

**Convergence of Marine Protected Area Policy with
Common Pool Research Theory, a case study:
The Lošinj Dolphin Reserve, Croatia**

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Abstract

The thesis analyses the development of negotiations for the management of the Lošinj Dolphin Reserve in Croatia. Interviews, meetings and observations were undertaken at all levels and stages of the negotiation process in order to provide a clear narrative of the development of the process. An actor orientated approach was taken to provide empirical material that could contribute to the convergence of two academic debates, common pool resource management and marine protected area policy. The Lošinj Dolphin Reserve provides a complex contextual case study with international, national, regional and local changes confusing the production of social capital to promote collective action. Development of the Croatian nation-state and its transition from State controlled to market system, coupled with conflicting issues of regional identity and local island context, and has significant impact on levels of trust and social integration. Finally a local non-government organisation provides the motivation for the designation of the Reserve and facilitation between the varying stakeholders and relevant authorities. The new paradigm of participation and co-management in protected areas for participative conservation provides for the overlaps within both commons and protected area literature. It is suggested that common pool resource scholarship can provide a framework for the development of marine protected areas, with certain contextual caveats. In turn marine protected area case studies can provide insights into other fields of commons research, particularly complex common pool resource theory.

Dedication

A promise I once made... ...'to someone just around the corner'

Death is nothing at all... I have only slipped away into the next room...
I am I and you are you... Whatever we were to each other, that we are still.
Call me by my old familiar name, speak to me in the easy way which you have
always used.
Put no difference in your tone, wear no forced air solemnity or sorrow.
Laugh as we always laughed at the little jokes we enjoyed together.
Play, smile, think of me, pray for me.

Let my name be ever the household word that it always was.
Let it be spoken without effect, without the ghost of a shadow on it.
Life means all that it ever meant.
It is the same that it ever was, there is absolutely unbroken continuity.
What is this death but a negligible accident?
Why should I be out of mind because I am out of sight?
I am just waiting for you, for an interval, somewhere very near, just around the
corner...

All is well.

Henry Scott Holland (1847-1918).

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To those around the corner, it's done, it's finished the promise is complete, all is well.

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List of Abbreviations & Acronyms

ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea & Contiguous Atlantic Area.
ADP	Adriatic Dolphin Project
CIESM	The Mediterranean Science Commission
CMCA	Croatian Maritime Control Act
CNHM	Croatian Natural History Museum
CPR	Common Pool Resource
CRO-NEN	Croatian National Ecological Network
cSAC	Candidate Special Area of Conservation
DICED	Department of International Cooperation for the Environment & Development, Principality of Monaco
EC	European Commission
EEZ	Exclusive Economic Zone
EU	European Union
FAO	Food & Agriculture Organisation
GEF	Global Environmental Fund
GIS	Geographic Information System
GPS	Global Positioning System
GSM	Global System for Mobile Communications
HDZ	Hrvatska Demokratska Zajednica (Croatian Democratic Union)
ICM	Integrated Coastal Management
ICTY	International Criminal Tribunal for the former Yugoslavia
IDC	Island Development Centre
IDS	Istrian Democratic Alliance
IMF	International Monetary Fund
IUCN	World Conservation Union
IWC	International Whaling Commission
LDR	Lošinj Dolphin Reserve
METAP	Mediterranean Environmental Technical Assistance Programme
MFP	Moray Firth Partnership
MoC	Ministry of Culture, Croatia
MOP	Meeting of the Parties
MPA	Marine Protected Area
NATO	North Atlantic Treaty Organisation
NGO	Non Governmental Organisation
NOAA	National Oceanographic & Atmospheric Administration
NPA	Nature Protection Act
NRC	National Research Council
NSAP	National Strategy & Action Plans
NTMPA	No-Take Marine Protected Area
NTZ	No-Take Zone
PGS	Pimorska Goranska Stranka (County Political Party)
RAC/SPA	Regional Activity Centre, Specially Protected Areas
SAA	Stabilisation & Association Agreement
SAP	Stabilisation & Association Process

SECI	Southeast European Cooperative Initiative
SINP	State Institute for Nature Protection
SPAMI	Specially Protected Areas of Mediterranean Importance
Tethys	Tethys Research Institute, Milan
UCL	University College London
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
US or USA	United States of America
USCOP	United States Commission on Ocean Policy
WTO	World Trade Organisation

1

Introduction

The conservation paradigm has changed substantially since the 1970s. Protected areas were originally developed with an exclusionary approach to designation and management, following an almost autocratic elitist style (Western & Wright, 1994). In many cases the protected area agencies of the early twentieth century undermined traditional rights and access systems already in place (Graham *et al.*, 2003; Philips, 2003). Up to and beyond the 1960s, protected area policy favoured the top-down approach with little concern for the welfare of the local population. Since the 1970s, however, conservation has become more participatory, particularly with regards to local communities within, and adjacent to, protected areas. Conservation has become participatory for two main reasons: first, the general rise in civil society around the world, and second, complex environmental problems require access to various knowledges, not only scientific (Berkes, 2004; Western & Wright, 1993).

Several events promoted the widespread development of governance rights in conservation. The ‘right of environment’ was written into the first declaration of the 1972 Stockholm conference¹ (Sapountzaki & Wassenhoven, 2005). The World Conservation Strategy (1980) promoted the link between conservation and development (Wells & White, 1995). Within European law the principle of collaboration is enshrined in the Habitats Directive (Article 2.3), which requires that conservation measures:

‘take account of the economic, social and cultural requirements, and the regional and local characteristics of the area’.

Coupled with this, is the ‘new’ inter-disciplinary scientific approach to nature conservation and the integration of new technologies, both for science and information dissemination (Kelleher & Kenchington, 1991; Phillips, 2003). Natural systems are non-linear, uncertain, and require access to a wide range of knowledge (Berkes, 2004a). As science has attempted to tap local ecological knowledge, so stakeholders have become aware that the knowledge they possess entitles them to some return. Invariably, this is access to the process of fashioning the rules that govern both the resource and themselves (Berkes, 2004b). Yet, the development of collaborative² conservation has had mixed

¹ Proclamation 1, the United Nations Conference on the Human Environment, Stockholm, 1972.

² All forms of collaborative management will be referred to as co-management unless otherwise

results. There has been experimentation with many different types of governance within protected areas. All forms of co-management, from community management to delegated management by third party organisations, have been tried with varying levels of success (Graham *et al.*, 2003). Identifying the appropriate communities and the appropriate degree of devolvement of power are particular issues underlying the failure of conservation co-management schemes (Murphree, 2002). Increasingly managing ecosystems is being seen as a social process (GEF, 2004; Gubbay, 1995; Mascia, 2004; Murphree, 2002). The World Conservation Union (IUCN), as the largest and most powerful worldwide conservation network, has the influence to develop conservation policies globally (Locke & Dearden, 2005). The IUCN (1994) defines a protected area as:

'[An] area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means' (IUCN, 1994: 7).

Increasing recognition that the failure to integrate local socio-cultural issues within park management was undermining management objectives necessitated a change in the governance paradigm of protected areas (Lane, 1997). Following the 1992 World Park Congress, a new series of protected area categories, including categories allowing resource extraction, were developed (see table 1.1) (Locke & Dearden, 2005).

Category	Description
Ia	Strict Nature Reserve: Protected Area managed mainly for science
Ib	Wilderness Area: Protected Area managed mainly for wilderness protection
II	National Park: Protected Area managed mainly for ecosystem conservation and recreation
III	Natural Monument: Protected Area managed for conservation of specific natural features
IV	Habitat/Species Management Area: Protected Area managed mainly for conservation through management intervention
V	Protected Landscape/Seascape: Protected Area managed mainly for landscape/seascape conservation and recreation
VI	Managed Resource Protected Areas: Protected Area managed mainly for the sustainable use of natural ecosystems
IUCN (1994: 24)	

Undoubtedly, biology still provides the underlying theoretical and analytical tools to identify areas of high biological value, but to change human behaviour requires the application of other skills (Christie *et al.*, 2003; Mascia *et al.*, 2003). This was also recognised by the IUCN (1993: 131):

specified.

'the key to protecting a cherished landscape lies within the communities that call it home'.

Historically the basis of IUCN categorisation is by primary management objective. However, as protected area management has evolved there are now various objectives to be considered within each of the categories. Graham *et al.* (2003: 12) suggest that a balance of four factors should be taken into consideration:

1. *Nature conservation*
2. *Science*
3. *Visitor opportunities*
4. *Local and indigenous needs*

The two 'new' categories of V and VI have, until recently, received less attention than the traditional categories I to IV. Both categories V and VI share the concept of multiple-use, and are often perceived as less strictly protected categories (Phillips, 2002). Whilst these designations remain concentrated on the conservation of biodiversity, they provide for sustainable use as an integral part of their management. In the 2003 UN list of protected areas, these categories accounted for nearly 30% of the total protected area worldwide³ (Chape *et al.*, 2003). As Chape *et al.* (2003: 7) state: *'There is an increasingly close link between protection and sustainable use'*. The latest World Parks Congress⁴, held in 2003, signalled an even more abrupt shift towards inclusive management of protected areas. Entitled, 'Benefits beyond Boundaries' the Congress promoted the development of *'more people orientated management'* (Phillips, 2003: 21). The resulting protected area policy is strikingly opposed to the original concept of a protected area, adopted until only 30 years ago (see table 1.2). There are, however, objections to the change in paradigm. Locke & Dearden (2005) argue that category V and VI protected areas undermine the protection of wild diversity as a whole, and these categories should no longer be considered as 'protected areas', but as 'sustainable development areas'. McClanahan (2004) suggests that in the future it will be impossible to determine protected areas from the 'domesticated planet'.

³ Another 19% remains un-categorised by the IUCN.

⁴ The IUCN World Parks Congress is held every ten years and is seen as a major indicator of the direction for protected area management for the following decade.

Table 1.2: Paradigm Changes in Protected Area Management		
	Pre 1970's	Post 2000
Objectives	Set aside for conservation	Run also with social & economic objectives
	Established mainly for spectacular wildlife & scenic protection	Often set up for scientific, economic & cultural reasons
	Managed mainly for visitors & tourists	Managed with local people more in mind
	Valued as wilderness	Valued for cultural importance of so-called wilderness
	About protection	Also about restoration & rehabilitation
Governance	Run by central government	Run by many partners
Local people	Planned & managed against local people	Run with, for & in some cases by local people
	Managed without regard to local opinions	Managed to meet the needs of local people
Wider context	Developed separately	Planned as part of national, regional & international systems
	Managed as 'islands'	Developed as 'networks'
Perceptions	Viewed primarily as a national asset	Viewed also as a community asset
	Viewed only as a national concern	Viewed also as an international concern
Management techniques	Managed reactively within a short timescale	Managed adaptively in long-term perspective
	Managed in a technocratic way	Managed with political considerations
Finance	Paid by tax-payer	Paid for by many sources
Management skills	Managed by scientists & natural resource experts	Managed by multi-skilled individuals
	Expert led	Drawing on local knowledge
After Phillips (2003)		

Although the development of the IUCN category system was explicitly designed to cover all environments, less than 1% of the oceans are under protected status, compared to 12% of the land (Kelleher *et al.*, 1995). There are three principle approaches to marine conservation. The first, and oldest, is designed to regulate and manage individual activities, often fisheries, by specialist state agencies (Mulongoy & Chape, 2004). The second involves the establishment of small highly protected areas for particularly vulnerable habitats. The third consists of the creation of large, multiple-use protected areas with an integrated system of management for varying levels of protection (Kelleher & Kenchington, 1991). The IUCN defines an MPA as:

'Any area of littoral or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment' (Resolution 17.38: 2b. of the IUCN General Assembly, 1988).

The increasing popularity of IUCN category V and VI protected areas is reflected by, and even magnified, in the designation of MPAs (see table 1.3). Taking the figures of Mulongoy & Chape (2004), categories V and VI account for

over half of the total protected marine area⁵, compared to 30% for the total protected area worldwide (Chape *et al.*, 2003). The integrated multiple-use method has the advantage that:

'co-ordination of regulation of different human activities can be automatically achieved when the overriding responsibility for management rests with one agency. Coordination of management in the marine environment is in many ways even more important than it is in the terrestrial sphere. This is because the high degree of connectivity in the seas facilitates the transmission of substances and effects throughout the water column' (Kelleher & Kenchington, 1991: 1).

Table 1.3: Marine Protected Areas by IUCN Category

IUCN Category	Number of Sites	Total Marine Area (km ²)	Proportion of global ocean area (%)
I-VI		1 577 883	0.44
Ia	419	189 439	0.05
Ib	49	5 916	0.00
II	666	279 654	0.08
III	133	3 819	0.00
IV	1 494	305 329	0.08
V	571	73 279	0.02
VI	159	809 354	0.22
No category	625	66 400	0.02
	4 116	1 639 065	0.45

The numbers have been corrected to avoid the problem of double counting where designations overlap, hence the sum of the individual categories gives a slightly higher total than the actual total figures provided here (After Mulongoy & Chape, 2004: 29)

Although the primary objective of an MPA will determine the category, there may be zones within the area that have other objectives. In turn, these zones may have different IUCN categories according to their use (Kelleher & Kenchington, 1991). This use of the IUCN categories is particular to multiple-use MPAs, and often leads to confusion over the definition of zones⁶.

Invariably, areas of high marine biodiversity will coincide with economically important resources (Kenchington, 1990). Community involvement in MPAs is not only important to avoid conflict, but also for the development of rounded knowledge in this cryptic and alien environment. Multiple-use protected areas are becoming more important generally in conservation, though they are even more significant for marine conservation. The inclusionary aspect of the management of these forms of protected areas resonates with issues of developing collective action for the successful management of the commons. Many of the changes seen in table 1.2 echo the principles of successful CPR

⁵ 53.8% of marine protected areas are categorised as V and VI, another 4% remains un-categorised by the IUCN.

⁶ For further debate on the applicability of the IUCN categories for MPAs see: Ballantine, 1999; Jones, 2001; Nijkamp & Peet, 1994; Stolton *et al.*, 2003.

management, such as the devolution of power, embracing uncertainty, and legitimising local knowledge and values. This raises the question: ‘how can the ‘tragedy of the commons’ be informative and useful to marine protected area policy?’ In a similar manner to the change in the conservation paradigm, the dominant narrative within commons research has also seen a significant shift. Hardin’s (1968), ‘tragedy of the commons’ has been replaced by Ostrom’s (1990), ‘governing the commons’. What was once simply:

‘Freedom in a commons brings ruin to all’ (Hardin, 1968: 1244).

Has become a challenge to:

‘develop theories of human organisation based on realistic assessment of human capabilities and limitations in dealing with a variety of situations that initially share some or all aspects of a tragedy of the commons’ (Ostrom, 1990: 24).

The imperative aspect has been recognition that sustainable common pool resources (CPRs) exist where there is an identifiable community of interdependent users that have the capability to exclude ‘outsiders’ (Selsky & Creahan, 1996). Murphree (2002: 3) suggests that there is an ‘essential affinity’ between ‘the commons’ and ‘protected areas’:

‘the commons are protected areas in that they are sites and bundles of collective entitlement for their constituents which require protection through controls on their use. Their legitimisations may come from a variety of sources, the entitlements may be differential and the definition of their constituencies may vary, but their essence is collective and controlled access’.

The empirical focus of this thesis is to examine, at a micro-level, the process of developing inclusive management structures for conservation of marine resources in Lošinj Island, Croatia. Over one third of the Croatian national territory is marine. The terrestrial area under some form of protection within Croatia amounts to 6.9% of the total landmass⁷ (Earthtrends, 2003). In total only about 300 km² of the marine system in Croatia is under protection (< 1%⁸). Specifically, this thesis concentrates on the negotiations pertaining to the development of the ‘Lošinj Dolphin Reserve’⁹, the first dedicated marine protected area in Croatia¹⁰. The Reserve is proposed to provide protection of the

⁷ Terrestrial area 56,542 km²

⁸ Territorial sea: 33,200 km²

⁹ The full title of the Reserve, under Croatian law is: A Special Nature Reserve in the Sea for the Protection of the Common Bottlenose Dolphins (*Tursiops truncatus*) of the Cres-Lošinj Archipelago. The definition ‘Reserve’ comes from the Croatian designation type rather than the proposed management technique. The Lošinj Dolphin Reserve is proposed as a managed multiple-use area rather than a no-take reserve, as implied by its title.

¹⁰ There are four National Parks or Parks of Nature in Croatia with some marine area within their borders: Brioni National Park, Kornati National Park, Mljet National Park, and Telašćica Park of Nature.

'critical habitats' of a group of resident common bottlenose dolphins (*Tursiops truncatus*). The dolphins are also being used as a 'flagship' species to implement management measures for the protection of the whole ecosystem.

Research has been ongoing on this population of dolphins since 1987. Throughout this period the 'image' of the dolphin has been promoted with that of the island of Lošinj helping to develop the 'economic capital' of the island, through tourism promotion. The Reserve has now been proposed as a logical step in both the development of conservation and the development of the ecological image of the island. Creating collective action for the development of the Reserve has not, however, been straightforward. The inhabitants of the island do not provide a homogenous group with which to build a co-management scheme for the Reserve. In fact, the island has been subject to various regimes and demographic changes making it one of the most heterogeneous of all the Croatia islands (Podgorelec, 1999). Generally, throughout Croatia and on the island the level of institutional trust is low, making it difficult to develop collective action. Facilitation by a local NGO, with support of national and international regimes, is driving the development of the Reserve in a participatory manner, rarely experienced within Croatian conservation. As the first, dedicated, MPA in Croatia the Lošinj Dolphin Reserve provides new challenges for all levels of governance. However, the social and institutional processes underpinning the development of the Lošinj Dolphin Reserve do not provide a generalisable case study for other 'typical' MPA contexts. Instead, it is argued that, this particular contextual situation can sit alongside other studies to further the collective understanding of MPAs in the broader CPR conceptual framework.

1.1. Research Aims & Questions

Solving the collective action problem of resource sustainability, despite divergences in goals, underlies both CPR theory and MPA policy (Jones & Burgess, 2005). However, are the objectives for CPR use equivalent to that of an MPA? The underlying objective for protected areas is the '*protection and maintenance of biodiversity*', whilst in the commons, sustainable resource exploitation is the main objective, which may have little or no positive effect on biodiversity. Yet, as local CPRs become articulated with global politics and economics, many are becoming more influenced by the factors that drive MPA selection, designation, and management. Increasingly, MPA policy and CPR theory are converging, under the current dominant paradigms. This thesis aligns itself with the view that CPR theory can provide insights into the development of MPA policy, with certain caveats. The Lošinj Dolphin Reserve provides a complex contextual case study that, analysed through the CPR lens, can provide for comparison with the work of others. The empirical research has the following two objectives:

- To examine how CPR theory can feed into the development of MPA policy, and in turn how MPA development can further CPR theory.
- To explore how international policy can be implemented at a local level considering the social and institutional processes active in the case study area.

From these broad aims a key set of research questions have been developed to be addressed:

1. How have the overarching international regimes and requirements for protection affected the development of the proposal?
2. What is the role of the emerging national political regime?
3. What is the role of civil society in the process, and how will its structure influence the development of the proposal?
4. How will the island social structure and identity fit with the Reserve proposal and the development of the 'island symbol'?
5. What is the potential for cooperation at the local level and how can it be nurtured, i.e. participation, social capital, institutional incentives?
6. How will local bottom-up 'objectives', integrate with the top-down primary objective of the Reserve?
7. How has the researcher affected the development of the proposal?

1.2. Thesis Structure

Chapter two examines the development of CPR theory. The seminal article of Hardin (1968) is briefly examined, as is the subsequent development of the 'commons' debate. The two characteristics of CPRs, subtractability and excludability, are defined and reviewed, and the characteristics of MPAs are introduced. Issues relating to the development of multiple-use and user commons are brought into the debate. Through Agrawal's (2002) critical enabling conditions for sustainability on the commons, issues of the resource characteristics, group characteristics, institutional arrangements, and external factors are reviewed based on a wide variety of literature. Finally, the CPR framework is applied to the development of MPA policy literature.

Chapter three grounds the empirical work described in this study within the ethnographic and anthropological literature. Section one reviews the range of qualitative methodologies that are utilised, including, literature reviews, participant observation, in-depth interviews, and direct observation of meetings. The role of the researcher and the NGO 'Blue World', the organisation facilitating the development of the proposal, are then analysed. Finally, the results of the data analyses are discussed considering the underlying framework of the thesis. The second section provides an introduction to the local context in

which the Lošinj Dolphin Reserve is embedded. A brief review of the geographical and historical context of the island is provided, outlining the particular regional and national issues that have affected Lošinj.

Chapter four reviews the development of the Reserve from the first proposal in 1993, to the 'Critical Habitats Report' in 2003. The first section provides an historical review of the early proposals for protection, utilizing the available literature and interviews with the authors. The second section relates, directly, the role of the NGO 'Blue World' in facilitating early negotiations with the relevant authorities. The third section presents the scientific case through the 'Critical Habitats Report', and provides the current state of biological knowledge about the Reserve. The final section follows Agrawal's (2002) framework for the critical enabling conditions of the resource system characteristics of the proposed Reserve.

Chapter five sites the study within the Lošinj archipelago, identifying the major factors affecting the identity of the primary appropriators (Selsky & Creahan, 1996). The main, but not exclusive, focus of this Chapter is upon the Lošinj islanders. The Chapter opens with a personal review, using interview material, of the changes to the Croatian State, and how it has affected the community. The second section follows Agrawal's (2002) framework for the critical enabling conditions of the group characteristics, drawing out the major issues relating to the social setting of the island.

Chapter six, the final empirical Chapter, looks at the development of the institutional arrangements for the Reserve, taking into account the contextual situation in which it is embedded. The first section follows the negotiations between the institutional actors, focussing on the development of the obligations and the expectations of the actors. The legislative requirements for the Reserve are then set out in order to examine the influences of the international organisations involved in this case study. The final section considers Agrawal's (2002) framework extracting the main issues for the establishment of the public institution to manage the Reserve.

Chapter seven reflects on the process, and draws out the contribution of the case study to the literature. The first section considers Agrawal's (2002) framework of 'critical enabling conditions on the commons' in Chapter two, and its applicability to the general model of MPA policy. The second section returns to the research questions, directly relating them to empirical Chapters four, five, and six, and relating back to the themes introduced in Chapter two. The third section provides conclusions considering the findings within the case study and the literature, providing suggestions for the development of CPR theory and MPA policy. Finally areas for future study are suggested.

2

Common Pool Resources and Marine Protected Areas

Introduction

Although often referring to terrestrial protected areas and fisheries (Berkes, 2002; Gordon, 1954; Graham *et al.*, 2003; Phillips, 2003; Wilson, 2002), common pool resource (CPR) theory has only touched upon the study of marine protected areas (MPAs) (Edwards & Steins, 1998; Garaway & Esteban, 2003; Jones & Burgess, 2005; Mascia, 2004; Wells & White, 1995). The biophysical dynamics of the marine system adds complexity when analysing resource use and its conflicts. Yet, it is its multiple-use and complexity that makes the field of significant importance. Further complicating the matter are political and economic issues underlying marine resource use at all institutional levels. Traditionally, the marine environment constituted the greatest open access system available, difficult to exclude anybody, and with unlimited resources. Management errors, particularly in fisheries, have undermined the perception of the inexhaustibility of the sea. As marine resources have become more important to a wide range of stakeholders, recognition has grown that some form of control is required. Since the 1957 UN Convention on the Law of the Sea, States have claimed increasing amounts of the marine system. The development of Exclusive Economic Zones (EEZs) reflects the change from using the sea as a security buffer to a new frontier for exploitation (Kelleher & Kenchington, 1991; US Commission on Ocean Policy (USCOP), 2004). The development of territorial seas and EEZs has changed the perception of the 'right' for all users to access marine resources. Coupled with this has been the development of mass tourism in the coastal zone. Increasing demand on the coastal zone requires that new analytical tools be developed to maintain its sustainability. As CPR theory becomes an accepted analytical tool for many environmental problems, the increasing importance of MPA management is a field that is due some attention.

The following Chapter consists of four main sections. The first briefly reviews changes in CPR theory from Hardin (1968) to present. The second section investigates the two defining characteristics of CPRs, subtractability and excludability, introducing aspects referring to the development of MPAs. The third section reviews the critical enabling conditions for the sustainability of the commons, drawing out issues of multiple-use and multiple-user commons research (Agrawal, 2002). The final section looks at the applicability of these critical enabling conditions according to the literature on MPA policy.

2.1. Development of CPR Theory

In the past two decades CPR theory has been applied to a wide range of resource use issues. Work on CPRs by Baland & Platteau (1996), Ostrom (1990) Wade (1988), and others¹ has taken the influential work of Hardin (1968) into new areas. There are certain features of natural and man-made resource systems that make them suitable for analysis as CPRs. Ostrom (1990: 30) defines a CPR as:

'a natural or man-made resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use'.

In 1968, Garrett Hardin argued:

'ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.' (Hardin, 1968: 1244).

Although, Hardin (1968) was not the first to express pessimism regarding the state of the world's resources and the effects of their exploitation, his article did stimulate debate in many scientific fields. Environmental warnings throughout the 1970s and 1980s, coupled with Hardin's (1968) article, created an explosive growth of research in the fields of CPRs and collective action problems (Dietz *et al.*, 2002). Hardin (1968) proposed two possible options to stave off ruin of the commons, the establishment of the 'Leviathan State', or the development of a 'private enterprise system'. Arguments for State control assume that the central agency has sufficient information to determine resource capacity, to secure the efficiency of monitoring and enforcement, to ensure the accuracy of identification of all transgressors, and to determine appropriate punishment (Ostrom, 1990). If all these facets are not accurately maintained, then there is a strong case for users to defect rather than cooperate. Finally, if the cost of creating and maintaining the monitoring and enforcement body is prohibitive, State control can lead to *de facto* open access use (Baland & Platteau, 1996).

The division and allocation of the resource into private property rights will require time and effort. Individuals will need to take time to ensure their exclusive rights, rather than simply utilise them. Division of the resource may lead to inequality due to variance in resource quality and differing renewal rates. Resource inequality will lead to the development of markets, or to the requirement for insurance, again incurring costs or creating conflicts. Reduction in resource size may also lead to greater vulnerability to change (Ostrom, 1990). Finally, certain resources may prohibit division, this is particularly so in non-stationary resources, or where there is little or no historic use of property rights, such as the marine system (Clark, 1980; Jones & Burgess, 2005).

¹ See in particular the National Research Council (2002). *The Drama of the Commons*.

Ostrom (1990) suggests that no single solution exists. Capacity to escape the tragedy of the commons varies from case to case. Baland & Platteau (1996) argue that privatisation, or State management of CPRs will damage both personal relationships and implicit entitlements to resources, leading to the impaired efficiency of, and disadvantage to, traditional users. Despite this, however, over the last three decades, formal environmental resource protection policy has been largely based on the above two arrangements.

Since Hardin's (1968) essay the interpretation of 'governance' has changed significantly. What was originally the equivalent of 'political steering', has changed to include regimes based on the interaction and co-operation between public and private actors (Carlsson & Ramphal, 1995; Mayntz, 1999). Schmitter (2000: 2) defines governance as:

'a method/mechanism for dealing with a broad range of problems/conflicts in which actors regularly arrive at mutually satisfactory and binding decisions by negotiating with each other and co-operating in the implementation of these decisions'. Hence governance now, 'rests on horizontal forms of interaction between actors who have conflicting objectives, but who are sufficiently independent of each other so neither can impose a solution on the other, and yet sufficiently interdependent so that both would lose if no solution were found'.

Pellizzoni (2003) identifies the main principles of good governance as effectiveness, coherence, and accountability, combined with the principle of participation from policy conception to implementation. Associated with this is the need to open deliberative forums, or arenas, and make them more flexible and interconnected with different or broader concerns and publics (Bryson & Crosby, 1993; Pellizzoni, 2003). This in turn, has led to more opportunities for non-State actors to assume traditional administration, regulation, management, and mediation functions (Mol & Sonnenfeld, 2000a). Fundamentally, governance is about power, access, and accountability (Graham *et al.*, 2003). The essence remains that genuine participation is only achieved with power sharing (Hildebrand, 1997).

Hardin (1968) fails to distinguish between a common pool resource and an open access resource. In his 1998 essay entitled, 'extensions to the commons' he highlights this himself stating that, '*the modifying adjective 'unmanaged'*' is missing from the original piece (Hardin, 1998: 683). Open access commons are particularly susceptible to overexploitation and history undoubtedly confirms this (NRC, 1999). However, in a managed commons, the assertion that each man acting logically will maximise profits whilst minimising costs, simplifies the complexities of societal influences on human actions. Time and again, field researchers have found that where successful CPRs exist, users have developed rights of access based on both formal and informal societal rules and norms (Netting, 1976; Runge, 1984; Wade, 1988). In a CPR scenario, collective action will typically occur if local stakeholders seek to overcome the problems associated with the '*the tragedy of open access*'. Agreeing on decision-making

arrangements that control access to, allocation of, and control over the resource converts it into a CPR. Consequently, the problem facing users of a commons is that of organising themselves to supply and maintain institutions or structures that overcome collective action problems (Ostrom, 1990).

2.2. Subtractability & Excludability

The two defining characteristics of a CPR are subtractability and excludability (Ostrom, 1990). A CPR is finite, and hence subtractive use by one individual will have a negative affect on, not only the resource, but also on the ability of others to utilise the resource (Ostrom *et al.*, 1999). It is important to distinguish between the *'resource system'*, and the *'resource units'* that may be obtained from the system, recognising that the latter is dependent on the former. Examples of natural resource systems include forests, ground water supplies, grazing areas, and oceans. Consequently, resource units are what individuals traditionally use from the system, such as lumber, irrigation water, animal fodder, and fish, respectively. Much of the original work conducted on the analysis of management regimes for CPRs has focused on resources that are subject to one single, extractive resource use (Agrawal, 2002; Ostrom, 1990; Pinkerton, 1989; Wade, 1988). In the case of the marine environment this has been inshore fisheries (Acheson, 1997; Baland & Platteau, 1999; Berkes, 1986; Dietz *et al.*, 2002; Gordon, 1954; Jentoft *et al.*, 1998; Ostrom, 1990; Pinkerton, 1989; Seabright, 1993; Wilson, 2002). Yet, more often than not, a resource system may provide more than one form of resource unit, or a resource unit that may be utilised by various appropriators in different ways. As Edwards & Steins (1998: 349) state:

'It is not realistic to assume that people will only demand one use of a resource, if the same resource system also yields other resource units'.

When commons evolve into multiple-use the institutional framework, within which collective resource use takes place, has to be re-negotiated. This is to avoid adverse impacts associated with increased access of new users to the resource system, overexploitation, alienation of traditional users, and inter-user conflicts. In these situations, it becomes increasingly important to balance resource management with the interests of different users associated with different types of use (Edwards & Steins, 1998; Selsky & Creahan, 1996). Many new user groups, such as tourism, derive benefits from the resource system itself, rather than from units produced from the system. Development of mass tourism in the 1960s has led to many 'traditional' commons, both terrestrial and marine, being overwhelmed by 'new' use patterns. These 'new' commons are often driven by the constituencies of conservationists and recreational users, and the provision of non-consumptive uses (Buck, 1999). However, questions remain over the extractive element of tourism and the subsequent loss of environmental amenity values (Briassoulis, 2002; Butler, 1991; Ostrom *et al.*, 1999). The concept of subtractability, or extractive use, of a resource is questionable, or perhaps needs redefining. Edwards & Steins (1998: 355) define subtractability as:

'the extent to which users are capable of subtracting from the enjoyment of other users'.

As integration with external markets continues to open up new areas of the world, traditional commons will increasingly come into conflict with new appropriators that have varying legitimacies to resource access (Edwards & Steins, 1998; Stern *et al.*, 2002). Although, a single user may have little effect on the resource, cumulative use may significantly degrade it. This leads to the issue of admitted responsibility by users, a significant problem for generating collective action (Hardin, 1968). In multiple-use commons this aspect is exacerbated, particularly considering that some user groups will conflict and may not communicate with other user groups. It may become imperative to spatially and temporally separate uses in these 'new' commons, as it seems unrealistic to expect tourists and hunters to occupy the same place in time and space (Naughton-Treves & Sanderson, 1995; Okerson, 1992; Tang, 1992).

Under a CPR, the *'right of exclusion'* is granted to a well defined user group. This presupposes that there is a distinct user group existing which is distinguishable (McCay, 2002). Hence, there is a requirement to devise rules that define not only the resource, but those individuals that have rights to that resource. Collective action amongst user groups requires the clear definition of rules of access, allocation, and control, and a collective understanding of the resource base. Schlager & Ostrom (1992: 250) identify five classes of property rights:

1. *'Access – the right to enter a defined physical property;*
2. *Withdrawal – the right to obtain the “products” of a resource, e.g., catch fish, extract water;*
3. *Management – the right to regulate internal use patterns and transform the resource by making improvements;*
4. *Exclusion – the right to determine who will have an access right and how that right may be transferred; and*
5. *Alienation – the right to sell or lease either or both a management and exclusion right.'*

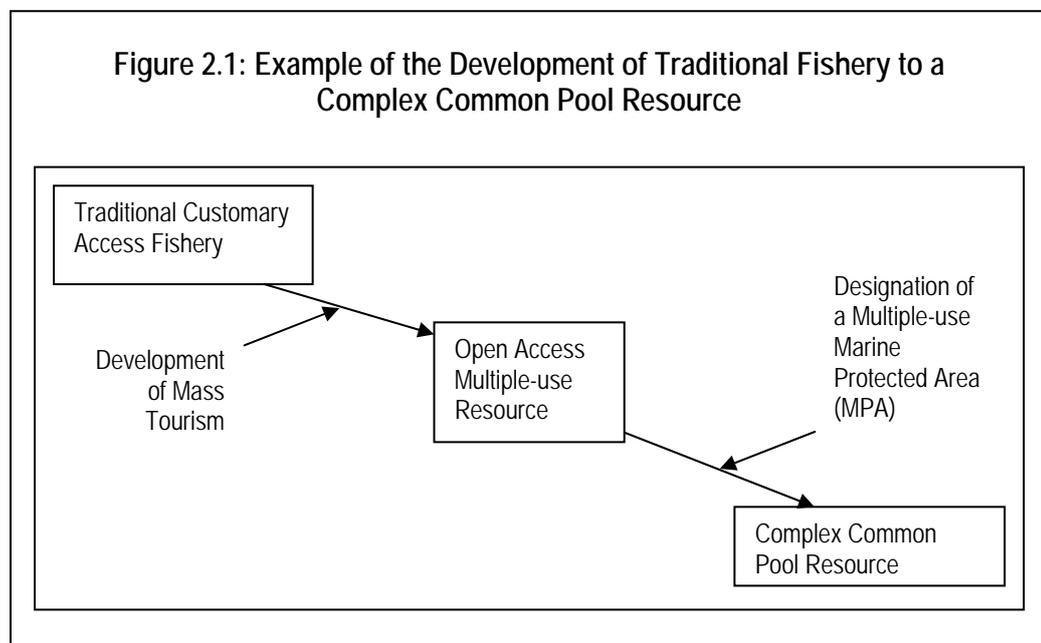
The type of resource rules utilised will be dependent upon the biophysical structure of the resource, legitimacy of the rules, understanding of the rules by users, and the monitoring and enforcement of these rules (Ostrom, 1998). If exclusion is difficult, excessively costly, or the rules are not effective, then the resource faces the possibility of 'free riding' and over-exploitation by harvesters.

Exclusion from a multiple-use site may become a significant issue, not only physically, but also politically. This is particularly pertinent when considering the physical and historical attributes of the marine environment, where material boundaries are difficult to maintain, and rights of innocent passage are guaranteed under customary international law (Kelleher & Kenchington, 1991). It is also difficult to separate resource use and conservation in the marine system, as natural resources and their living space are sought after by many different users, for many different purposes (Kelleher & Recchia, 1998). Based

on the current paradigm of inclusive protected area management, the action of designating a multiple-use MPA converts an open access resource system into a CPR, providing there were no prior informal rules governing the area (see figure 2.1). As Edwards & Steins (1998: 379) state:

'Any resource management situation where: there are a number of competing uses; exclusion is problematic; and a degree of subtractability exists may be analysed as a commons dilemma'.

The nature of multiple-use, IUCN categories V and VI MPAs make them ideal to be analysed as complex CPRs. There is a mix of extractive and non-extractive use, a mix of users, and the definition of boundaries leading to the possibility of exclusion. Hence, a multiple-use MPA can be regarded as an emergent complex CPR (Selsky & Memon, 2000).



2.3. Design Principles

Comparative studies analysing examples of successful CPR management have resulted in various ‘design principles’ being drawn up (Ostrom, 1990, Pinkerton, 1989; Platteau & Baland, 1996; Wade, 1988). Ostrom (1990: 90) focuses on the design principles to create, adapt, and sustain institutions to manage CPRs. She defines a design principle as:

‘an essential element or condition that helps to account for the success of these institutions in sustaining the CPRs, and gaining the compliance of generation after generation of appropriators to the rules in use’

There are some distinct similarities in the results from the authors Ostrom (1990), Pinkerton (1989), Platteau & Baland (1996), and Wade (1988). Four key areas are highlighted:

1. Resource characteristics;
2. Group characteristics;
3. Institutional arrangements; and,
4. External factors.

Analysis of the work of the previous authors’ has resulted in a set of enabling conditions for facilitating and sustaining commons institutions (see table 2.1) (Agrawal, 2002). Although, these conditions incorporate many findings from empirical work, Steins *et al.* (2000) argue that there is a significant possibility that concentrating on ‘design principles’ will undermine the results of institution building. Agrawal (2002) suggests that instead of focusing on a broad list of factors that apply to all commons institutions, it may be more beneficial to focus on configurations of conditions that bear a causal relationship to sustainability. He goes on to suggest that design principles are only relevant to the study undertaken and may not be applicable elsewhere, due to problems with method, analysis, and context. Naughton-Treves & Sanderson (1995; 1273) concur with this, proposing that no existing form of property right could be adequate for all biodiversity conservation contexts:

‘universal prescriptions for appropriate property arrangements are impossible, rather, they depend on social and ecological context’.

Nevertheless, these design principles do provide a viable starting point for the analysis of the sustainability of institutions for CPR management.

Table 2.1: Critical Enabling Conditions for Sustainability on the Commons

- (1) Resource system characteristics
 - (i) Small size (RW)
 - (ii) Well defined boundaries (RW, EO)
 - (iii) Low levels of mobility
 - (iv) Possibilities of storage of benefits from the resource
 - (v) Predictability

- (2) Group characteristics
 - (i) Small size (RW, B&P)
 - (ii) Clearly defined boundaries (RW, EO)
 - (iii) Shared norms (B&P)
 - (iv) Past successful experience – social capital (RW, B&P)
 - (v) Appropriate leadership – young, familiar with changing external environments, connected to local traditional elite (B&P)
 - (vi) Interdependence among group members (RW, B&P)
 - (vii) Heterogeneity of endowments, homogeneity of identities and interests (B&P)
 - (viii) Low levels of poverty

- (1) & (2) *Relationship between resource system characteristics and group characteristics*
 - (i) Overlap between user group residential location and resource location (RW, B&P)
 - (ii) High levels of dependence by group members on resource system (RW)
 - (iii) Fairness in allocation of benefits from common resources (B&P)
 - (iv) Low levels of user demand
 - (v) Gradual change in levels of demand

- (3) Institutional arrangements
 - (i) Rules are simple and easy to understand (B&P)
 - (ii) Locally devised access and management rules (RW, EO, B&P)
 - (iii) Ease of enforcement of rules (RW, EO, B&P)
 - (iv) Graduated sanctions (RW, EO)
 - (v) Availability of low cost adjudication (EO)
 - (vi) Accountability of monitors and other officials to users

- (1) & (3) *Relationship between resource system and institutional arrangements*
 - (i) Match restrictions on harvests to regeneration of resources (RW, EO)

- (4) External environment
 - (i) Technology
 - (a) Low-cost exclusion technology (RW)
 - (b) Time for adaptation to new technologies related to the commons
 - (ii) Low levels of articulation with external markets
 - (iii) Gradual change in articulation with external markets
 - (iv) State
 - (a) Central governments should not undermine local authority (RW, EO)
 - (b) Supportive external sanctioning institutions (B&P)
 - (c) Appropriate levels of external aid to compensate local users for conservation activities (B&P)
 - (d) Nested levels of appropriation, provision, enforcement, governance (EO)

From Agrawal (2002: 62-63)

SOURCES: RW, Wade (1988); EO, Ostrom (1990); B&P, Baland & Platteau (1996).

2.3.1. Resource characteristics

Natural systems are complex, and the absence of equilibrium makes it difficult to follow cause and effect relationships, due to the large number of factors that may affect particular outcomes (Holling, 1987). This obviously has an effect on attempts to understand nature in a reductionist manner, based on the stability of the system, or on past system states (Van der Leeuw, 2000; Wilson, 2002). Particular features of the resource will help to enable sustainable management. The importance of clearly defined boundaries and knowledge of the resource are the underlying themes throughout. Reductions of uncertainty and, in the case of conservation, the application of precaution are themes directly related to the knowledge and characteristics of the resource.

2.3.1.1. Small size

The physical size of the resource system will not only affect the ability to reduce the uncertainty, but as Wade (1988) suggests, has a direct affect on the detection, or 'noticeability', of users that may be free-riding. As technology increases, the importance of both of these issues may decrease. Modern technology is increasingly being used to aid knowledge and detectability in CPRs (Ostrom *et al.*, 1999).

2.3.1.2. Well defined boundaries

The presence of boundaries is the single defining characteristic between 'open access', and 'common pool resource' institutions (Ciriacy-Wantrup & Bishop, 1975). Ostrom (1990) suggests that defining boundaries should be the first step in organising for collective action. Defining the boundaries of the resource system will allow for the definition of rules of excludability, hence those that invest in the resource will not lose benefits by having them expropriated by 'outsiders'.

2.3.1.3. Low levels of mobility

Resource unit mobility is different to the small size of the resource system, yet often erroneously perceived as the same (Agrawal, 2002). Movement of resource units within or through the resource system may lead to inequitable appropriation, or external appropriation, leading to conflict between users (Schlager *et al.*, 1994). Typically, in CPRs with highly mobile resource units, the rules adopted to coordinate users are based on time or space allocations. In the Alanya inshore fishery in Turkey, local knowledge has resulted in the identification of the most productive fishing areas. Eligible boats occupy each location in rotation as an equitable method of sharing the resource units (Ostrom, 1990).

In the case of wildlife conservation, many animal species have extensive home-ranges or migration patterns. Invariably it is these species that are of major

conservation importance, hence, this may question the applicability of local resource management systems (Naughton-Treves & Sanderson, 1995). Trans-national migrations of resource units may require bilateral or multilateral international agreements. These agreements may support or undermine local resource management, an obvious example of this being fisheries (Young, 2002).

2.3.1.4. Possibilities of storage of benefits from the resource

Greater storage allows for greater predictability of the flow of resource units. Users may be able to understand the current and future flow of resource units, and maintain some control over that flow (Schlager *et al.*, 1994). Combining the elements of storage and mobility, Blomquist *et al.* (1994) considered four typologies: resources that are mobile and cannot be stored, such as wildlife, resources that are mobile and yet have some storage capacity, such as irrigation water, resources that are stationary and have little capacity for storage, such as shellfish, and resources that are stationary and can be stored, such as groundwater. Greater resource unit mobility and the absence of storage will lead to greater uncertainty concerning the resource and its reliability. This will inevitably lead to greater costs to acquire information regarding the resource system and resource units (Schlager *et al.*, 1994).

2.3.1.5. Predictability

Baland & Platteau (1996) identify the lack of resource knowledge as one of the main issues to drive users to over-exploit CPRs. Unpredictability affects the ability of the user to allocate available resources, or undertake activities to augment, or protect future supplies (Wilson, 2002). The complexity of natural systems makes them difficult to manage and ignoring uncertainty has contributed to many management failures. The most cited examples are marine: the collapse of the Newfoundland cod fishery, and the commercial exploitation of the great whales. In both cases, management failures led to *moratoria* to rescue near extinct populations, thereby destroying industries and livelihoods (Jackson *et al.*, 2000; Lauck *et al.*, 1998; Ralls & Taylor, 2000). There is significant scientific literature advocating the view of proceeding with resource conservation in the face of scientific uncertainty (Allison *et al.*, 1998; Ludwig *et al.*, 1993). However, in many cases there is a divergence in the opinions of decision makers. Some promote the precautionary principle, whilst others prefer to delay for greater scientific proof (Slooten *et al.*, 2000).

The requirement for expansive knowledge of natural systems calls for a merging of 'lay' and 'local' knowledge, with scientific knowledge (Berkes, 2002; Pinkerton, 1989). Incorporating a post-modernist view of science into the role of conservation will help fill the 'scientific blind spots' (European Environment Agency (EEA), 2001). However, the use of 'local lay knowledge' in environmental and technological issues must be open to the same form of scrutiny as scientific knowledge (Barnes *et al.*, 1996; Irwin, 1995; Wynne, 1996). Local knowledge, although not applicable beyond local context, is just as valid as information provided by formal science. In fact, this information may be

more useful due to the accumulation of knowledge over longer periods of time (Fischer, 2000). If more account is taken of a richer body of information, from more diverse sources, then society may do substantially better in achieving balance (EEA, 2001). As Wilson (2001: 1) states:

'If the knowledge needed for managementis more realistic and easier to get, this helps management to be more rational. If the knowledge needed for management is contributed to, shared and controlled by more stakeholders, this helps management to be more equitable'.

As more environmental problems directly affect a larger proportion of society, many individuals have strong opinions covering a broad spectrum of ideals. Rhetoric based on the assumed universal authority of scientific experts is not sufficient to win the heart and minds of lay audiences (Harrison & Burgess, 1994). Science, alone, is no longer enough to provide answers to environmental problems. There is increasing realisation in scientific and policy circles that complex environmental issues require stakeholder input and support in the decision making process (Ravetz, 1999). The European Commission (2000: 5) state that: *'new relationships are needed that fit the new mould of science, technology and society'*. The question is now: how do we ensure scientific accuracy, policy effectiveness, and political legitimacy, whilst fulfilling social concern (Radaelli, 2001)?

Involving stakeholders at the earliest stage of decision making not only augments the information available, but may also improve public trust in science and policy makers (EEA, 2001). Stakeholders must be expected to provide something more than mere interest representation (Mol & Sonnenfeld, 2000b). Uncertainty requires consideration of viewpoints, perceptions, interests, and values in every phase of the policy process, from agenda-setting to policy formulation, implementation, evaluation, and revision. Public actors can no longer assume:

'the responsibility for developing and implementing an unattainable optimal solution to every problem' (Pellizzoni, 2003: 211).

The maintenance, or restoration, of faith in scientific integrity and the decision making process requires that risk, uncertainty, and ignorance must be defined, recognised, and analysed (EEA, 2001). Removing uncertainty from public discussion will impede our ability to learn, risk scientific credibility and governance, and diminish our long-term ability to conserve resources (Rosa, 1998).

2.3.2. Group characteristics

According to Hardin (1968), if individuals act rationally then the characteristics of the user group will have no influence on the exploitation of CPRs. Ostrom (1990: 193) identifies four variables affecting individual action:

1. *expected benefits;*
2. *expected costs;*
3. *internal norms;*
4. *discount rates.*

The first two variables follow Hardin's (1968) logical user. The contribution of internal norms and discount rates in the individual decision making process are the variables that affect the possibility for collective action. A definable stable population, where societal norms have had time to develop, fosters mutual trust and reduces discount rates (Ostrom, 1990). It is important to distinguish between a group where the members have a common goal, or goals, and a history of working together, and an 'artificial group', where individuals are thrown together with little concept of common goals and no history of cooperation. Individuals with a common goal are one of the motivations for collective action. However, in the absence of special arrangements, large, heterogeneous groups of rational individuals will not act in their group interest (Olson, 1982). This is important, recognising that most communities are diverse entities (Murphree, 1994).

2.3.2.1. Small Size

Interest groups should be small enough to foster primary relationships, collective interest, and peer control among propriety units (Baland & Platteau, 1996; Murphree, 1994; Wade, 1988). Ostrom *et al.* (1994) discovered that face to face communication fostered greater trust and reciprocity in collective action. Olson (1965: 36) concurs: *'the smaller the group the stronger its ability to perform collectively.* He goes on to suggest that it is not just the size of the group, but also the 'noticeability' of individual behaviour. However, small populations may be detrimental due to the lack of skilled workers, or the presence of personal antagonisms (Baland & Platteau, 1996; Eurisles, 2002). Agrawal & Goyal (2001) suggest there is a curvilinear relationship, with medium sized groups best placed to provide collective action, particularly with the introduction of third party monitoring. Ostrom (1997) summarises that the effect of group size on collective action is usually mediated by other variables, such as technology, excludability, and heterogeneity of the group.

2.3.2.2. Clearly defined boundaries

Defining the boundaries of the group is essential (Rydin & Holman, 2004). Ostrom (1990) suggests that once the resource boundary is set, then the logical step is to define who has the right of access to that resource.

'this principle enables participants to know who is in and who is out of a defined set of relationships, and thus with whom to cooperate' (Ostrom, 2000: 149).

In multiple-use situations, it may prove to be difficult to delineate user groups due to the heterogeneity of use. Selsky & Creahan (1996: 355) identify three different forms of appropriators in multiple-use situations:

Primary appropriators: those that, 'seek to develop and maintain, by themselves, adequate institutional arrangements for the sustainable appropriation of critical resources'.

Selsky & Creahan (1996) suggest that within this group of appropriators are individuals that have strong social norms and shared values, living within the geographical area of the resource. Dahl (1997) found that people living in relatively small isolated cohesive communities have a close relationship to the resources they depend upon. This concurs with the conclusions of Eder (1996) who states that cultural traditions shape the representation of human relationships with nature, hence, the closer we are to nature, the closer our identity is to where and what we come from.

Secondary appropriators: 'Consist of decision making actors who have an instrumental interest in appropriation of resources from the CPR', yet hold, 'no intrinsic interest in the sustainability of the resource system over the long term' Selsky & Creahan (1996: 355).

Selsky & Creahan (1996) identify two subgroups: those that live within the community, but do not subscribe to the values of involvement and correctness, despite sharing some of the norms and goals of the primary appropriators. These individuals would be local poachers, thieves, or 'free-riders'. In this case, the main issue for collective action will be one of enforcement and appropriate sanctioning (Agrawal, 2002; Ostrom, 1990; Wade, 1988). The second subgroup is outside appropriators, who may have the same market-oriented goals as primary appropriators, but with a shorter-term vision and a tendency not to pool their resources. This category includes appropriators that may use the resource, but have an exit strategy. Baland & Platteau (1996) identify absentee grazers of common pastures in India, as falling into in this category.

Tertiary appropriators: 'have an instrumental interest in the consumption of resource units but are concerned neither with direct appropriation, nor with the resource stock' (Selsky & Creahan, 1996: 356).

These are market traders or external consumers who have little interest in the origin of, or the processes involved in appropriating, the resource unit. They remain unaware or indifferent to the sustainability of the resource (Selsky & Creahan, 1996). Warner (1997) recounts how external traders contributed to the decline of sea urchins in St Lucia, which was linked to the expansion of the urchin market to external islands. Edwards & Steins (1998) suggest, however,

that even quite remote users may have an interest in the resource, particularly when it is a tradable good such as recreational or amenity provision.

2.3.2.3. Shared norms

Communication of knowledge between individuals is more effective when social norms have had time to form and understanding is uniform. Grima & Berkes (1989) suggest that appropriators that live and work in the same area for a long time, with the expectation that their children will continue to live in the same manner, will not heavily discount the future. Maurstad (2000) links the knowledge of Greenland fishers to the closeness of informal societal links within the community. Communication of tacit knowledge can play a crucial role in maintaining institutions and addressing collective action problems (Douglas, 1986; Roepstorff, 1998; Wilson, 2001). Tacit knowledge works as a shared, cultural phenomenon that is a critical for communication (Habermas, 1984). Demographic changes, particularly migrations, can have a significant effect on shared norms within a community. Immigration may bring new participants, who do not trust, or are not trusted by the group, and are ambivalent or indifferent to the underlying social norms (Ostrom, 2000). Since collective action is based on mutual trust, rapid settlement may disintegrate some self-organized resource regimes within a relatively short time (Baland & Platteau, 1996).

2.3.2.4. Past successful experiences – social capital

The concept of social capital is widely used in social science, yet there is no clear definition. Despite the lack of definition, the majority of authors agree that trust (or trustworthiness), reciprocity of norms and values, and the development of social networks all play a major part in developing social capital (Ahn & Ostrom, 2002; Cooper *et al.*, 2005; Fukuyama, 1995; Putnam, 2000; Rydin & Holman, 2004). A pragmatic definition of social capital is forwarded by Ahn & Ostrom (2002: 3):

'Broadly speaking, social capital is a set of values and relationships created by individuals in the past that can be drawn on in the present and future to facilitate overcoming social dilemmas'.

They go on to suggest that individuals learn from experience, and it is reasonable to assume that those experiences will be reflected in a person's expectation of the way others behave. Conversely, where trust has been broken and communities are divided, the ability to build social capital can be significantly hindered (Putnam, 1993). Building social capital can alter the cost-benefit ratio for individuals, thereby encouraging greater involvement and cooperation in collective action problems (Brown & Ashman, 1996; Fukuyama, 1999). In small communities, the desire to maintain a reputation of trustworthiness allows for the use of the 'soft sanctions' of censure and loss of reputation (Ostrom, 1998; Rydin & Holman, 2004). Hence:

'social capital is a means of enforcing norms of behaviour... ..and thus acts as a constraint as well as a resource' (Walker *et al.*, 1997: 111).

Absence of consensus on the definition of social capital has led to the development of different 'types' of social capital. Woolcock (1998: 159) suggests that short of dismissing the term altogether, there may be various types or dimensions of social capital. He refers to, *'two distinct but complementary forms of social capital'*. Embeddedness is based on micro-level ethnic entrepreneurship studies, and 'autonomy' based on macro-level institutionalist studies of State-society relations. Putnam (2000) also refers to two forms of social capital: 'bonding', which refers to linkages within a community, and 'bridging', referring to linkages between communities or groups. Following the World Bank *'Initiative on Defining, Monitoring and Measuring Social Capital'*² in 1998, a third form of social capital was added, that of linking social capital.

The World Bank (2002: 14) refers to bonding social capital as:

'kinship and other intra-group networks or formal associations. It serves as a collective coping and risk-management mechanism when money, physical resources, and social safety nets are absent, and helps reduce violence and other problems by reinforcing group values'

Invariably, bonding social capital is referred to in local level case studies (Rydin & Holman, 2004). It is associated with local communities and is typified as intra-group horizontal linkages (Putnam, 2000). Bonding social capital can help to give community members a sense of identity and common purpose, which is critical for grassroots development (Brown & Ashman, 1996; Cooper *et al.*, 2005). However, bonding social capital can also act as a barrier to outside opportunities and resources, deepening social rifts and conflicts, thus undermining development (Collier, 1998; World Bank, 2002). Dowley & Silver (2002) found that bonding social capital can be formed on ethnic grounds, thereby undermining democracy in transitional countries. Close ties may narrow the interests of the community, prohibiting the access of information and material resources to outsiders (Cooper *et al.*, 2005).

Bridging social capital refers to: 'those networks or formal associations linking individuals and groups beyond major social categories and cleavages. It provides the poor with the potential to leverage new resources, and fosters generalized trust and reciprocity.' (World Bank, 2002: 14).

Bridging social capital can link communities, groups, ethnicities, languages, cultures, and religions (Cooper *et al.*, 2005; Narayan, 1999; Putnam, 2000). Of particular importance are pre-existing linkages, at either personal or organisational level, that can bridge gulfs of wealth, power, and culture (Brown & Ashman, 1996). The vertical and horizontal ties of bridging social capital can

² A series of working papers on the definition of social capital can be found on the World Bank website: <http://www.irisprojects.umd.edu/socat/papers/papers.htm>.

create instances where broad, multi-ethnic initiatives might build on indigenous ideas and traditions. In this manner, a symbol embraced by one section of community may help to bring divided communities together (Richter, 2002; Rinkevicius, 2000). Brown & Ashman (1996: 1476) also note that NGOs, '*can act as bridges among donors, government agencies and grassroots populations*'.

Linking social capital refers to: '*the links people have with higher levels of decision-making and resource allocation, and thus provide the poor with potential access to additional resources and political voice*' (World Bank, 2002: 14).

Linking social capital can enable access to institutions such as banks, insurance agencies, the courts, or even the State (Cooper *et al.*, 2005). As with bridging capital, personal connections may have a significant impact on the capacity to access higher level institutions. Nederveen-Pieterse (2003) refers to this simply as, 'friends in high places'. The World Bank (2000) states that a key function of linking social capital is the capacity for groups to access resources, ideas, and information from formal institutions beyond the community.

It is clear that the concept of social capital still requires more definition. Undoubtedly, the concept of social capital has relevance for collective action problems, particularly in the fields of poverty reduction and sustainable development (Collier, 1998; Ostrom, 1990; Pretty & Ward, 2001; Rydin & Holman, 2004; World Bank, 2000, 2002). Finally, we should consider that social capital and development is a two way relationship, without some community or individual improvement social capital can be depleted. It is important, therefore, to link social capital with other forms of capital, especially human and economic (World Bank, 2002).

2.3.2.5. Appropriate leadership – young and familiar with changing external environments, connected to the local traditional elite

Wade (1988) found that there was a correlation between the desire for collective action, in water resources, and the amount of land owned by an individual. He claims that there is an added incentive for local elites to partake in collective action, even initiating the action itself. Menzies (1994) found in China that elite clans controlling large portions of land use moral and economic coercion to maintain forestry enforcement. Khawa (2001) observed that male leaders between the ages of 25-50, linked to hereditary clans in the Himalayas, had a significantly positive effect in collective action projects. This result was even more significant if the leader remained resident within the community. The personality of the leaders, as well as the general social atmosphere, can have a major effect on collective action. As the social structure becomes more hierarchical, greater importance is placed on the personal qualities of the leaders. However, nepotism, cronyism, patronage, and political clientism can lead to inappropriate leadership and undermine collective action (Royale, 2001).

Increasingly, leadership with experience of the external world and a higher level of education seems to have a positive effect on CPR management (Baland & Platteau, 1996). Of particular importance is the ability to manage the official aspects of the system and communicate findings in formal meetings with other officials (Baland & Platteau, 1996; Seabright, 1993). Murphree (1994), however, bemoans the fact that invariably, participation and involvement in co-management strategies relies only on the co-option of the local elite and leaderships, thus reinforcing rather than upsetting the *status quo*.

2.3.2.6. Interdependence among group members

Without some form of dependence on others, individuals will make isolated decisions based on selfish motivations, regardless of the needs of the collective (Hardin, 1968; Olson, 1965). Oliver *et al.* (1985) suggest that individuals are influenced in making decisions according to the historical response of others within the community. Inter-relationships in groups fosters trust and reduces discount rates (Ostrom, 1990). Closer communities tend to work more effectively toward the solution of collective action problems of resource management (Edwards *et al.*, 1997; Royale, 2001). Seabright (1993) suggests that stable populations, implying greater interdependence, are more likely to act cooperatively. This corresponds with the findings of Curran & Agardy (2002), who state that demographic change, through migration, can adversely affect community use of a resource.

2.3.2.7. Heterogeneity of endowments and homogeneity of identities and interests

The relationship between group heterogeneity and commons management is complex (Bardhan, & Dayton-Johnson, 2002). Conflicts in the literature suggest that heterogeneity can foster, or alternatively, undermine successful collective action (Baland & Platteau, 1999; Bardhan, & Dayton-Johnson, 2002; Khwaja, 2000; Olson, 1965; Varughese & Ostrom, 2001). Baland & Platteau (1996) identify three different forms of heterogeneity: differences in ethnicity, culture, or identity, differences in the pattern of use of the resource, and differences in wealth. They suggest that heterogeneities of identity and resource use will impede collective action, whilst heterogeneities of wealth will not.

Homogeneity in identity enables cooperative action due to similarities in perceptions and similar understanding of the social order. Individuals from similar backgrounds will interpret the rules for collective action in a similar manner (Baland & Platteau, 1996).

'Generally shared value or interpretations of social problems - cultural homogeneity - can facilitate cooperation in the use of the commons... ...The effectiveness of social sanctions weakens as they cross ethnic reference groups' (Bardhan, & Dayton-Johnson, 2002: 89).

In a heterogeneous population, groups tend to fracture along lines of difference such as, income, class, ethnicity, or race, thereby leading to poor group performance (Khwaja, 2000; La Ferrara, 1997). Bardhan & Dayton-Johnson (2002) suggest that groups maybe ethnically homogeneous, but socially heterogeneous, and hence there may be an absence of trust or social cohesion. Differences in ethnic, cultural, social, or even geographic identity may lead to differences in commitment to the sustainability of the resource system, particularly in the case of indigenous populations (Trawick, 2002). Participation in social activities is significantly lower in more racially or ethnically fragmented localities (Alesina & La Ferrara, 2000). Tang (1992) suggests that where CPRs are community managed, socio-culturally heterogeneous communities do not necessarily prohibit good performance.

Heterogeneity of interests requires that some form of negotiation takes place, possibly resulting in spatially or temporally sub-dividing the resource system (Baland & Platteau, 1996). This is often seen in multiple-use and multiple-user CPRs, where varying use may lead to conflict (Steins & Edwards, 1998). The very nature of multiple-use implies that heterogeneity of the user community increases significantly, in comparison to traditional single use CPRs. One of the primary issues is, therefore, to define and categorise users. Group identity may be defined due to socio-economics, location, and more usually, resource use (Edwards & Steins, 1998). However, where objectives are diverse, but motivations of users are compatible, it can create a productive strategy between different institutions (Young, 2002). Coalitions may not necessarily be based on shared interests, but on shared concepts (Bryson & Crosby, 1993; Hajer, 1995).

Where wealth equality is high there are higher levels of community action (Bardhan & Dayton-Johnson, 2002; Khwaja, 2000). Tang (1992) also found that there was a higher degree of conformity to resource rules where there was a low variance in family income among irrigators. Yet often, wealthier users will pay more to maintain the resource, offsetting the lack of commitment from poorer users (Khwaja, 2000). Economic heterogeneity may aid collective action due to motivations of the social elite to maintain their status, and hence assume the lead role (Baland & Platteau, 1996; Olson, 1965). However, where extreme wealth inequality exists stratification may breed class antagonism, leading to a point where subordinate players may free-ride on the dominant players. In this case free-riding against the social norm may become the subordinate social norm (Bardhan & Dayton-Johnson, 2002; Khwaja, 2000; Wade, 1988).

2.3.2.8. Low levels of poverty

Users may discount their future incomes due to severe poverty (Baland & Platteau, 1996; Ostrom, 1990). Jodha (1986) found, in North Indian Forests, that extreme poverty may lead to a greater reliance on the resource and an increase the possibility of over-exploitation. However, development of co-management schemes of natural resources can be more effective in poor rural areas due to the local knowledge available to the appropriators, which in turn, may lead to greater poverty alleviation (Agrawal, 2002; Kumar, 2002). Kumar (2002) also

found, in Northern India, that the devolvement of daily management of forestry resources to local community institutions had more effect on alleviating poverty and sustaining the resource, than governmental management.

2.3.3. Relationship between resource system characteristics and group characteristics

2.3.3.1. Overlap between user group residential location and resource location

Overlap between resource appropriators and resource location reflects one of the underlying principles for the definition of primary appropriators (Selsky & Creahan, 1996). Appropriators living closer to the resource will behave differently to those that have the mobility to access and utilise other resources (Ostrom, 1990). Living in close proximity to resources tends to provide greater knowledge and better understanding (Baland & Platteau, 1996). This is reflected by Wilson (2001) who suggests that the attitudes and actions of artisanal and industrial fishermen can differ significantly, the latter having the ability to move to new resources, and hence, regard exploitation of the resource in purely economic terms. Baland & Platteau (1996) suggest that an organic link can be created that imparts a specific geographical identity to the local user and creates an emotional attachment to the local resource.

2.3.3.2. High levels of dependence by group members on resource system

Bardhan & Dayton-Johnson (2002) suggest that short-termism will dominate the motivation of appropriators if there is a possibility of a low risk, low cost exit strategy from the CPR. Bardhan (2000) found irrigators in south India that had easy access to external opportunities, such as cities, had a detrimental effect on resource system maintenance. Logically, there are fewer possibilities to enforce cooperation on 'footloose' populations through the use of norms or reciprocity (Bardhan & Dayton-Johnson, 2002). Conversely, one would expect that a stable population would exhibit restraint for future generations. However, Fischer *et al.* (2004: 19), investigating intergenerational altruism found:

'clear and strong evidence that the presence of an intergenerational link affects subjects' expectations concerning the behavior of their peers. But, while expecting their peers to face up to the intergenerational responsibility, subjects do not reduce their own exploitation levels'

They suggest that the only way to mitigate resource over-exploitation is to implement the constitutional rights for future generations by sanctioning current appropriators.

2.3.3.3. Fairness in allocation of benefits from common resources

Social and political inequalities can make fair allocation of benefits from a CPR unlikely (Agrawal, 2002; Baland & Platteau, 1996). Wealthy individuals are more likely to secure a larger benefit from the resource, through access to technology or markets (Baland & Platteau, 1996). Agrawal (2002) suggests that maintenance of the social *status quo*, in Indian irrigation systems, is more likely to sustain CPR institutions than fairness in resource allocation. The underlying inequity of water rights, in many of the hacienda dominated villages in the Andes, is central to the stand-off between immigrant and indigenous communities (Trawick, 2002). McKean (1986) found in Japanese irrigation cooperatives, that the combination of inequality in land-holding and political power may be evened out within a system where water rights are determined by lottery. In this way, the allocation of the resource was determined to be fair, despite heterogeneities in wealth.

2.3.3.4. Low levels of user demand

High demand will place excess stress on the resource system. Briassoulis (2002) found in areas where seasonal tourism alters quickly and significantly, natural resources may become overwhelmed. Demand may also be closely linked to external market forces (Warner, 1997). User demand may seem low, however, where there is heterogenic use and little communication between users, there may be a significant cumulative affect degrading the resource, which can be difficult to prove causally in natural systems (EEA, 2001).

2.3.3.5. Gradual change in levels of demand

Changes in demand can be linked directly to demographic changes in the primary appropriators, or indirectly to changes in market forces. Emigration of appropriators can lead to the loss of viability of the regime. This may be compounded by the fact that most migrations concern younger, fitter members of society (Curran & Agardy, 2002). Conversely, immigration may lead directly to the over exploitation of the resource (Baland & Platteau, 1996; Ostrom, 2000). In extreme circumstances, this may lead to the displacement of indigenous populations, as well as to overcrowding, pollution or general overexploitation of the resource (Ostrom *et al.*, 1999; Steins & Edwards, 1998). Trawick (2002) relates migration patterns in Andean irrigation systems to changes in resource use. Original methods for managing water were devised in pre-Colombian times. Subsequent population collapse during the colonial period created a situation of water abundance and a change in water use patterns and techniques. The demographic recovery of the indigenous population has once again led to a rapid re-intensification of water use which, with the growth of regional export economies, is leading to unsustainable water use in the region.

2.3.4. Institutional arrangements

Co-management and participation are increasingly being promoted as the solution to the problems of resource governance (Berkes, 2002). There are two main principles that have emerged as critical to the success of this form of governance: the devolvement of power, and the right of access to decision making (Agrawal, 2002; Bryson & Crosby, 1993; Ostrom, 1990). If positive social capital is to be developed, local communities must be encouraged to build and develop institutions, rather than have institutions imposed upon them (Ostrom, 1990; Rydin & Pennington, 2000).

2.3.4.1. Rules are simple and easy to understand

McKean (1986) states that rules laid down by Japanese villages in the successful management of local forests were clear and simple, lacking any leeway for ambiguity. Moreover, rules were set locally and open to adjustment according to the will of the group. Baland & Platteau (1996) suggest that formal rules are merely used to sanctify social norms and codes of behaviour, and do not have the flexibility to account for all the uncertainties of natural systems. Informal rules are still required, as they are based on daily activity and are typically easily understood. Simple rules are particularly applicable in institutions with large diverse groups and weak community ties. In small communities with strong links, fairly complex rules can be applied (Berkes, 1992). Low project complexity and clearly defined rules reduce the possibility of corruption (Khwaja, 2000; Trawick, 2002). Ostrom (1986: 611) states simply:

'fewer rules used to organise activities, relative to the complexity of the activities, the more likely that individuals can understand them, remember them, and follow them, and the more likely that infractions will be interpreted by all as infractions'

2.3.4.2. Locally devised access and management rules

Collective action in CPRs can vary considerably. Various case studies refer to self-management and co-management arrangements (Baland & Platteau, 1996; Ostrom, 1990; Wade, 1986). Criticism exists over the lack of definition of the term 'co-management' as it ranges from consultation to complete devolvement of power to design, implement, and enforce rules (Arnstein, 1969; Jentoft, 2000; Pinkerton, 1989; Pomeroy & Berkes 1997; Pretty, 1995). Pinkerton (1992: 331) defines co-management as:

'power-sharing in the exercise of resource management between a government agency and a community or organization of stakeholders'

Balancing levels of co-management of natural resources has been widely discussed in the literature. There is a dilemma that top-down approaches are too heavy handed, whilst bottom-up may confound the strategic objectives,

resulting in a fragmentation of ideas (Goodwin, 1998; Rydin & Pennington, 2000). The relevance of fragmentation can also be seen from the viewpoint of the trade-off between legitimacy and effectiveness, and between democratic enlargement and timeliness of decisions (Radaelli, 2001). Early participation in the process can help to deflect conflict and reduce delays. However, there are problems with achieving effective involvement by all sections of the public and securing agreement from those that do become involved (Baland & Platteau, 1996; Ostrom, 1990). Broad participation of stakeholders may increase the legitimacy of a resource management regime and thereby enhance the sustainability of the CPR (Hanna, 1995; Pellizzoni, 2003). Khwaja (2000) suggests that community participation is not an unqualified good, but is more effective in non-technical projects.

The creation of participatory arrangements must allow for access to all appropriators. In the case of complex CPR situations, resource use may be conflicting, resulting in contradictory opinions that may delay the process of reaching consensus (Jones & Burgess, 2005). Access rights to decision making levels may be 'hi-jacked' by certain user groups, due to their ability to articulate the needs of the group (Baland & Platteau, 1996), the economic importance of the group compared to other users (Edwards & Steins, 1998), and even the motivation of group members to be heard (Steins & Edwards, 1999). Edwards & Steins (1998) suggest that when dialogue becomes fraught, there maybe a need to use third party facilitation to further the process. NGOs may play a significant role in this respect, especially in countries with weaker histories of popular participation (Mol & Sonnenfeld, 2000a).

'in the face of inertia against the democratisation of decision-making, non-governmental organizations (NGOs) are beginning to play a critical, double role both in advocating the need for reform and in proactively establishing new practices in public participation.' (Richardson *et al.*, 1998: 201).

2.3.4.3. Ease of enforcement of rules

The ease of enforcement of rules depends significantly on the bio-geographical characteristics of the resource, the available technology to detect infringements, and the size of the user group. Monitoring is easier when the user group is in close proximity to the resource, and the resource is small and highly visible (Ostrom, 1990). For instance, where there is a rotational system, those that are waiting their turn are, in doing so, monitoring the previous user (Baland & Platteau, 1996; Ostrom, 1990). As the amount of users increase, the requirement for monitoring also increases. In many cases there will be a change from informal community monitoring to a formal system. The presence of formal monitoring is often an important factor in increasing rule compliance in CPRs (Agrawal & Goyal, 2001; Tang, 1994).

2.3.4.4. Graduated sanctions

Compliance, not punishment, is the main aim of CPR rules (Baland & Platteau, 1996). Generally, graduated sanctions are based on the seriousness of the infraction, the context in which it was undertaken, and the frequency of defection by the appropriator in question (Ostrom, 2000). Initial sanctions are invariably so low that they have little effect on the cost-benefit ratio of the appropriator.

'Rather, the initial sanction needs to be considered more as information both to the person who is 'caught' and to others in the community. Everyone can make an error or can face difficult problems leading them to break a rule' (Ostrom, 2000: 151).

Maintaining reputation in small groups may be a greater motivation for rule compliance (Ostrom, 1990). Baland & Platteau (1996) suggest that the natural hazards of the environment may force users to inadvertently violate access or conservation rules. In such cases, a large fine may result in resentment and unwillingness to conform to rules in the future. However, should the rule breaker be looking for short term profit, or consistently breaks the rules, then sanctions will increase significantly for each occasion. McKean (1986) identifies three conditions for effective sanctioning in Japanese forest CPRs: escalating sanctions, flexibility of sanctions in exceptional circumstances, and special devices in place to watch the watchers.

2.3.4.5. Availability of low cost adjudication

Even the best rules of collective action may be interpreted differently by different users and there will be situations where unbiased adjudication will be required (Ostrom, 1990). The availability of simple, local mechanisms to air and resolve conflicts within the community will help to mitigate infractions (Ostrom, 2000). Mechanisms can vary from rotation of respected individuals from the appropriator group, to complex court mechanisms. Resolving infractions in a transparent, prompt, and cost effective manner will enable equal access to the process for all individuals. Having a mechanism for rule change and independent rule interpretation will also help to maintain the system (McKean, 1986).

2.3.4.6. Accountability of monitors and other officials to users

Monitors who actively audit CPR conditions and appropriators should be accountable to those appropriators they monitor (McKean, 1986; Ostrom, 1990).

'most long-surviving resource regimes select their own monitors, who are accountable to the users or are users themselves, and who keep an eye on resource conditions as well as on user behaviour' (Ostrom, 2000: 151).

In some cases monitoring may be undertaken by the appropriators themselves, as a by-product of resource use (Berkes, 1986; Ostrom, 1990). In other instances, third party monitors may provide certain advantages, particularly with regards

to favouritism or fraudulent claims (Agrawal, 2002). Hence, a central authority to counter fraudulent activity may be seen as a fair and legitimate solution, providing it is cost effective (Baland & Platteau, 1996). Wade (1988), Tang (1994), and Schlager *et al.* (1994) also highlight the need for formal monitoring of compliance in CPRs. However, when monitors are hired by central government, paid low wages, and sent to distant locations, with little long term interest to them personally, the temptation of corrupt activities to supplement payment may outweigh the benefits of fulfilling their job description (Stern *et al.*, 2002).

2.3.5. Relationship between resource system and institutional arrangements

2.3.5.1. Match restrictions on harvest to regeneration of resource

Clarifying appropriate rules, reflecting the local context of the resource system, will help sustain the CPR. Stern *et al.* (2002) suggest that in most instances market forces will help to determine, and even restrain, resource use. In some situations nonlinear cause and effect may lead to a rapid decline in the resource, before market forces, or institutions are aware or capable of creating change (Edwards, 2003). Resource uncertainty and predictability will also have an effect on determining sustainable resource use. This is particularly relevant in systems with high mobility and low storage, such as fisheries (Schlager *et al.*, 1994).

Crowding in single periods, such as tourist summer seasons, can have a significant environmental impact on the resource, and may also affect amenity values (Deschenes & Chertow, 2004; Briassoulis, 2002). Over longer-term periods, cumulative use may deplete natural capital through erosion or habitat disruption (Vail & Hultkrantz, 2000). The development of carrying capacities may be one option to protect the resource. The principle of carrying capacity does not provide a definitive number of users, but it does provide the opportunity to question how changes in resource access rights, use, and regulations can provide for the sustainable use of CPRs (Davis & Tisdell, 1995). Finally, where replacement rate significantly exceeds withdrawal rate, or vice-versa, there is little possibility of the establishment of institutions for the management of resources (Stern *et al.* 2002).

2.3.6. External Environment

There has been a remarkable lack of study into the role of contextual or external factors on CPRs (Agrawal, 2002; Edwards & Steins, 1999). This is despite the fact that the State, and its over-arching governance structures, is central to the functioning of CPRs (Agrawal, 2002). Yet, many CPRs are deeply embedded within the social and institutional context, thereby making it difficult to ascertain which factors are internal, which are external, and how they are linked (Steins & Edwards, 1999). Contextual information will not only affect the actions of individual users, or collectives in CPRs, but also the State. As both resource management and nature conservation becomes increasingly driven by global

political and economic values, external contextual factors will impose greater influences on both CPRs and protected areas (Buck, 1999; Murphree, 1994; Naughton-Treves & Sanderson, 1995; Singh, 1994). Context is particularly important in multiple-use commons, where multiple-user groups have different legal, economic, and other factors that may affect their desire and legitimacy of using a resource (Buck, 1999; Edwards & Steins, 1999).

2.3.6.1. Technology

The availability of new technologies in the exploitation, or management of a resource, is invariably linked to the market articulation of the region within which the CPR is based. Technology can improve knowledge, help to inform decisions by improving the monitoring of the resource or resource users, and facilitate the dissemination of information (Ostrom *et al.*, 1999). However, technology can also lead to the over-exploitation of resources.

2.3.6.1.1. Low cost exclusion technology

Cheap exclusion technology is a major feature to control access to areas. The development of barbed wire in 1874, helped change the face of American history. Later, it was used as an exclusionary technology for terrestrial protected areas (Razac & Kneight, 2002). As technology advances, remote sensing systems such as radar, GPS, and satellite tracking are becoming more available (Ostrom *et al.*, 1999). Technology is being used to detect infractors where the nature of the system may prohibit physical exclusion. Satellite tracking of fishermen in the Wadden Sea has led to 100% compliance of collective action rules (Edwards & Steins, 1999). Advancements in detection technology may also reduce the requirements of other 'design principles', such as small resource system size.

2.3.6.1.2. Time for adaptation to new technologies related to the commons

The arrival of new technologies may transform the cost-benefit ratio of harvesting the resource, resulting in changes in the power relations within the resource group (Agrawal, 2002). The development of, or access to, low cost technology can lead to an explosive exploitation of a resource, an example of this, is the exploitation of whale stocks. Prior to the steam engine and the development of the explosive harpoon in 1867, the majority of whale species were considered impossible to exploit. In 1982 the first whale hunting *moratorium* was imposed to protect whale stocks (International Whaling Commission (IWC), 1983). Technology may advance resource extraction before the institutions in place have the opportunity to devise rules to manage extraction (Ostrom, 1999).

2.3.6.2. Low levels of articulation with external markets

Local management appears to be more sustainable when the resource is used for subsistence economics and least effective when the resource has a high value

(Baland & Platteau, 1996). As CPRs move from subsistence towards cash exchanges the motivation to over-use the resource becomes greater (Agrawal, 2002). Rapid degradation of natural resources is often associated with the collaboration between private enterprise and the State, at the expense of traditional users (Baland & Platteau, 1996). As Thurow (1996: 115) suggests:

'Minimizing costs and maximizing revenues is what profit maximization, the heart of capitalism, is all about. Sentimental attachment to some geographic part of the world is not part of the system.'

Lack of articulation with market may benefit the resource, though, it may also limit local community development and opportunities, which may in turn, lead to migration and abandonment of the resource (Curran & Agardy, 2002).

2.3.6.3. Gradual change in articulation with external markets

Increasing articulation with markets may open new opportunities for the marketing of resource units, or create a new market for new resource units not previously exploited in a CPR (Berkes *et al.*, 2006). Market pressures can result in significant changes to the resource and even the type of resource use. Buck (1999) found that market forces have changed the use of forestry in the United States, from the traditional lumber and hunting markets, to tourism and recreation. Jodha (1995) states that land reforms, due to market changes, introduced into rural India in the 1950s, reduced the amount of common land available, thereby exacerbating degradation of what was remaining. Changes in market articulation may be extremely rapid, particularly in transition economies, and is likely to affect sound environmental production and consumption (Mol & Sonnenfeld, 2000a).

2.3.6.4. The role of the State

The role of the State in the management of both CPRs and protected areas is paramount (Agrawal, 2002; Ostrom, 1990; Young, 2002). There is wide range of literature investigating the capability and desire to enter into voluntary collective agreements, in capitalist and socialist States (Chloupkova *et al.*, 2003; Paldam & Svendsen, 2002; Putnam, 1993, 1995). Putnam (1993) suggests that there is a correlation between the time under dictatorship and the destruction of trust and cooperation. Fukuyama (1999) states that the ability to cooperate is based on practice, hence should the State be in the business of organising everything, people have no ability to spontaneously cooperate. In Eastern European transition countries, trust is three to four times lower than that found in industrial countries (Paldam, 2002).

'Trust is a commodity in relatively short supply in transition countries, especially in the early stages of transition when institutions are weak and the formal and informal bonds holding the economy together are ruptured. Transition, after all, entails massive transactional upheaval, as markets replace

central planning as the main mechanism for matching producers with consumers' (Raiser *et al.*, 2003: 1).

As countries become more open to external influences, civil society organisations can become important actors in the development of the nation (Brown *et al.*, 2000). They are particularly valuable in liberating the consciousness of populations, helping to encourage individualism, freedom, and equal rights, and access international actors that promote and strengthen the emergence of national civil societies. However, Sundberg (2003) found that environmental protection and democracy intersect in complex and contradictory ways in Guatemala. On one hand, democratisation created an opening for an elite environmental movement to influence the creation of new conservation policies. On the other, those implementing the policies assumed an authoritarian and exclusionary approach to protection. Key to this was entrenched social hierarchies that restrict individuals and organisations access to the process. Conversely, Edwards *et al.* (1997) suggest that participation is more ingrained in developing countries, due to greater reliance on natural resources and less centralised controls, unlike many European countries where 'command and rule' has a long political history.

2.3.6.4.1. Central government should not undermine local authority

Paldam & Svendsen (2002) present a story of deliberate destruction of 'old' social capital by the Soviet regime. As the 'new' economies grew they did so without this crucial component. Comparing social capital in Denmark and Poland, Chloupkova *et al.* (2003) found that, in the case of fostering agricultural cooperation, levels were significantly higher in Denmark. They conclude that the original social capital accumulated during the 19th and early 20th century was destroyed by the communist regime, and has remained low.

In many developing countries, State control over CPRs may become complicated with the introduction of new markets. Agrawal (2002) suggests that State officials may become personally involved in the privatisation of CPRs, in cooperation with private actors. Corruption at State level can undermine local collective action in CPRs (Bardhan, 1997; Brissoulis, 2002). In some instances large multinational corporations may be more powerful than the State itself. Although the State may wish to maintain sustainability of the resource, they may feel that subordinate cooperation is the only method of gaining desired economic development (Clark, 1999). Invariably, local sustainability is sacrificed for short term national economic gain. In most instances these corporations will have exit strategies planned during profit decline, unlike the State or traditional users.

2.3.6.4.2. Supportive external sanctioning institutions

Traditional rules that are in place should be recognised and legitimised rather than supplanted by external governmental rules. Ostrom (1990) argues that without State legitimisation, the whole structure of the CPR may be

undermined. Legitimation of the internal workings of the CPR may be used to define access rights and enforce sanctions on deviants (Swallow & Bromley, 1995; Wade, 1988). The State may also aid local systems by providing expertise in legal matters regarding the legitimacy of resource rules (Baland & Platteau, 1996). In a situation where external factors, such as pollution in a fishery, may detrimentally affect the resource the State is in a position to protect the system that would otherwise be vulnerable (Baland & Platteau, 1996).

Conservation of natural resources is now a global political issue. However, nations still retain sovereign rights over their biological resources (United Nations Conference on Environment & Development (UNCED), 1992). Supranational institutions, above the immediate national decision making level, have contributed strongly to the re-orientation of environmental regulations (Gouldson & Murphy, 1997; Hajer, 1995; Weale, 1992) and have the ability to undermine the traditional role of the State, or be perceived as doing so (Mol & Sonnenfeld, 2000a). Hence, the vertical and horizontal interplay between international, national, and local institutions is important as it may generate consequences where local regimes may gain strength, or be undermined by global regimes (Young, 2002).

With the development of globalisation, strategic direct partnerships between international and local organisations, bypassing the national authorities, are becoming more common (Haley & Clayton, 2003; Stern *et al.*, 2002). Khwaja (2000) found that projects supported by the Aga Khan Rural Support Program NGO in Baltistan, were significantly more successful than those supported by the local government. He attributes this to the fact that the NGO works more closely with the local community and is more aware of community needs. It is less prone to corruption, has greater accountability and transparency, attracts a more dedicated staff, and elicits greater community participation.

2.3.6.4.3. Appropriate levels of external aid to compensate local users for conservation activities

Incentives can be used to compensate users for loss of income, or to provide new employment opportunities. The World Development Report (World Bank, 1992) suggests that people rarely accept nature conservation strategies unless they are accompanied by economic incentives. Shah (1988) recounts cooperative work between the Forest Department and landless castes in West Bengal, India. The Department grants collective ownership over low-quality land, provides seedlings, fertiliser, and pesticide, and rewards the planters for every live seedling at the end of the season. This system was successful due to the lack of alternative employment and the low quality of the land which prohibited agricultural use.

Aid dependence in developing countries is a significant problem. Large amounts of aid delivered over long periods can create incentives for governments to under-fund or undermine good governance (Bräutigam, 2000; Gibson *et al.*, 2000). International aid that does not take into account indigenous

knowledge, or the needs of indigenous populations, may lead to the undermining of local action (Baland & Platteau, 1996; Ostrom, 2000). Wade (1988) suggests that appropriators may deliberately degrade a resource to such an extent that it would be impossible to conserve it without external aid.

2.3.6.4.4. Nested levels of appropriation, provision, enforcement and governance

Ostrom (1990: 14) states that getting institutions right *'is a difficult, time consuming, conflict invoking process'*. This is particularly so where heterogenic user groups add to the complexity of the CPR. Different users will be governed by different decision making arrangements and management regimes (Edwards & Steins, 1998). One of the key issues is the negotiation process between users, resulting in a democratic formulation of rules. Ostrom (1990: 101) highlights the fact that more complex enduring CPRs have:

'appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities organised in multiple layers of nested enterprise'.

Diverse problems in location and types of use require varying forms and levels of governance. Many authors have identified the need for different levels of rule making, Ostrom (1990) identifies: *legislative, organisational, and operational*. This is similar to Bryson & Crosby's (1993): *courts, arenas, and forums*, and, Edwards and Steins's (1998): *constitutional, collective choice, and operational*.

Legislative or constitutional level: 'Where decision making arrangements form the legal framework within which stakeholders in the resource have to operate' (Ostrom, 1990: 52).

Bryson & Crosby (1993) describe this as the 'court', referring to the formal or informal body that interprets and applies norms of social control, with the ability to sanction conduct. This level defines who is eligible to participate in the system, and the underlying rules that will apply. The constitutional level creates, enforces, and monitors the collective choice rules (Edwards & Steins, 1998). Baland & Platteau (1996) refer to this as the level that will provide external sanctioning.

Organisational level or collective choice rules: 'Where decision making arrangements determine the rules for interaction between management organisations and user groups' (Ostrom, 1990: 52).

The arena level (Bryson & Crosby, 1993) provides the establishment of rules, laws, and norms that govern the specified population or resource. They define this as the structural basis for the development of potential policies and their subsequent translation. This is also the level at which planning and budgeting is usually undertaken. Invariably, this is where the formal management board of the resource system resides. It establishes the institutional arrangements to enforce, monitor, adjudicate, resolve, and modify operational rules. Dependent

on the contextual situation of the resource, access may be limited to group representatives working with authoritative bodies (Edwards & Steins, 1998; Ostrom, 1990).

Operational level: 'where the purpose of decision making arrangements is to provide resource users with day to day rules controlling access to, allocation of, and control over the resource' (Ostrom, 1990: 52).

Bryson & Crosby (1993) refer to forums as structures for people to advance their views, create meanings, and communicate them to their peers. This provides for the structural basis to list issues, conflicts, and policies, and translate them into decisions by regulating behaviour to maintain the resource. Day-to-day rules are devised to protect the resource system from degradation and will depend upon the effects of different users. At this level individual users may be governed by their group rules (Edwards & Steins, 1998).

A major issue, regardless of the levels suggested, is the devolvement of the decision making power to the lowest level capable of solving the pertinent problem, often referred to as the 'subsidiarity principle' (EEA, 2001). This is of particular importance in the development of sustainable resource management (Ostrom, 1990; Pennington & Rydin, 2000; Pretty & Ward, 2001). The challenge is to allocate:

'specific tasks at the appropriate level of social organisation and then taking steps to ensure that cross-scale interaction produce complementary rather than conflicting actions' (Young, 2002: 266).

The evolution of the complex multiple-use CPRs makes the requirement for a nested structure of management essential (Steins & Edwards, 1999). At the operational level, differing uses of the resource may lead to conflicts of interest. Each group will have their own social norms and rules based upon the underlying structure of the group on which individuals will draw (Giddens, 1984). For truly inclusive participation in the management of resources, these groups need to have a voice in the development of the organisation of the resource. Appropriate nesting structure and facilitation will reduce the opportunity for process manipulation and provide for equal representation of groups at the organisational level, where a consensus can be formed and taken to the legislative level (Steins & Edwards, 1999). Finally, recognition of the legitimacy of the process at higher levels of governance will help to reduce pluralism, making the process truly participatory.

2.4. Applying CPR Critical Enabling Conditions to MPAs

Successful management of MPAs calls for an inter-disciplinary approach to research (Kelleher, 1999). Of the 383 MPA management regimes assessed by Kelleher *et al.* (1995), only 117 were deemed to be meeting their management

objectives. Invariably, the success of an MPA is based on achieving the primary conservation aim. Yet, using purely biological criteria for the definition of the success of MPAs may be simplifying what is inherently more complex (Christie, 2004; Christie *et al.*, 2003; Jones & Burgess, 2005; Pollnac *et al.*, 2001). Initial biological successes can be undermined by the absence of community support, the creation of inappropriate management institutions, the development of new markets, or the absence of a legislative framework, among other factors (Christie *et al.*, 2005; Garaway & Esteban, 2003).

This section reviews the four key areas of resource characteristics, group characteristics, institutional arrangements, and external factors, identified by Ostrom (1990) and others, with regard to the marine system and MPAs.

2.4.1. Resource Characteristics

Marine conservation was originally undertaken by specialist agencies to regulate specific industries, normally fisheries. Recent approaches have favoured either the designation of small highly protected no-take zones (NTZs) or larger integrated multiple-use areas (Kelleher & Kenchington, 1991). Generally, the necessity for high protection has required that the size of most NTZs be relatively small, though multiple-use areas, such as the Great Barrier Reef Marine Park, can encompass whole ecosystems. In either case, Kelleher & Kenchington (1991) identify boundary definition as the first step of the establishment and management of an MPA. Although, boundaries may be defined clearly on paper, they are less obvious on the sea. Physical boundaries do exist, such as current flows, sea temperature, and salinity, but they are not as obvious to the casual observer as terrestrial boundaries, i.e. rivers, mountains, or walls and fences (Carr *et al.*, 2003; Jones, 2001). Hence, the definition of MPA boundaries are sometimes based on pragmatic principles, such as depth contours, distance from the coast, lines of longitude and latitude, or jurisdictional boundaries of authorities (NOAA, 2005).

The absence of physical boundaries enables free movement of both resource users and resource units within, and through the system. The openness of the system allows for greater connectivity than in terrestrial systems, thereby limiting the possibility of storing resource units within a given area. Yet, the issue of storage and subsequent connectivity is a major factor in designating NTZs. The potential for larval spill-over and adult export from NTZs are often used to obtain support for MPAs from fishermen (Norse *et al.*, 2003; Roberts *et al.*, 2001). A perceived crisis in terms of reduced fish populations can motivate local communities to support the designation of an MPA (Pollnac *et al.*, 2001). This is significantly different from the terrestrial environment, where protected areas are not 'sold' on the prospects of benefits for hunters (Jones, 2006).

Bio-geographical complexity makes the marine system inherently uncertain. Uncertainty can undermine the biological justification, the identification of

cause and effect relationships, and even, the verification of the effectiveness of an MPA (Ralls & Taylor, 2000). In the face of uncertainty and the legislative requirement for precaution, conservation ‘shortcuts’ are increasingly being sought to impose habitat protection and ecosystem management (Hooker & Gerber, 2004)³. Whilst there has been considerable criticism of the indicator or focal species concept in terrestrial environment, Zacharias & Roff (2001: 72) suggest that:

‘the cryptic and fluid nature of marine environments lends greater support for the use of indicator species’.

They go on to propose that the ‘flagship’ concept may be better suited to marine environments than other concepts, due to species association with distinctive critical habitats, such as feeding and breeding grounds. Yet, the ‘flagship’ concept of conservation may be regarded more as a management policy than a scientific rationale (Lindenmayer & Fischer, 2002). High profile, charismatic species can be used as a pragmatic social hook to motivate communities and governments (Simberloff, 1998). However, ‘indicator’ species are also highly regarded within international legislation, particularly if these species are migratory between states (Gerges, 1994).

2.4.2. Group Characteristics

The type of community adjacent to, or utilising, an MPA will have an important bearing on the way community involvement is developed. In simple isolated communities, management can be community based. However, where there are diverse interests and heterogenic use there may be opposing views, necessitating a formal structure of management (Wells & White, 1995). Identifying the primary appropriators, i.e. those with greater investment and commitment to the area, is critically important for MPAs. Yet, there are significant problems identifying the appropriate community for participation (Garaway & Esteban, 2003; White *et al.*, 2002). Communities adjacent to the MPA are more likely to invest time and energy in participating in coastal management (Borrini-Feyerabend, 1999; Edwards *et al.*, 1997; Wells & White, 1995). Oracion *et al.* (2005) argue that community support for MPAs is more likely where members are related by common origin, blood, marriage or friendship. However, McClanahan (2004) argues that historic movements of people have resulted in genetic and ethnicity diversity that makes it difficult to identify ‘indigenous’ populations with which to work with in conservation. Hence, it is critical that MPA research investigates the underlying causes affecting the willingness of local people to participate (Christie *et al.*, 2003). In areas with small populations, underlying historical conflicts may undermine

³ For an extensive debate regarding the use of single species and ecosystem approach for conservation see, Coates *et al.*, 2002; Grumbine, 1994; Lindenmayer & Fischer, 2002; Simberloff, 1998; Zacharias & Roff, 2001.

community support for MPAs alternatively, where legislative rules have replaced or superseded previous agreements, mandatory MPAs may undermine past successful experience (Christie, 2004; Jones & Burgess, 2005; Well & White, 1995).

Although there is usually a legal mechanism for local participation in MPAs, the extent to which it is applied is often influenced by the motivations of individuals, particularly those from the relevant authorities (Garaway & Esteban, 2003). Support of appropriate leaders, from all levels of relevant authorities, as well as stakeholder groups and civil society, is crucial to the viability of MPAs (Oracion *et al.*, 2005; Pollnac *et al.*, 2001; White *et al.*, 2002).

Competing interests in multiple-use MPAs inevitably lead to conflicts between stakeholder groups (NRC, 2001). Many authors report that fishers increasingly feel peripheralised as tourism develops in MPAs (Christie *et al.*, 2003; Garaway & Esteban, 2003; Oracion, 2005). Christie (2004) found that dive tourism has effectively assumed the management role of certain Caribbean MPAs at the expense of local traditional users. Where tourism is competing with traditional fisheries, the perception of class, related to occupation, may also trigger social conflict. Tourism development will often encourage immigration and may exacerbate ethnic or social heterogeneity. Resulting differences in immigrant group values can impede collective action for the management of MPAs (Garaway & Esteban, 2003). Underestimating ethnic and social diversity may lead to conflicts, particularly in socially stratified contexts (Christie *et al.*, 2003).

Heterogeneity in wealth can lead to 'silencing' of the poorer, less educated, and less articulate members of society, again these are often the 'traditional' fishermen of the community. The link between poverty and MPAs is complex (World Bank, 2004). In extreme poverty, poorer users are more likely to infringe on MPA rules due to short-term perspectives, and the fact that destructive fishing practices are invariably cheaper and more immediately productive than legal means (Garaway & Esteban, 2003; Silva, 2006). McClanahan (2004) asks, however, whether problems of poverty can or should be addressed by MPA managers. The most important factor is that MPAs do not, in themselves, create poverty or exacerbate inequality (Christie, 2004).

2.4.3. Institutional Arrangements

Without community involvement in the development of management institutions, MPAs are not sustainable (Christie *et al.*, 2003; Kelleher, 1999; Kelleher & Kenchington, 1991). It is increasingly being recognised that it is necessary to combine top-down and bottom-up approaches to management. Co-management techniques allow for stakeholders and relevant authorities to jointly manage MPAs (Jones, 2001; Kelleher, 1999; Kelleher & Recchia, 1998; Mascia, 2001). Pollnac *et al.* (2001) found that support from the municipal government, in which the MPA is based, had a positive effect on the sustainability of MPA institutions.

'One salient characteristic of successful MPA projects is the strong involvement of communities and the local government in the planning and enforcement process' (White et al., 2002: 5).

Balancing participation in an MPA may be made more difficult due to the wide scale of users and authorities involved (Edwards & Steins, 1999; Jones & Burgess, 2005). The essence is to identify the appropriate level of participation for the context of the area and clarify it accordingly with all participants (Jentoft, 2000; Pyhala, 2002). White *et al.* (2002) highlight the importance of a well articulated process, suggesting that a lack of understanding by any of the parties, can lead to the breakdown of the system. Where institutional trust is low, the presence of a facilitating organisation can help sustain co-management (Garaway & Esteban, 2003). As Kelleher & Kenchington (1991: 32) suggest:

'A zoning or management plan is the means by which the planners and managers define the purposes for which a protected area may be used. It may be a legal document, but it must be capable of being understood by those whose actions it seeks to control'.

Multiple-use within MPAs requires that there is a large degree of coordination between, not only the various authorities, but also the sanctioning organisations. Often, there is an overlap of jurisdictions between coast guard authorities, marine police, and fisheries inspectors, adding a park ranger service may create more problems or, alternatively, provide a coordination point (NOAA, 2005). Rule compliance is a balance between incentive and sanctioning structures (Wells & White, 1995). Christie (2004) suggests that the development of coercive systems breaks with the concept of community management. However, as the management structure of an MPA becomes more complex, enforcement systems become more common than incentive based structures, or self-monitoring. However, lack of cooperation from the adjacent local community will lead to greater enforcement costs (Garaway & Esteban, 2003). Hence, incentives remain one of the primary tools to develop support for MPAs, managers often create exclusive rights that may be offered in return for local support (Jones & Burgess, 2005; Wells & White, 1995).

Once the management rules are in place, appropriate sanctioning needs to be developed. Sanctioning needs to balance the possibility of 'honest' mistakes, with the actions of deliberate repeat offenders, the most important aspect being that the system is transparent and fair (NOAA, 2005). Once an infraction is detected a system must be in place to resolve conflicts. Without equitable formal conflict resolution strategies the enforcement agency and MPA management may be undermined (Christie, 2004). However, violations of MPA rules may often be viewed with little concern or urgency by an external court system dealing with day to day human to human violations (NOAA, 2005).

Balancing conservation and sustainable use is a continuing problem, especially in multiple-use MPAs. However, identifying appropriate 'sustainable use' of the

MPA is one of the principles adopted by the UN Commission of Sustainable Development in 1999. It encourages States to:

'establish and manage marine protected areas... ..in order to ensure the conservation of biological diversity and the sustainable management and use of the oceans.' (Hakon Hoel, 2003: 27).

In addition to the problems of ascertaining natural changes from anthropogenic changes, there may be synergistic aspects of effects for multiple-users and user types (Mascia, 2004; USCOP, 2004). Establishing cause and effect, and consequently responsibility, is particularly difficult with 'non-extractive' uses, such as tourism (Briassoulis, 2002). Yet, increasingly all forms of tourism in marine areas are being assessed with regards to carrying capacities, the general decline in amenity values, and degradation of aesthetics (Burger, 1998a; Davis & Tisdell, 1995).

2.4.4. External Factors

Despite the change in the IUCN paradigm and power devolution by many de-centrififying national governments, MPAs are rarely created by local communities (Garaway & Esteban, 2003). Invariably, the driving factor behind protected areas is the State (Jones & Burgess, 2005). International conventions and agreements have helped to develop national policies focus on greater habitat protection as a holistic approach to biodiversity conservation (Scovazzi, 1999). Underlying many of the international agreements is the precautionary principle, which requires States to act cautiously in favour of environmental protection in the face of scientific uncertainty (EEA, 2001).

'In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.' (United Nations Conference on the Environment and Development, 1992: Principle 15)

The alien nature of the sea provides serious challenges when undertaking research and reducing scientific uncertainty (Carr *et al.*, 2003; Jones, 2001; Ralls & Taylor, 2000). NOAA (2003) suggests that there are three main technology requirements for the management of MPAs: mapping of the resource system, monitoring users and boundaries, and the monitoring of the marine system. Development of remote sensing technologies, such as sonar and remote operated vehicles, has provided increasingly cost effective knowledge of the marine system for management (Cracknell, 1999). Satellite technology has, in turn, allowed authorities to track individual boats, having a significant effect on rule compliance (Edwards & Steins, 1999). Development of analysis tools, in particular GIS, allows users to digitally render data into a format for management, thereby combining information of habitats and habitat use.

Finally, underwater filming has taken away some of the fear of the unknown and replaced it with a fascination of the marine system (Kelleher & Kenchington, 1991). However, technology has also had a major negative effect on the marine system, users have adapted to technology faster than the rules that are in place to sustain resource leading to overexploitation (Jackson *et al.*, 2000; Lauck *et al.*, 1998; Ralls & Taylor, 2000).

As interest grows in the marine environment, MPAs come increasingly under stress (Berkes *et al.*, 2006). As markets for minerals and hydrocarbons push exploitation technology forward, new areas come under threat (USCOP, 2004). In the coastal zone, tourism is expanding, what was previously seen as the panacea to the threats to MPAs is increasingly degrading it (Badalamenti *et al.*, 2000). As these markets expand there are indirect effects, for example, tourism may catalyse changes in traditional fishing practices as new markets open (Warner, 1997).

Underlying long-term conservation success, in both terrestrial and marine protected areas, is the need for sustainable finance (McClanahan, 1999). There are two aspects of funding identified as being a priority for the development of MPAs worldwide (Kelleher *et al.*, 1995). The first, is securing appropriate funding for the establishment and management of the MPA itself. The second, is the provision of funds to compensate users or develop of alternative employment (Pollnac *et al.*, 2001). Others have suggested that the beneficiaries of MPAs, often tourism, should compensate the traditional extractive industries, when local rights or practices have been impinged upon (Kelleher & Kenchington, 1991; Oracion *et al.*, 2005).

The interconnectivity of the marine environment means that MPAs are affected by the surrounding unprotected area, and adjacent landmasses. Garaway & Esteban (2003), building on Ostrom (1990), identify three levels of nesting for MPAs as: the external legal and policy making level at international and national level, the MPA decision making level where the rules are defined, and the MPA operational level in which rules are put into operation. Physically, NTZs are often integrated into multiple-use MPAs, and multiple-use MPAs are then subsequently nested within Integrated Coastal Management⁴ (Bishop *et al.*, 2004). The Convention on Biological Diversity and the World Summit for Sustainable Development both call for MPAs to be incorporated into ICM (Cicin-Sain & Belfiore, 2005; Gubbay, 1995). As Cicin-Sain & Belfiore (2005: 847) state:

'If managed in isolation, coastal and marine protected areas (MPAs) are vulnerable to natural resource development and exploitation occurring outside these areas... Thus, protection of coastal and marine areas... should be integrated into spatial development strategies for larger areas, under the umbrella of integrated coastal and ocean management (ICM).'

⁴ Also referred to as Integrated Coastal Zone Management (ICZM) and Integrated Coastal Area Management (ICAM).

Increasingly, MPAs are being drawn into supra-national networks, due to the connectivity of marine systems between states (Scovazzi, 1999). Often, bi-lateral or multi-lateral agreements exist to reduce pollution or conserve biodiversity. The Mediterranean Action Plan⁵ was the first such Regional Seas Programme, which served as a 'blue print' for other UNEP plans. Within this agreement is the definition of 'Specially Protected Areas of Mediterranean Importance' (Kenchington, 1990; Sand, 1988).

2.5. Concluding Remarks

Producing a definitive list of critical factors that apply to all MPA situations is impossible. There is a danger that producing a list, such as that outlined in table 2.1, will encourage researchers to fall into an epistemological trap of adopting a regimented normative approach in applying these 'rules' to every case study (Steins & Edwards, 1999). Although these design principles have been drawn from generic knowledge, built up from many cases studies, they will not all equally apply to each case study (McCay, 2002; Stern, *et al.*, 2002). Many of the factors are interdependent, and these relationships may have a greater influence, than taking each of these factors independently (Agrawal, 2002).

As the marine environment becomes increasingly important to the many stakeholders that utilise its many resources, there is a need to explore theories that can provide insights into its management. The design, implementation, and management of MPAs provide a new field for the development of CPR scholarship. Loosely, the four key areas provide guidelines for the development of an interdisciplinary approach for the study of MPAs.

More often than not, once an MPA has been proposed the underlying biological objective has already been defined. Invariably, social science is left trailing behind, and then spends vital time 'catching up' with biological science. This framework reminds researchers that it is important to consider interdisciplinary aspects earlier in the process to facilitate MPA management, and make it sustainable over the long-term. It may also be useful to focus research attention on aspects of MPAs that are of significant importance to stakeholders, yet seeming insignificant to biologists. The 'critical enabling conditions' may be particularly insightful for the examination of, group characteristics and institutional arrangements, but less informative for resource characteristics and external factors, that have been widely investigated by MPA policy makers. In the process of applying CPR theory to MPAs, MPA policy may in turn help to advance CPR theory itself.

⁵ The 'Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, Barcelona (1976)' provided the framework for the development of the Mediterranean Action Plan.

3

Methodology & Case Study Context

Introduction

Chapter three represents a change in focus, from the theoretical discussions in the previous Chapter, to an account of practice and empirical reporting. The Chapter is divided into two main sections.

The first relates the various methods that were employed to provide a full representation of the ongoing negotiations for the development of the Lošinj Dolphin Reserve. A variety of forms of data are generated from this multi-stranded methodological approach, each serving a different purpose. Within this section the role of the researcher and Blue World as an organisation are investigated.

The second section situates the methodology within the context of the case study. The contextual background places Lošinj geographically and historically within Croatia and the Northern Adriatic region. It relates the physical characteristics of the island and explores the significant historical changes that the region, the nation and the island have experienced.

3.1. Methodology

Empirical design of the study incorporated two methods of data collection. Initially archival reviews were undertaken to identify the legitimacy of the proposal within the political, social, and economic context. This review encompassed international, national, and local law, as well as significant texts regarding the sustainable development and planning for the archipelago, and served to identify key topics for discussion. Subsequently a range of ethnographic methods were employed. Informal conversations and un-taped interviews enabled me to confirm or discard topics, and identify key information holders and community gate-keepers (Cook & Crang, 1995). These informal conversations also provided significant contextual material and aided in the facilitation of the learning process. Semi-structured interviews were then arranged with local stakeholders and the relevant authorities. In total 31 recorded semi-structured interviews were undertaken that directly addressed the research questions (see appendix III). Throughout the whole process participant observation was employed to ground the work within the local and policy making communities. The methods employed had four main functions:

1. To address directly the research questions;
2. To gain the trust of the interview respondents thereby negotiating access to the community;
3. To gain a deeper understanding of the nature of social relations, material on the wider political, cultural, institutional, and economic context, and the daily existence of islanders;
4. To facilitate the learning process inherent in the fieldwork in terms of gaining expertise, the evolution of interview questions, and challenging any previously-held assumptions.

Whilst some studies rely on one qualitative methodology this study uses various methods in an attempt to provide a rounded vision of the subject. Limb & Dwyer (2001) suggest that it is preferable to use different qualitative techniques to enable comparisons of materials from different sources and situations. Triangulating information from various methods and sources improves the reliability of the data making the study more rigorous (Cook & Crang, 1995). Giddens (1984) suggests that participant observation and immersion allows for the development of the rapport with the respondent before any interviews begin, allowing for a more interactive dynamic discussion. By disrupting the normal rules of interviewing, deeper and more complex issues may be discovered (Silverman, 2000).

The development of case studies allows for the application of principles to factual scenarios and may highlight a wide variety of management issues. A case study approach allows a specific sequence of events to be explored in greater depth (Suman, 2001). The use of case studies to illustrate given theory is set practice. It must, however, be taken into account that a case study is an observation of theory set temporally and spatially with contextual issues. It

cannot be used to prove a theory, only to add to the development of the epistemological debate.

Another inherent limitation is the development of comparative studies. Stake (1998) suggests that each individual case study is different and that these differences make comparative work unfeasible. However, in depth case studies provide an opportunity to document limitations of hypotheses and identify key variables to break new ground (Stern *et al.*, 2002). Both MPA and CPR literature are littered with case study examples, the seminal work of Salm *et al.* (2000) uses 25 case histories of MPAs, whilst Ostrom (1990) uses numerous case studies to illustrate the principles of CPR theory. CPR theory is based on both the development of large 'n' reviews and specific case studies (Agrawal, 2002). Analysis of large, archival data sets and multi-case, multi-variate research provide essential infrastructure for the generation of hypotheses to underpin case study research (Stern *et al.*, 2002). The development of a 'thick description' presented by the case study approach ensures that research has a strong understanding of any variation in context. Any remaining influential variable will be recognised by the method and can then be accounted for in the conclusions (Geertz, 1973).

This case study focuses on the negotiations that have been undertaken, at all levels of governance, among and between the resident primary appropriator of Lošinj Island and the relevant authorities. Negotiations have covered all scales of governance, and as such this study does not focus purely on the islanders, but also on the regional, national, and international actors involved. This holistic view is warranted to trace and explain shifting relationships between actors, through the analysis of broader processes and social structures. The study does not assume, for instance, that islanders as whole are homogeneous acting collectively for the good of the community. Formal and informal bonds within a small community, and even within a small country, may have significant effects on the development of the negotiation process. As such, the island provides an interesting case study to analyse the features of developing collective action for conservation within the European continent.

3.1.1. Archival Research

Archival research can provide an important background to the development of environmental policy (Brulle, 2000). Taking into account the absence of historical and contextual information utilised in CPR research (Agrawal, 2002; Edwards & Steins, 1999; Stern *et al.*, 2002) I undertook a significant archival review of the Croatian State, the region, and the island to understand the construction of norms and values of the people inhabiting the island.

Conservation policy documents originating from ACCOBAMS¹ and European Union directives highlight the priorities at international level (ACCOBAMS MOP Documents, 2004; European Commission, 2005a). In turn this can affect the development of national and local policies towards nature conservation and sustainable development (Hajer, 1996). Croatia's desire to enter Europe is the driving force for the development of conservation initiatives in the country.

Archival research also involved an extensive review of the development of the Lošinj Dolphin Reserve proposal. In total there are three variants of the proposal dating back to 1993 (Bearzi *et al.*, 1993; Bearzi, 1995; Mackelworth *et al.*, 2002), the original of which is included in Environmental Management Plan for the Cres-Lošinj Archipelago (IDC, 1997). This is one of the primary documents I reviewed. It provides within its 320 pages a comprehensive ecological, social, and economic review of the archipelago. Other documents such as the tourism master plan for Lošinj (Horwarth Consulting, 2003), the spatial plan for the archipelago (Urbanistički Studio, 2005), and various county sustainable development plans (Primorsko-goranska županija, 2005a; Primorsko-goranska županija, 2005b) were reviewed. Some documents came to light only during or following interviews and conversations. The documents provided by the local fishery guild, regarding the development of fishery policy in Croatia and on the island (Jović, 2004), being of particular interest in this respect.

3.1.2. Ethnographic Approach

Informal communication has been identified by many authors as a forum for the expression of opinions on policy making (Bryson & Crosby, 1993). Obtaining tacit knowledge can only be achieved through interactive qualitative research methods.

“The basic purpose in using these methods is to understand parts of the world as they are experienced and understood in the everyday lives of the people who actually ‘live them out’” (Cook & Crang, 1995: 1).

Three ethnographic methods were employed: taped semi-structured interviews, un-taped informal conversations, and participant observation. Initial un-taped informal interviews were undertaken in autumn 2002 with the objective to better understand the background island culture and social setting. The first set of semi-structured interviews took place in autumn 2003, again predominantly within the local community filling my knowledge gaps. In this way I was able to gain a better understanding of the community and establish contacts at different levels of authority. The main body of field work was carried out in autumn and winter 2004 to 2005. Throughout the period that I was on the island I maintained a research diary (table 3.1), in which I recorded every time an event or conversation pertained to a relevant topic.

¹ Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS).

Table 3.1: Research Diary Outline

Start	End	Number of Months	Notes
May 2002	September 2002	5	
April 2003	September 2003	6	Preliminary Interviews
April 2004	November 2004	8	Main period of interviews and meetings for the development of the Reserve
January 2005	April 2005	3	Meetings for the development of the Reserve
May 2005	December 2005	9	
Total		31	

3.1.2.1. Interviews

Interviews enable the researcher to gather information on the specific features of the society under study.

‘To understand other persons’ constructions of reality we would do well to ask them and to ask them in a way that they can tell us in their terms and in a depth which addresses the rich context that is the substance of their meanings’ (Jones, 1985: 258).

Interview structure will vary considerably according to the interviewee, the interviewer, and the relationship between them. Some interviews, based on the underlying trust between the actors, allow a degree of confrontation with vigorous debate, others require that a structure be maintained (Silverman, 2000). Practical issues such as time constraints may also determine the structure of the interview, particularly in the case of formal institutions (Cook & Crang, 1995). In many cases allowing the interview to take its own course, interjecting only when required to focus the interview on the question in hand, will provide information not preconceived by the researcher (Cresswell, 2003). However, by maintaining a degree of structure and providing details on the study in hand, we reduce the need for respondents to expend energy in guessing the aims of the interview (Jones, 1985). The interviewing process should be reflective and allow for the subsequent re-structuring of the questions for later interviewees (Cook & Crang, 1995). One of the criticisms of interviews is that:

‘An interview is a complicated, shifting, social process occurring between two individual human beings, which can never be exactly replicated’ (Jones, 1985: 259).

What is crucial is that the interviewer recognises the extent to which their relationship with the respondent exists, and if their own theories and values are stifling the interview (Jones, 1985). Furthermore, it is important that the respondents feel that their opinion, once sought, is not dismissed and that they are being listened to and taken seriously (Cook & Crang, 1995).

All interviews in this study were undertaken face to face. In the case of the ACCOBAMS members a trip to Palma, Majorca was necessary. In many cases interviews were carried out in café bars, but boats, offices, hotels, and homes also provided venues. On the whole the venue was determined by pragmatic logistics, or by particular request of the interviewee, recognising that the location of the interview may reflect the respondents' identity and the space that they feel most comfortable (Cook & Crang, 1995). Prior to the interview all of the interviewees were provided with a copy of the executive summary of the Blue World Critical Habitats Report (appendix II). The aim of this was to provide a clear and concise summary of the Reserve proposal, its scientific aims, and the means being forwarded to implement it.

It is important to distinguish between taped and un-taped interviews. When a formal request for an interview was made most respondents were willing to be taped, and thus the use of a tape recorder did not seem to have a significant effect on the interview. A question check-list was designed to ensure the fulfilment of the objectives of the taped interviews. Qualitative, in-depth questions were mixed with open-ended and semi-structured questions (appendix IV). Although a structure was pre-determined the respondent was encouraged to ask questions and raise issues not previously contemplated by the researcher, allowing the check list to be revised for future interviews. In the opening section of the taped interviews initial questions were designed to put respondents at ease rather than immediately beginning the interview with an investigation of their thoughts, opinions, and experiences (Jones, 1985). This information was collected to provide short biographies so that information received could be contextualised (appendix III). Following this initial section the taped interviews were of an open-ended character and allowed respondents to talk about themselves and their personal experiences (Cook & Crang, 1995). The check list remained iterative and questions evolved and adapted according to my understanding and relationship with the respondent. Towards the end of the interview structured questions were used to clarify opinions and to further explore some topics brought up. Finally, the respondent was offered the opportunity to ask questions regarding the study or other issues pertaining to the Reserve proposal. The physical setting of the interview, social circumstances, process of recruitment, and impressions of the relationship between the researcher and the respondent were also noted.

Taped interviews were transcribed, usually the same day as the interview, with the cooperation of the translators, if used, so that additions could be made with the memory fresh. All transcripts were then made available to the interviewee to make additions or clarify points. Recording was of particular importance where a translator was required (Cook & Crang, 1995). Interviews lasted between 40 minutes and two hours, often extending after the tape had been turned off. Most of the interviews were recorded, apart from those undertaken in an impromptu manner normally determined by the accessibility of the interviewee. This was particularly so at the ACCOBAMS meeting in Palma. There were also occasions where I was wary of using a tape-recorder, if the conversation was

opportunistic, or other people were around. These interviews served to provide contextual information, and thus the questions were largely unstructured and open-ended. For instance, many of the interviews of fishermen were conducted in café bars, and invariably other people turned up and joined the conversation, making it more a group discussion rather than a strict 'interview'.

The initial choice of interviewees was based on personal knowledge and subsequently the recommendations of the interviewees themselves (Cook & Crang, 1995). In many cases individuals were named in interviews and in this case I deemed it necessary to obtain a response from the person in question, whilst maintaining the confidence of the original interviewee. Complementary to this, members of specific stakeholder groups were approached through personal contacts, in particular the fishery guild and the tourist board. In total 31 taped interviews were undertaken. Brief details of the occupation of interviewees are recorded in table 3.2 (further details are recorded in appendix III). Where a number of interviewees articulated the same point, the individual with the greatest insight and fluency of expression was selected, hence certain individuals appear more frequently than others in the following Chapters.

	Primary Occupation	Secondary Occupation
Fishery	5	5
Tourism	7	3
Governmental Organisation	5	
Non Governmental Organisation	4	4
Artist	1	
Media	1	
School Employee	2	
Student or Retired	2	
Other Employment or Unemployed	4	
Total	31	

3.1.2.2. Participant Observation

Participant observation is one of the principal methodologies of an ethnographic approach to qualitative social research (Silverman, 2000). It requires that the researcher spends considerable time observing and interacting with a social group, thus exploring the knowledge and structures that underpin social action (Cook, 1997). To be a participant the researcher has to immerse into the community, experiencing the everyday cycle of the community, developing and experiencing relationships with the 'subjects' of the study. Participant observation, in its basic form, consists of:

1. Gaining access to a particular community;
2. the researcher then lives and/or works among the people under study;

3. then travels back to the academy to write up an account of the community (Cook & Crang, 1995).

Gaining access to a community may require the researcher to adopt a specific role, or train in a certain skill, or maintain a particular attitude (Stake, 1995). In other cases researchers may have spent time working in a particular trade or industry and returned to the academy to undertake a formal study (Cook & Crang, 1995). In either case identities adopted in the field may alter significantly to those in the academy. In gaining access to a community the researcher may well rely on 'gatekeepers', those individuals that enable access. It is at this point that the researcher should be aware of the balance of power between, not only the researcher and group under study, but also amongst group members. The researcher should also consider their own position within the study, as they will have some kind of effect (Fuller, 1999).

In my case, participant observation took two forms: immersion into the local community, which provided both contextual and specific information with regards to the Reserve; and, my position as conservation director within Blue World which provided access to the ongoing negotiations between stakeholders and the relevant authorities for the Reserve. In both cases access was guaranteed through my position as a Blue World researcher. This provided significant issues with regards to my own position, which is addressed later in this Chapter.

The most essential aspect of this research, in my view, was that it was undertaken '*in situ*', in that I chose to live in the local island community. I made considerable effort to integrate myself into island life to achieve the necessary richness to the study. My enrolment at UCL signalled the beginning of this thesis, in March 2001, though I had been visiting the island since the summer of 1998. Previous experience on the island allowed me to access many people, documents, and situations that would not have otherwise been available. Due to the prior relationships I had with the island community, it is difficult to divide my research into the discrete stages of participation observation outlined by Cook & Crang (1995). Instead I have outlined a time line of my movements since enrolling at UCL highlighting my main roles in each period and my academic status.

I was resident in the village of Veli Lošinj from March 2001 until September 2001. In the 2001 summer season I worked as a Blue World researcher building local connections and embedding into the community. After September I moved to Rome to work for the Institute for Applied Marine Research, where in conjunction with my Blue World colleagues, I prepared the proposal for the Reserve (appendix I). Throughout the winter I continued to review archival data from Lošinj. Returning to Lošinj in April 2002, having submitted the proposal for the Reserve to the Ministry for the Environment in February, I maintained my position in the local community, but at this stage the proposal was developing more in the international arena. I left Croatia in September 2002 to start full-time at UCL. The following season began in April 2003 with the

creation of the Lošinj Marine Education Centre. The establishment of the centre, besides providing a working environment for Blue World, helped to embed the organisation and myself within the local community. At this time preliminary semi-structured interviews were undertaken to gain contextual information. In September and October 2003 sustainable development and fishery meetings were organised on the island in cooperation with Blue World. Following this, the majority of my interviews were conducted through the summer of 2004 and the subsequent winter months. The winter months were important in respect to my visibility on the island, as people were more accessible and more willing to engage. In this period the proposal was also adopted by the State Institute for Nature Protection (SINP) and numerous meetings were held, with both local and national stakeholders.

One of the interesting issues that emerged was the interconnectivity of the varying actors on the island. Immersion allowed me to ascertain who was related to whom, what those informal links were, and how they affected not only the proposal for the Reserve, but also the socio-economics and politics on the island. This local knowledge also proved to be helpful when trying to obtain access to certain members of local society. Participation in activities such as the re-building of the kindergarten playground and attending tourism and fishing meetings and activities, served to provide access to, and engender an empathy with, the local community. In many cases there was a cross over in methodologies, in that discussions were entered into in informal situations led to an invitation for the interviewee to 'go on record' in a semi-structured interview. This often subsequently led to more discussions in the street, in a café bar, or on board the ferry. This reflects the ease of access for both researcher and subjects in the local environment.

My position within Blue World allowed me access to closed negotiations between stakeholders and relevant authorities regarding the Reserve. The marine conservation community within Croatia is very small. Many of the researchers, policy makers, and consultants, of comparable age, attended the same faculty at the University of Zagreb, the only major biological faculty in the country. These informal links played a significant part in arranging meetings and negotiations, and invariably alliances or agreements were made between constituent parties prior to meetings themselves. Even at international or Mediterranean level the cetacean conservation community is rather small and interconnected. Gaining access to this group is more dependent upon introductions and connections than knowledge itself. An example of this is the connection between ACCOBAMS and Blue World, in that, the initial informal contact in Rome led to the development of this thesis and the Reserve proposal. I attended a total of sixteen formal and informal meetings in my formal capacity within Blue World (appendix III). In two instances the meetings were recorded, transcribed and translated, with the permission of the participants. These recordings maintained an accurate record of the process, but were also made available to me for the development of this thesis. Without my position within Blue World I would not have gained access to either community, yet within each I maintained different identities. At island community level, I was

perceived more as a biological researcher escaping the day to day grind of UK life to 'live the island dream'. Yet, within the national and international policy and conservation community my dual identity as Blue World MPA specialist and UCL researcher was more important.

3.1.3. Positionality & Reflexivity - The Role of Blue World NGO

This thesis was undertaken whilst I was employed by the Blue World Institute of Marine Research and Conservation (Blue World). Primarily, I was engaged in developing the negotiations for the marine Reserve. Whilst undertaking empirical research I made all of my interviewees aware of my dual role. For this reason I now introduce the issues that may have influenced some of the results of my work for the thesis. The first is the role of Blue World NGO, the second, my positionality as both researcher for Blue World and a student of UCL.

The role of NGOs as bridging or linking organisations is well documented (Brown & Ashman, 1996; Edwards & Sen, 2000; Haley & Clayton, 2003). NGOs can create social capital through promoting collective action (Ahmad, 2003), co-management (Warner, 1997) and, can generate 'bridging' and 'linking' social capital (Varshney, 2001). Central assets for NGOs are legitimacy and transparency. An equally important facet is bargaining, with linkages formed between global and local needs and actors (Princen & Finger, 1994, Raustiala, 1997). In short, NGOs can play an important facilitation role between the local community and formal institutions imposed by external forces.

Blue World as an organisation was developed as a cooperation between local citizens and the international researchers of the Adriatic Dolphin Project (ADP). Developed to fulfil the public awareness role of the ADP in 2000, Blue World subsequently took over the whole project in 2001. As a research based NGO Blue World provides information for public awareness through its visitors centre in Veli Lošinj. The centre itself was constructed in cooperation with the local authorities² and is used to promote various facets of marine conservation, but with particular emphasis on the development of the Reserve. Blue World also organises special events related to nature. Of particular importance is 'Dolphin Day', which is a public awareness day that has been hosted in Veli Lošinj since 1993. Along with taking over the ADP, Blue World also took on the role as primary advocate of the Lošinj Dolphin Reserve. There has been a deliberate attempt to maintain independence, yet allow transparency of operations and embed within the community by providing full time employment and support for local people. The future development of Blue World is highly dependent on its further integration into the local community.

² Within this thesis the terms 'local authorities', 'city authorities', and 'municipal authorities' are inter-changeable, and all refer to the primary authority on the island, the Municipal Authorities of the City of Mali Lošinj.

Since its inception Blue World has promoted the development of civil society, recognising that sustainable development goes hand in hand with the development of democracy and public participation. There has been a concerted effort to strengthen and bring together the various stakeholders on the island. Meetings have been hosted at the visitors centre between the City authorities, the national authorities, and various stakeholder groups. Unlike many NGOs facilitating these kinds of actions there is an obvious agenda attached to the role, that of dolphin conservation. Hence, Blue World should also be regarded as a stakeholder in the process. As the primary advocate for the Reserve, Blue World has provided the scientific research findings and wrote the most recent proposal in 2002 (appendix I). Perhaps the most significant contribution of Blue World has been the development of 'The Identification of Critical Habitats and the Analysis of the Management Procedures for the Future Lošinj-Cres Marine Protected Area'³ report funded by the principality of Monaco. The ten page executive summary of this report was used as a primary discussion document in all of the meetings and interviews undertaken in this study (appendix II).

3.1.4. Researcher Identity, Positionality & Transparency

No researcher is truly objective as each will be influenced, either implicitly or explicitly, by their life experiences. The detached, cool, calm, and collected fieldworker does not exist. We are equally capable as researchers of changing and being changed by the societies in which we live and study along with our 'subjects' (Cook & Crang, 1995). To a greater or lesser extent researchers will have an effect on their subjects. The question is more one of 'how to critically reflect on our position whilst undertaking research in the social world?' Over-rapport between researcher and those under study, often referred to as 'going native', may bring into question the validity of the study (Stanley & Wise, 1993). Yet, it is increasingly being recognised that 'value free' social research is impossible. Furthermore, the 'view from nowhere' or the 'god-trick' is being replaced by the 'view from where I am at' (Maxey, 1999). Contradictions and uncertainties in research are pervasive and should be acknowledged, but it remains difficult for the researcher to be fully reflexive and fully aware of their positionality (Rose, 1997). Locating oneself within your research and exploring positionality has been widely explored within feminist geographies (Katz, 1994; McDowell, 1992; Rose, 1997). Reflexivity is advocated as a strategy for situating knowledges and avoiding false neutrality of academic knowledge (Rose, 1997). Grand claims regarding the applicability of ones work should be tempered when considering one's position (Mattingly & Falconer-Al-Hindi, 1995). The relationship between the researcher and the researched should be made transparent and open to discussion:

³ Hereafter referred to as the 'Critical Habitats Report'.

'we must recognise and take account of our own position, as well as that of our research participants, and write this into our research practice' (McDowell, 1992: 409).

Blurring the 'researcher' and 'researched' boundary has ethical and analytical implications. The balancing act is difficult and fraught with professional and personal difficulties in coming to terms with multiple positions. Fuller (1999) suggests that the maintenance of a critical multi-positioned identity can be a beneficial reflexive learning experience for researchers operating within ethnography, and for research itself. Transparency of thought and reflection can improve research design, implementation, and documentation. It can engender a further layer of professional accountability, allowing academics to play a greater role in effecting social change. Critical engagement calls upon the researcher to continually question their social location, physical location, discipline, political position, and personality (Routledge, 1996). Engaging in research remains a personal commitment, and it is rare for a researcher to undertake a topic that is not personally interesting to themselves, either before or during the development of the study (Fuller, 1999). Rather than seeking to separate academia and activism, Routledge (1996: 411) suggests that the researcher should seek a middle ground:

'Certainly no simple opposition exists between academia and activism. Rather, occupying a third space of critical engagement enables research to become a personal and reflexive project of resistance. Clearly such a space must be one's own, not one prescribed, ordered, expected, enforced'.

The desire to access knowledge, yet remain objective is a difficult balance. Increasingly researchers are calling for 'engaged research' (Blomley, 1994; Katz, 1998; Routledge, 1996). Katz (1994) calls for the deconstruction of the boundaries between academics and subjects. Maxey (1999: 203) refers to his movement into academia from activism, and his changing position:

'I viewed myself as an interloping activist within academia, to my current position, whereby I reject the academic-activist binary and see the fluidity of all the roles I perform'.

Many authors go further, suggesting that academics should become professional activists. Chouinard (1994: 5) argues this move to activist/academic identity:

'means putting ourselves 'on the line' as academics who will not go along with the latest 'fashion' simply because it sells, and who takes seriously the notion that 'knowledge is power'. It means as well personal decisions to put one's abilities at the disposal of groups at the margins of and outside academia. This is not taking the 'moral high ground', but simply saying that if you want to help in struggles against opposition you have to 'connect' with the trenches'.

Similar to Maxey (1999), many of the island people I studied did not primarily relate to me as a 'researcher', but at times as a friend, acquaintance, colleague or

environmentalist. With my name foremost on many of the materials used as discussion documents, it reflected my position within the development of the proposal and in certain environments made my position difficult⁴. I made it a deliberate ploy to ensure that the islanders being interviewed were aware of my affiliations to Blue World and to UCL. I found that it was better to be fully transparent at the outset, making my personal information available to all the actors. It was a pragmatic approach based on my personal integration into the community. In this manner the effect caused by the interviewer was acknowledged, and attempts were made to minimise it. Invariably, the UCL affiliation was ignored in this community, as it did not relate to the day to day issues of the island. In fact, in some instances it appeared to build barriers, suggesting that I was just on the island to 'study' them. Unlike many researchers that aim to maintain their position as an outsider, I embraced the concept of island life and tried to integrate fully, despite language issues. Being a British 'islander', rather than a continental, appeared to resonate with the islanders, particularly my commitment to stay the 'hard' winter months of 2004 to 2005. Prior to this, I was viewed as another visitor lost in the milieu of summer tourists, an identifiable face, but not of much interest. Staying on the island in the winter and socialising on the dark nights developed my personal social capital, and enabled people to open up to me more.

Within policy circles, the UCL affiliation provided me with greater legitimacy, particularly with national and international actors. Coming from a recognised institution to interview and participate in formal meetings appeared to reassure other institutional actors. My background as a specialist in MPAs was highlighted, and invariably this was the aspect that policy makers focussed on. My legitimacy was further enhanced by being placed on the specialist list for ACCOBAMS and the RAC/SPA⁵.

3.1.5. Data Analysis

Analysis was carried out using ATLAS.ti 4.2 software (Muh, 1997). The software was used to manage the transcripts from the taped semi-structured interviews. Using the CPR design principles a series of '*a priori*' codes were drawn out of the theoretical framework and applied to the interview texts. As such, these codes address themes from the semi-structured questions, relating them to the original research questions. A total of 41 '*a priori*' codes were drawn out of the theoretical framework (see appendix IV).

Whilst working with the interviews it became obvious that iterative coding would be required to cover the entire groups of topics brought up by the

⁴ This was particularly so with initial informal meetings with fishermen and the fishery guild. In this situation having access to certain freer thinking fishermen allowed my access into the groups, especially when I showed them the pictures of when I worked as a fishery observer on a trawler in the North Atlantic.

⁵ Regional Activity Centre, Specially Protected Areas for the Barcelona Convention.

interviewees. This is partially due to the interview technique, but also the diversity of the interviewees. The open question technique of the interview provided for the development of themes not previously defined by the researcher. Emergent coding was used to build theory from the subjects and categories brought up by the interviewees. In this case the coding was '*a dynamic and fluid process*' (Strauss & Corbin, 1998: 101). Emergent coding enables the development of robust analysis where linkages are not presumed, allowing for the exploration of the data without concentrating exclusively on selected aspects (Strauss, 1987). Thus, the data analysis is more focussed and allows integration with the underlying theory. Initial analysis identified some 184 codes (including the '*a priori*' codes) which were then reviewed, with some codes being merged, and other spilt, according to the iterative process of reviewing all the transcripts. A definitive list of 131 codes was constructed and is presented in appendix IV.

3.2. Placing Lošinj Island

Lošinj lies within the borderland area of the Northern Adriatic, where the three great European racial groups, the Mediterranean, Germanic, and Slav, meet (Ballinger, 2004; Moodie, 1950). It is historically and geographically an extension of the Istrian peninsula, now part of the Republic of Croatia (see figure 3.1). The island has consistently ended up in the hands of the dominant power in the Adriatic. The independence of Slovenia and Croatia in 1991 brought some stability to the region. Yet, even before independence the borderland area remained one of the most relaxed, with more or less free access for neighbouring communities, with the Italian and Yugoslav governments agreeing on greater permeability of the border in 1949 (Bufon & Minghi, 2000). Lošinj remains in the borderland region of Croatia, influenced not only by the proximity of the border itself, but also by the distance from State institutions, and the fact that it is an island. It is like so many other transition zones, characterised by shifting and multiple identities (Minghi, 1963; Wilson & Donnan, 1998).

The structure and characteristics of the State can play a major role in facilitating or obstructing the development of civil society, and thus the sustainable management of environmental resources. Croatia as a State has only existed since 1991, yet the concept of Croatian nationhood can be traced back to the seventh century (Sekulic, 2004). There have been substantial influences on the development of the Croatian State, which have included the suppression of the Croatian identity, war, and significant migrations (Denich, 1994; Denitch, 1996; Gerčić, 2002; Iveković, 2002; Lindstrom, 2003; Pavlović, 2000; Sekulic, 2004). Despite the efforts of politicians and intellectuals to consolidate a homogenous ethnicity to the nation-states of the Balkans, regionalism remains strong. This is probably as a response to the various regimes that have tried, and failed, to suppress these identities (Ballinger, 2003; Kaplan, 2000). These empires and federations have left an indelible mark on Croatian identity, yet as Mesić (2004: 277) states:

‘Croatian national identity has evolved out of very diverse sub-ethnic (regional) cultural (linguistic) identities that developed relatively independently in the frameworks of different dominant political formations (empires). Some of the diversities between individual Croatian regions in regard to mentality, music, dialect or cuisine are noticeable, even to a superficial observer’.

The following section places the island within its geographical and historical context. It focuses on the island, touching briefly upon how the administrative changes and the development of the Croatian nation-state, have affected the development of the island.

Figure 3.1: Placing Losinj Island: Map of Croatia highlighting the Cres-Lošinj Archipelago.



Legend

□ Republic of Croatia

0 50 100km



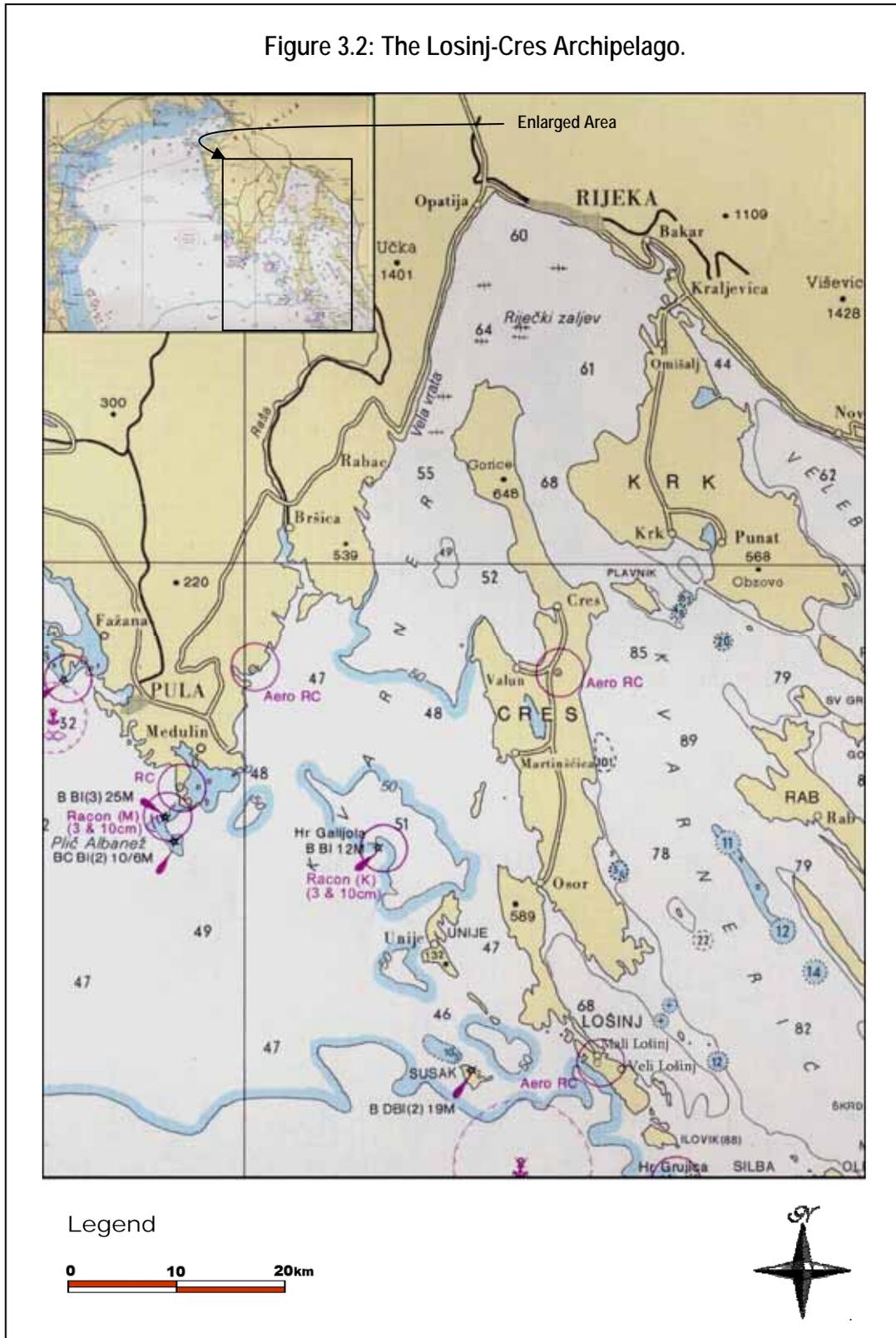
3.2.1. Geography

The Cres and Lošinj Archipelago is the northernmost archipelago in the Adriatic Sea. It consists of 36 islands, islets, and reefs, of which seven islands are inhabited: Lošinj, Cres, Ilovik, Susak, Unije, Mali Strakane, and Vele Strakane (see figure 3.2). Geologically the archipelago is made up predominantly of cretaceous limestone and dolomite, typical of the Adriatic region (Balon, *et al.*, 1986). The southern part of the archipelago, namely Lošinj and its related islands, are considerably lower than the northern part, giving these islands a closer feeling to the sea (Fučić, 1990). Generally the archipelago is extremely indented, providing shelter from the winds that ravish this area. The climate varies from north to south, from sub-Mediterranean to Mediterranean, respectively. Lošinj Island is dominated by Aleppo Pine which was planted as part of the health tourism strategy of the 1880s and is now synonymous with the island. The area is susceptible to strong winds; the prevailing north east 'Bura' wind is famous throughout Croatia. Other winds that affect the area include the north west 'Maestral', and the south east 'Jugo' or 'Scirocco'. The structure of the coast line and the development of the socio-economics of the islands are inherently linked to these winds and shelter from them.

Access to a stable water supply is a constant problem for all Mediterranean islands. Lošinj and Cres are the only islands in the Croatian Adriatic with a natural water source, Lake Vrana. Currently, the lake provides water to the two main islands. However, plans are underway to connect the islands of Ilovik and Susak to the water mains. The aqueduct that transports the water from Lake Vrana was constructed in the 1950s, and in 1960 the first water flowed over thirty-five kilometres to the bronze dolphin fountain (plate 3.1) in the centre of Mali Lošinj harbour (Balon, *et al.*, 2005).

The Cres-Lošinj area is one of the 'healthiest' marine areas left in the degraded Northern Adriatic Sea. This is mainly due to the presence of a submarine ridge stretching from Istria to the island of Unije, marking the boundary of the fluvial sedimentation from the river Po. The area encompasses a wide range of marine habitats, including rocky shores and bottoms, submerged reefs, seagrass flats, and mud seabed (IDC, 1997). It remains particularly diverse, despite being heavily exploited since the seventeenth century. Over 95 species of teleost fish have been recorded in the area, along with such top predators such as cetaceans and sharks (Sokolić, 1992).

Figure 3.2: The Losinj-Cres Archipelago.



3.2.2. History

Initial settlement of the archipelago is believed to have been in the Neolithic period, by the Illyrian tribe of the Liburians⁶, with the first interactions with the Romans taking place around the 2-3 century BC (Fučić, 1990). The archipelago is located on an important trade route between Venice and Greece. It provided strategic and commercial positions, along with safe harbourages against the rapidly changing wind systems in the region (Balon *et al.*, 2005). Settlements were made in the northern part of the archipelago, initially around Osor and Cres. It was around the sixth and seventh centuries that Croats began migrating to the islands from Dalmatia. In 910 Byzantine rule was succeeded by the rule of Croatian King Tomislav, until the arrival of the Venetians in 1000. Between 1000 and 1409 the islands remained disputed between Venice and Hungary. Until 1303 all of the lands had been feudal, at which point Venice appointed a governor to administer the islands. Despite this administration, there was an obvious divide between the Venetian nobility living in the walled towns of Osor and Cres and the Chakavian⁷ speaking Croatian peasants (Balon *et al.*, 2005). This was typical of the Venetian system of colonising the islands, characterised by the development of port towns with ethnically diverse hinterlands, rather than full colonisation and integration (Bufon & Minghi, 2000). At this time Lošinj⁸ Island was used principally for grazing land. The island itself was unpopulated and the property of the Venetian clerical and secular nobility of Osor. In 1280 the first evidence of settlers is documented in Javorna bay, south of Veli Lošinj⁹. Twelve Croatian families¹⁰ are documented as forming this first settlement with Javorna bay being chosen due to the ease of access to the inner island for the raising of sheep (Ivanišević, 2005). In 1290 the second settlement of Mali Lošinj¹¹ developed in the bay of Saint Martin.

In 1409 the Venetians bought the archipelago for the sum of 100,000 ducats from Ladislas, King of Naples, and maintained the islands until the fall of the empire in 1797. After the collapse of the Venetian republic, Istria and the islands of the Cres-Lošinj archipelago came under the control of the Austrians, with a brief rule by the French from 1805-1815. During the eighteenth and nineteenth centuries, trade, shipbuilding, and seafaring developed intensively. By 1844 Mali Lošinj was the second largest producer of ships in the Austrian empire, with a population of 5,300 inhabitants¹². Administratively the Austrians were relatively benign, allowing the continued use of Italian as the formal language, but also legally recognising all the languages on the island. The development of

⁶ Liburians were a Celtic mariner tribe present throughout the eastern Adriatic.

⁷ Chavakian is a dialect of Croatian spoken predominately in Istria, the Dalmatian littoral zone and the islands.

⁸ Lošinj, derives from 'Loš' meaning 'bad', referring to the agricultural quality of the land.

⁹ Translates to 'Big Lošinj'.

¹⁰ The twelve families were led by, Obrad Harnović and consisted of the following families, Marinčić, Križinić, Maglić, Ljubovčić, Nadalić, Rumanjolić, Konstantin, Buškaja, Baričević, Rerečić and Forcinić (Ivanišević, 2005).

¹¹ Translates to 'Small Lošinj'

¹² This is the same amount of people as living in Belgrade at that time (Balon *et al.*, 2005).

steel steam ships in the 1880s led to the rapid decline of the shipbuilding industry on the island, significantly affecting Mali Lošinj, with many of the larger shipyards relocating to Trieste (Balon *et al.*, 2005). In 1886 health tourism, particularly for respiratory and allergic diseases, started to develop in the towns of Mali and Veli Lošinj. Lošinj became famous in the Austrian court for its superior natural environment (Balon *et al.*, 2005).

The defeat of Austria and the Axis powers in World War One lead to expansion of Italian territory that included Istria, Rijeka, the islands of Cres and Lošinj, and parts of Dalmatia. Legally, the treaty of London (1915) returned Istria and the archipelago to the Italians. From 1918 to 1947 this region was administratively separated from the rest of Croatia, hence it diverged from the standard development of Croatia in this period. The rest of current Croatia was taken into the Kingdom of Serbs, Croats, and Slovenes¹³ (see figure 3.3). Created in 1919 by the Treaty of Versailles, the Kingdom appeared to all those involved in the post First World War negotiations to be the most viable solution for the region.

¹³ In 1929 the democratic constitution was abolished by King Alexander and the name of the country changed to the Kingdom of Yugoslavia.

Figure 3.3: Kingdom of Yugoslavia 1930.



The fact that Serbia was on the victorious side at the end of the First World War enhanced the status of Serbia among the other South Slav elites, particularly as the political leaders of Croats and Slovenes had, as parties to the Austro-Hungarian State, been defeated in the war (Denich, 1994). The development of a strong Slavic State was seen to be the only option to resist the constant pressure from the expansion of the neighbouring States, particularly Austria and Italy (Brkljačić, 2003; Korunić, 1989; Tepsić, 1970). Significantly, the island was less affected by the Kingdom of Yugoslavia, but influenced by the fascist Italian period under Mussolini. On the island, there was severe repression of the Croatian identity, including internment. The use of the Croatian language was prohibited and Slavic names were Italianised by law in 1927 (Balon *et al.*, 2005). On the mainland, instability characterised the Yugoslav situation between the two World Wars, domination of the Serbian political elite in this period led to serious resentment and increasing anti-Serbian sentiment, particularly by the Croatian peasants (Denich, 1994; Sekulić, 1997). Following Nazi conquest in

1941, the Croatian Ustaša¹⁴ was placed in control of the 'independent State of Croatia', which encompassed most of current Croatia, Bosnia-Herzegovina, and part of Serbia (Denich, 1994). The Ustaša, in cooperation with their Nazi patrons, implemented the 'final solution' against the Jewish and Serb minorities, during which one third were to be exterminated, one third to be converted to Catholicism, and the rest expelled (Brkljačić, 2003; Simić, 1993). This evoked an immediate response from Serbian nationalists, who organised their own 'Chetnik'¹⁵ paramilitary forces, dedicated to restoring the pre-war Serb dominated Yugoslav government (Denich, 1994). Suppression of these war memories by the subsequent communist Yugoslav regime proved to be one of the underlying issues which led to the violent break-up of communist Yugoslavia. Italian rule on the island throughout the Second World War meant that Ustaša atrocities, that so undermined communist Yugoslavia, were not directly felt. Hence, Serb-Croat antagonism was felt significantly less here than in other Croatian regions.

The post-war communist Yugoslav regime was not so much built on ideology, but more a case of a balance between the imperial powers of the west and hard-line communism of the east. Following the defeat of Italy in the Second World War, the islands were returned to Croatia, as part of Yugoslavia (see figure 3.4).

¹⁴ The Ustaša was a Croatian far-right organisation put in charge of the Independent State of Croatia by the Axis Powers in 1941. They pursued nazi-fascist policies and were subsequently expelled by the communist Yugoslav partisans and the Red Army in 1945. The origin of their name is in the noun 'ustaš', which means insurgent.

¹⁵ Chetniks originated as a consequence of Serbian resistance to the Ottoman Empire in the twelfth Century, and have been resurrected in all of the subsequent conflicts in the region. The origin of the name comes from 'chete' meaning company or group; hence Chetnik means one of the brotherhood.

Figure 3.4: Communist Yugoslavia.



Political changes in the region as a whole led to widespread migration, particularly from these borderlands. Following the Second World War, large emigrations of the Italian minority and non-communists led the island into decline, with population levels falling to 70% of that in the 1850s (Podgorelec, 1999). Only with the development of mass tourism facilities in the late 1960s did the population begin to rise again on the islands (Podgorelec, 1999). Many of the positions left by the Italian émigrés were filled by the immigration of other Yugoslavs, predominantly from the interior of the country. Immigration of these continental Yugoslav peoples significantly changed the demographic balance of the island. Immigrants brought with them issues of personal identity related to their origin, thereby bringing Yugoslav issues to the island. The restructuring of the island population also fulfilled one of the main 'Titoist' aims in this period: the homogenisation of the population of Yugoslavia.

Fratricidal memories of the wartime atrocities posed a significant threat to the formation of a social order of reconciliation, the suppression these memories seemed the best policy for the development of a multi-ethnic Yugoslav nation (Bakić-Hayden & Hayden, 1992; Denich, 1994; Denitch, 1996). By the 1980s the western colonial threat had subsided with European integration. At the same time, perestroika and liberalisation of the USSR, prior to the fall of the Berlin wall in 1989, tolled the final death knell for Yugoslavia. As much as European integration attracted Slovenian and Croatian leaders, the Serbian leadership remained committed to maintaining the Yugoslav federation.

The rapid collapse of the old Yugoslav regime propagated the simplest form of government, the antithesis of communism: nationalism (Denitch, 1996). The right-wing Croatian Democratic Union (Hrvatska Demokratska Zajednica (HDZ)), led by Franjo Tuđman, launched a professional political campaign supported significantly by diaspora organisations (Denich, 1994; Denitch, 1997; Hockenos, 2003). Coupled with this was a poorly designed electoral system, and manipulation of the state media (Hayden, 1992; Mueller, 2000). Perhaps most alarming was the adoption of the former symbols of the Second World War Ustaša that isolated the large Serbian minority. Yet the Croatian people, as a whole, did not believe that the EU and NATO would allow a war in Europe in the late twentieth century. Most people both inside and outside Croatia were shocked by the escalation of the conflict. Many of those that embraced the nationalist rhetoric had certainly not expected to see such violence as a consequence. Few people expected that ethnicity and nationalism would lead to genocide and ethnic cleansing (Denitch, 1997). Violence erupted less from national frenzy, and more from the empowerment of common criminals in local militias, recruited to 'ethnically cleanse' the country (Duffy & Lindstrom, 2002). Whilst mainland Yugoslavia imploded, regional politics dominated the island and Istria throughout the 1990s (Ballinger, 2003). Although the war did not directly affect the island, many of the economic migrants from the 1960s and 1970s maintained strong family links to the mainland. The island also became a place of safety for a number of refugees, with a substantial amount remaining following the cessation of the conflict in 1996.

Since independence, Croatia has been engaged in a nationalizing project, though in the same period alternative identities, especially in the form of regionalism, emerged as forms of resistance to the nationalist ideology and its definition of identity (Ballinger, 2005; Banovac 1998). In the 1995 World Value Survey¹⁶, a representative sample of Croatian citizens declared their principal commitment to a region narrower than the national territory. When asked to which territory they felt most attached: the city where they live, region, Croatia, Europe, or the World, over three quarters chose city or region (Sekulic, 1997).

‘The civic identification is more pronounced in the Zagreb region, the largest metropolitan area and in Istria and Rijeka, the two regions with strong regional

¹⁶ This followed the success of operation ‘Storm’ which recaptured large territories previously under Serbian control, when the national euphoria should be at its highest.

feelings, where local power never fell into the hands of the nationalist HDZ and which are more left-leaning than the rest of Croatia' (Sekulic, 2004: 480).

Despite the obvious human and economic costs due to the war, subsequent corruption and paranoia affected the country more deeply (Spajik-Vrkaš, 2001). The implementation of privatisation policies deprived many Croatian citizens of their rights to share in the distribution of the society's wealth, which they themselves had accumulated during socialism (Spajik-Vrkaš, 2001). Parliamentary democracy remained immature with corruption rife, resulting in an economic crisis (Skrbiš, 1999). Štulhofer (2004) suggests the increase in corruption in the period 1995-1999 resulted in a decline in generalised trust, in civic participation, and in trust in institutions, all indicators of social capital. Conversely, in the late 1990s the third sphere of civil society started to appear, originally in the form of self-help groups supporting war veterans. The largest growth in the registration of civil society organisations occurred between 1998 and 2000. Up to June 2005, there were 26,000 NGOs and associations registered in Croatia (Cooper *et al.*, 2005).

National elections in January 2000 resulted in a rejection of the nationalist HDZ party, leading to the election of a moderate government coalition (Nelson, 2001). Reforms were pushed through by the centre-left coalition and in 2001 Croatia signed and ratified a Stabilisation and Association Agreement (SAA¹⁷), part of the Stabilisation and Association Process (SAP¹⁸) with the European Union. The Croatian Government gave the highest priority to the remaining political preconditions: full cooperation with International Criminal Tribunal for the former Yugoslavia (ICTY), refugee return, and judiciary reform. European Union integration negotiations were conditional upon the fulfilment of these political criteria (Samardžija, 2003). On 21 February 2003 Croatia applied for EU membership and just one year later the European Council officially granted Croatia candidate status, opening the way for accession negotiations in 2005. Croatia had hoped to catch up with Bulgaria and Romania and enter the European Union in 2007¹⁹.

Up to June 2004, the general public had shown consistent support of between 70 and 75% for European integration (Ministry for European Integration, 2005²⁰). However, in August 2004 support dropped to 51%, and in the opinion poll of

¹⁷ The SAA replaces former agreements and represents a legal process governing the framework for the harmonisation of Croatia into European structures.

¹⁸ The SAP represents the development of a new integration paradigm for the expansion of the union into the western Balkans due its '*special geopolitical, economic and even psychological situation*' (Letica, 2004: 212).

¹⁹ The start of accession negotiations were postponed because of insufficient cooperation with the ICTY (Crespo-Cuaresma *et al.*, 2005). The disappearance of General Ante Gotovina, who had been indicted for war crimes, became a significant issue for Croatia, The Hague and the EU. On the 3rd October 2005 the chief prosecutor declared that she was satisfied that Croatia was fully cooperating with the ICTY. On the same day accession talks were reinstated. Gotovina remained at large until December 2005. However, amongst certain right wing parts of the Croatian population General Gotovina is seen as a heroic character of the war.

²⁰ Ministry of European Integration website: <http://www.eu-pregovori.hr/default.asp?jezik=2>.

August 2005 those against integration formed the majority²¹. Two main factors underlie this decline in popularity: the first, goes back to the early 1990s when the belief was that the EU would step in to stop war, the second, is the fear that Croatia will once again be integrated into a new more powerful model of Federalism, in which Croats have little control over their future. Against this, is the view that the EU represents political and military security, the development of the parliamentary rule of law, the promotion of democratic norms, the sanctity of rights, and the reinforcement of social democratic traditions of multiculturalism (Lindstrom, 2003).

Regional and local identities are becoming more and more pronounced in Croatia, now that national independence is secured. Politically, the importance of regionalism is expanding and this is reflected in the growth of registered regional and local political parties, of which there are now nineteen (Mesić, 2004). Today, Croatia participates in a number of sub-European regional organisations. Of particular importance is identification with, and cooperation in, the Adriatic region. The Adriatic evokes a far more positive cultural image than the Balkans, and enables informal ties to be made with current EU countries. The increasing focus on regionalism is illustrated in the Croatian National Tourist Board slogan: *'The Mediterranean as it once was'*.

Contemporary Lošinj exhibits many of the aspects of insularity that affect island societies, remoteness, smallness, isolation, peripherality, and a lack of natural and human resources (Royale, 2001). It has, however, been affected by the international, national, and regional changes experienced by the whole of Croatia over the last century. As regionalism becomes more significant for Croatia, particularly in the re-branding of its image internationally, the island and coastal regions have become particularly important focal points. The development of the image of Lošinj as the 'island of dolphins' (see plate 3.2) is not only important economically at local level, but also at regional and national level. It provides an example of the positive use of nature for Croatia as a whole.

²¹ Against were 47.9%, for 43.4%, and undecided 8.7%.

3.3. Concluding Remarks

Having started with *'a priori'* codes taken from Agrawal's (2002) design principles, it became clear that some principles resonated clearly with the case study and others were more abstract. Certain themes ran consistently through the study. In particular heterogeneity of use was considered as important from the theory, but, the initial mining of the data, coupled with the historical review above, revealed that the underlying heterogeneity of identity was significantly more important. This heterogeneity of identity has proved to be a core category prohibiting collective action. Lack of trust in individuals holding positions of power, and the institutions they represent, was also a major issue identified in the analysis. As McCay (2002) suggests, design principles offer a useful starting point for analysis, but particular principles may not form conditions for individual studies.

Another factor exposed in the mining of the data, was the obvious overlap between certain aspects of the case study, particularly the external factors. The case study was so embedded into these contextual factors that it was difficult to determine what was internal and external. This may explain why 'external contextual factors' are suggested as being ignored by other authors, when in fact, they are internalised within the work (Agrawal, 2002; Edwards & Steins, 1999). The second section of this Chapter gives an introduction to the salient contextual or external factors that have influenced Lošinj, including historical factors.

The following empirical chapters break with the four key areas of Agrawal's (2002) critical enabling conditions. They focus on: the resource characteristics, group characteristics, and institutional arrangements, embedding them within the contextual or 'external environment' of the case study. Chapter four analyses the development of the Lošinj Dolphin Reserve (LDR) in the science-policy rationale, referring closely to the validity of the critical enabling conditions for the resource characteristics of the case study. Chapter five moves on to the social specifics of the island in which the Reserve is embedded drawing heavily on local participant observation and interviews. Chapter six reflects on the institutional negotiations with attention to the national and international policy within which the public institution will be embedded.



Plate 3.1:

Bronze fountain, the first water to come to Mali Lošinj harbour.



Plate 3.2: Economic capital: Lošinj 'the island of dolphins'.

4

The Lošinj Dolphin Reserve: A Resource System

Introduction

All cetacean species have been legally protected in Croatia since 1994¹. Research has been ongoing into the resident common bottlenose dolphin (*Tursiops truncatus*) community around the Lošinj-Cres archipelago since 1987. The first proposal for the designation of a marine reserve for the protection of dolphins dates back to 1993 (Bearzi *et al.*, 1993). It has subsequently been through three other forms until reaching the present proposal, which was submitted to the competent national authority in February 2002 (Mackelworth *et al.*, 2002). The proposal for the designation of the Lošinj Dolphin Reserve has been formulated and developed with conservation of the resident common bottlenose dolphin population as its primary goal:

*'The primary objective of the marine Reserve will be the restoration and maintenance of the population of bottlenose dolphins in the Koarnerić at a viable² level. Additionally, this proposal seeks to ensure that the Kvarnerić provides the environmental and ecological processes necessary for the achievement of this primary objective, subject to natural change' (Mackelworth *et al.*, 2002: 3).*

Throughout the process, of the development of the Reserve, there has been clear recognition for the integration of conservation with sustainable development. The Lošinj Dolphin Reserve represents the largest marine area to be placed under protection in Croatia³. Due to the significant importance of this area for tourism, the area is proposed as multiple-use area, and once designated will be a category VI area under IUCN guidelines. The dolphins are being used as a

¹ All cetaceans were declared protected under the Law on Nature Protection (1994), (Official Gazette No. 30/94), this has subsequently been superseded by the current Nature Protection Act (Official Gazette 70/05, 2005). All Cetaceans are protected under appendix II of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1979), and appendix II of the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona, 1976). Migratory species are protected under the Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979). All of these Conventions have been signed and ratified by the Croatian Parliament.

² Viable Population is defined as; A secure and enduring population that is able to sustain itself in the long term. This is dictated by minimum and maximum breeding age, adult and calf survival rate and annual birth rate (Scottish Natural Heritage, 1999).

³ The total area of the Reserve is 525.8 km²; the territorial sea of Croatia is 33,200 km².

'flagship species' to enable the creation of an institution to assert some local control over a resource system that is essentially 'open access'. The dolphins are not only the 'flagship species' for the Reserve, but also for the development of the island: 'Lošinj the island of dolphins' (see plate 3.2). The image of the dolphin is inherently linked to the image of the whole island, and as such the Reserve will provide an important tangible link between the natural and economic capital of the island.

This Chapter is divided into four sections. The first section reviews the previous proposals, documents, and organisations involved in developing the Reserve proposal, in an attempt to address the lack of historical investigation into the development of CPRs (Stern *et al.*, 2002). Section two follows the early negotiations for the current proposal and for the funding of the underlying scientific information contained within the 'Critical Habitats Report'. Section three reviews the scientific information on which the Reserve is based, with particular emphasis on the Critical Habitats Report and subsequent research. The final section reviews the resource characteristics of the Reserve, through Agrawal's (2002) framework for critical enabling conditions for the sustainability of CPRs.

4.1. Development of the Lošinj Dolphin Reserve, the Role of Tethys, 1987-2000

The Reserve proposal is based predominantly on the work of the Adriatic Dolphin Project (ADP). As such, its development is inherently linked to the ADP. The ADP was established in 1987 by an Italian NGO, the Tethys Research Institute⁴, at its inception it was one of the earliest projects to study the common bottlenose dolphin (*Tursiops truncatus*) in the Mediterranean sea. This area was selected for research for two main reasons. The first, scientific: this area was found to have a high density of bottlenose dolphins in a preliminary study in 1986. The second, pragmatic: the regional cultural influence on the island has resulted in Italian being spoken as a local dialect. The original protected area proposal was written by Tethys (Bearzi *et al.* 1993) to be included into the 'Management Plan for the Conservation of the Cres-Lošinj Archipelago' (Island Development Centre (IDC), 1997).

Respondent 1 [11.2004⁵]: *There was a management plan supported by the World Bank. At that time we already had photo-identification data about the dolphins living in the area, and some rough idea of the main threats. The management team showed interest in our work and they wanted to involve us in the management plan... ..In the context of this management plan we were*

⁴ Tethys was founded in 1986 with the intention to undertake cetacean research in Italy. However, preliminary work undertaken around Lošinj, in 1986, resulted in the basing of the project on Lošinj. Tethys now maintains three projects in the Mediterranean sea based in, the Ligurian sea, the Venice lagoon, and the island of Kalamos, Greece.

⁵ Month and year of interview.

asked to make a proposal for the dolphins. We made a very preliminary proposal suggesting some kind of protected area to protect the dolphins. The information was based on the data and analysis that was done at that time.

Tethys carried out 282 surveys for dolphins, from 1987 to 1992, on which the proposal was based. In total, 120 dolphins were photo-identified and subsequently re-identified showing significant site fidelity. The presence of calves and sub-adults suggested that the area was important for nursing mothers (Bearzi *et al.*, 1992). The justification for the development of the Reserve rested on:

1. *'Protecting dolphins and monitoring trends in their population, means protecting all marine organisms living in their ecosystem, and the ecosystem itself.*
2. *Dolphins are extremely visible animals, and also very popular among the public. Establishing a dolphin Reserve would provide a remarkable image benefit for the area, as dolphins are known to the public as inhabitants of a clean, healthy sea.*
3. *Finally, protecting the dolphins from uncontrolled tourist pressure and industrial fishing activities, means also protecting small-scale, local artisanal fishing practice, which has coexisted for centuries in balance with the dolphins, but today is at an even greater risk of disappearing due to these pressures' (Bearzi et al., 1993: 5).*

This original proposal provided a pragmatic outline for conservation using the dolphins as a flagship species, as identified by Simberloff (1998) and others. This is also reflected by the comments of the primary author.

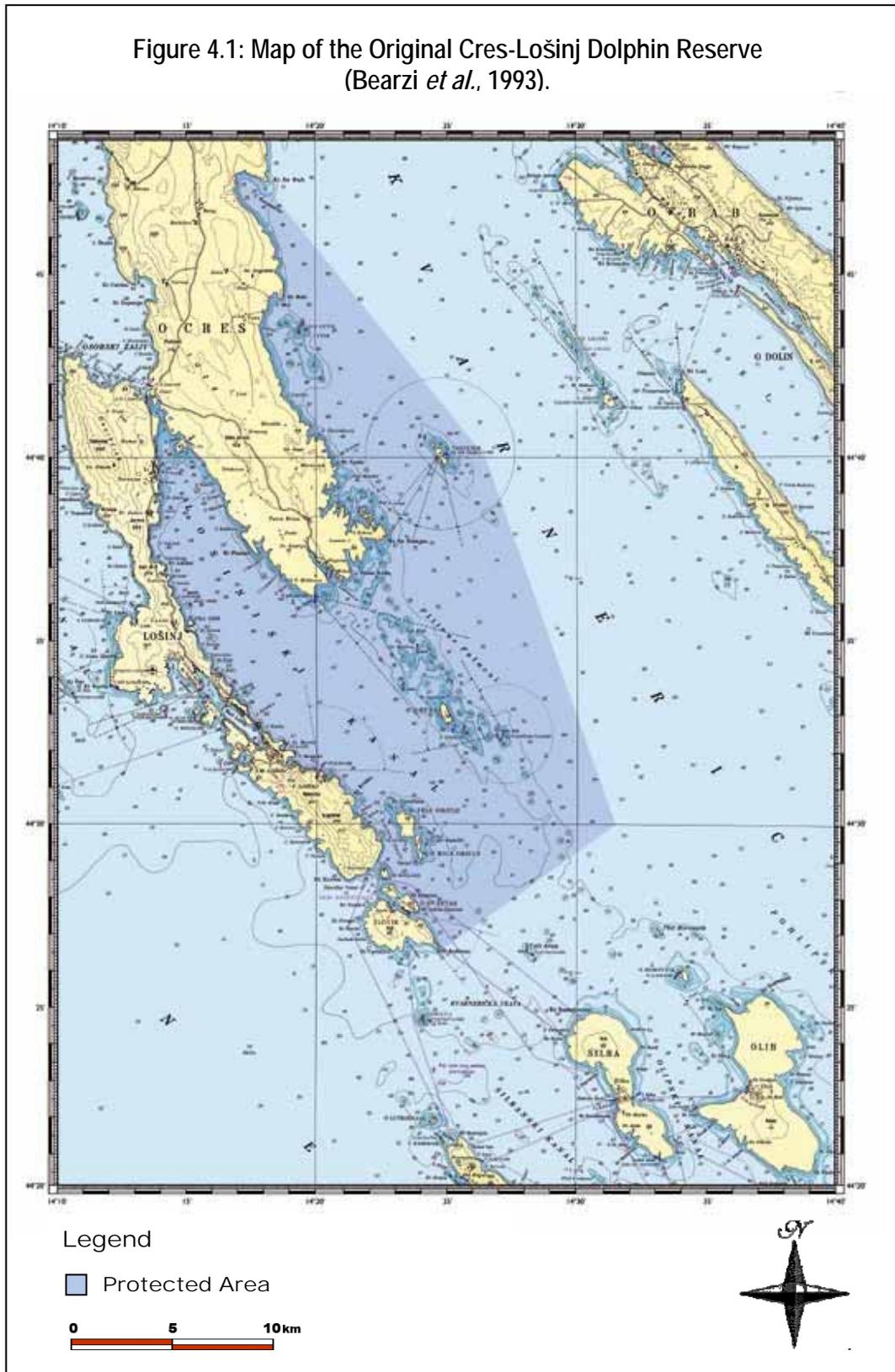
Respondent 1: We were trying to use the dolphins as a flagship species to imply that the island was a beautiful place, worth visiting, to attract tourists, and to promote some kind of better use of the natural resources.

This proposal also forwarded direct conservation measures including fishing and boating regulations. Of particular interest is the proposal for local protectionism of the fishery:

1. *'Small-scale artisanal fishing should be allowed in the protected zone by permit only to local operators, with a fixed maximum limit of permits, in compliance with the regulations in force, and with periodical monitoring of the status of the main fish stocks.*
2. *Professional fishing should be prohibited to non-local operators' (Bearzi et al., 1993: 12).*

Unfortunately, the legal side of the proposal was left undetermined. This aspect was further developed in the 'Management Plan for the Conservation of the Cres-Lošinj Archipelago (METAP Report)' (IDC, 1997).

Figure 4.1: Map of the Original Cres-Lošinj Dolphin Reserve (Bearzi *et al.*, 1993).



The 'Management Plan for the Conservation of the Cres-Lošinj Archipelago' (IDC, 1997) was compiled under the Mediterranean Environmental Technical Assistance Program (METAP), between 1993 and 1996. The work was financed by the European Commission, the European Investment Bank, the World Bank, and the United Nations Development Program. The plan examines the technical, constitutional, environmental, and socio-economic aspects of conservation of the archipelago. The main goals of the report were to promote the conservation and management of the natural, historical, and cultural resources of the archipelago, whilst evaluating schemes for sustainable development (IDC, 1997). The document itself was designed to be a practical instrument to help fulfil these goals.

The marine aspect of the plan was developed not only for dolphin conservation, but also to identify sites of benthic importance, areas used by sea turtles, and islands important for nesting sea birds. However, the restrictions suggested were confusing and misleading. The term 'scientific' interchanges with 'strict' and 'special' throughout the report, despite the fact that these terms have different implications for management. The dolphin Reserve was proposed as a 'Scientific Reserve' with the following restrictions:

- *'Only small scale traditional fishing allowed by permit only to local operators, with a fixed maximum limit of permits, following periodical monitoring of the status of the main fish stocks;*
- *No spear-fishing;*
- *Recreational boating only by permit for interpretation, or for scientific research;*
- *Nautical Sports allowed with adherence to code of conduct in the Scientific Dolphin Reserve;*
- *No diving permitted;*
- *Boats and dolphin watching tours permitted by licensed operators' (IDC, 1997: 103-104).*

The marine aspect feels like an after thought, rather than an integral part of the METAP report. This is underlined by the confusing regulations that allow motorised nautical sports, but limit recreational boating. One of the major aspects of the report was a considerable legal review, which investigated the validity of integrating terrestrial and marine protected areas into the management plan. Perhaps, the most significant issue was the identification of the possible use of sub-national designation for protected areas:

'The adoption of physical plans regulating the measures for the protection, management, promotion, and use of specially protected areas fall within the competence of a county and a municipal assembly, except in the case of a National Park or Park of Nature which are within the competence of the Parliament of the Republic of Croatia' (IDC, 1997: 158).

Due to the political instability of Croatia and the Balkan region in the 1990s, funding agencies, including the EC and World Bank, pulled out of the implementation of the project, and although locally well known and seemingly

supported⁶, the project remained unrealised. The closure of the coordinating institution, the Island Development Centre (IDC), signalled the end of the implementation of the management plan. Whilst the management plan was being written, the original Tethys proposal was being updated and modified (Bearzi, 1995). Modifications were based on two main considerations:

1. *'Despite their high level of residency in the area east of Lošinj and Cres, delimited by the proposed Reserve, local dolphins are now known to range in a larger area. Although some zones are used more often than others, and represent important feeding and breeding grounds, the dolphins seem to move from feeding ground to feeding ground, and do not use any area exclusively. Therefore, a strict zoning of limited extension may show to be ineffective, or even have a negative effect, and a more global approach should be adopted.*
2. *The major threats to the local dolphin population, which faced a dramatic reduction during the last decades, including the geographic extinction of one of the major species once inhabiting the area, are likely represented by the combined and possibly synergistic effect of habitat degradation, changes in food supply, and human disturbance' (Bearzi, 1995: 1).*

These considerations take into account the fact that dolphin home range is difficult to identify. They also indicate a move towards the protection of critical habitats, such as feeding, breeding, and nursing grounds, which is now standard practice. Respondent 2, chairman of the ACCOBAMS Scientific Committee, highlights this:

Respondent 2 [11.2004]: Identifying critical habitats for cetaceans is important. Not all habitat portions are equally important, therefore, it is essential to protect those that are. We need to evaluate if MPAs will, or will not fulfil their objectives. There are certainly other ways to control human/cetacean interactions, and these must be considered in addition to MPAs, on a case by case basis.

The modified proposal focuses on the need for further research to delineate the boundaries of the proposed protected area, thereby signalling a change from the adoption of the 'precautionary principle' of the first proposal. It also suggests that direct and incidental killing of cetaceans is negligible, and that greater threats come from disturbance by boat traffic and competition for food resources. Management suggestions include zoning of sensitive areas from the effects of boat traffic and discouraging 'dolphin watching' tourism, clearly a change from the original proposal.

Although Tethys successfully managed the ADP from its inception in 1987 until 2000, and was highly respected within the local elites, it did not shed its foreign identity. This lack of local ownership undermined the personnel and its decline

⁶ As part of the METAP plan, the Department of Philosophy at the University of Zagreb sampled 350 inhabitants, and found that 83% were in favour of the plan, whilst only 7% felt there was no need for such controls. In fact, 49% of the people sampled called for stricter controls than proposed by the management plan (IDC, 1997).

was inevitable without major philosophical changes. Respondent 1, the coordinator at that time, suggests that without legal recognition the project remained unstable.

Respondent 1: At that time we felt in a difficult position in Croatia. I wanted to be recognised as a citizen there and to work legally. So, I got a personal permit to do research, I had it two or three times, it was a stamp on my passport to allow me to research, it was not for Tethys as an organisation. We wanted to apply for formal research permits, but the information we received was that it was impossible at that time. If some people knew about us, Italians, working in Croatia they could kick us out of the country. It was a very frequent suggestion, that it was better to wait and collaborate at local level, but not to touch the institutional level... ..In the last years that I was there, there was some progress to obtain the permits. It was quite interesting, we were working in Lošinj, without trying to hide anything, journalists were there all the time, everybody knew about us because there was so much noise in the media about our activities. But, on the other hand, we could not afford to declare officially what we were doing and apply for a permit.

The two Tethys proposals were supported locally, but the absence of higher level political connections restricted their effectiveness. This is highlighted as a major factor in limiting the implementation of the proposals.

Respondent 1: I don't think we had the power to affect political decisions because we weren't recognised. We didn't have any kind of official contact with the Ministry so we couldn't be pushy in that sense. All we could do was provide the relevant authorities with the information and ideas we had, and let them do the best with that information. We were in contact with the Island Development Centre, and kept presenting our data, almost on a real time basis. Every month we would update people with presentations and meetings, so our responsibility at that time was limited to ensuring what ever we knew about the dolphins was transmitted to others. But, we didn't want to be in charge of the promotion of the marine Reserve ourselves as we didn't have the means to do so.

The decline of these proposals was exacerbated by the national situation in the late 1990s. Financial and political problems within Tethys meant that resources were not available to develop other aspects of the proposal, apart from the biological fieldwork. It was not until cooperation with Heriot Watt University in 1998, that the issue of the marine Reserve was investigated once again. Two masters thesis were undertaken in 1997-8 academic year, investigating the effects of dive tourism, and commercial fishing on the proposed marine Reserve (Mackelworth, 1998; Taylor, 1998). These theses concentrated on the social science aspect of tourism and fishery, and through the empirical work, helped to re-establish interest in the idea of the Reserve on the island. Soon afterwards, internal changes within Tethys led to a new focus for the organisation. In 1999 they announced their withdrawal from Croatia, to focus on less challenging regions of the Mediterranean. Reactively, Blue World was constructed by the ADP researchers and concerned local people. Its remit was to take over both the work of the ADP and the Reserve proposal.

4.2. The Role of Blue World 2000-2005

Between 1999 and 2001 the change over from Tethys to Blue World did not run smoothly. Despite the tense situation during the partnership, Blue World borrowed many of the rules and ethics from Tethys. Financially the situation in Blue World was precarious and certain aspects of the research were scaled back, particularly the length of the research season and work on the Reserve proposal. The speed of the crisis was exacerbated with cooperation between the two groups being dissolved a year early.

Respondent 1: Pulling out of resources occurred at the very end, when Tethys decided to leave the project to Blue World in 2000. By that time there was no reason for Tethys to keep controlling a project that seemed to be able to run under what looked to us like fine Croatian management. Furthermore, after a one-year experiment we were convinced that the double Tethys/Blue World management did not work well. Today, we know that we were quite right when we thought that the Tethys partnership or equipment were not essential for Blue World to succeed. We still feel that we left, to Blue World, a heritage that is more important than money or equipment.

In early 2001 corporate sponsorship alleviated urgent financial issues, and Blue World started to direct research towards the development of the Reserve. By the spring it became clear that the Reserve proposal was gathering momentum. A presentation of the Reserve at the European Cetacean Society (ECS) conference, held in May 2001, brought the proposal to the attention of the international authorities, in particular the ACCOBAMS secretariat. An informal meeting was arranged the following day with the ACCOBAMS secretariat, Marie-Christine Van Klaveren, and former RAC/SPA⁷ director, Marco Barbieri. This provided the first contact between Blue World and international institutions. It was at this meeting that Blue World was informed of a Croatian project presenting four islands for protection, being supported by the Principality of Monaco⁸. One of these islands, Ćutin, lies within the boundary of the proposed Reserve. The ACCOBAMS secretariat suggested that, if Blue World were to integrate this island into the Reserve proposal, then any application for funding to the Principality would be met with a positive reception. Respondent 3 identifies this as one of the key moments in the development of the proposal at international level.

Respondent 3 [05.2005]: The first meeting in Rome with Marie-Christine and Marco Barbieri, at the European Cetology Society conference in 2001, was crucial. It set us up for the funding for the Critical Habitats Report, and put us on the list of ACCOBAMS as an organisation working in the region.

⁷ Regional Activity Centre, Specially Protected Areas of the Convention for the Protection of Mediterranean Sea against Pollution (1976), Protocol concerning Specially Protected Areas & Biological Diversity (SPA Protocol) (1993) (Barcelona Convention).

⁸ The permanent ACCOBAMS secretariat is based in Monaco.

A copy of the new proposal of the Reserve (appendix I) was presented to the ACCOBAMS secretariat. It was then passed on to the Department of International Cooperation for the Environment and Development of the Principality of Monaco (DICED). Representatives from DICED then presented the proposal to the Marine and Coastal Protection Unit (MCPU) of the Croatian Ministry of the Environment the following week⁹. This was the first time that the proposal had been presented to the Croatian Authorities. Subsequently, the 'Croatian Country Report for the Fifth Annual Meeting of the National Focal Points for the Barcelona Convention', published by the MCPU, highlighted the 'Blue World initiative of the proclamation of the Lošinj aquatorium a marine park' (Trošelj, & Klasić-Stanković, 2001: 6). Finally, the proposal was also submitted as a contribution to the International Whaling Commission (IWC) scoping meeting on habitat degradation, also in May 2001 (Simmonds *et al.*, 2001).

At local level, Blue World presented the ADP and the Reserve proposal to the local authorities and invited journalists, in August 2001. Following this presentation, agreement was made that the proposal would be given to the local authorities and local community, before being formally submitted to the Ministry of the Environment. Also at this meeting, the Mayor provided a five point plan of how the City would support the work of Blue World. Respondent 4, who led the presentation that day, identifies this meeting as a key moment in the negotiation process along with the following meeting in Monaco in September.

Respondent 4 [05.2005]: *One of the key meetings was when the City Council came to the house and we gave them a presentation before Dolphin Day 2001. This is when they gave us the 5 point plan and agreed to give us the space for the centre. The second one was definitely this meeting with Marie-Christine and Fredrik Platini in Monaco. From then, the Ministry started to see us as an organisation capable of delivering something solid. These were the two key moments in my view.*

Arising from the original meeting with the ACCOBAMS secretariat at the ECS conference, Blue World was invited to Monaco to present the project at the International Conference for the Scientific Research of the Mediterranean Sea (CIESM), in September 2001. Another informal meeting was arranged between Blue World, the ACCOBAMS secretariat, and a representative from DICED. Blue World was informed that if a project was submitted for funding, the Monegasque government would approve it through the Croatian Ministry of the Environment. This meeting cemented a key relationship between Blue World and ACCOBAMS (see section 6.3 for the role of international regimes).

During the winter of 2001-2002, the proposal for, 'The Creation of the Cres-Lošinj Dolphin Reserve'¹⁰ (appendix I) was completed. It was submitted to the

⁹ The proposal was presented to the Croatian government at the 'Pan-European Biological and Landscape Diversity Strategy', meeting in Strasbourg, May 2001.

¹⁰ The Cres-Lošinj Dolphin Reserve Kvarnerić, Northern Adriatic: Proposal for creation of Special Zoological Reserve.

Croatian State Institute for Nature Protection (SINP) in February 2002. The proposal was supported by the Croatian Natural History Museum, Zagreb (CNHM), and ACCOBAMS. This 'new' proposal updated the original proposal of 1993 using further research from the ADP, between 1995 and 2001. It also incorporated information from other sources on submarine habitats, sites of archaeological importance, sea bird nesting sites, and sea turtle sighting and stranding data. What was significantly different from previous proposals was the inclusion of a comprehensive review of international¹¹ and national¹² environmental law. Furthermore, the proposal provided the basis for the designation through the appropriate legislation:

'It is proposed that the County of Primorsko-Goranska designate the waters East of the Cres-Lošinj archipelago as a marine Reserve for the protection of cetaceans, (Annex I) in accordance with the law for Nature Protection (1994), (Official Gazette No. 30/94), with the establishment of a 'Special Zoological Reserve'. This status will allow for the protection of the area due to the presence of one or more protected species that are acknowledged as under threat, thus prohibiting actions that may cause disruption to those species for which the Reserve is designated' (Mackelworth et al., 2002: 2).

At that time, the establishment of a 'Special Zoological Reserve' was declared by the county assembly. Significantly, this designation allowed for the municipal authorities to take over the management of the area by creating a local management institution. Changes to the law in 2005 have, however, resulted in this form of designation being declared by the Ministry of Culture. Despite this, there remains the possibility of the development of management at county or local level. This type of designation is discussed in greater depth in section 6.2.

The Reserve proposal was also presented at the plenary Meeting of the Parties (MOP1) of ACCOBAMS in Monaco, February 2002. The Lošinj-Cres area was recommended, in the international priorities for implementation 2002-2006, as one of the areas for the implementation of 'pilot specially protected areas' containing critical habitats for cetaceans (ACCOBAMS, 2002a). The Croatian representative officially expressed the interest for Croatia to start actions for the development of the Lošinj Reserve, including its inscription as part of the Emerald network of the Bern Convention (ACCOBAMS, 2002b). In May 2002, the Monegasque government provided funding, through the Croatian Ministry of the Environment, for 'The Identification of Critical Habitats and the Analysis

¹¹ In the period between the last Tethys proposal, in 1995, and the new Blue World proposal, in 2002, Croatia had ratified many international conventions and agreements these included: Convention of Biological Diversity, ratified 1996; Convention on the International Trade in Endangered Species, succession 1999; Convention on the Conservation of European Wildlife and Natural Habitats, succession 2000; ACCOBAMS, ratified 2000; Convention on Migratory Species, ratified 2000; Convention for the Protection of the Mediterranean Sea, ratified 1998 (Trošelj, & Klasić-Stanković, 2001).

¹² Law for Nature Protection, 1994 (Official Gazette No. 30/94). National Strategy and Action Plans (1999) calls for the development of protected areas for protected species; protected areas for all species of dolphins; and, the estimation of the size, population trend, and protection of dolphins through the use of a pilot marine park.

of the Management Procedures for the Future Lošinj-Cres Marine Protected Area', (Critical Habitats Report) by Blue World (see appendix II for the executive summary of the Critical Habitats Report). This report combined biological data with societal aspects of the Reserve for the first time.

Blue World's position was secured further by the development, with the cooperation of the City authorities, of the Lošinj Marine Education Centre (LMEC), in the summer of 2003. The centre has become an important focal point and source of local community pride. It has also provided a venue for meetings organised by Blue World. In September 2003, the Reserve proposal was presented to the local community at a sustainable development meeting co-hosted by Blue World. Finally, in October 2003, Blue World was invited to the annual meeting of the local fishery guild where the concept of the Reserve was presented to a mixed response. It was at this point, that it became obvious that a significant public awareness campaign was required to promote the Reserve with local stakeholders, these negotiations are followed in depth in Chapter 6.

Box 4.1: Personal Note:

With hindsight, the key moments for the proposal were the three meetings highlighted by my colleagues. The meeting in Rome in May 2001 resulted from a personal contact between the ACCOBAMS secretariat and Respondent 3. At that time, there was some financial support available from the Monegasque Department for International Cooperation for the Environment and Development, through the Croatian Ministry of the Environment, for the development of protected areas in Croatia. Coincidentally, the husband of the ACCOBAMS secretariat was head of the Department at the time. The follow-up meeting in Monaco, in September 2001, sealed the finances for the development of the proposal, and incidentally this thesis. It also provided a tangible link between the work being undertaken on Lošinj and the international community.

At local level, prior to the presentation in August 2001 to the City authorities, Blue World had not received any form of financial or moral support. It was a surprise when they presented the 5 point plan at that meeting.

4.3. The Science Case: the Critical Habitats Report, 2003

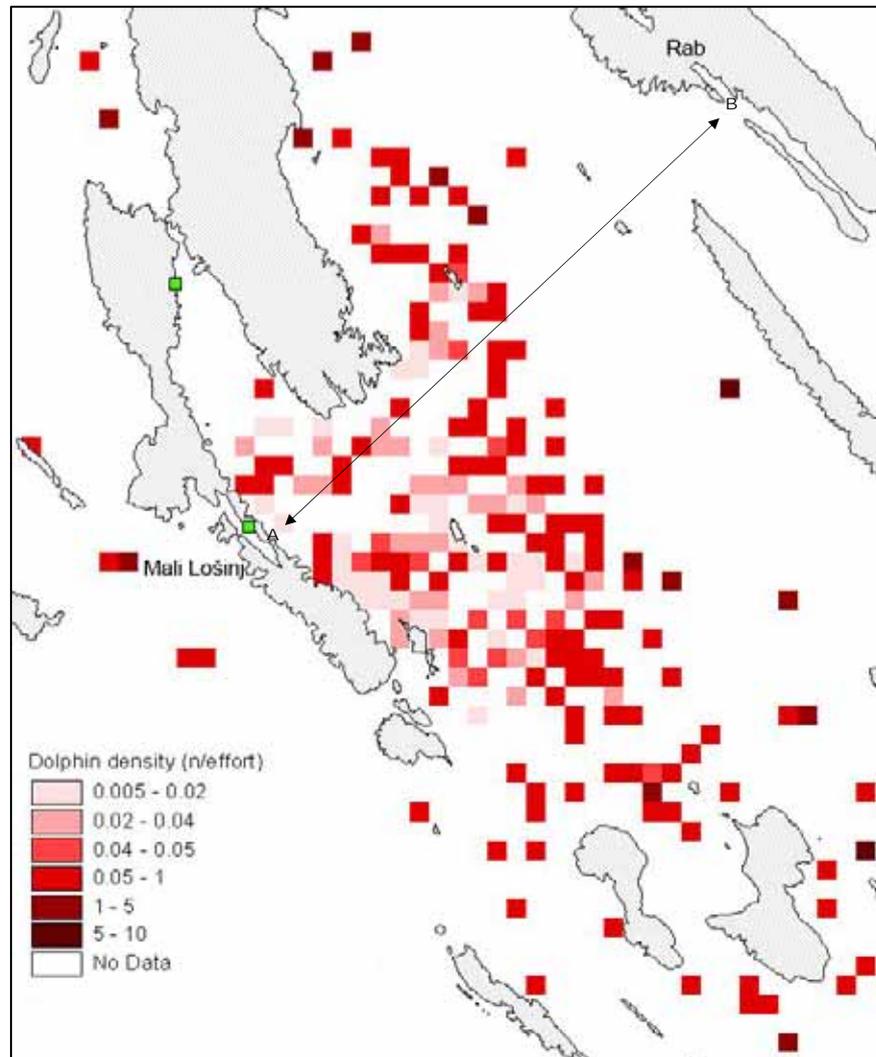
Funding secured from the Monegasque government financed the development of the 'Critical Habitats Report'. Prior to the research for this report, most negotiations regarding the Reserve had been undertaken at national and international level. It was in the process of carrying out this report that contacts with most local stakeholders were initiated. The primary goal of the report was to combine the biological aspects of the reserve with the social context, and provide clear and understandable advice for the future management of the area. The aims of the report were five-fold:

1. *'the identification of specific areas, within the Kvarnerić, that may be regarded as critical habitats for all protected species, with particular emphasis on bottlenose dolphins;*
2. *based on the available information, the identification of the factors that may affect dolphin distribution;*
3. *identify the processes for the development of the Reserve;*
4. *inform the public and analyse feedback regarding the Reserve;*
5. *recommend methodology to instigate the Reserve to ensure the highest degree of success for its objectives'* (Mackelworth *et al.*, 2003: 7).

Although the report focussed on the common bottlenose dolphin (*Tursiops truncatus*) population, it also collated information for other protected habitats and species in the area. Of significant importance, were the submarine corallagenous habitats around Čutin Island, islands providing sea bird nesting and roosting sites, and use of the Reserve area by sea turtles.

The report analysed bottlenose dolphin data collected from 1995 to 2003. In total 681 surveys were undertaken, with over 32,457 km covered, and 401 encounters with dolphins were recorded. Dolphin distribution was analysed according to certain natural variables: water depth, bottom substrate variability, submarine slope, and distance to the coast. Of these, only depth was found to be highly significant, and slope to be significant. Greater depth and low slope was hypothesised to be related to the habitat of the preferred prey species, hake (*Merluccius merluccius*). Three anthropogenic variables were also analysed: distance from marine petrol stations, distance from the direct route between Mali Lošinj and Rab, and known trawling areas (see figure 4.2). The former two variables were found to have a significant negative effect on dolphin distribution, whilst, the latter had a highly significant positive effect, possibly reflecting the overlap of target species for both dolphins and trawlers. The significant negative effect of marine petrol stations and the direct route between Mali Lošinj and Rab was indicative of disturbance by boat traffic. This was particularly noted in the years 2001 to 2003 where dolphins showed strongest avoidance of these areas. This correlated to the increased number of pleasure boats in the summer seasons in those years (Fortuna, 2006).

Figure 4.2: Weighted Dolphin Distribution - Critical Habitats (Fortuna 2006).



Legend

- Marine Petrol Stations
- A Eastern entrance to Mali Lošinj harbour
- B Entrance to Rab City harbour
- ↔ Represents the direct route between Mali Lošinj and Rab

0 5 10km



Throughout the proposed Reserve large areas of sea grass (*Posidonia oceanica*) with its associated marine life can be found. There are also areas with a highly developed benthic community dominated by corals, sea-fans, and sponges. Work carried out by the Natural History Museum of Rijeka, around the island of Ćutin (Arko-Pijevac *et al.*, 2003), was included in the report, as per the agreement between Blue World and the ACCOBAMS secretariat (section 4.2). The submarine area of Ćutin Island is one of only three locations in the Kvarner Bay known to host facies of the gorgonian *Paramuricea clavata* (see figure 4.3). Other protected species are also found concentrated in this area including Red Coral (*Corallium rubrum*), the short tailed lobster (*Palinurus elephas*), and sea dates (*Lithophaga lithophaga*, *Pholas dactylus*¹³). The museum proposed the area around the island of Ćutin be protected. Within their original report they also suggest that this area could be included in a larger protected area:

'due to the numerous proposed natural sites within the wider region of Cres-Lošinj archipelago, the option of inclusion of the islands within a larger protected area, by using of zoning as a tool in setting the appropriate protection regime, must be seriously considered' (Arko-Pijevac *et al.*, 2003: 55).

The archipelago has also be on an important trading route, between Greece and Venice (section 3.2.2.), and it is locally believed that a large number of important wrecks remain undiscovered. In 1999, an original Greek bronze statue of 'Apoksimenos', an athlete scraping himself after competition, was discovered near the island of Orjule. It is believed to be one of only six Greek originals to be discovered in the Mediterranean region. The site of the discovery of 'Apoksimenos'¹⁴ is also encompassed by the proposed Reserve (see figure 4.3).

The Cres-Lošinj archipelago provides nesting and roosting sites for several species of sea birds¹⁵, of particular importance are the Common Tern (*Sterna hirundo*) and the European Shag (*Phalacrocorax aristotelis*¹⁶). Within the proposed Reserve area there are between 100-120 pairs of Common Terns (Benussi, 1986) nesting on the islands of Ćutin, Trstenik, Osir, Oruda, Palacol, and Orjule (see figure 4.3), this species is considered as low risk, near threatened status¹⁷. The European Shag has between 155-188 nesting pairs in the region on the islands of Trstenik, Oruda, Palacol, and Orjule. However, numbers have been declining (Benussi, 1991), and this species is also considered as low risk, near threatened status (see figure 4.3). The Gull Billed Tern (*Gelochelidon nilotica*), which historically nested on the island of Palacol in the region, has now been recorded

¹³ *Paramuricea clavata*, *Lithophaga lithophaga*, *Pholas dactylus* are protected under appendix II, Bern Convention; *Posidonia oceanica*, *Pholas dactylus*, *Lithophaga lithophaga* are protected under appendix II Barcelona Convention; *Corallium rubrum* and *Palinurus elephas* are protected under appendix III of the Barcelona Convention.

¹⁴ The Apoksimenos site is protected under the Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris (1972).

¹⁵ All birds species are protected under the Nature Protection Act (Official Gazette 70/05, 2005).

¹⁶ *Phalacrocorax aristotelis* is protected under appendix II, Bern Convention and under appendix II of the Barcelona Convention.

¹⁷ Defined by the IUCN red list as: 'species close to the threatened thresholds or that would be threatened without ongoing specific conservation measures'.

as regionally extinct (Benussi, 1986). Numerous other species have been regularly sighted, including the Short-toed Eagle (*Circaetus gallicus*), the Golden Eagle (*Aquila chrysaetos*), and the Peregrine Falcon (*Falco peregrinus*), all are considered as vulnerable¹⁸.

Table 5.1: Bird Nesting Sites with in the proposed Lošinj Dolphin Reserve

Island	Common Tern (<i>Sterna hirundo</i>) (Benussi 1986)	European Shag (<i>Phalacrocorax aristotelis</i>) (Benussi 1991)
Ćutin	30-35	
Trstenik	30-40	6
Oruda		63
Palacol	20	21
Mali Osir	10	
Male Orjule	5-10	5-8
Total	95-115	95-98

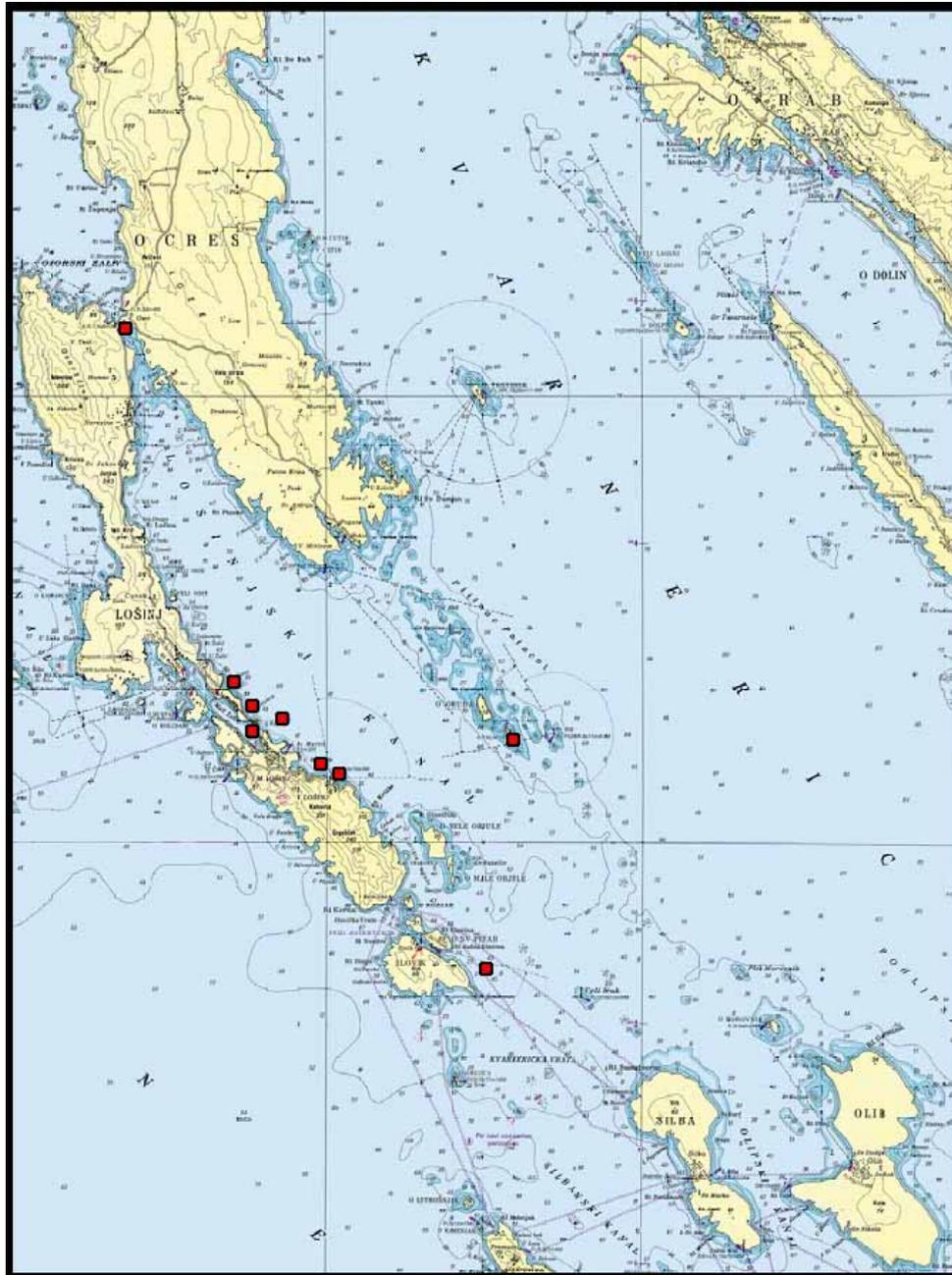
The islands within the proposed Reserve provide significant habitats for those species of sea birds nesting upon them. These species are being placed under increasing threat from disturbance by tourists visiting the islands, particularly in the summer season (Benussi, 1991).

¹⁸ Defined by the IUCN red list as 'species threatened with global extinction'.

The Northern Adriatic is classified as a critical habitat for foraging and hibernation of adults and juveniles of the Mediterranean Loggerhead Turtle (*Carretta carretta*)¹⁹ (Lazar *et al.*, 2004). The loggerhead turtles of the Ionian-Adriatic management sub-unit are considered as a resident species in the Cres-Lošinj archipelago, due to their year round presence (Lazar *et al.*, 2003). The main threat locally to the population is interaction with fisheries; by-catch is estimated to be between 10 and 100 turtles per trawler per year in the Kvarner region alone. Direct mortality is estimated to be around 12.5% (Lazar & Tvrtković, 1995). Although there is no direct food competition, between trawlers and turtles, trawling has a devastating effect on the benthic communities that represent foraging habitats for loggerhead turtles, hence, the overall impact of the trawl fishery may be higher (Lazar & Tvrtković, 1995). Data on interaction with gillnets, long-lines, and collisions with speed boats do not exist for the Kvarner region.

¹⁹ The loggerhead turtle is considered as endangered: facing a high risk of extinction in the wild in the near future throughout its entire range, by the IUCN. All sea turtle species are protected under the Nature Protection Act (Official Gazette 70/05, 2005). All Sea Turtles are protected under appendix II, Bern Convention; and, appendix II of the Barcelona Convention. The loggerhead turtle (*Caretta caretta*) is a priority species under annex II of the Habitats Directive.

Figure 4.4: Loggerhead Turtle Sightings & Strandings within the Proposed Reserve (Mackelworth *et al.*, 2003).



Legend

■ Individual Sightings or Strandings

0 5 10km



The Critical Habitats Report ran to over 70 pages, of which approximately one third analysed the possible management structure and local perceptions of the Reserve. A 'layman's' executive summary was condensed, and drafted from the report. This executive summary consists of ten pages, with maps and simple explanations (appendix II). Within it are proposals for possible management techniques within the area, many of which mirror what had been previously proposed such as local protectionism for the artisanal fishery. Other issues such as zoning for permanent and temporary no take zones had come up in discussion, particularly with professional fishermen, and are further investigated in Chapter 6. Management proposals for tourism include a statutory code of conduct for boats in the presence of dolphins, speed limits in critical habitat areas, and limits on diving on sensitive areas (for full proposals see appendix II). Finally, the summary recommended the designation of the Reserve based on current scientific information, following the precautionary principle. One other significant change, which was revealed in interviews, was the need for a clear jurisdictional boundary of the Reserve. As a result, the report recommended a pragmatic change in the boundary to follow that of the eastern jurisdictional limits of the City of Mali Lošinj, thereby providing clarification for future enforcement. The executive summary was a key discussion document used both for the development of the Reserve, and for this thesis. Dialogue developed from this document is focussed on in Chapter 6.

4.3.1. Current Biological Knowledge

Since the completion of the Critical Habitats Report, in December 2003, some studies have continued and others have been initiated. The following section briefly reviews four studies undertaken as part of University theses, in cooperation with Blue World.

In the research season of 2004, twenty-one encounters between common bottlenose dolphins (*Tursiops truncatus*) and vessels were observed to ascertain the effects of boat disturbance on dolphin behaviour. Randić (2004) found that the impact of vessel presence and behaviour has a significant effect on all dolphin groups, but particularly those with calves. The behaviour of the vessel affects the frequency and the intensity of the avoidance response of the dolphins. Boats that actively 'chase' dolphins have a significant effect on the group, resulting in avoidance behaviour, such as long dives, increased respiration rates, increased swimming speed, abrupt changes of direction, and shielding of young. Randić (2004) suggests that behavioural change was directly related to the power of the vessel rather than its speed, suggesting that engine noise may be the primary source of disturbance for the animals.

Stewart (2004) analysed the stomach contents of 7 common bottlenose dolphins (*Tursiops truncatus*) found in the Lošinj region to investigate the potential for conflict with the artisanal fishery. Within the Lošinj area, resource overlap at species level indicates a very high potential for direct resource competition. Stewart (2004) identified the 'other blue fish' category, consisting of two species of

horse mackerel (Atlantic horse mackerel (*Trachurus trachurus*) and Mediterranean horse mackerel (*Trachurus mediterraneus*)), as having the highest overlap between dolphins and the commercial fishery.

'The resource category of 'other blue fish' is where the greatest dolphin-fisheries direct resource competition occurs in the Cres-Lošinj area. Thus, this is the fishing method at (potentially) the greatest conflict with dolphins through direct resource competition' (Stewart, 2004: 83).

This species is solely targeted by pelagic purse seine boats, all of which are external professional fishers. This finding was in contrast to the previous data that implied that the favoured prey species of this region for bottlenose dolphins was hake (*Merluccius merluccius*) (Fortuna, 2006).

From November 2004 to October 2005, within the proposed Reserve, sea ambient noise (SAN) was recorded and analysed (Rako, 2006). A total of 180 recordings were made, during each recording vessel presence was noted. In the same period a total of 106 common bottlenose dolphin (*Tursiops truncatus*) groups were encountered. Analysing the distribution of the dolphin encounters with levels of SAN, results demonstrate a strong seasonal avoidance of those regions affected by high anthropogenic use. Rako (2006) found the areas that large motor cruisers and small speed boats frequent, such as marine petrol stations, and the direct route between the islands of Rab and Lošinj were more significantly avoided by dolphins than other regions in the summer season. Significantly, consistent avoidance of these areas may have a long term effect by pushing the dolphin population further away from their critical habitats.

Finally, Fortuna (2006) found, over a nine year period of monitoring 1996-2004, the trend in abundance of the Kvarneric common bottlenose dolphin (*Tursiops truncatus*) population showed a clear and significant decline of about 38%. The risk of extinction of this population over the next 60 years is estimated at 35%, assuming that all demographic and environmental factors remain stable. The causes of such decline are uncertain; however, it seems reasonable to suspect that changes in nautical tourism fluxes, and overexploitation of marine resources, following the end of the war, can be included among them. Fortuna (2006) suggests that the current level of fatal fishery interaction is unsustainable and efforts should be made to ensure the survival of the adult specimens of the dolphin population. This is in opposition to previous data, which suggests that the effect of direct dolphin mortality due to fishery interaction was negligible (Bearzi, 1995). According to the IUCN framework on endangered populations, the Kvarneric common bottlenose dolphin population should be proposed as 'endangered' under Criterion E²⁰. As Fortuna (2006: 236) points out, the boat traffic that is attracted by the dolphins may be one of the factors that drive them away:

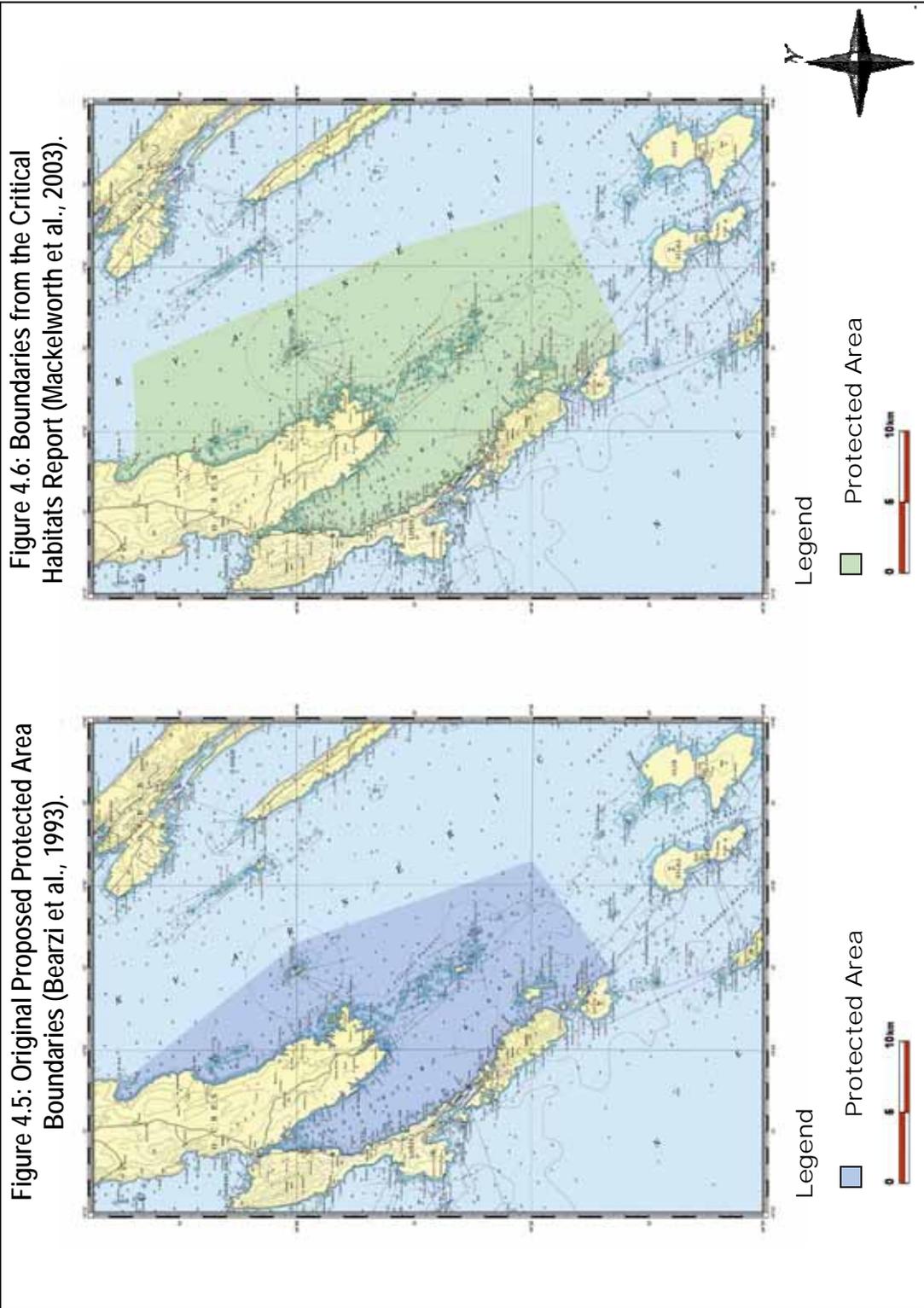
²⁰ Quantitative analysis showing the probability of extinction in the wild is at least 20% within five generations, whichever is the longer (up to a maximum of 100 years) (IUCN, 2005).

'In the short term such anthropogenic pressure could lead to a very undesirable scenario where dolphins, that in the past played a fundamental role in promoting tourism, will leave the area and move elsewhere, due to the actions of unregulated boaters and visitors'.

4.4. Resource Characteristics

The nature of the marine environment complicates the resource system characteristics for CPRs. As a result, certain critical enabling conditions will resonate with resource characteristics of the Reserve more than others. The absence of physical boundaries undermines the ability of the management institution to exclude users, the alien nature of the environment for humans makes uncertainty inherent, and finally, connectivity makes marine systems vulnerable to external influences from both marine and terrestrial sources (Carr *et al.*, 2003; Jones, 2002). The nature of cetaceans creates further problems due to the mobility of the animals and the inherent unpredictability of their lifecycle (Reeves, 2001; Thompson *et al.*, 2000). Yet, worldwide cetacean MPAs have been designated and are being managed (Hooker & Gerber, 2004).

The original boundaries presented by Bearzi *et al.* (1993) and Mackelworth *et al.* (2002) are presented in figure 4.5. The revised boundaries from the Critical Habitats Report are presented in figure 4.6, these are the boundaries that have been accepted as the current best practice, and will therefore be referred to in this thesis. The pragmatic change in boundaries allow for greater clarification of stakeholder rights, and the responsibilities of the relevant authorities. This change, fortunately, does not scientifically undermine the original boundaries as it increases the area itself. Internally, no-take zones, speed limits, and limited access have all been suggested as forms of control, but as yet none have been agreed. The debate about zoning continues in Chapter 6.



4.4.1. Small size

When compared to some MPAs the size Lošinj Dolphin Reserve, at 525.8 km², is relatively small, the Great Barrier Reef Marine Protected Area is 34,380 km². Compared to others it is relatively large, the Miramare Marine Reserve, Trieste, is only 0.3 km². Kelleher *et al.* (1995) suggest that the median size for an MPA is around 16 km². Comparing the size of the Lošinj Dolphin Reserve to two other protected areas for cetaceans, the Cardigan Bay Special Area of Conservation, at 958.6 km², and the Moray Firth Special Area of Conservation, at 1,513.4 km², it is consistent for the common bottlenose dolphin in Europe. Other protected areas for cetaceans, such as the Southern Ocean Sanctuary, at 50 million km², and the Indian Ocean Sanctuary, at 103.6 million km², of the IWC are massive. Although these are specifically devised for the protection of cetaceans from direct interaction, they do not protect habitat. The Pelagos Sanctuary (9,000 km²) in the Ligurian Sea is a large sanctuary based on similar principles to the IWC sanctuaries, but with greater focus on indirect human-cetacean interactions (Scovazzi, 2003).

Locally, the Reserve is regarded as quite large by the islanders. As for all protected areas enforcement is related to size, the geographic characteristics of the area, and the available technology. The President of the chamber of commerce, questions the enforceability of an area the size of the Reserve.

Respondent 5 [03.2005]: *It's a big area and the police must control the whole aquatorium of Cres and Lošinj. It is not easy. I think that it is very difficult to enforce speed limits or fishing rights across the area, it is practically impossible to control.*

The hilly nature of the islands surrounding the Reserve, coupled with the historic military presence, and border aspect of Lošinj gives some advantages to the 'noticeability' aspect of monitoring. One asset is the presence of land based radar. Radar is located on several of the hills on the island, and although is currently controlled by the military, it is available to both the marine police and harbour authorities. Another feature of the area is the network of formidable Austrian lighthouses. Not only do they provide platforms for observation, but also remote power sources to supplement remote sensing. Ease of enforcement is discussed further in section 6.4.3.

The size of the Reserve is directly related to the identified critical habitats of the dolphin population and the jurisdictional boundaries of the municipality of Mali Lošinj. This raises the issue of the scientific validity of the size of the Reserve to sufficiently protect the whole dolphin population. Opinions coming from the scientific community are mixed. Respondent 1, the primary author of the original proposal, suggests that the image of the Reserve is more important in changing localised pressures, than the conservation element itself.

Respondent 1: *If you ask me, does such a small scale protected area have the potential to change anything as far as the local dolphins are concerned? Yes and*

no. It depends on what the threats are in the nearby areas, and how far the dolphins move. The problems for the dolphins in the area are not so dramatic after all, and are rather global in fact. They don't originate on the island of Lošinj. It's certainly over-fishing at the larger scale, climate change, and pollution that affect the whole northern Adriatic sea. These are not problems that can be solved by a small size protected area, so in that sense it doesn't help. But, it does help as long as it affects the way that humans approach natural resources, locally. It's mostly for public awareness reasons and not for conservation reasons... ...[yet, B]y protecting even a small area containing important ecosystems, then the whole surrounding areas could benefit from that, no matter the species. The fish and the dolphins themselves can benefit.

In terms of global threats the Reserve cannot solve issues of regional over-fishing or pollution. Respondent 3, the research director of Blue World, despite recognising the local threats to the population (Fortuna, 2006), is even more sceptical.

Respondent 3: If the aim of the MPA is to protect this population then I don't think that it can be achieved. The MPA is small and the population is using a bigger area, but if the aim of the MPA is to mitigate impacts from local anthropogenic activities, which can be important for the locals and can be really adverse for the dolphin population, then the MPA can be successful within the boundaries... ... If you look at the IWC southern Ocean sanctuary it's not working either and it's huge, it's the biggest. Conceptually it is not working because there are lots of species that are migratory, so you protect part of their home range, but you cannot protect other areas important for feeding and reproduction. Bottlenose dolphins do not migrate, or have special areas for feeding or reproduction. We have here some spots that are good for feeding, which we know that they use frequently. Probably they have similar areas within the Adriatic. I think that the only effective result would be to mitigate local anthropogenic problems, it's a help at least. I don't particularly believe in MPAs generally.

Size is relative to the opinion of the observer. Invariably, size is negotiated between what is valid for the conservation aim, what is practical to enforce, and possible to defend socially.

4.4.2. Well defined boundaries

On paper the external boundaries of the Reserve are clearly defined, following the jurisdictional limits of the eastern section of the municipality of Mali Lošinj (see figure, 4.6). The decision to link the boundary to local planning level allows for the development of management at local level, rather than county or national level. The captain of the marine police for Lošinj, agrees that jurisdiction is an issue, but maintains that even cross-border cooperation will result in effective enforcement.

Respondent 7 [03.2005]: Jurisdiction is always a problem; at least by putting the boundaries the same as Mali Lošinj you reduce one problem of physical area.

This proposed protected area is Mali Lošinj jurisdiction, although we do cooperate with the Rab police who may enter our jurisdiction, so it is not a problem to enforce. The other problems you will have will be related to people's understanding of the rules.

Comments of the Lošinj harbour master do not entirely complement the previous opinion. He suggests that clear jurisdictional boundaries clarify the responsibility of the enforcement agency, but he does agree that public awareness of the boundaries and rules is essential.

Respondent 6 [02.2005]: *It is important to keep the Reserve within one jurisdiction, otherwise each organisation will say that it is the other's duty to deal with any problems... ..But, the most important thing is to educate people. Without education you cannot have a protected area and expect to enforce it correctly.*

Physically defining the boundaries on the sea is not only important for enforcement, but also for public awareness, however, this presents logistical problems. In a smaller area, such as the limited access Miramare Marine Park, the use of buoys every hundred metres to delineate the park is possible. However, Lošinj is substantially larger and will maintain its multiple-use features. Buoys are also expensive and difficult to maintain, and may be regarded as an aesthetic blight in the Reserve.

It would be difficult to enforce rules that are not widely known, particularly if there are many visitors accessing the site. There is a legal requirement to place the Reserve on nautical charts (Nature Protection Act, 2005 (NPA, 2005): Article 24.3), but applying this to software for private GPS units can also help to inform visitors of the boundaries. Other new technologies provide a possible answer for the dissemination of boundaries of the area. Suggestions have included the development of text messaging services through mobile phones. The area is covered by two national networks providing the opportunity to develop such technologies. When entering the area, covered by the relevant mobile phone base stations, a text message can be sent informing the user that they are approaching a protected area giving them the GPS coordinates. Another technology that has been discussed is the development of a wireless local area network relayed through point sources, such as lighthouses.

The definition of boundaries changes the resource system from open access to a CPR, allowing for the definition of rules for excludability. However, identifying rights of exploitation is easier for some users than others, for instance the development of exclusive rights for the local artisanal fishery is an obvious example. A local fisherman, highlights this issue:

Respondent 8 [09.2004]: *'I don't want people to fish in my garden if the garden is good'. In this respect, it is normal that I want people to stop using my garden. I know how to take care of my garden as I live here. These others that are*

fishing in our garden, they have finished all there own gardens, so why should they have the right to fish here?

Non-extractive uses, such as tourism, are more difficult to define. Tourism, in its many forms, provides the greatest challenge to the area. The economic importance of this sector makes any restrictions a delicate issue. Suggestions have been made with regards to the rights of access for professional tour boats attracted to the area by the dolphins. Respondent 9 suggests some form of licensing to control rights of access.

Respondent 9 [02.2005]: *Maybe it would be a good idea to have some agreement with people with tourist boats, to arrange some license. This, this and this boat can drive tourists here, but not a boat from Pag [one of the neighbouring islands]. Some form of license and agreement should be made to teach them how to drive around dolphins.*

The issue for controlling independent tourists remain. Creating rules limiting access for tourism in MPAs are notoriously difficult to achieve and enforce. When tourists pay a fee to enter a protected area they fulfil their right of access and in many cases assume that they have priority over other users. The multiple-use aspect of the Lošinj Dolphin Reserve may require the definition of boundaries or zones within the Reserve. However, the multiple tourist users in Lošinj make these issues even more complex and difficult to define. Internal rules should still exist to govern their behaviour, particular where there are sensitive areas vulnerable to overuse. Sensitive areas such as the submarine area of Čutin Island require greater protection; however this area is also one of the major diving attractions for the archipelago.

Respondent 6: *Cutin islands should be protected, they are a gem. They need to be protected from divers and from anchoring boats. The rules need to be clear and we should find out some way to clearly define where people can and can't go.*

Pragmatically making boundaries within the Reserve based on lines of latitude and longitude, or coinciding boundary lines with significant land features for reference may help compliance. However, this may only be applicable in clearly defined areas, such as a submarine wall or reef, areas that are critical habitats for the 'Lošinj' dolphins may more difficult to delineate.

4.4.3. Low levels of mobility

Whilst the majority of cetaceans are migratory some species, for example coastal dolphins, can be regarded as highly mobile species that demonstrate a degree of site fidelity (Bearzi *et al.*, 1992; Cockcroft, 1994; Grellier *et al.*, 1995; Ingram, 2000; Wilson *et al.*, 1999). To that extent it may be possible to provide protected areas for these resident or non-migratory species (Reeves, 2001). Field based studies have revealed that individually identifiable bottlenose dolphins exhibit a high degree of residency in certain core areas (Grellier *et al.*, 1995; Ingram, 2000;

Wilson *et al.*, 1999). Bottlenose dolphins do show signs of site fidelity, in the case of the 'Lošinj' dolphins certain individuals have been recorded in the area for several years. The residency of these animals has even led to the sub-division of the population into 'northern' and 'southern' groups, according to their preference within the area. There is little doubt that this area does provide important habitats, particularly for feeding (Fortuna, 2006). High site fidelity is typical of coastal cetaceans. Hence, the character of the species and population must be taken into account when devising applicable MPAs.

Respondent 4: Not all cetaceans are highly mobile. There are species that are less and others that are more mobile. Some of them live in quite confined areas. I feel that some MPAs may work for some species, and for others they may not. It really depends upon how they are designed, with what level of knowledge, and what are the possibilities of real management of the area itself. The bigger the area you have to cover your species, the better the possibility that it will work. But, it also depends on what type of areas are you protecting, the feeding grounds, the breeding grounds, or if they are feeding and breeding all around. In general the concept of MPAs for cetaceans can work if it is clearly developed on what and why you want to do it. In terms of this area here, it is actually the biggest protected marine area in the Adriatic, and in these terms it will cover more area than all of the national parks all together in Croatia. In these terms I think that the MPA can help with mitigation. It's a question of defining which of the features are the most important or key factors that are helping the species to survive. If you look at all the negative affects they are facing in terms of pollution, overfishing, disturbance etc., some of them you can mitigate with MPAs and others you cannot. If it has an impact and makes some change then I think that the MPA should and could work.

Does the movement of the dolphins within and through the area undermine the definition of the Reserve? The dolphins are being used as a flagship species to protect the resource system. One could argue that mobility is not an issue as the Lošinj Dolphin Reserve is a resource system providing many and varied resource units, only one of which is the dolphins. The objective of the Reserve is to conserve the dolphins, yet cetacean MPAs are often utilised in umbrella conservation and designated as a pretext to manage all human activities in an area (Hooker & Gerber, 2004).

Respondent 2: There are differences between intentions and actions. MPAs are being used to manage human activities to enhance cetacean conservation. So on the one hand cetacean conservation is a bona fide objective of the MPA. On the other, their presence is also used as a powerful pretext to bring forward the concept of managing human activities in the sea.

Recent scientific work, carried out since the Critical Habitats Report, suggests that the dolphins are moving away from this region. This in turn, may undermine the reasons for the development of the Reserve. However, as the local authorities and tourist board have been invested heavily in promoting Lošinj as 'the island of dolphins' (see plate 3.2) there remains a pragmatic reason

to maintain the Reserve once it is designated, regardless of whether dolphins frequent it or not.

4.4.4. Possibilities of storage of benefits from the resource

Habitat protection helps to maintain the underlying resources of the system. Effective protection of the critical feeding habitats for dolphins, through the use of some form of fishing limitation, may also provide for the local artisanal fishers. Increasingly NTZs are being promoted as methods to store 'resources' within MPAs (Roberts & Hawkins, 2000). Acting as harvest *refugia* they provide a simple method to maintain fish stocks, particularly territorial or sessile species, and are often used as insurance policies to over-fishing. NTZs are also one of the easiest forms of zone in which to detect fishing infractions (NOAA, 2005). Although they are socially contentious methods in many areas, on Lošinj more and more stakeholders are considering them as a viable method to increase fish stocks. Of the ten fishermen interviewed, six were in favour, and one against some form of NTZ. This may be motivated by the decline in fish catch. Despite the fact that there is little scientific data on fish resources in the area, anecdotal evidence suggests that fish stocks are in decline.

Respondent 10 [09.2003]: *People are now turning to desperate methods of fishery because you can't fish in a classic way. This is the last step. I think we are keeping the fish population at its bottom, it can't get any worse. Maybe it can go worse with pollution, I don't know. But, you don't have any big fish, it has been over fished.*

The President of the fishery guild has been promoting the development of temporary closed areas over the last few years, yet there has been little government support for the idea.

Respondent 11 [09.2004]: *There is no better protection than a temporary closed area, but nobody cares about these temporary closed areas for fishing, because the government decided not to control these periods, so there is no control again.*

Behavioural sampling of the dolphin population has indicated that the animals spend much of their time foraging in this area (Bearzi & Politi, 1999). Hence, an increase in available fish resources will benefit both the fishery and the dolphins. This may make the movements of the dolphin population more predictable.

Respondent 1: *You reinforce fish stocks and the nearby areas can benefit from that even if they are not protected. It is very clearly shown in the scientific literature that this happens. This is not directly related to dolphin conservation actions, but if the way of managing the protected area affects the environment as a whole and allows the fish stocks to benefit from the management status then the dolphins can also benefit. For instance, if they have a problem with prey depletion they would have reasons to stay near the protected area because there*

is more fish there, and so they would reproduce there. This would eventually become a place where the population becomes larger and this can also help with colonising the surrounding areas.

Storage of benefits, mobility, and predictability of the resource are all interrelated. The development of conservation within marine environments is closely related to our ability to access knowledge, and in the absence of knowledge to act in a precautionary manner.

4.4.5. Predictability

The nature of cetaceans creates problems for research. Although air breathing, they are difficult to track as they spend the majority of their time underwater. The development of new research techniques, such as photo-identification (IWC, 1990) and genetic sampling (IWC, 1991), has provided new information on all cetacean species. Recognition of individual animals within a population provides the basis from which other research can be developed (Wursig & Jefferson, 1990). Long consistent datasets increase the predictability of the movement of individuals and provide greater certainty for the estimation of population size and dynamics, site fidelity, and the definition of the home range of a population (Forney, 2000). In addition to this, one of the major changes in cetology in recent years is the development of the digital camera. Photo-identification data can now be analysed the same day, rather than having to be sent away to be processed and analysed after, days, weeks or even months. Data can be utilised in real time to provide information on the population and distribution changes of dolphins. Despite this cetaceans provide a significant challenge to MPA design:

'optimal design of a protected area intended to conserve a population would bound that population's entire year-round distribution, while it may be possible for some resident or migratory species, the ranges of most marine mammal populations are too large for this to be practical' (Reeves, 2001: 5).

When only a section of a population's homerange can be included within a protected area, it is important to understand source-sink dynamics for that population. Protected areas can then be designed to protect key breeding, nursing or feeding areas (Kelleher *et al.*, 1995). Site selection based on the presence of critical habitats²¹ important to a vulnerable species has been recognised as a valid basis on which MPAs can be selected (Norse, 1993; Ray & McCormick-Ray, 1994). The ADP has been working since 1987 using consistent methods and regular personnel. Lošinj has approaching twenty years of data, this allows for some predictability with regards to distribution. However, many interviewees asked why the Reserve is being placed here, as dolphins are seen

²¹ Critical habitats are defined as those areas with a cetacean's range that are essential to daily survival as well as maintaining a healthy population growth. Areas that are regularly used for feeding, breeding, and nursing of young, as well as regular migration areas can be considered as critical habitats (Hoyt, 2005).

throughout the Adriatic. A discussion with the President of the fishery guild and another fisherman, underlines this:

Respondent 11: *How come you [Blue World] chose this area as an MPA, because the dolphins are distributed in other parts of the Adriatic sea. I know in the list [Adriatic sole (*Pegusa impar*)] fishery season outside of the MPA the dolphins are everywhere. If you decided just by the type of fish that dolphins are eating, then the dolphins shouldn't even be here, as there is a small amount of Oslic [hake (*Merluccius merluccius*)].*

Respondent 12 [09.2004]: *I talked to people from Umag and Pula [Istria], and they say they have dolphins there as well.*

The fact that dolphins are found throughout the Adriatic has never been in dispute; however this is the only area in Croatia with a scientifically proven population which consistently use the area year after year. As Respondent 4, the President of Blue World, puts it:

Respondent 4: *Critical habitats for bottlenose dolphins exist throughout the Adriatic, the problem is that we have no knowledge of them, and there is no science. There is here, and we chose to draw the boundaries pragmatically around the area we know and to the jurisdictional limits of the City.*

There is a huge amount of data backing up this statement²². Work of Fortuna (2006) suggests that this population should be predictable on the basis of the habitat of their preferred prey species, the hake (*Merluccius merluccius*). The distribution of many cetacean species correlates with the variability of their prey species, based on the movement of currents, and nutrients. However, the recent work of Stewart (2004) indicates that there may have been a shift in feeding habits. Bottlenose dolphins are well known for their adaptability and will often take the prey species which is most abundant and available. This change in feeding habits, probably due to over-exploitation of the favoured prey, adds to the uncertainty regarding the distribution of this population. Despite the lack of certainty over the distribution of this population, the chairman of the Scientific Committee of ACCOBAMS suggests that we know enough for our purposes.

PM: Is scientific uncertainty an issue for MPAs?

Respondent 2: *As a problem, no. Scientifically we have the power to make qualified decisions about this. The need for information is there and we can collect it. In fact, I think that Lošinj has all of the information it needs for protection to make informed decisions on management and zoning etc.*

PM: How important is local knowledge?

Respondent 2: *That's tricky. We must be able to reconcile local ecological knowledge with science. The analysis must be sufficiently rigorous, as it can be highly opinionated. Local ecological knowledge must be brought into the equation to further understand the areas of conflict.*

²² Between 1987 and 1992, there were 282 surveys (Bearzi, 1992); and, from 1995 to 2005 there were 854 surveys (unpublished data) for bottlenose dolphins around the Lošinj archipelago.

One of the secondary aims of the Reserve has been to protect the local artisanal fishery (Bearzi *et al.*, 1993). The submarine area of the Reserve is extremely heterogenic, consisting of submerged reefs, sea grass beds, and mud. There are areas within the boundaries of the MPA that are believed to be important spawning grounds for local fish populations. In this case accessing local ecological knowledge is extremely important for the predictability for fish stocks. A spear-fisher talks about the behaviour of the fish and the need to protect them in spawning periods.

Respondent 10: I could show you places for at least three or four species where they come to spawn. Closing those areas in those periods would be great. Generally fish are hard to catch, it doesn't matter with what, nets, spear-guns, lines, anything, but you have periods when fish gather and start acting numb and stupid, and then the people come. So if you say this is a place where one species, the females comes and spreads the eggs, and the male comes and guards them, you have hundreds of kilos of fish guarding eggs. People come and take the adults, and then the other fish eat the eggs. So it would be enough to protect this to help to maintain the fish stocks.

Other scientists have found that working with fishers not only helps improve fisheries science and fish stocks, but also builds social legitimacy (Lane & Stephenson, 1998; Wilson, 2002). Tapping local ecological knowledge also shows a form of respect to the fishermen, which can help develop trust and further negotiations (Berkes, 2004a). This is particularly important in Lošinj where researchers live within the local community.

4.5. Concluding Remarks

This Chapter presents the development of the Reserve from its original form to the current proposal. In doing so, it addresses the historical nature of the Reserve. The development was not smooth, but moved along intermittently with long periods of stagnation, then rapid progressions. What is highlighted in the most recent proposal is the importance of creating links within science and policy circles at an early stage. These early negotiations enabled the development of the discussion document, the 'Critical Habitats Report', which provided a rounded, defensible argument for protection. The importance of this document was that it provided a starting point for negotiations, presenting the scientific argument for the development of the Reserve in a manner that could be understood by all stakeholders. At this point what also comes to light is the importance of the origin of the scientific information. Tethys as a foreign organisation was limited its ability to affect policy change. Coupled with this was the national contextual situation, which had a significant effect on the ability of foreign researchers to work. The construction of a 'local' organisation created a greater feeling of ownership of the scientific information. Associated with this was greater financial and moral support for the ADP as organisation, as well as the Reserve proposal.

Turning to Agrawal's (2002) critical enabling conditions for sustainability on the commons, the marine environment as a resource system provides many challenges. The bio-physical properties and the absence of property rights undermines effective resource management, as a result, not all of the generic 'critical enabling conditions' will apply equally. MPAs vary considerably in size and this is perhaps the least important characteristic. In the case study the size of the Reserve was increased following discussions for the Critical Habitats Report. This was in recognition that providing a clear jurisdictional boundary, in anticipation for coordination with monitoring organisations, was more important than having a smaller area. Generally, the requirement for small size becomes less important as remote monitoring technologies become more available, cost effective, and real-time.

Boundaries may be defined clearly on paper; however they are less obvious on the sea. Yet, one of the guidelines for MPA design is to find some pragmatic method to define boundaries on the sea (Kelleher & Kenchington, 1991; Salm *et al.*, 2000). The absence of clear boundaries will not only affect the ability of monitors to exclude users, but possibility of movement of resource units through the system. This is exacerbated in the case study due to the nature of cetaceans. However, mobility may be an asset when considering the possibility of using NTZs as storage of resource units. In this case the movement of units into other areas may be a tool to induce community support for the Reserve.

The nature of the marine environment makes uncertainty prevalent. Developing knowledge of the resource is again closely linked to the available technologies. As the marine environment becomes more important to the many stakeholders that utilise it, new technologies and techniques will help to reduce uncertainty. However, this environment remains the most uncertain as it is the least accessible to the human form, hence the adoption of precaution in the face of uncertainty is perhaps more imperative in this environment than others.

Using Agrawal's (2002) framework for the resource characteristics helps to bring together the scientific information with comments from the authorities and stakeholders drawing out the discussion regarding the nature of the Reserve. The main features highlighted in the case study are, the necessity for clearly delineated boundaries and the reduction of uncertainty.

5

Lošinj Islanders: The Primary Appropriator Group

Introduction

Physical aspects of islands such as closeness to the sea and its weather, and insularity can create closed and close-knit societies (Eurisles, 2000). Royale (2001) suggests that resilience, coherence, social cohesion and political stability, and active participation are qualities that can be often found in close-knit island societies. Yet, islands tend to be more susceptible to demographic change than the mainland, with the 'snowball' effect of emigration resulting in the closure of amenities in areas with small populations. Conversely, in areas of maritime wealth mass immigration can occur resulting in significant changes to the population structure. Migration can result in the change of identity of the population resulting in cultural tensions between the indigenous population and new migrants (Oracion, 2003). In extreme cases the indigenous population could lose its inherent 'feeling for nature' (Royale, 2001). Even temporary immigration, related to seasonal tourism, may result in islanders feeling 'imprisoned' in certain periods of the year (Eurisles, 2000). Dahl (1997) suggests that coastal resource management, *'must be re-thought to adapt it to the geography and social conditions of small islands'*. Undoubtedly, islands are often affected by resource limitations that may result in an over-reliance on one form of economy, invariably this is tourism.

According to Selsky & Crehan (1996), primary appropriators have strong social norms and shared values, living within the geographical area of the resource. Lošinj islanders do not fit the description perfectly, but they are resident adjacent to the resource, and remain the group most likely to gain from its effective management. Outsiders, such as tourists and external fishers, may have an interest in the resource, but maintain a low cost exit strategy, and hence can be regarded as secondary appropriators. These groups have not been directly involved in the negotiations for the Reserve, but are represented by organisations like the local tourist board or fishery guilds. Finally, tertiary appropriators have not been considered in this study. For the sake of discussion, the residents of Lošinj Island are regarded as primary appropriators, and external fishers and tourists utilising the resource as secondary appropriators.

The theme of this Chapter is to identify the major factors affecting the will and capacity for the local population of Lošinj to collaborate collectively. Through analysing the changes to regimes and demographics, and social and ethnic

differences, this Chapter aims to illuminate the principal social issues for developing the co-management of the Lošinj Dolphin Reserve.

This Chapter is divided into three sections. The first relates the effect of national changes over recent on the islanders, illustrating directly how this has effected the development of trust in institutions. Using Agrawal's (2002) framework, the second and third section of the Chapter probe deeper into the underlying social characteristics of the many and varied groups on the island.

5.1. Contemporary Croatia, the view from Lošinj

Literature suggests that there is often an undermining of trust under socialism and a corresponding decline in social capital (Paldam & Svendsen, 2002; Putnam, 1993). Yugoslavia, particularly at its western periphery, was one of the least severe of the socialist regimes. Yet, changes to the nation-state have been significant and even felt on the island. As such, each individual has been affected by many of the national contextual issues highlighted in section 3.2. When discussing the changes of system, many interviewees extolled the virtues of the old Yugoslavia, even considering the recent stability in the country. 'Yugo-nostalgia' is becoming more pronounced in conversation. Respondent 10 reminisces about his childhood on the island.

Respondent 10: *[I]t was a childhood with everything, maybe not bananas and pineapple, but in Yugoslavia there were not many imports. We had a happy childhood we were more economically settled then. We always had money, we could travel, now we need visas to get anywhere. In the Yugoslavia federation we were respected.*

Issues of social stability are highlighted by older islanders, who underline the stability of the Yugoslav system, which provided job security regardless of occupation or ability. Respondent 13 reflects that although the system provided security it did not reward individuals based on ability. As a fisherman, there is still the underlying fear of a few bad months, but on the whole he has embraced capitalism.

Respondent 13 [09.2004]: *Before in Yugoslavia, my father and everyone was the same, when there was work everybody had a good salary, but you could not express yourself freely, it was not democracy. I think that it is better now. With capitalism if you work, you have, and if you do not work you are on the streets. OK, that is not so good. When Tito was in control, nobody was hungry and everybody had something, but we were all treated the same. We are not the same, so that was not so good. If you work in one company everybody earned the same money, well that's wrong. I am smarter than you, you can work more than me, and so we cannot be paid the same. That I didn't like from before. But, now is not safe for anybody. If you have a little bit of bad luck then you go on the street.*

The transformation from Yugoslavia to Croatia was not a bloodless one, and the 'homeland' war remains a delicate subject. Many Croatians saw it as a necessary evil and maintain that it was a defensive war of liberation. Areas bordering Serbia and Montenegro, particularly the cities of Dubrovnik, Split, and Zadar on the coast, and Varazdin, Vukovar, and Sisak in the interior, were directly involved in the conflict. Other areas, especially Istria, the north-west, and the islands were less affected. When the war for independence changed from defence to the attack on Bosnia, in 1993, many of the feelings of pride dissipated. Respondent 13 is one of only two interviewees that were directly involved in the fighting. He describes the mixed feelings that permeate through Croatian society.

Respondent 13: That was the war, many groups were involved. But, we had two main groups in Croatia, one was Tuđman, and the other was the military police. There were things going on in that time that even we don't know about. But, OK, they did what we always wanted: to be independent, and because of that many people like them. But, in the end he allowed some men to do big bullshit, in the name of independence.

Although the war years obviously had a profound effect on the country, only three of the 31 interviewees spoke about the subject. Most preferred to move onto the period following the war. This era had the most consistent critique from all the interviews. Respondent 14, like most other islanders, is scathing about the post-war period which was rife with corruption and favouritism, particularly at national government level.

Respondent 14 [09.2003]: Privatisation in the 1990s really destroyed Croatia, it was really a robbery, the robbery of the century... ...during 1994 the politics in the country was suffocating everything, in political life and human rights. It was something like a police State, you couldn't speak up loudly what you think, everything was full of criminality... ...this robbery of the century in Croatia, and in Serbia too, was because it was only one party on the top, that was the problem. The thieves were coming out from the ground stealing the things, it was really unbelievable. The independent newspapers and magazines were writing about this, and nothing happened. Everything was in the fist of HDZ [Tuđman political party]. The court, the army, the police, everything, so it was fucked up, we will need years to recover, like in the Czech Republic or Hungary.

Corruption under the post-war regime left many people feeling bitter, particularly as the privatisation of national assets favoured the Zagreb elite. Many interviewees felt that the post-war system was far worse than the communist era, due to widespread paranoia and insecurity. On a personal level foreigners felt intimidated by the authorities. Respondent 1, the coordinator of the ADP in this period, relates the problems he had in 1996 in section 4.1. The change in government in 2000 saw Croatia adopt a pro-European stance. The resulting change in the attitude on the island, between the 1999 summer season

and the 2000 season, was palpable. Almost overnight the island changed from grey socialist to vibrant Mediterranean.

Entry into the European Union remains a priority for Croatia and underpins many of its national policies. Legal, economic, and political harmonisation with the EU is a key political goal. However, as the opinion polls in section 3.2 indicate, there is still a lack of trust regarding the commitments that both parties have to make. Since the last opinion poll in August 2005 the national government has stepped up public awareness of the debate, yet many people remain undecided. Conversations about accession into the EU show a dichotomy of views. Previously, EU status was associated with stability, freedom, and economic growth. Impositions by the IMF and EU, particularly in the banking sector, have soured the desire to join. Respondent 10 explains how changes over the last few years have influenced his opinion of accession into the EU.

Respondent 10: I remember when I was a kid or a teenager I couldn't wait to be a part of the EU, because of the things you could see, the details. Our life always consisted of shopping in Italy or working in Germany, and you would think one day I would go to do it legally. I would be able to go somewhere and earn better money than Croatia, and then come here and spend it. Or, I would be able to go shopping somewhere without being harassed or humiliated on the border. But now it has changed, on one part the west has come to Croatia, every big company now has its foot here. That's one thing we missed as kids, nice Milka chocolates, Coca cola and stuff, now we have that, so there is no need to go in the EU. The other thing is the fear that we can't really compete. When I look at it now we can't compete, but we cannot forbid them to enter. We are a small State that doesn't have a lot of foreign political strength. I fear what position we will have when we enter... ...You will have on one hand Germany, France, UK, and on the other Bulgaria, Hungary, Yugoslavia, Bosnia, and Croatia that will be the third world of Europe. I think it is a fear that can be justified.

Worries over assimilation are a consistent theme running through conversations and interviews. Associated with this is the fear of the loss of national identity and autonomy. Many Croatians believe that by entering the EU Croatia will find itself in a similar, if not weaker, position than it was when in Yugoslavia. This is reflected in the continuing saga over the Croatian declaration of a protected ecological and fishing zone (EEZ) in the Adriatic Sea in October 2003. The declaration was intended to protect and conserve local fisheries. It was met with delight by the Croatian fishermen. The international ramifications however, were serious with both Italy and Slovenia objecting. Under pressure from the Italian and Slovenian governments the implementation of the proposal was suspended in June 2004.

'There is a possible danger that some among the 25 heads of (EU) States at the meeting ... would not back Croatia's EU candidacy if we apply the fishing-ecological zone on the EU member countries' (Sanader, 2004¹)

¹ Speech quoted in HINA Croatian News Agency 04 June 2004.

In the period between October 2003 and June 2004, when the Italian fleet suspended their fishing in the mid Adriatic, the fishermen of Lošinj recorded their highest levels of catch of striped red mullet (*Mullus surmuletus*). The following quote indicates the frustration and fear that many local fishermen have:

Respondent 12: Italians are already fishing in Croatian waters even though all the Croatian fishermen are against. Last year when the EEZ proposal went ahead, the Italians stopped fishing in the deep water nursery grounds of the red mullet juveniles. We had one of our biggest catches of red mullet... ..I'm annoyed about the EEZ and joining Europe, there is no way we can compete with them. I've had the trawler for twenty years and I know what I was fishing before, and what I catch now. I am afraid for what I can expect in 50 years.

Following negotiations the area was declared in October 2004, with the exemption of EU countries from exclusion. This compromise solution was seen as a major sell out by the national and local fishing unions, and a sign of things to come by many Croatsians.

Respondent 11: In 2004 there was a new law, reducing the fishing area that was in Croatian hands. At the same time there were negotiations with the EU regarding the EEZ. Finally in the end Italy supported the accession of Croatia into the EU and the fishermen lost the EEZ.

Yet, despite this there are some positive aspects that islanders relate to entering the EU. Respondent 9 suggests that one positive thing to come from EU integration, would be the restructuring of national and local institutions to provide greater accountability.

Respondent 9: The only bright things about the EU would be that the government should become a little bit more mature, if you look at the organization of the administration, and the technical aspect of the government, its 30 years behind in structure. The structure is chaotic, so one positive thing would be that the EU could help us build a better government structure with more accountability, less corruption.

The system still favours personal connections as a hangover from the socialist era, particularly with the older members of society. Nepotism, favouritism, and corruption still infect the system and the State institutions in particular. Respondent 15 also feels that with EU help the State institutions can mature. However, it is not only the organisations, but individuals that need to become more accountable, with a fairer system based on ability rather than connections.

Respondent 15 [06.2005]: I think accession will happen, but it will take some time. On one hand that is good, because as a State we are not prepared for it. Many years of bad management of the State administration, you can see results now. We want to do things overnight, but you cannot do things like this

overnight. For years only people who had good connections were employed and politically acceptable. No one cares about expertise, but about other things and now when you need experts you don't have them. The system of State administration is bad, because you can sit and read newspapers all day and get the same salary as a person that is working night and day trying to do something. You have lots of people doing nothing and a few people who are doing everything.

The legacy of national mismanagement is the erosion of the trust of Croatian people in government institutions (Štulhofer, 2004). Zagreb is physically and mentally a long way from Lošinj; however the idea of governance from Brussels is even more disturbing.

5.2. Group Characteristics

One would expect that the divergent geopolitical patterns of the Northern Adriatic, particularly between 1918 and 1947, would result a strongly regionalist perception of identity on the island. Physical influences of history can be seen throughout the towns and villages of the island. Austrian Emperor Franz Josef sited his holiday home in Mali Lošinj, the Venetian Lion of St Mark can be found on town gate of Osor, and the main square in Veli Lošinj is still called Marshall Tito square. However, migration has significantly affected the island in terms of identity. These islands have the closest relation to an 'open population' model than any of the Adriatic islands (Lajić, 1993). This is related to changes in administrative regime since the beginning of the twentieth century, and the development of mass tourist facilities in the 1960s (Podgorelec, 1999).

The collapse of the ship-building industry of the 1800s led to the first emigration of workers to the mainland shipyards of Trieste and Rijeka. Regime change in the early 1900s and the First World War saw a mass out migration of Slovenes and Croats into mainland Yugoslavia. Following the Second World War, Istria, Primorska-Goranska, and the islands were annexed to Yugoslavia in 1947. Associated with this were substantial migrations of people of Italian descent to Italy, and non-communists to other countries, particularly Australia and the Americas (Ballinger, 2004; Balon, *et al.*, 2005; Bufon & Minghi, 2000). The period from 1948 to 1971 displayed the greatest emigration from the archipelago. Figures suggest that up to 30% of the local autochthonous population moved from the islands, mirroring the exodus of 200,000-350,000 ethnic Italians from Istria between 1943 and 1955 (Ballinger, 2004; Kaplan 2000; Podgorelec, 1999). After fifty years of continual emigration from the archipelago, immigration began in the 1960s as new hotels were constructed for mass tourism. Migrants were encouraged to take up employment left by the migration of the Italian minority. By the 1971 census, only one in three people resident on the islands were born there (Podgorelec, 1999).

Although the homeland war did not directly affect the island in terms of conflict, it had an indirect affect. Many refugees, particularly from the Slavonia, Dubrovnik, and Bosnian areas, were hosted on the island. In the 1991 census there was growth of 25.2% of the population, due to the placement of refugee families (Podgorelec, 1999). By 1992, over 4,000 refugees were resident on the island, this level stabilised to 900 in 1994 (IDC, 1997; Podgorelec, 1999). Prior to the war, nationality was not considered as important on the island. However, the war raised deeply seated antagonisms. The economic migrants of the 1960s, who had previously integrated into local society, suffered due to their ethnic backgrounds. Even those with one Croatian parent suffered abuse. The influx of refugees exacerbated the social split. Subsequently, many of these refugees remained and replaced previous migrants in semi and unskilled jobs.

Consequently, the island community can be loosely categorised into three main constituents based on ancestry or origin. The 'Lošinjane'², refers to the autochthonous families that have been resident on the island for some generations, this includes both ethnic Italian and Croatian families. The second, 'Furešti'³, are the economic migrant families of the 1950s to the 1980s, the majority of whom are from the inner part of the continent, such as central Bosnia or Slavonia. Others who also migrated in this period come from other less developed islands in the region. Generally this group is ethnically mixed, including Serbian, Croatian, and Bosnian, but very few Slovenian families. The final group is the ethnically Croatian 'Izbjeglice'⁴ refugee families that moved to the island in the 1990s and remained. Most originate from the inner parts of Croatia, particularly the border areas with Serbia, but some also originate from Bosnia.

Despite the fractured nature of the community, the connection to the environment is very strong on Lošinj. On a sunny Sunday in spring, the 'dupin puta'⁵ is congested with local people taking the air. The original 'health tourism' bay of Ćikat is particularly popular (section 3.2.). Invariably, local people talk about the spring and autumn as being the best times of the year, good weather and no tourists are usually the reasons given for this. Tourism on the island developed in the 1880s for the 'favourable climate' for asthmatics, and although mass tourism has changed the island over the intervening years, there is once again a desire to create specialist tourism based on natural resources.

² 'Lošinjane' refers to individuals that have lived on the island for some generations, particularly those families that stayed through the Yugoslav period. They comprise approximately 30% of the island population.

³ 'Furešti' is slang dialect term for foreigner taken from the Italian, 'forestieri' meaning outsiders. In this context the term is used for individuals that migrated to the island for economic reasons from 1950 to 1990, when the tourism boom hit the island. They are now the largest group on the island, consisting of about 60% of the population.

⁴ 'Izbjeglice' is derived from the verb, 'bježati' directly meaning to escape. In this context this word is used to describe the individuals that moved to the island in the 1990s to escape the war. The amount of refugees settled to around 900, approximately 10% of the population.

⁵ Dolphin pathway

5.2.1. Small Size

Mali Lošinj is the largest municipality on any of the Croatian islands, there are 8,388⁶ permanent residents (Držvni zavod za statistiku (Croatian Bureau of Statistics), 2005). The nature of islands means that most of the population rely on the use of the adjacent marine area, and hence all the islanders should be considered as primary appropriators. Respondent 13, a local fisherman reflects the general system of the island where informal contacts are an important part of day to day life.

Respondent 13: I know these people, because it is a small place, let's say I can trust them because of that. If someone tells me or promises me something I can ask him even on the street because I know him privately. I can say that I trust the police, the marine police, because I know them personally, that's the only reason.

However, small communities can be intrusive with deep-seated antagonisms. This may lead to the possibility of clan-like feuds between or even within families.

Respondent 16 [01.2005]: It is a small village. Everybody knows everybody else, knows their backgrounds, connections, and relatives. That can be good or bad, depending on your relationship with them. It is very political here, who you talk to, and who you associate with. Living a life in small village influences everybody around you, because we know each other, we know how you live, what you have for dinner, it's a small community. It would be the same for me to live in a small town somewhere else. We would have the same problems.

Living in a small community may also limit the opportunities for self improvement. This has led to the emigration of many of the better educated islanders. The absence of tertiary education also means that many of the brighter students leave for University and often remain on the continent. Otherwise, they face the prospect of returning to the island to work in unskilled or semi-skilled temporary tourism jobs. This issue is reflected in the county analysis for the sustainable development for the island. Of 60 young people⁷ interviewed, 93% believed that there was no future for them on the island (Primorsko-goranska županija, 2005a). Respondent 17 is an example of one of those islanders that moved away. Educated in graphic design, she prefers to work as a nanny in Milan to be in a city where there are more opportunities to advance.

Respondent 17 [09.2003]: I left because there are no opportunities here. To work in graphic design you have to go to at least the mainland, even to another country, that's why I went to Milan. If you stay on the island you can only work in tourism. For that reason there is a lot of wasted talent here. From school, from childhood, I could count at least 6 people from my class [of 20] that were from here originally, but don't live here now. They left because they were

⁶ According to the 2001 Croatian census

⁷ Aged 17 to 24.

bored here, and they didn't see any opportunities to make a life here. Most went away to either high school or university, and then they stayed there.

Certain sectors of the island utilise the Reserve area more than others. There are 114 registered professional fishing boats on the island, of this 36 are trawlers. Estimates place about one third of the boats within the borders of the Reserve at any one time. Of these, there are 10 trawlers that use it consistently. On top of this, about 20% of the population have some form of sport fishing license, the majority of these utilise the proposed Reserve, due to the heterogeneous submarine bottom. In addition to the islanders, there are currently industrial pelagic fishing boats from Zadar, Rijeka, and Pula, and the artisanal fishery from neighbouring islands utilising the area. Finally, perhaps the largest influence, especially from the aspect of dolphin disturbance, is that from approximately 8,000 residents there are 3,000 local boats registered. Significantly, the number of boats more than doubles in the summer season, the harbour master, underlines the lack of knowledge regarding the use of the area during the summer period.

PM: How many vessels are there currently coming through this area?

Respondent 6: *We have about 3,000 local boats registered here, if you include Susak and Srakane. Around 3,000 boats register per year as visitors. However, this is a small percentage, around 30%, of the number of boats passing through the area. Unfortunately, there are no statistics, but we did do a survey over the August holiday, and found that there were 4,000 boats anchored in the bays within our jurisdiction. If you think that on average four people are on the boat, that's 16,000 extra people within the area.*

There is a significant lack of knowledge regarding the number of current users of the area. The designation of the Reserve may enable the authorities to develop a registration system that can effectively monitor the amount and type of users within the area at any one time.

5.2.2. Clearly Defined Boundaries

In one respect, the island itself provides a clear delineation of the primary appropriators of the Reserve. However, limiting access only to the islanders would not be economically viable for an area that relies heavily on tourism. Problems arise for the Reserve in the definition of different rights for multiple-use and multiple-users. In the local fishery, for example, the concept of local protectionism within the boundaries of the Reserve aims to catalyse local responsibility for the area. As the captain of the marine police, points out it also allows for easier enforcement locally.

PM: One of the proposals is to limit the fishermen to only ML registered boats, what do you think of this?

Respondent 7: *About 15 years ago there was a law to limit the use of the area to local fishermen only, it's really nothing new. I think that this is a good idea and it would make it much easy for the marine police to control the area. We*

more or less know who has illegal equipment, and who is fishing from the local community. When somebody from another island fishes illegally they will leave and already be home before we can do anything.

The members of the local sport-fishing club, 'Udica', are a strong lobby. Many of the local politicians and business leaders maintain sport-fishing licenses. The club itself is one of the oldest in Croatia, established in 1948, and has a certain status within the community. But, as the retired President of the club states, it is less the definition of the local users and more problems of controlling visiting fishers that is the issue.

Respondent 18 [06.2005]: *The problem is that there are many different types of fishermen using the island. Most of our members are recreational fishermen using the line from the coast, others are the spear-fishermen who dive. But, the main issue is less about the local people, and more about the fishing licenses that the tourist board sells. Nobody really knows who buys them, how many they sell, and what these people are doing.*

This indicates that it is the rules that determine the exclusion or inclusion of the secondary appropriators that need defining. The exclusion of external fishers is one of the features that most interviewees supported, Respondent 9 sums up the attitude quite concisely:

PM: What do you think the reaction of fishermen from outside will be?
 Respondent 9: *Who cares for them? That's our part of the sea, they could be against it, it's normal, but there is some part of the law that they says they cannot fish, and you can apply it here, then that's it. But, you must have the support of the police and the port authorities, or the coastguard to stop them from entering.*

Excluding external fishers would solve one issue for the Reserve. However, diverse tourist use of the area is difficult to exclude, particularly due to its economic importance. It is in this instance, that it is important to include the representatives of tourism, the local tourist board, and tourist agencies, to devise a coherent plan for managing tourism within the area. Negotiations regarding access rights are developed further in Chapter 6.

5.2.3. Shared Norms

The island has experienced significant demographic change. Many of the indigenous families have left the island taking with them a rich source of traditional and ecological knowledge. In-migration has brought continentals, who are unfamiliar with the sea, to work on the island. The loss of knowledge and experience, constructed over generations, has a significant effect on the management of the ecosystems of the island. The symptoms of this loss are obvious. Many of the old villages stand empty and the old olive groves, previously an important winter activity, have fallen fallow.

Respondent 10: *If you have a big piece of land why not plant tomatoes and potatoes, and sell them to the tourists. OK, I have this local produce, 'taste this and then taste the other from Spain', this is a good thing that we could offer. A cheese that is local, without any technology or preservatives, just offering it as fresh cheese, like Pag [another island in Croatia]. There are a huge amount of things, details, like food and culture that could be offered. But, nobody knows how to do it. Nobody knows how shepherds live on the island, because there are no shepherds anymore, they are gone because of the changes on the island.*

Despite social changes, reputation is still an important motivation for individuals and groups in the island community. This would imply that the Lošinjane families of the island, in particular, would compromise their behaviour to maintain their reputation. However, demographic change has diluted the natural impulse of people to maintain their reputation and compromise their behaviour for their offspring. Respondent 19, an ethnic Italian, relates the exodus of many of his friends and workmates from the island. He now fears that the identity of the island has changed irreversibly. On a personal level, the migration of his only son to Zagreb has had a significant impact that could lead him to disregard any compromise of his behaviour.

PM: So many of your friends left?

Respondent 19 [08.2003]: *Mamma mia, all of them left. From Veli Lošinj at least 30 friends from school and work mates, with their families. You cannot imagine how many left from Mali Lošinj every second one, to Australia, America, South Africa, Italy, Canada, and Germany... ...the Croatians came and told us we were liberated after the war [Second World War]. We didn't even know who these Croatians were, what were we being liberated from?*

PM: What about the future?

MMS: *Why, I don't know. Maybe we [islanders] are still mentally like the Venetians or Marco Polo. It will change because more people are coming from the continent here, and there are only a few people left with this mentality and the young people will be more culturally Croatian. Slowly, slowly we will leave, and all the sons and daughters are culturally changed. Lošinj was for hundreds of years culturally and economically connected to Venice. But, now the future is unknown, who knows who will be here, maybe not my family.*

Another Lošinjane fisherman echoes these themes. He talks about the traditional knowledge he has, and that fishing is now all about flawed economics. The former cooperative agreements that were in place have been eroded over time.

Respondent 8: *I know that the fish is there, you have to fish it, but, you can't work 24 hours a day. You know how we used to work before, we used to do two or three hauls, there was less fish, but the price was higher. Instead of this, they started to fish 48 hours continuously, they were bringing in hills of fish and the price went down. They stay out 48 hours to get 200 kilos of calamari [Squid, (*Loligo spp.*)] and obviously the price goes down. We used to respect the moon's period. When the moon is full you work, when the moon is absent you stop. You work from sun to sun.*

PM: Was this a law?

Respondent 8: *No, it was a fisherman rule. Also, the fish behave like this, when it is dark, you don't get scampi [Nephrops norvegicus]. Now you work, the effort and effect is not proportional, and you destroy everything. So you should not fish.*

The divide between 'traditional islanders' and 'new islanders' is based on origin rather than ethnicity. This divide is clear in the social links between groups. Respondent 20, a former primary school teacher, suggests that as the children of the groups integrate in school social links will develop. However, there remains an underlying desire for the groups to maintain their individual identity.

Respondent 20 [09.2003]: *The Lošinjane population mix with the Furešti now, I mean most of our generation went to school together. But, they still don't mix with the refugee population. I guess that their children will... ...Its funny, when two Lošinjane marry, both of the families are really happy, it's like they are continuing the blood line, but that's normal with old families here. It's not like mixing is prohibited, it's just that they feel happier with one of their own.*

5.2.4. Past successful experience - social capital

Historically, the islanders have had their trust in all authorities undermined. The previous section (section 5.1) relates some of the national issues that have undermined generalised trust in institutions in Croatia. Local authority schemes for the development of quality tourism have also fallen through. This has resulted in a cynical attitude to the possibilities of major change on the island.

Respondent 21 [09.2003]: *I believe in the project [Reserve proposal], because I know who is standing behind the project. But, the average person of Lošinj doesn't know, and they have heard in their life all sorts of ideas. The golf playground, protected area, I don't know, high class tourism, sheiks from Arabia. Everything, they have an attitude of 'well ok, one more' about this kind of thing. The average person is cynical; they've heard it all before.*

More specifically, issues still exist about the development of previous Reserve proposals. The 'Management Plan for the Conservation of the Cres-Lošinj Archipelago' (IDC, 1997) remains a problem for some of the people in the community. The former head of the coordinating organisation, the Island Development Centre (IDC), lays the blame of the failure of the project down squarely to local political changes. Others, however, see it in a different light. The Mayor suggests that this and other previous proposals were undermined by various problems at the time. Political centralisation policies of the national government and problems of commitment from all parties were all suggested. However, he remains optimistic for the future of this proposal.

Respondent 22 [02.2005]: *I became Mayor in 1992, and the centre was already fading away. Croatian law at that time was that everything had to be in Zagreb, centralised, in 1993 it died out [IDC]. We were really sorry about it, but the law came in at that time, the development centre in Spilj was also closed. Also, it*

takes a lot of work to develop something like that. Maybe the City, Tethys, and the centre did not take it seriously enough. One of the problems was that Tethys was a private foreign organisation. I'm not trying to diminish what they did, but with your serious attitude towards what we are doing now, and our support and logistics, I don't see any reason for it to fail.

Respondent 23 was involved with the public awareness aspect of Tethys in the period around the METAP proposal. Her statement corresponds with that of the Mayor, with regards to the national political situation. She also underlines one of the problems with small communities, that of personal compatibility.

Respondent 23 [03.2005]: I think that it was due to the political situation in Croatia, and there were not the right people involved. Personality clashes between the coordinator and the Mayor undermined the development of the IDC. So, they came to a war of principles about what should be done. I think that if the right person had been there to push it, somebody who would not give up, not get angry or take it personally, then it could have gone much further, it lacked a mediator. You have to think that you are not doing it for yourself; you are doing it for the project. You should separate your personal feelings from the project, after all a management plan is a plan, that's it.

The primary advocate of the present Reserve proposal is Blue World. Blue World, as a relatively new organisation, has the advantage of no 'negative history', but is also, therefore, untried with most of the organisations and individuals involved in the process. First contact, at island level, was with the local authorities in 2002. Cooperation between Blue World and the local authorities, at its height, culminated in the development of the Lošinj Marine Education Centre in the summer of 2003. A combination of the successful opening of the centre and the substantial funding invested by both organisations enhanced mutual trust. The development of the Reserve proposal was deemed as a reasonable extension of the cooperation for mutual benefit.

Respondent 22: The agreement was that the initiative was ours, [Blue World and the City] so we [the City] don't want to do anything without you, you have our support. When we approach other institutions we will go together. I can't go as an individual player we have to do it together. Only if you ask will I go, we have to have the main aim together. We don't want to take the any millimetre of the initiative from you.

Previous proposals for the tightening of enforcement of the fishery, by the fishery guild, have been ignored by the local authorities. Subsequently, the relationship between the two organisations is strained. Media assaults by the President of the fishery guild have led to suspicion and distrust between the two organisations.

Respondent 11: The fishermen of Lošinj agreed to make a project to solve the problem of overfishing in the area, but this project was not accepted, at local, county, or national government level. This is despite the fact that the fishermen were willing to sacrifice themselves to bring about some good changes. This

project would require some self-control by the fishermen, but the government didn't care. The government only wants to get money from taxing the private companies, and they don't give a damn about fishing. We involved everybody in this, local government, the harbour authorities, the county authorities, the police, the national fisherman's authority, and the financial police. But nobody cared. The big problem was with the Mayor, whenever I speak about the problems for the fishermen in the media, there is anarchy here.

As a result, the close relationship between Blue World and the City authorities has been viewed suspiciously by the fishery guild. The guild remains wary of the motivations of Blue World, suspecting that the only benefit of the Reserve will be for tourism, and once again fishermen will be left on the outside.

Respondent 11: If Blue World has political contacts and this area becomes an MPA nobody will protect local fishermen, not even the local authorities as Blue World has contacts to them, so the fishermen won't be able to do anything. The local authorities will probably help, because they will see that they can gain money, so they will support Blue World and not the fishermen. That's why the county jumped into this project so quickly, not for the fishermen or the fishery, but only for tourism. The local county will gain money through the dolphins and Blue World, but the fishermen will only be on the margins.

Respondent 24 [08.2003]: Talking about it, it sounds positive. Everybody thinks so at the moment, but we should see what will happen later, we should see how it will work. They [the government] could do it only for tourism and close the entire area. It's not because of you [Blue World], but we don't trust the government, they could close the area, and then it is not a positive thing for us fishermen.

Despite the belief that Blue World and the tourist board are cooperating on the Reserve, historically they have not been close allies. Lack of financial and moral support from the tourist board, over recent years, has made the relationship tense between the two organisations.

The absence of inter-organisational trust at local level could still destabilise the Reserve. Changes to the local political situation, have also resulted in a change in attitude for the development of the island. The new administration supports the Reserve in principle, but negotiations have stalled and trust between the organisations needs to be rebuilt.

5.2.5. **Appropriate Leadership - young familiar with changing external environments connected to local traditional elite**

The size of the island community, and size of the marine biology network in Croatia, means that many contacts are established and maintained through personal relationships. These relationships are highly dependent on the qualities of the leaders of the various groups and other altruistic gatekeepers who act as liaison.

The relative youth of Blue World as an organisation, and the individuals involved, made the development of the negotiations for the Reserve a dynamic experience. Four members of Blue World have been directly involved in the negotiations for the Reserve, of these only one is local. JJ has provided access to the fishing community in particular, but also understands the mentality of the local people. Her previous position, as elementary school teacher, provides respectability in many of the social situations that negotiations have taken place. DH, the President of Blue World has had a forceful influence. His relationship with the Mayor was particularly strong, as were his connections to the national authorities and marine biology network of Croatia. CMF has a close relationship with the ACCOBAMS secretariat, and access to many of the influential international forums. Again, cetology as a field of research has a particularly small network in the Mediterranean, much of which is based in and around the Italian coast. Finally, the role of the researcher has been to direct these contacts from behind the scenes (the role of the researcher is discussed in greater detail in section 3.1.4.).

Fortunately, the Mayor of Mali Lošinj took a personal interest in linking the image of the dolphins to the island. In July 2004, he brought the President of Croatia, Stepan Mesić, to visit the educational centre in Veli Lošinj. This was particularly important with regards to the relationship between Blue World and the tourist board. Prior to this event the tourist board had promoted local tourism through the ADP, whilst neither recognising the project financially nor morally. In interview the attitude of the director of the tourist board seemed to have been affected by the visit of President Mesić, but was also influenced by a visit to a marine protected area in Spain.

Respondent 25 [02.2005]: Last year when President Mesić was at the centre he was very happy, and was prepared to support the project. He was very happy and he talked about dolphins when we were sitting over dinner... ...I've seen those protected areas in Spain last year when I was a guest of a firm from Barcelona, I was very pleasantly surprised. It was just one empty island, not really an island, but a rock. You have to pay if you want to visit or to dive, there is no catching, it's a protected area and a lot of tourists came. When something is protected its very interesting, tourists are willing to pay and pay to dive or to take the photo safari. I think that we also have to think about this, because we have wonderful places and I think that has to be protected. I think that's very good, but the law has to come from the national government.

Official contacts with the fishery guild remain fraught with suspicion. The guild itself is split and does not provide a single focal point to access the professional fishermen of the island. Some of the fishermen have concerns over the competence of the President of the guild. The major problem is that President is not from the island and only fishes part-time, whilst maintaining his teaching position at the nautical high school. The dysfunctional nature of the guild makes it necessary to access the fishermen through individual contacts. Two fishermen, in particular, opened up access to the fisherman's guild. The first, Respondent 26, is the son of one of the major exporters of fish, but also maintains two trawlers on the island. The second, Respondent 8, was the previous President of the fishery guild. In both cases contact was made informally and trust built over extended periods of time. Respondent 26 recalls when he took some of Blue World representatives to the annual fishery guild meeting, in 2003 (see section 4.2).

Respondent 26 [10.2004]: Towards the end of the meeting we got our 5 minutes. I began speaking to present shortly the ADP project, and say something about the Reserve before Jelena started her presentation. I didn't even start talking when the President came in with the nonsense of how the ADP wants to chase away all the fishermen from the Reserve, and that they were not asked about anything, a total lie. Since my name has some importance in the fishermen circles most of the people wanted to hear what it is all about, and he got himself a "minus". He came from Zagreb a few years ago and thinks that he knows everything, changes his mind very easily, has a 7m boat and I personally don't trust him very much. He's President because he's willing to run around for the meetings and raise his ego, but still it's good to have him. He has gathered us together and shown us that the opinion of fishermen also counts.

Although the idea of co-management is supported by many people there may be problems to engage locals in the day to day management of the Reserve. Respondent 5, the President of the chamber of commerce, was quick to favour the idea, but then highlighted the problems with getting people to be involved.

Respondent 5: I think that it [co-management] could work here, why not. The problem is to get people to fill the roles in the organisation. If people were forced to do it they would, the question is how much would it cost. There is no big money in this, so it may be a problem to get ten people to join a management board without being paid. This is may be something a younger person could do.

Whilst maintaining good relations with the local elite is important for the development of support for the Reserve, it also raises ethical issues. By co-opting the elites will the Reserve prove to reinforce issues of inequality, or can change to the system only occur from within? The dominance of the 'Lošinjane' families has stifled the democratic development of the island, reducing the confidence of local people in institutions. Respondent 10 summarises the attitude of many of the younger islanders towards the local authorities.

Respondent 10: *I am quite positive that they are not doing their job properly. In just a few words: not professional, corrupted, and not interested. The City is controlled by a few families, nobody can prove that, but I'm sure that it is quite true. You have people with the power, and they always have the power no matter which party is in control. There are some bright spots in the political scene of the island, but I think they are by far the minority. You know how politics work, if you are not a skilled politician then you can be as positive as you like, nothing will happen... .. Some things will never change, politics on the island is passed from knee to knee, corruption is innate and it will always be so.*

There is also a practical issue with regards to cooperating with elites. What will happen if the local elites or local politics change? The latter has happened in the in Lošinj. Respondent 2 underlines the dangers of tying the Reserve to local politics:

Respondent 2: *In Italy MPA management is tied to the local town hall and changes according to political colour. MPA administration needs longevity and stability, and cannot change due to politics. It is a major crippling problem otherwise. We need to decouple management from politics.*

5.2.6. Interdependence among group members

Although many of the older families of the island are inter-related, newer migrants have not yet fully integrated into the island community. Even those older families have feud-like conflicts between themselves. Lošinj is rife with selfish motivations dominating local political and business dealings. Lack of trust undermines the possibility of developing collective action. Respondent 10 describes the situation on the sea.

Respondent 10: *Now it is completely lawless, it is like in the Wild West in America. Everybody is doing what they want, including me. We don't need corrupt cops that will catch me once per year and fine me. OK, it benefits the State, but the sea won't get any of that money. If you look at me as an individual I can basically go tonight to the sea and get out 1000 euros without any major effort. It's a matter of codes of conduct or personal morals. But its changing, most individuals are acting in a selfish manner. If I had any strong economic problem now I'm sure I would settle that with the sea. The first thing I would think of is go down in the sea and take the money out from the sea. If I became greedy I would go again into the sea for sure.*

The absence of will to develop the area as a community, but interest in being involved in co-management, means that there is real need for the development of a third party monitoring body. Respondent 8 suggests that this as a project is too big for it to be controlled without third party enforcement.

PM: Do you agree that fishermen can form some control of the area?

Respondent 8: *I agree, one can control the other, but none of them can handle this. I can imagine that in theory it can work, but practically it can't. You know how it is with this situation, one person closes the eye, and in the end between*

one person and the other you can't be harmful. You know that if there is a problem,' I haven't seen anything', if I have seen it, then this creates another problem. I remember one time I saw a fisherman doing something wrong, so I called the owner of the boat saying, 'You call him and tell him'. But, instead he denounced the renter to the police and I had to be a witness, so in the end he fucked me also.

The lack of integration of the local community, coupled with seasonal instability associated with tourism makes the development of informal social sanctions difficult.

5.2.7. Heterogeneity of endowments, homogeneity of identities and interests

Heterogeneity plays an important role on the development of collective action on the island of Lošinj. Tourism dominates the island and the use of the Reserve. It is the primary driver for heterogeneity of interests and endowments. As such, it is also the primary driver for the permanent and temporary migration to and from the island. In all of the meetings and interviews undertaken in this study, safeguarding tourism was the priority, more so than either conservation or fishery protection.

When the Yugoslavia broke-up Croatia was left with approximately 65% of the tourism capacity. The majority of this is based in the coastal and island regions (Jordan, 2000). Croatia relies heavily on foreign tourism revenues, in 2004 they amounted to over US\$6.9B (Croatian National Bank, 2005). Lošinj hosts approximately 5.7% of Croatia's tourist population (Urbanistički Studio Rijeka, 2005). According to the 2001 census, tourism and its related services generate 88% of total revenue on the island of Lošinj, and account for 82% of total employment (Držvni zavod za statistiku (Central Bureau of Statistics), 2005). In the socialist period State owned corporations dominated local economies with little if any competition, this was also the case on Lošinj. Not only did these State corporations control hotel tourism, but also camping and the retail trade. This occupational pluralism increased their authority over local economies.

Commercial activities on Lošinj are dominated by two companies. Both of these companies were privatised during the war and they currently control 95% of private sector tourism on the island (Horwarth Consulting, 2003). Jadranka⁸ controls the five largest hotels, several camping grounds, a 'cash and carry outlet', and numerous small shops and supermarkets. In total 580 people work for the company, over 20% of the working population of the island. Lošinjska

⁸ Jadranka is translated to, 'girl from the Adriatic'. It was originally formed as a hotel and catering enterprise by the Peoples Board of Cres-Lošinj district in May 1947. The board ceded the majority of villas, hotels and lodging houses to the company in 1950, The first major hotel on the island was constructed in 1962, , further development Mali Lošinj was undertaken with a campsite in 1962 and another hotel 1966. The company expand into Veli Lošinj and constructed a hotel in 1967. The final two hotels were constructed in 1977 again in Mali Lošinj. At this point Jadranka owns 6 hotels, 5 campsites, and various catering and retail facilities.

Plovidba⁹ owns the only major shipyard remaining on the island, two tourist marinas, and the remaining campgrounds. The link between local politics and economics is quiet clear. The former Mayor of Lošinj was brother in law to the CEO of Jadranka, and the President of the City council is the cousin of the CEO of Lošinjska Plovidba. Respondent 14 bemoans the close relationship between the City and Jadranka.

Respondent 14: Jadranka and the City community are very close. The game is several people and that's it. Jadranka survived privatisation during the 1990s so its OK, but still it is suffocating concurrence. They are holding all of the things, like the food and things coming to the island, it is like a monopoly.

Like many other monoliths of the Yugoslav era, Jadranka is now at crisis point. Lack of structural investment over the last two decades, new competition, the loss of local authority support, and the death of its charismatic CEO in 2005 has placed strains on the organisation. In late 2005 it was split into three groups, hotels, camps, and retail. It is now widely speculated that this was done to make it easier to sell to outside investors. The economic dominance of the tourism sector by these two companies, controlled by just a few families, justifies the suspicion of many islanders considering the development of the Reserve. Yet, tourism will probably provide the most substantial financial contribution towards the management of the area. Already, negotiations have led to a proposal for the development of an 'ecological tax' to fund protected areas on the island.

Migration has had a major effect on the identity of the primary appropriators of Lošinj Island. Although the population is fundamentally ethnically homogenous, with over 83% population being Croatian¹⁰ in the 2001 census (Držvni zavod za statistiku (Croatian Bureau of Statistics), 2005), the Mayor suggests that problems experienced in the 1970s with integrating migrants was one of the issues halting island development.

Respondent 22: No major development has been planned on the island due to problems with staffing and the integration of migrant workers, the example is the enforced migration in the 1970s which created huge social problems here.

The ebb and flow of migration on the island has created a three tier social system. The indigenous population maintain a close link to the island, a geographic identity, closely related to local knowledge and respect for the island resources. This is reflected by Respondent 27, from a Lošinjane family, who believes that the Furešti and Izbjeglice families have little respect for the island resources and particularly the sea.

⁹ Lošinjska Plovidba was founded in 1957 initially only as a shipyard. It later took over the tourist marina in Mali Lošinj in 1970 and built a second marina in Nerezine. In the 1970s Lošinjska Plovidba built several campsites in Mali Lošinj.

¹⁰ The standard ethnic mix in the Balkan region is estimated to be around 70% majority to 30% minority (Widgren, 2000).

Respondent 27 [08.2003]: *There is a lack of respect for the island, not from the population that has lived here for generations, but from those that are new to the island, those that migrated here since the late 1960s and 1970s. They fish and fish and fish, soon there will be nothing left, they just don't understand.*

For collective action to be developed, islanders need to take responsibility for their actions. This is difficult where the social system is maintained through the entrenched control of a few indigenous families. The ability for islanders to act in a responsible manner is linked to their capacity to shape their own future. Hence, lack of integration undermines the capacity for collective action. The recent local elections emphasise the issue, with seven different candidates running for Mayor. All of the candidates were backed by family allegiances. Many islanders are cynical about the possibilities of change.

Respondent 16: *Change of the Mayor is difficult as they know they can count on certain families to support the status quo. They can count upon 400+ votes which is more than the opposition parties can get as a whole. Remember there are only around 4000 people voting on the island.*

At the other end of the spectrum are the refugee families, who have limited opportunities for permanent fulltime employment. Respondent 28 refers to the problems for the refugee population to integrate into the smaller town of Veli Lošinj where social bonds are more ingrained than in the larger Mali Lošinj.

Respondent 28 [10.2004]: *Originally when we moved here there were mixed reactions, some people were very sympathetic and help out a lot, others almost accused us of running away. I think that they were worried that we would all stay and take the jobs on the island. These days things are OK, now I have a local husband, people seem to accept us more. Some other refugees returned home because they could just not settle here, they [the local people] can be quite closed sometimes. Other people that came at the same time tend to stick together, only socialising amongst themselves.*

The lack of contacts restricts the ability of many of the temporary seasonal workers to settle on the island. Invariably they return to the rural areas, where unemployment is high. Added to this is a growing conflict with Albanian immigrants that work in Albanian businesses and send remittances home. According to the 2001 census, residents of Albanian ethnic origin now outnumber the ethnic Italians of the island (Držvni zavod za statistiku, 2005). However, some interviewees fundamentally believe that everybody that comes to live on the island will come to respect it, given time. Respondent 21 argues that many things may change, but essentially the spirit of the island remains the same.

Respondent 21: *I think that many things have changed, but one kind of spirit remains the same, the human factor. Everything else has changed, we are bigger than we were when I was a small kid, roads, schools, everything is bigger... ..But, the proof of the dominance of that spirit is that from 100 people that came*

here from different parts, 90 people became that spirit. Everything else, political or development is arranged in that spirit. The human factor, and I name it spirit of the island, is the most important thing here, and that is linked to the nature of the island.

The coastal and marine area around Lošinj is dominated by two industries, fishery and tourism. Within these industries there are various subgroups. All of these uses are competing for the use of the resource system. Some of these uses directly conflict whilst others, with negotiation, may coexist or even combine.

Mass tourism currently dominates the Lošinj economy. Efforts to promote the development of specialist, or quality tourism, remain the priority of the local authorities and tourist board, they have already jumped on the branding of the island as, 'Lošinj the island of dolphins' (see plate 3.2). The Reserve is a logical progression for the economical development of the island. There are, however, caveats to the support for the Reserve, highlighted by the Mayor.

Respondent 22: The only problem that I see is the control of the area, and controlling how people behave in the area. This should be really clear, we have a lot of tourist boats coming into this area in summer, and it should be clarified if tourist boats should have a permit to enter. There may be a problem with tourist motor yachts and limiting their speed. Tourists shouldn't be limited in their behaviour apart from when they see dolphins. This area lives from tourism, although tourism should not be allowed to devastate the area. We should find some measures, but not too drastic. We can't reduce the speed to just 5 miles per hour, as they will never arrive to the place that they are going.

It is important that the Reserve should not alienate sections of the local community. Many of the local professional fishermen already feel side-lined by the dominance of tourism, and the current requirements for tourism on the island. They fear further restrictions on their activity. Respondent 12, a local fisherman, worries that the MPA will be the 'thin end of the wedge'.

Respondent 12: I think that the MPA is a nice idea, but it brings restrictions for us. These restrictions can get bigger and bigger each day, in the end they can say, you cannot fish here anymore, because there are dolphins or other things, so I am afraid of it. I have been living here for a long time, I go out a lot on the sea, I can really tell when the area is calm, and they [the dolphins] can find peace. From the 15th July they move to other areas because of the boats. It is not the fishing that makes them go away, but the boats that have 20-30HP engines. So you can't say that fishing is the main problem for your MPA.

Perhaps the interest area with the greatest potential for conflict is between the professional and the sport fishermen. In a letter to the county authorities, the President of the fishery guild argues that the greatest threat to the sustainability of the area is illegal fishing, concealed behind the use of sport fishing licenses. It is well known that sport-fishers supplement their income by selling their catch. Many of the local families rely on this income, particularly in the winter months.

Fish are caught and then sold directly to the restaurants, which is illegal in Croatia. Respondent 13, another professional fisherman explains the situation.

Respondent 13: The sport-fisherman is the criminal on the sea. Sport is only what the word says. On the land, you go and catch this wild pig, do you take the gun and go alone? No, we go in a group we catch something, we make a barbeque. It must be the same on the sea. I have a friend that was with me in the school, he has an uncle in Canada. He said 'We were fishing calamari', I said 'how much did you catch?' He looked at me and said 'not how much did we catch, we paid the license for five pieces, and we caught five pieces then went away'. I said 'you could catch a few more and hide them', but nobody is even thinking about that because if you are caught then you can never go fishing again, and you must pay a fine. Here sport fishermen are allowed to catch 5 kilos of fish per day, if you catch 5 kilos of quality fish that's 100 euro per day. Now you account for twenty or thirty days, without paying anything, many of them are doing that.

There has been a conscious effort to include as many of the local stakeholders as possible in the development of the Reserve. Respondent 22, the Mayor, remains positive about the efforts to combine all the stakeholders for the benefit of the Reserve.

Respondent 22: This Reserve connects interest of fishermen, which is very rare, and the rest of the inhabitants in this area. In the end, there is not enough fish in this area because it has been over-fished in the past, and the interests are multiple in the area. I'm not saying all this for other reasons, but I am convinced that the way we planned it together is the best way. The way we were talking about it during the meeting [City meeting, September 2004] and it is welcome. This combines the different interests in the community.

5.2.8. Low levels of poverty

Absolute poverty is not really an issue on the island. In fact, Lošinj is one of the most prosperous areas of Croatia. However, many islanders are pushing to improve their social situation whilst tourism is booming. In many cases illegal construction is placing strains on the already stretched infrastructure. Although development is seen as one of the strategies to maintain the current population on the island, there are justified fears over competition with foreigners and continental Croatians for local property. Purchase of weekend and holiday homes by foreigners and continental Croatians has destroyed the identity of many of the smaller villages on the island. In one small village, Nerezine, over 40% of the houses are now weekend homes. The problems for islanders in competing with foreign investment are highlighted by the following two quotes:

Respondent 16: A lot of foreigners bought houses here. This is inevitable, you cannot control who buys things, whoever has more money buys things. But someone should think about how to keep alive a town where a kid growing up

doesn't have the money to buy a house in the same town. Someone should think about that, it is an important issue. It is hard to find a place to live on the island.

Respondent 10: We are in a tricky situation, foreign people are starting to see the value of the island, everybody is trying to buy as much as possible. The locals can't compete with that, we still don't have any money to buy real estate or do big business, so it's a political issue. It could become a big problem, and we could lose ground because of that. The local politicians don't have an answer and I think they don't even care. They are just occupied with the day to day business, collecting money and trying to collect money in the future. That's their only solution.

The displacement of local populations due to tourism is an issue not only throughout Croatia, but the whole Mediterranean. The Croatian government is taking steps to limit the possibility for foreigners to buy in the coastal and island regions. This is, however, an issue that remains contentious, especially considering the current situation regarding EU accession. The local issue is, 'how can any form of social capital be created when your neighbours are only on the island at the weekend, or for one month of the year?'

5.3. Relationship between resource system characteristics and group characteristics

5.3.1. Overlap between user group residential location and resource location

Close proximity to the resource has two aspects. The first is the tangible issue of 'noticeability', the second, is the intangible 'connection'. In Lošinj access to the sea is relatively easy, there is a pathway running around the coastline just a few metres above the sea. In many cases illegal actions are reported by people just out for a morning or evening stroll, Respondent 19 points out how easy it would be for monitors to check the resource and then call for enforcement.

Respondent 19: It is simple to see these people that go with lights and guns [spear-guns] by night. Stay in one place and wait, or take a walk along the coast. Go on top of the wall, and stay for two to three hours to see what is happening. Even if the local police can't go by sea, they could call the marine police and within 10 minutes they could be there.

Consistently, throughout interviews and observations, the importance of nature and the environment is highlighted. Respondent 12, an older professional fisherman, explains the importance of the sea and nature to those utilising it not only to make money, but also to derive pleasure from.

Respondent 12 [164]: For me the fishing is not only about making money, but I really enjoy going out on the seas, I have been going out on the sea for all my

life. Even when I was sick and the doctor said I shouldn't do it keep doing it, but I do because I enjoy it.

Respondent 23, an artist, recalls the issues that she had when she was living in Zagreb, to be in nature remains an important aspect for many Lošinj islanders.

Respondent 23: It's better for my work here, in cities I lose a lot of time for nothing. Here, if you want to go for a walk, in two minutes you can be at the lighthouse in Feral. In Zagreb you have to drive for half an hour even more and you come to nowhere. When we lived there we had a problem of where to go when we wanted to go to the nature, to breathe some fresh air, where it is beautiful, unfortunately there is nothing. If you are used to just walking out of the house to see something so beautiful, it was a problem. We were trying to find a place near Zagreb by car to just take a walk. This is very important for me, more important than to see a new exhibition every two weeks, I can see this on the internet. If I really want to see something then in a few hours I can be in Zagreb or Venice. There are other things that we have here that the cities do not have that are more important to me, now.

The importance of geographical identity can be seen particularly clearly in the older islanders. Respondent 19 emphasises the difference between being an islander and being a continental, relating the openness of the island to external influences.

Respondent 19: We have different mentalities from them [referring to continental Croatians], first our mentality is orientated towards the west, and second it is more a mariner mentality. 'Put your finger in the sea and you are connected to the entire world'. Maybe this is not appreciated by Zagreb.

Yet, migrations of younger generations may undermine the commitment to the island for many of the older islanders. Those that would instinctively discount their behaviour for their offspring, may now see it as unnecessary. As exit strategies become more viable it is likely that migration of younger individuals will continue unless something is done to encourage them to stay.

5.3.2. High levels of dependence by group members on resource system

Nature as a whole and the sea in particular, is an important asset for the island and its development. Whilst the Reserve only incorporates the eastern jurisdiction of the municipality of Mali Lošinj, the dolphin has been adopted as a symbol for the island as a whole. Since 2003, and the construction of the marine education centre in Veli Lošinj, dolphins have been promoted more and more as the symbol of Lošinj. This has been extremely successful for the development of the economic capital of the island (see plates 5.1 & 5.2). For the City authorities and the tourist industry, the image of the dolphin provides an easily identifiable symbol with which to promote the island, 'Lošinj the island of dolphins' (see plate 3.2). Respondent 9 relates how the image of the dolphin, as

an indicator of environmental quality, has taken over the promotion of the island in tourist brochures and fairs.

Respondent 9: Lošinj is every year more recognisable with the dolphins, and it helps to promote Lošinj as an island with clear sea and good nature. Dolphins must be in all the promotional material for the island in the tourist office. The tourist organisations must promote dolphins and this area, everything that is connected with the dolphins should be in all the tourist manifestations in the summer time. When they inform tourists about Lošinj there should be some films or brochures or information about dolphins, the sea, and the Reserve. Every year it is more and more 'Lošinj the island of dolphins'. And that's good.

Respondent 29, looking from the perspective of Jadranka the leading tourism organisation on the island, underlines the importance of dolphins in redeveloping nature tourism for the future of the island.

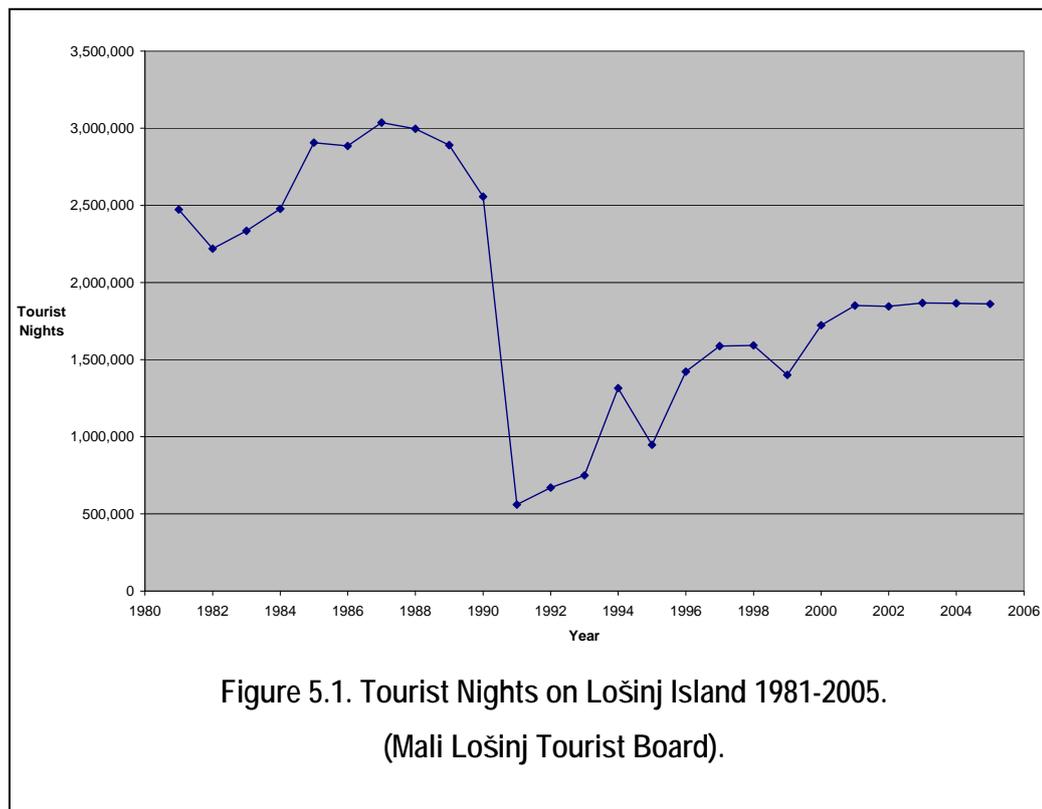
PM: Are dolphins important only as an image for only Lošinj and Jadranka?

Respondent 29 [03.2005]: It's very important for the image of Lošinj. If it is important for the image of Lošinj, then of course it is important for Jadranka. Dolphins mean that the water around Lošinj is clear that nature is protected. If they live here then it must be good for them and us as well. Well preserved nature is something that we are very proud of, as a company and a nation. That's the best thing that we can offer, unfortunately, maybe the only thing right now. Around the world it [nature] is becoming more and more important.

Concentrating on this single image entails risks. If the science is correct, then the dolphins may not be around forever unless conservation is applied soon. If the dolphins do leave the islands it could be economically problematic as well as a poor indictment of the island system. Respondent 10 worries that the exploitation of the dolphin creates a false image of the island and suggests that instead of concentrating on the dolphins alone, that Lošinj should look at nature as a whole.

Respondent 10: Now in Lošinj dolphins are a marketing resource. I'm sure that the people that come to Lošinj for dolphins go back disappointed. They can see a dolphin maybe once in ten years on the horizon. Our biggest resource is nature and we should invest in that. The dolphins can be seen a symbol of the nature, rather than as a resource itself, but it's not being used properly.

Being heavily reliant on tourism is a risky strategy, tourism is a fickle industry. The effect of the war on the local economy in the 1990s is a stark example of this (see figure 5.1). Encouraging the diversification of the local economy is one of the underlying principles of sustainable development, and is a common method used in the development of protected area strategies.



5.3.3. Fairness of allocation of benefits from common resources

The nature of the economics of the island suggests that some industries, companies, and individuals will benefit more than others, especially if the *status quo* is maintained. The proposed method of creating the Reserve, through participative means, provides an opportunity for many of the different stakeholders to get involved. Scepticism, voiced by certain members of the community, implies that only those willing to take a leap of faith, or believe they will personally benefit, will become involved. Respondent 5, President of the chamber of commerce, reflects the view that Reserve will be something supplementary to the day to day issues of many of the islanders.

Respondent 5: You know when we talk about the dolphins and the Reserve we must be very careful and see how this project is supplementary to the job of artisans. Our fishermen, not now, not yesterday, but in the past, were not going together well with the dolphins, that does not mean that it is impossible now to make some project. But, this project must also be looked at in terms of tourism. A Reserve for the dolphins can be very interesting for tourists. The only problem is how to find the way to balance tourism, fishery, and protection. I think that in the future it is important to make these projects, which have the aim to protect something, interesting for all the people.

Dolphins represent a symbol that all of the islanders can grasp, regardless of ethnicity or origin. They provide a common link between the various communities. Respondent 22, the Mayor, recognises that it is important that the image is made relevant to the entire island population.

Respondent 22: What's most important is that we have dolphins here, I don't know much about their ecology or population, but we do believe that this population is ours. It's important that the whole community should gain from this.

The development of the Reserve through the use of participatory techniques, rarely seen in Croatia, can be viewed as an example of a new paradigm of inclusion. Development of trust in the process can be used for future cooperative projects. Respondent 23 advances the theory that the dolphins provide something more than just economics, and that local people associate them now with the island and the maintenance of the high quality of the environment.

Respondent 23: It's not only good for the tourism, but it is also good for the local community. As outsiders associate the dolphin with the island and good nature, so do the locals. Who can say that they have a group of dolphins that have been studied for all these years. There are other dolphins, but people don't know their names like we do [researchers assign names to the dolphins to make identification easier]. We are special because of that.

5.3.4. Low levels of user demand

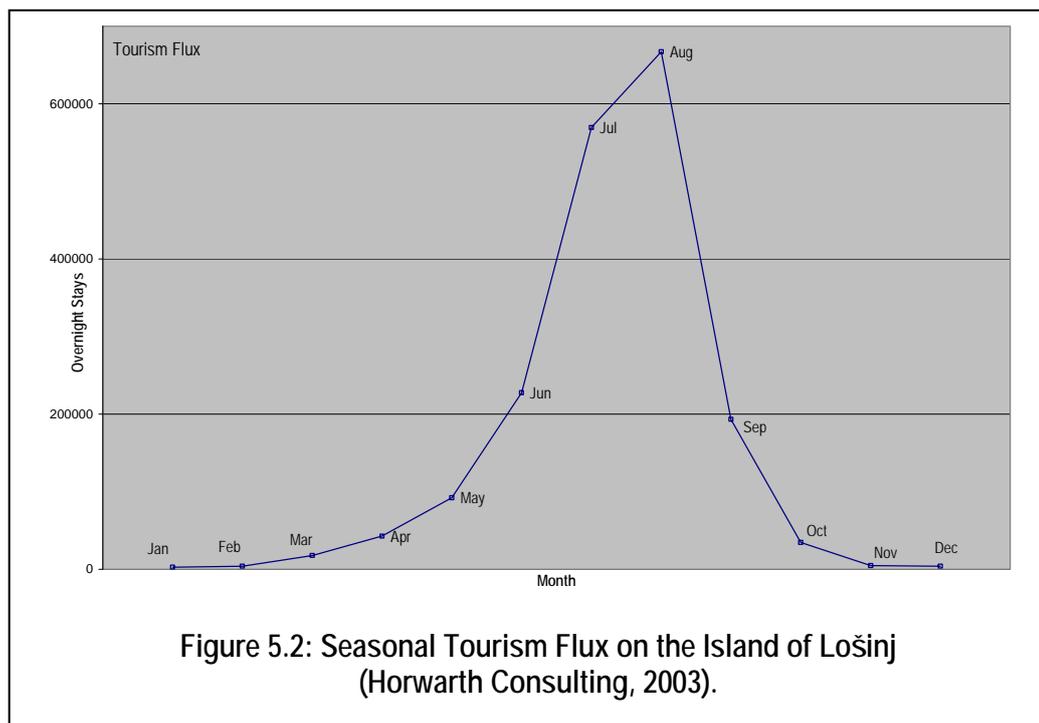
There has been a tourist demand for the island since the 1880s. However, it was not until the development of mass tourism in the 1960s and 1970s that the island resource began to be stretched. Even in the period of socialism this region did not remain isolated for very long, as early as 1949 preferential border movement was encouraged in Istria and the Kvarner region. As better relations have developed with Western Europe access has been made easier, both philosophically and physically. Respondent 19 relates the changes to the island since the end of the Second World War.

PM: What are the local major changes that you have seen?

Respondent 19: Nothing really happened after the war, apart from many people left. In this period it took 8 hours to get to Rijeka by steamboat. It was not until the 1960s or 1970s when we got electricity and water. But, then the tourists started to come. First, the ones in the cure house, for asthmatics and tuberculosis, this provided more work for the local people, especially with the East Germans. At this point, we could catch a boat from Rijeka to Cres, about an hour and a half by sea, then the bus for two hours. Then the new ferries came in 1964 from Porozina in Istria. Then the villas in Cikat were refurbished and the tourists were stopping there. Then they developed the big hotels, then more and more. Then all the tourists started to come by their own car, more and more ferries, faster roads, now everyone is in a big rush to go on holiday.

Tourism is concentrated in the summer months of July and August (see figure 5.2). In the winter months there are very few boats on the sea. Those that are, are registered on the island and of traditional design, i.e. capable of a top speed of around 8 knots. The dolphins are regularly seen entering the bays and harbours of the island. It is easy to imagine how Lošinj was prior to the development of mass tourism. Yet, even in the winter months the demand for the resource is increasing, the hook and line squid fishery, which was once purely recreational or subsistence, is now being used to supplement local incomes. In the winter months local people catch squid, freeze it, and sell it in the summer. Many locals have four or five chest freezers at home for just this reason. Respondent 18 talks about how, even basic technology like freezers, this has changed fishing over the last few decades.

Respondent 18: Forty years ago fish were cheap you had to eat them when you caught them, fresh. But, the problem is now the freezer. People can catch fish in the winter and freeze them until the summer to be sold for the tourists. Before this there was no problem for the fishing, there was no way to over-fish.



5.3.5. Gradual change in levels of demand

Changes in demand have been significant in the development of Lošinj Island. Mass tourism facilities, constructed in 1960s, brought large numbers of tourists to the island peaking in the late 1980s (see figure 5.1). Respondent 21 and Respondent 16 relate how the standard of living has changed on the island, and how the 'golden 80s' were the boom years.

Respondent 21: *Thirty five years ago the living on the islands was poor. Around thirty years ago that changed, in one moment we became the same as the coast. In some periods like the golden 80s, maybe the standard of living was better. Now everyone is fighting to stay at that level. The alternative is to return to how we were 50 years ago, me personally why not, but you can't expect people will understand and agree. Now if you want to make a solution everybody must find a way to that keep that standard of living without affecting nature, maybe its an impossible mission.*

Respondent 16: *In the 1980s, the last few years of socialism, it was heaven on earth here. It was socialism, but you could do what ever you wanted, without tax authorities and with growing inflation. I don't know how it was working with the mainland people in Serbia, Macedonia, but here on Lošinj there were a huge number of tourists coming here. I know people who were coming home with sacks of money after each evening working in the restaurants, just putting on one side without the time to count it.*

The war of the 1990s curtailed what would have been an environmental disaster on a par with the Spanish Riviera. Tourism peaked in 1987 at over 3 million tourist nights, and then declined to around 560,000 tourist nights in 1991. By 2001 it had returned to nearly 2 million tourist nights, at which it has stabilised (see figure 5.1) (Horwarth Consulting, 2003). During the war the use of the island resources declined due to reduced tourist demand and lack of investment. This had a major effect on the ecological processes of the marine system around the island.

Respondent 1: *Certainly during the war the dolphins were happier. There were fewer tourists, less disturbance, the fishing effort was limited, and there was little demand for fish. Also, there was no money and people could not afford to buy fish. There were no tourists so they didn't have to fish much and the market with Italy was affected by the war. In this case, it provided the dolphins with a quiet situation.*

The war of independence, and subsequent mismanagement of the State resources, left a ten year period in which Croatia remained in a form of suspended animation. There was little investment or contact with outside markets. Despite the national situation, Lošinj recovered faster than most areas of Croatia, due to its proximity to Italy and the lack of direct involvement in the war.

Until the end of the war, the majority of the fish caught were consumed on the island. However, increasing integration with the EU, and particularly the Italian market, has led to more and more fish being exported from the island. The local market is dominated by two private companies exporting fish from the island, this dominance is often berated locally. The absence of national fish market is also a contentious issue. Respondent 13 relates the situation with the market for fish on the island.

Respondent 13: *We have now these small firms buying the fish, it passes through four or five hands to reach the market in Italy. Everybody takes something. When our fish is here, trilia [red mullet (Mullus barbatus barbatus)] costs 20kn [€3] by the time it gets to Milan it is €12. If the national fish market comes and the price increases 50%, that can be expected, we can take all of our fish there, and sell nothing on the black market. If I put all the fish on the market, then I will live better than now.*

Italy is one of the largest consumers of fish in the Mediterranean. On average each Italian consumes around 24 kilos of fish per year compared to the 7 kilos of the average Croatian (FAO, 2004). This market demand is insatiable and has resulted in many local fishermen altering their working practices. Respondent 8 refers to the change in the use of the area with regards to the opening of the market place with Italy.

Respondent 8: *The idea of fishing 24 hours, when they began to work like that it was madness. We were working 3 times more for the same money. The problem is the dealers, they keep the price low, and all the fish is exported. Then they say that the fish price has decreased in Italy. This is a major problem as here in Croatia we eat 8 kilo per year, in Italy they eat 30 kilos per year.*

Owners of smaller fishing boats that do not export struggle to make ends meet in the winter. These fishermen have to deal with strong seasonal demand. Tourism is concentrated into summer months, and as a result there is a frenzy to gather enough money to provide for the long winter season.

Respondent 21: *The problem is that the season for making money is too short, only two to three months the price of fish is high, like opium. If for example season the season was for 12 or 10 months then the price for fish would be normal, then the job is normal, so there is less urgency to get money as fast as possible. This is also the case for tourism, when the season will be longer and the possibility to make money is normal like on the coast, then it will be better. Here you only three months and that is the basis to be greedy.*

There are also other issues with seasonality. A sewage system designed in the 1970s for the resident population of 8,000 deals with around 40,000 individuals in the peak season. Waste water overwhelms some of the harbours and bays of the island in the height of the short summer season. The strain on the system is obvious and recognised by all islanders.

Respondent 19: *I went to eat pizza with my wife in the harbour, and we left because of the smell of the sewage, how can the tourists eat in these conditions? The system is not designed for this many people, the waste just goes straight into the sea.*

Localised pollution undermines the drive for developing specialist nature tourism. There is growing recognition that the island is at its capacity,

particularly in the busy summer months. Respondent 25, the director of the tourist board, highlights this:

Respondent 25: I think that the Lošinj archipelago has reached capacity for over night stays, around 2 Million. Lošinj has a great potential, but we must work on quality. In the master plan our target is to stay with the capacity we have 23,000-24,000 beds, so we have to work on the quality of the destination in the first place, if the destination does not have quality then you cannot speak about the quality of accommodation. It is one of the very important things of course, unspoilt nature, clean water, and dolphins.

Significant market change has already happened in Croatia. However, greater changes can be expected as Croatia integrates with outside markets. Lošinj is slowly having its position as a tourism hot-spot in Croatia eroded by less developed but more forward thinking regions, particularly the southern islands. Lošinj must also look for new markets to maintain its position in Croatia. New roads, new ferries, and the refurbishment of the airport are being planned. Although connectivity with the mainland is good for the locals, it also makes the island more easily accessible and vulnerable to outside exploitation. The tourist board and agencies are reconnecting with old markets and seeking to develop new markets.

Respondent 29: We are targeting Germany in general for a start, because Lošinj is well known there, it is the easiest place to start from. We are also looking for new markets, and Scandinavia is one of those. We have groups coming in the spring and in autumn from Norway. This is something we would love, to extend the season, they prefer spring and autumn rather than the hot summer, they are not used to it. They are mainly pensioners, their pensioners have a good life and good standard of living and they spend money.

Despite the desire to develop quality tourism, and attempts to reverse the changes made in the 1960s, the issue is that large, poorly maintained hotels still exist on the island. Without major reconstruction these facilities are little more than 'gentrified barracks' and unlikely to attract the high quality tourism that Lošinj craves. Respondent 20 is cynical about the attempts to change to quality tourism.

Respondent 20: The problem with Lošinj is the capacity that we have. None of the high quality guests that we are talking about will come to Hotel Aurora and spend their holidays with thousands of other people. Aurora will always be here, no one will dynamite it. Now we have so many beds and we won't cut it. There won't be less people because no one will close down the hotels. Capacity will always remain the same, which is unsustainable. There are still 10,000 beds, but the people who have the money will not come to spend their holidays where there are 10,000 people. They will have a yacht and go around.

5.4. Concluding Remarks

This Chapter has presented a detailed account of the issues affecting the Lošinj islanders. Taking Agrawal's (2002) framework for the critical enabling conditions for sustainability on the commons allows a deeper examination of the structure of Lošinj islanders. Despite their isolation from the mainland there have been significant changes related to the development of the nation-state. The nature of the construct of the principle appropriators has been significantly influenced by the character and history of the State, region, and local environs. Of particular importance has been the undermining of institutional trust from national to local level.

Also related to the changes in the nation-state, has been large scale migrations making the island demographically unrecognisable compared to the turn of the century. This fact underpins many of the factors explored in this Chapter. Despite being ethnically homogenous, the fractured nature of the island society undermines the construction of 'bonding' social capital between 'islanders'. The population is not split on ethnic grounds, as one might expect considering Croatia's recent history, but on social or cultural grounds based on ancestry or origin. The situation echoes the findings of Bennett (1995), who suggests that the great divide in Yugoslav society was between rural and urban communities, not peoples.

Looking more specifically at the Reserve, the civil society groups involved in negotiations are split and there is little bridging between the entrenched groups, particularly tourism and fishery. These two heterogenic interests are further fuelled by significant disparities in wealth and power. Tourism dominates the economy and the politics of the island leaving the fishery peripheralised. These two stakeholder groups remain fractured, with fragile leadership and motivated by selfish goals. Without considerable facilitation between stakeholder groups there is little chance for the Reserve to be designated and subsequently managed correctly.

Although the island is wealthy in Croatian terms, it is relative poor compared to the surrounding EU states of Italy, Austria, Germany, and even Slovenia. Experience with the breakdown of the local economy in the war and post-war period of the 1990s has left the islanders apprehensive as to what EU integration will bring. There are significant worries that foreign investment will erode the local community, as has been seen in other Mediterranean coastal regions, and the fishery will be overwhelmed by foreign fleets. However, the island remains in a catch 22 position. Individuals, business, and the authorities are reluctant to reduce tourism capacity, yet are hoping to market the area as a quality tourist location. Increasingly the development of the Reserve is being seen as an option to maintain some local control over the area. Associated with this is the hope that the designation of the Reserve may help to diversify the local economy, reducing its dependence on mass tourism. In this manner it may provide a reason for younger islanders to remain on the island.

Agrawal's (2002) framework helps to draw out the underlying social issues affecting the potential for collective action. Three issues emerge strongly at island level: heterogeneity, generalised trust and social capital, and the role of appropriate leadership.

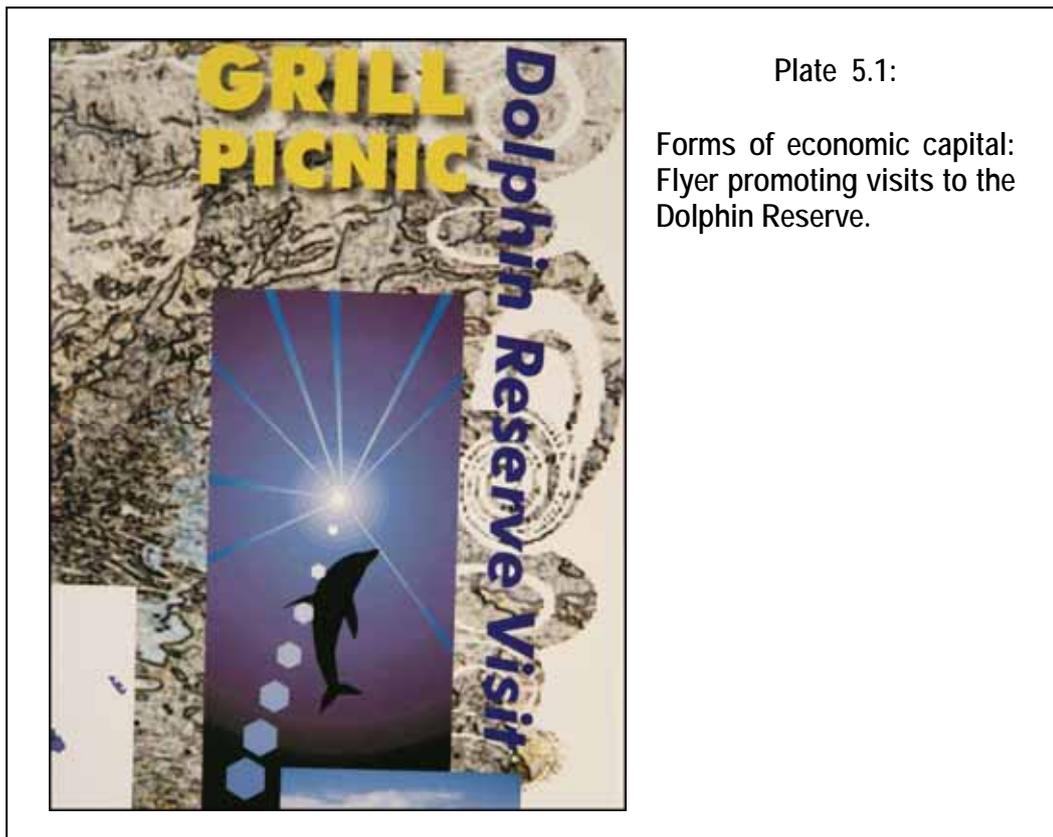


Plate 5.1:

Forms of economic capital:
Flyer promoting visits to the
Dolphin Reserve.

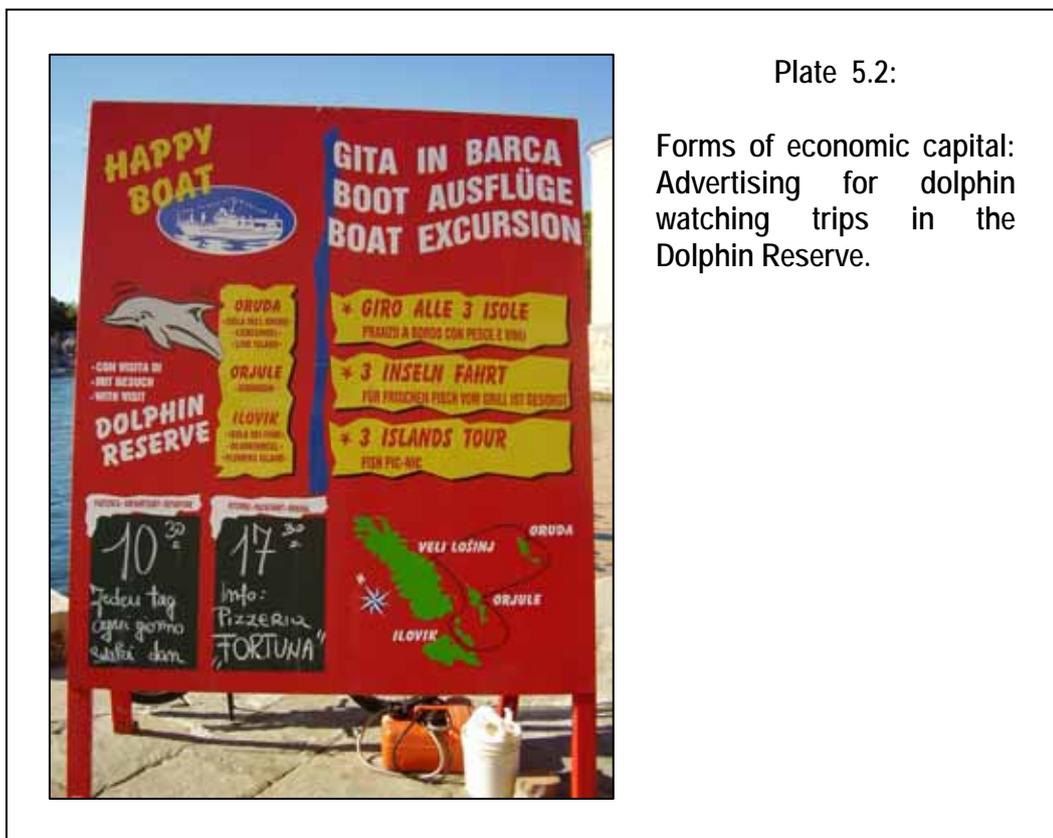


Plate 5.2:

Forms of economic capital:
Advertising for dolphin
watching trips in the
Dolphin Reserve.

6

The Lošinj Dolphin Reserve: Institutional Negotiations

Introduction

Chapter 6 analyses negotiations for the Reserve following submission of the 'Critical Habitats Report', in December 2003, to the end of the empirical study, in December 2005. This period was the most significant in the development of the proposal, with Blue World being involved in numerous meetings that directly and indirectly affected the Reserve.

Up to the completion of the Critical Habitats Report, negotiations had been predominantly top-down involving mainly the relevant authorities at various institutional levels. Pressure for designation of the Reserve was initiated at international level and then applied to the national authorities (see section 4.2). Whilst undertaking stakeholder interviews for the report, it became obvious that for the Reserve to be effective there needed to be significant local awareness, education, discussion, and input. From a personal point of view, it was also essential that the proposal did not become an issue to isolate Blue World within the local community.

This Chapter is divided into four main sections. The first relates the processes and outcomes of several meetings Blue World was involved in, between September 2004 and February 2005. The second outlines the statutory requirements for the Reserve, according to the 'Special Nature Reserve' designation. The third section analyses the international influences upon the development for designation. Finally, section four frames the institutional negotiations within Agrawal's (2002) critical enabling conditions for sustainability on the commons.

6.1. The Meetings

This section continues chronologically from section 4.3, following the completion of the Critical Habitats Report in December 2003. The seventy page report was submitted to the State Institute for Nature Protection (SINP) and the ACCOBAMS secretariat in January 2004. Agreement was made to follow up the report with a short simple Executive Summary. The subsequent drafting and translation, from English to Croatian, of the Executive Summary was completed in spring 2004 (see appendix II). This document was then used to lead

discussions on the development of the Reserve with relevant authorities and stakeholders, in both meetings and interviews. Between September 2004 and February 2005 six meetings took place. Three were hosted by Blue World and directly addressed the development of the Reserve. In two, Blue World was invited to present the proposal. In the other, members of Blue World were participants at the county meeting for the sustainable development of the Lošinj group of islands.

Following informal meetings with the Mayor of Mali Lošinj in spring 2004, Blue World agreed to withhold local dissemination of the Executive Summary until the City Executive¹ could meet and discuss the proposal. Several dates were proposed in the spring of 2004, but due to the proximity of the summer season the meeting was finally scheduled for September, delaying discussion for five months.

Meeting 1

Box 6.1: September 10th, 2004. Official presentation of the Reserve to the City Executive Committee hosted at the Lošinj Marine Education Centre

The ten person Executive Committee of the municipality of Mali Lošinj were provided copies of the Executive Summary and invited to discuss the document. For many members of the committee this was the first presentation of the Reserve proposal since the original was included in the METAP report (IDC, 1997). However, more than half of the committee had remained in position since that period, so had some knowledge of the proposal. It was also the first visit to the centre in Veli Lošinj, for most of the committee, which had been constructed in cooperation with the City. The committee were shown around the centre, and the meeting was convened in the conference room.

The meeting was divided to two sessions. The Critical Habitats Report and the development of the negotiations for the Reserve were first presented. The second session was an open discussion aimed at outlining areas of confusion and uncertainty. Finally a list of topics was drawn up to be addressed at a subsequent meeting with the other relevant authorities.

The meeting outlined the following issues to be addressed:

1. What is the appropriate designation type for the area?
2. How would it integrate into local and county plans for development?
3. How would the rules for the Reserve be devised, and who would be involved?
4. How would the rules affect the current use of the area?
5. How would the property rights, for the individuals that own part of the islands, within the proposed area be affected?
6. Who will manage the area?

¹ The City executive is a ten person board that reviews policy before submission to the whole City council.

The discussion emphasised the lack of knowledge, of both the City authorities and Blue World, regarding the use patterns of the area, particularly by fishery and tourism. The Mayor also highlighted the need for greater local community input, and the development of trust.

Respondent 22: I would like to warn you about one thing. We have to say that this area is not just good for dolphins, but also for people. We are an island with five or six wards. You have to talk with all of them, and please we would like to be involved in these meetings. We would also like to be on the meetings with fishermen. Not because of control, but because we want to be involved in everything. This area should be welcomed by all the people. Its good to have everything on a local level, but there must be complete trust in the process. The first measures must be to build trust locally. People have to have trust in us. After the trust is here then we can move further.

According to the agreement with the City authorities, Blue World did not contact other stakeholders until after the meeting. However, the President and Vice President of the fishery guild were eager to discuss what the Reserve would mean to their members. Despite the wishes of the City, it was decided that bringing the two groups together at this stage would not be constructive. The following evening an informal meeting was arranged between Blue World and member of the local fishery guild. This was the first meeting between the two organisations since Blue World had been invited to the fishery meeting in October 2003, which had been rather antagonistic.

Meeting 2

Box 6.2: September 11th, 2004. Informal meeting with the President and Vice President of the fishery guild.

The meeting was held in an informal atmosphere at the house of Blue World in Veli Lošinj. Blue World presented fishermen with the Executive Summary in fine detail. Initially, the fishermen were guarded in their opinion of the proposal. They raised fears about limitations on fishing, suggesting that the Reserve was the 'thin end of the wedge', and that their members would see this as a devious method of placing a 'no-take' reserve in the area. Nevertheless, the concept of local fishery protectionism was one suggestion that was supported by the guild.

Suspicious about relationship between Blue World and the City and State authorities were voiced. Reassurances were given that, whilst working closely with the authorities, Blue World remained independent and was not influenced by either local or national politics. The fact that they were the first group contacted after the local authority meeting, on the previous day, helped allay some suspicions. However, this meeting did underline the poor relationship between the fishermen and formal institutions. They were assured that Blue World wanted to form working relationships with all parties involved in the area to make the Reserve as equitable as possible. The

President of the fishery guild was sceptical of finding solutions that would please all sides, but the younger Vice President was willing to try. The absence of trust between the two groups was reflected in the meeting with both the President and Vice President repeating the need for Blue World to integrate further into the local community, and work with the fishermen.

The meeting concluded on good terms, with agreements to work more closely together on events such as 'Dolphin Day'. Finally, the Guild stated they would present the proposal to their members in a positive light, and would also like to be included in the research aspect of some Blue World projects.

Respondent 11: I claim one more time there is no protected area in Croatia apart from a National Park. But, maybe we can make it work if Blue World and fishermen are working together, then we will see if there will be an increase in the amount of fish. If that happens, then we can give you information about the fish we are catching, when the dolphins are around and work together on the research.

At international level, the relationship between Blue World and the ACCOBAMS Secretariat has remained good since the original contact in Rome, 2001 (see section 4.2). In March 2004, Blue World was presented with partnership status to ACCOBAMS in recognition of its research and conservation work in Lošinj (see appendix V). As a result, Blue World was invited to present the results of the Critical Habitats Report, and the state of local negotiations, at the ACCOBAMS second meeting of the parties in November 2004.

Meeting 3

Box 6.3: November 8th - 13th, 2004. The second meeting of the parties (MOP2) for ACCOBAMS, held in Palma, Majorca.

On 11th November, Blue World was invited to present the findings of the Critical Habitats Report and update the committee on the present situation of the proposal. Copies of the Executive Summary were distributed to all delegates. A short presentation was given regarding the development of the report and the subsequent meetings with the City authorities and representatives of the fishery guild. Following the presentation, support for the proposal was expressed from the Scientific Committee of ACCOBAMS. Various delegates requested further information regarding the process. The presentation also resulted in a formal statement of support for the Reserve from the Croatian delegation (Appendix V).

Significantly, at the end of the meeting, the Croatian delegation announced that the third meeting of the parties (MOP3) would be held in Dubrovnik in 2007. As the Lošinj Reserve remains one of the priorities for ACCOBAMS, this is viewed by many as an opportunity for the announcement of designation. The ACCOBAMS Secretariat, is positive.

Respondent 30 [11.2004]: *It's a very positive thing this announcement [Dubrovnik Meeting], particularly for Lošinj. I can't imagine that the Minister will stand up there at the opening session without announcing the designation. That would be very embarrassing.*

Locally, the new relationship with the tourist board of Lošinj led to an invitation for Blue World to address the annual island tourism meeting in December 2004. This annual meeting is used to discuss the planning of tourism for the following season.

Meeting 4

Box 6.4: December 16th, 2004. Annual meeting of the tourist authorities and tourist agencies in Mali Lošinj.

Unfortunately, the tourism meeting overran and Blue World was unable to present the proposal. In this regard the meeting was unsuccessful as contact was limited with the representatives of the local tourist agencies. It was significant that Blue World received an invitation to this event. However, the lack of interest shown by most of the delegates underlined the need for greater awareness of the significance of the proposal for tourism on the island.

The invitation belied the underlying indifference of the tourist industry towards Blue World and the Reserve proposal. The dominance of the tourism sector over the economics of the island makes it the most resistant to change. Whilst there is acknowledgment that the Reserve will bring changes, there is a firm belief that it can only be positive for tourism. This was highlighted by the comments from Respondent 29 who works in hotel marketing at Jadranka, the largest company on the island.

Respondent 29: *I think the Reserve will provide a positive image. The other thing is we are not very well informed about what exactly it means in real life. I read this material [the Executive Summary] and I don't see how it will affect our business at all. Are there any restrictions that apply to us? I see something that applies to fishermen and diving tourism, but we are not specialists in diving tourism so that doesn't affect us directly. I would really like to know what it suggests for us. I don't think that it will affect us much at all.*

At the beginning of 2005, a series of sustainable development workshops were held throughout Croatia, organised by the Ministry for the Sea, Tourism, Transport, and Development. In total, the programme hosted sustainable development meetings for the 26 island groups in Croatia. The programme was broken into three phases:

1. An expert elaboration of the current state of the islands, from which printed materials are presented to the participants;
2. The development of limitations, preferences, and aims of the programme, of which the workshop is a significant part;
3. Finally, the implementation of those aims by the local authorities.

Blue World was invited to participate in two meetings. The first was for the island group of Cres, and the second for the island group of Lošinj. Although members of Blue World attended both meetings, only the Lošinj workshop directly addressed the area within the Mali Lošinj jurisdiction and as such was pertinent to proposed Reserve.

Meeting 5

Box 6.5: February 19th, 2005. Sustainable Development Workshop in Mali Lošinj.

A standard format for all of the workshops was applied. A brief presentation was given regarding the process of the programme and then the participants were divided into four thematic groups:

1. Natural and built resources;
2. Island groups and social activities;
3. Economy;
4. Institutions for developing management.

Members of Blue World were placed in the first group, natural and built resources, along with other environmental and cultural NGOs from the islands, and other interested participants. During discussion, topics were highlighted and then scores were then appointed to them by each member of the group according to their importance. The top five ranked topics were subsequently presented to all of the participants of the workshop. The major topics identified within the natural and built resources theme were:

1. Setting of regulations for the protection of the sea and coast, particularly waste water discharges, illegal fishing, anchoring, traffic, and the land-fill site.
2. Prohibition of illegal construction and the protection of historic architecture and culture.
3. Protection of indigenous flora and fauna, and strategies for land planning and agriculture.
4. Elimination of introduced species, particularly the wild pig.
5. Protection of environment through specialist education of the local community.

In the afternoon session each group presented its topics and a matrix associating topics between themes was created. Finally, scores were allocated verbally by workshop participants according to the importance of the links between topics.

The importance of marine protection within the natural and built resources theme group was a surprise to many people from other groups. However, this was deliberately manipulated by the large number of Blue World members in the group. Whilst both the workshops in Cres and Lošinj were well attended,

only members from Blue World participated in the natural and built themes at both venues. Hence, manipulation of the process was not difficult to achieve. At the end of the sessions, the cross-theme matrix descended into a chaotic shouting match from the floor. This underlines the lack of experience that not only the participants, but also the practitioners of these workshops have in Croatia.

In an opportune moment outside the formal workshop, I discussed the Reserve with the Head of the County Department for Sustainable Development and Physical Planning, who was running the workshop. Whilst he was complimentary about the proposal, like others within the relevant authorities, he was sceptical about the ability of the county to provide assistance in its development.

PM: What do you think about the development of the proposal as a Special Nature Reserve under county jurisdiction?

Respondent 31 [02.2005]: *I think that it is a good idea that you at Blue World have worked hard on, and although there is a department for protected areas, there is even an office, there is no funding to employ anybody. We have been trying for the last three years to find funding, so basically there is nothing that the county can do.*

The final meeting in this period was an extension of the first meeting in September 2004 with the City authorities. A meeting with all the relevant authorities was arranged in February 2005 to discuss the issues raised in the September meeting. This was probably the most significant meeting for the Reserve to date.

Meeting 6

Box 6.6: February 21st, 2005. Official presentation of the Reserve to the relevant authorities, at the Lošinj Marine Education Centre.

Prior to the meeting, letters of invitation setting the agenda were sent out along with copies of the Executive Summary of the Critical Habitats Report. The core relevant authorities were: the Directorate for Nature Protection of the Ministry of Culture, the State Institute for Nature Protection (SINP), the County Office for Sustainable Development and Physical Planning, and the City of Mali Lošinj. Of these authorities, the representatives from the county failed to attend. The structure of the meeting followed that of the September meeting. However, the discussion was focussed on the following aims:

1. Identification of the appropriate legislation and its implications for management;
2. Defining future steps necessary for the creation of the Reserve, including identification of all of the relevant authorities;
3. Identification of the roles of the relevant authorities, and identification of the lead authority;
4. Identification of structural funding needed for the development of the

Reserve;

5. Setting of an appropriate timetable for goals.

The discussion was to also aimed at directly addressing the questions raised in the first meeting between Blue World and the City authorities:

1. What is the appropriate designation type for the area?
2. How would it integrate into local and county plans for development?
3. How would the rules for the Reserve be devised and who would be involved?
4. How would the rules affect the current use of the area?
5. How would the property rights, for the individuals that own part of the islands, within the proposed area be affected?
6. Who will manage the area?

Discussion was led by the representative of the Ministry of Culture, as the competent authority. Initially, discussion focussed on the designation type and the implications for the economics of the area. Concerns were raised about the need to balance tourist use with the conservation aims of the designation. The Ministry representative confirmed that a Special Nature Reserve (Special Zoological Reserve for Dolphins) was the most appropriate designation type. He suggested that provided economic use did not directly impinge on the designation aims, then it could continue.

Respondent 32 [02.2005]: *Changing the category of the protection is not possible because a Park of Nature or National Park are not suitable in many ways and would cause many problems... ...A Special Nature Reserve asks for restrictions in activities that influence the reason why the area was protected. In this case, whatever is the part of dolphins' life cycle. Therefore, we can say that not everything would be forbidden. The management plan should decide what is allowed and what is not. So, if some form of fishery is shown to be harmless then it can continue. We are certainly not allowed to kill animals or to use tools that cause mortality. So, it is important to say that some things will have to be denied, but much more will be gained.*

The process for designation of the area was discussed and outlined by the representatives from the SINP. The next step in the process is the development of the expert elaboration by the SINP, to be initiated immediately. Finally, the issue of public access to the process, and participation in the management of the area was considered.

Respondent 32: *The mechanism for public access, with public debate, is led by the Ministry. We simply have to stand in front of the people and defend the proposal. The public need the explanation of how they are going to live and work here etc. Public documents remain to guarantee what is said and it's up to us to convince people that it is a good idea.*

The agenda of the meeting was rather ambitious, but it did identify some important issues. However, the definition of an operable timetable was overlooked, as was the topic of funding for the development work of the Reserve.

6.2. The Lošinj Special Nature (Zoological) Reserve for Dolphins

*'A special nature reserve is an area of land and/or sea of particular importance for its uniqueness, rarity or representative character, or is a **habitat of endangered wild taxon**, having a particular scientific significance and intended purpose'* (Nature Protection Act (NPA), 2005: Article 12.1 (emphasis added)).

The designation 'Special Nature Reserve' is the highest level of nature protection, according to Croatian law, that provides for the development of a local management institution. At the time of writing the protected proposal, in 2001, Special Nature Reserves were declared by the county authorities. Changes to the law in 2005 (NPA, 2005) means that they are now declared by the Government of Croatia.

'Strict and special natural reserves are designated by the Government of the Republic of Croatia by a regulation at the proposal of the Ministry' (NPA, 2005: Article 21.2)

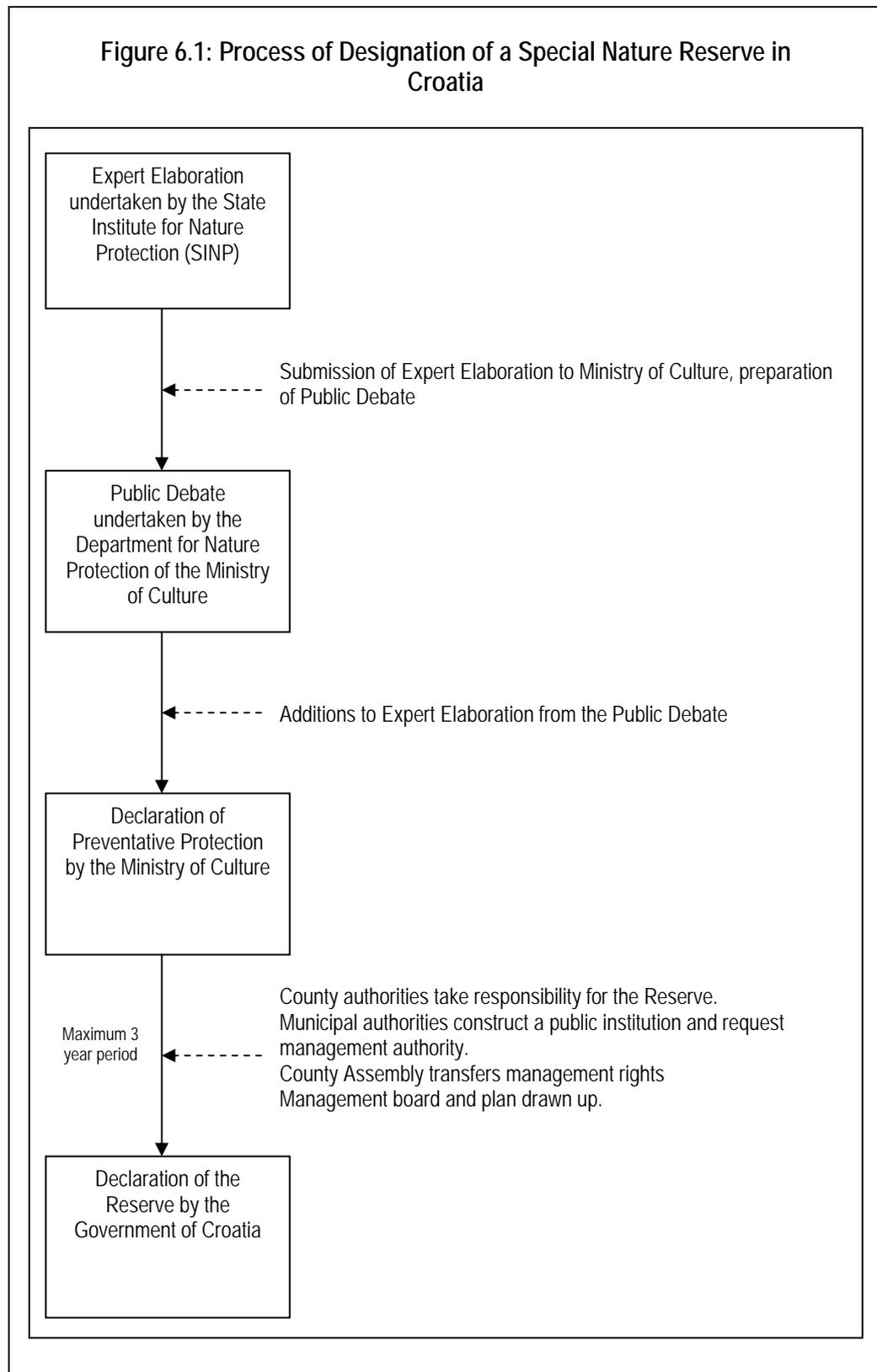
Although a Special Nature Reserve is now designated at national level, the county authority still has the obligation to take over the management of the area once it has been designated². However, under Article 72 (NPA, 2005), the County Assembly may transfer management rights to the municipality in which the protected area resides, providing that the area does not exceed the boundaries of that municipality.

'Public entities for administering other protected areas [non National Park or Park of Nature] and/or other protected natural assets shall be founded by the regional self-government units by virtue of a decision by the County Assembly... ...The County Assemblies may transfer shareholder rights over the public institution on the municipality or City whose territory hosts the protected area' (NPA, 2005: Article 72.3-72.4).

The process of designating any protected area, including a Special Nature Reserve, follows a standard rather convoluted method in Croatia (figure 6.1).

² All protected areas below the status of National Park or Park of Nature fall under the management of the County Office for Nature of the Department for Sustainable Development and Physical Planning. This office is tasked to manage all of the protected areas within the county. National Parks and Parks of Nature have independent management authorities constructed by national government.

Figure 6.1: Process of Designation of a Special Nature Reserve in Croatia



Before designation all protected areas within Croatia require an expert elaboration undertaken by the SINP. This forms part of a recommendation that the SINP makes to the Ministry of Culture. This recommendation includes the definition of property rights, business activities, methods of administration, and potential funding requirements. Finally, both the biological and social effects of the proposal are assessed. Under the recommendation, the primary objective of the area is then identified (NPA, 2005: Article 22.1). Head of the SINP, explains:

Respondent 33 [02.2005]: *The recommendation is actually a review of the total state found in the field, but this study also contains assumptions, i.e. possible ways of economic and developmental use. Therefore, from this study you can read what has been recommended, i.e. what is forbidden, and what, and in which way it is possible to create rules in the management plan. Within the management plan itself it is possible to affect certain more subtle processes. A sociological study is also included here which helps to understand public opinion.*

Once the expert elaboration is complete, it is sent to the Ministry of Culture for the preparation of the public hearing. However, major changes to the law for nature protection over the last decade have led to confusion over the correct application of the law. Head of the Inventorying Section of the SINP, explains:

PM: What is the stage after the expert elaboration?

Respondent 15: *Well, the next stage should be a public hearing. But, there is this stupid problem, according to the law there has to be some bylaw or regulation that gives you the methodology of this public hearing. Without this you cannot do it. After we make the expert elaboration we send it to the Nature Protection Division of the Ministry of Culture which is the body that has to organise the public hearing. So after we make the elaboration and send it to them our work is basically done. One thing that is also very important is that this area will be proposed for Natura 2000, which will give it priority.*

Following the public hearing, comments are evaluated and objections are addressed. Once consensus is reached the process of designation is started. Initially preventative protection is declared by the Ministry of Culture. Preventative protection actually establishes the Reserve for a preliminary period of three years, in which a decision must be undertaken from the government for permanent designation (NPA, 2005: Article 26.1). Following the declaration of preventative protection the relevant authorities maintaining jurisdiction over some component of the area will be required to relinquish their claims to the competent authority, the Ministry of Culture³. In the case of the Lošinj Dolphin Reserve, this is represented by the County Office for Nature of the Department for Sustainable Development and Physical Planning, until such time as the local

³ Within Croatia, there are three Ministries with claim over certain aspects of the marine environment: the Ministry of the Sea, Tourism, Transport, and Development, the Ministry of Environmental Protection, Physical Planning, and Construction, and the Ministry of Agriculture, Forestry, and Water Management (MAFWM). However, the Ministry of Defence and the Ministry of Internal Affairs also have rights to use the area.

public institution is established and the municipality of the City of Mali Losinj requests management authority.

Assuming the local public institution is created, and the request for management authority is made, the Reserve will be governed by a steering committee appointed by, and answerable to, the municipality (NPA, 2005: Articles: 75.1; 80.3). Once the institution is established it must define the by-laws for the development of the area and the management of the institution itself. The institution is then tasked with the:

'protection, maintenance and promotion of the protected area with the purpose of protection and conservation of authenticity of nature, safeguarding the undisturbed running of natural processes and sustainable use of natural resources, as well as control the enforcement of nature protection requisites and measures in the area they administer' (NPA, 2005: Article 73.1).

This is usually undertaken through the development of a management plan for the area. This plan outlines the development guidelines, the method of implementing protection, the use and administration the Reserve, as well as more detailed guidelines for protection and conservation, whilst taking into consideration the needs of the local population (NPA, 2005: Article 80.3). There is also a legal requirement for public access to the drafting of the management plan (NPA, 2005: Article 81.3). However, there is no legal mandate for the development of advisory, liaison or topic groups. Without this legal mandate the provision of local participation, beyond the steering committee, is not guaranteed. Bearing in mind that the construction of the public institution lies squarely in the hands of the founding organisation, the development of the Reserve could be hostage to the vagaries of local politics, which may still undermine the original objectives of the proposal. Despite this, as with all protected areas in Croatia, this site would be subject to inspection from the competent authority (NPA, 2005: Article 177). This may allay the possibility of local political appropriation of the Reserve and subsequent management paralysis.

PM: What about management of the area and local participation?

Respondent 2: *The competent ministry must ensure management and participation in wider protected area policy. There is a need to take advantage of a higher viewpoint than just local; however, real management is best done at a local level, physically close to the territory. The federal level ensures a minimum standard and conformity with national, European, and international policy, it ensures uniformity. In Italy we have noticed the problem of MPA management bodies being too dependent on local politics and linked to their vagaries. MPA management should be connected to local powers, but must have greater longevity than the local political authorities.*

In almost in every interview, meeting, and conversation the issue of funding was suggested to be the most likely factor affecting the success of the Reserve. The responsibility for funding the area lays with the founding authority, in this

case the municipal authorities. The law does provide, however, for the possibility of funding to be sought through other means, in particular entrance fees, licenses or through a localised tax system (NPA, 2005: Article 74). A recent UNDP/GEF project highlighted significant problems for funding protected areas in Croatia. Most protected areas are financed by a combination of visitor fees and funds from the budget of the Ministry of Culture. Yet, in 2004 protected areas were not included in the Ministry budget (Frankić, 2004). It seems likely the site would be required to be financially self-sufficient to be operable. All authorities support the idea, but the issue of funding remains pertinent, and could not be resolved at the relevant authority meeting in February 2005 (see section 6.1).

Respondent 32: *The main question about establishing the Public Institution is who is going to pay for it. The State doesn't predict support for an area like this one, and the tendency is to make protected areas independent, but without commercialising... [However] ...You have one irrefutable argument and that is that you will be exclusive, the only area like this in the Adriatic or even the Mediterranean. This is exclusivity can go on any world tourist market on which you can earn money.*

Associated with funding is the question of compensation. Compensation also falls under the responsibility of founding authority (NPA, 2005: Article 116). In the meeting with the City authorities in September 2004, the need for the development of compensatory measures for property rights and businesses was high on the agenda, and can be regarded as a hot local political topic. The fishery guild has been particularly vocal regarding fears over the loss of business due to the designation of the Reserve. Changes to the working practices of some fishermen should be expected and many locals worry that finding alternatives may not be easy.

Respondent 21: *You must give him [the fisherman] alternative employment. Here there are not many options, only fishing and tourism... ..If you want them to convert their boats for ecotourism it costs money, there are licenses that they have to pay for, changes they have to make, even to put a toilet on board... ..who will pay, you? The Ministry? Or the big money pot of Europe? It's OK, but it's not enough just to give money to change the boats, you must have money to change everything.*

The proposal for the exclusion of secondary appropriators, such as external fishermen, may also lead to demands for compensation. Invariably, the solution to the funding issue was the development of a project for funding from the EU. The importance of the potential for accessing international funding for the Reserve was recognised in the 2002 proposal:

'Designation could also lead to inclusion into the Emerald Network of the Bern convention, thereby advancing the potential for large scale financial support through the LIFE 3rd Countries scheme of the European Union, supporting the

economic and social changes that will occur in the area.' (Mackelworth *et al.*, 2002).

This is also emphasised by the Head of the SINP, who sees the potential for EU funding as a significant asset.

Respondent 33: *We will probably soon become EU members that will change a lot of things. The possibility for getting significant grants will open up from the fact that this protected area and is probably going to be a part of the Natura 2000 network. The requirement for some restrictions in the area will stimulate possibilities from EU funding. The access to appreciable 'pre joining' funds will also open up.*

On the island there an opinion that if local development is going to be limited for the benefit of the whole of Europe, then funding should be forthcoming to compensate local users. The President of the chamber of commerce remains sceptical.

Respondent 5: *I think honestly that money is the problem. Who will give the money? We do not have the money, and this means that somebody must give money for this entire project. I think that if the EU wants to have some 'oasis' here, some clean natural area in Europe, they must invest in this project. If not, I don't believe that this project can go ahead. It is an interesting project that we must help and support, but there is a limit to what can we do.*

Failure to secure funding undermines management of protected areas worldwide. However, reliance on external funding can prove to be a major dilemma for MPAs. Although there is a need to identify a source of funding to establish the management of the Reserve, once created it will have to be financially self-sufficient to be sustainable.

6.3. International Influence

The two major international influences on the Reserve are the European Union and ACCOBAMS. The EU is the largest international market for Croatia, maintaining good relations is essential both politically and economically. The EU also represents many of the political and social norms that Croatians aspire to, as Prime Minister Ivo Sanader states:

'The EU stands for economic prosperity and cooperation; it means stability and security' (Sanader, 2005: 4).

In some respects, the accession process places more emphasis on those members trying to enter 'the club', than those already in. As well as the possibility of accessing EU funding for the reserve, highlighted in the previous section, there is a legal requirement for Croatia to integrate with European law. The

Stabilisation and Association Agreement signed in 2001, and the subsequent Partnership Agreement signed in 2004, requires Croatia to:

'Ensure the integration of environmental protection requirements into the definition and implementation of other sectoral policies with a view to promoting sustainable development...[to]...Continue work on the transposition of the acquis, with particular emphasis on waste management, water quality, air quality, nature protection and integrated pollution prevention and control' (EC, 2004a: 14).

Harmonisation of Croatian nature protection law has been done with particular emphasis on the flagship of EU conservation policy, the Habitats Directive. The Nature Protection Act (2005) has been written to integrate many of the international conventions and agreements signed and ratified by Croatia since independence.

Respondent 33: This law is very comprehensive, because it takes the obligations from the ten conventions or so, and adds the instruments from the directives, especially Article 6⁴ of the Habitats Directive. It's mostly harmonised, but I think that there will still be some things to do. The accession process will require some changes, but not wholesale changes of the law.

Without the carrot of funding and the stick of sanctions from the EU, nature protection strategy would be languishing behind economic development in Croatia. This is reflected in comments made by national government employees. Respondent 15 states that without the potential to tap into EU funds environmental protection would have no budget or any likelihood of obtaining any funding.

PM: How important is the EU for nature protection?

Respondent 15: For nature protection it is very important, it is the only argument we can use to accomplish something, because the Ministry of Culture reacts only if we mention the EU and there is pressure from the EU. The guy from the EU who is responsible for us visited Croatia on several occasions. There was a meeting and he explained the process, but the State Secretary, who is the guy in the ministry who is like a god, didn't turn up to any of these meetings, so the EC delegation decided to organise a meeting with the State Secretary. From this meeting the Ministry understood that some things had to be done about nature protection and that they could not just ignore it.

However, political changes in the election of 2004 have created confusion due to changes to the law. The new Nature Protection Act (2005) has replaced the previous law introduced by the previous government.

⁴ Article 6.1: For special areas of conservation, Member States shall establish the necessary conservation measures involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans, and appropriate statutory, administrative or contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites.

Respondent 15: *In 2000 we started to work on the new law, because of all the conventions that we signed. It usually takes a few years to make the law, pass it, and adopt it. For three and a half years it was trouble, trouble, trouble to pass the law, because it put nature protection in all sectors, hunting, agriculture, and we had great problems especially with forestry. Finally, at the end of 2003 they adopted it, and then at the beginning of 2004 a new government came. They said that the nature protection law is no good and they changed everything, and now, last month they adopted this new law which is actually the old law without GMO problems. So, it will take some time to know what is where in the law, because they mixed everything. Although, the main thing is that the EU will be the mover of things with the law, harmonisation with the EU.*

To add to the confusion, the Directorate for Nature Protection was moved from the Ministry of Environmental Protection, Physical Planning, and Construction to the Ministry of Culture. The change of competence for nature protection is pointedly highlighted in the European Commission opinion of the application of Croatia for membership to the EU (EC, 2004b: 102):

'Whilst the legislative framework for nature protection exists, implementation measures, and particularly the management of protected areas, need to be strengthened. In this context, the recent shift of the competence for nature protection from the Ministry of Environment to the Ministry of Culture appears to deviate from common practice in EU Member States.'

This was also reflected in comments by State employees at a meeting in Zagreb. It appears that at the personal request of the Minister for the Environment, who is an architect, the nature protection directorate was transferred to the Ministry of Culture where there is little or no expertise with dealing with the subject.

Respondent 15: *We started as the Institute to operate two years ago [2002], you have to invest at the beginning lots of money to put this institution on its feet. Then there was the change of the competence between the ministries. The Ministry of Culture cut the budget for nature protection in half, and so it was the worst time for us. We were starting to operate, but we didn't have any money for human resources, equipment or anything... ...The thing is it was much better when we were in the Ministry of the Environment. It's so logical, what does nature protection have to do with culture? Please. Anyway, they moved us to the Ministry of Culture and it was terrible because in the Ministry of Culture don't know anything about this field, they are not interested and they want to put it aside. They wanted to take some things out of the competence of the Ministry, but in the end they didn't do it because of the EU.*

On top of this is the shortage of manpower and resources within many of the State institutions. A UNDP/GEF report of 2004 highlights the absence of consistent training, education, and management within the nature protection directorate (Frankić, 2004). In meetings, the personnel from the Ministry remain fearful about requesting help from the EU to address these issues. Any critique of the system is routinely removed from documents. In the inventorying

department of the SINP there are only two full-time employees, the rest of the department is run using interns from the University. However, the accession programme will require the Ministry to improve the capacity of the 'expertise' side of nature protection.

Bottlenose dolphins (*Tursiops truncatus*) are protected under Appendix II of the Bern convention (see introduction to Chapter 4), and hence the inclusion of the Lošinj Reserve into the Emerald Network was one of the objectives of the proposal. This also recognised the importance of obtaining external funding for nature protection in Croatia ⁵(Mackelworth, *et al.*, 2002). Its inclusion into the first group of Croatian Natura 2000 sites is a significant step. The importance of having this area integrated into the Natura 2000 network has been reiterated throughout interviews and meetings.

Respondent 15: As Croatia is an accession country it now has the Natura 2000 designation. You have Natura 2000, and you have a national ecological network that includes some areas that are important for Croatia and sites of Natura 2000. You have some areas that are important National level, but not European level. This area of Lošinj is part of the Natura 2000 proposal, important at European level.

This is coherent with the law for nature protection, which calls upon internationally important sites to be established, according to international standards, and integrated into appropriate ecological networks (NPA, 2005: Article 60). The importance of being included into the network is also underlined in Article 203 (NPA, 2005), which clearly states the status of these areas and, should Croatia join the EU, sets a deadline for their establishment.

'The international ecologically important areas referred to in Article 60, paragraph 2 of this Act shall be constituent parts of the European ecological network Natura 2000... ...The international ecologically important areas referred to in paragraph 1 of this Article shall be established before the date of accession of the Republic of Croatia into the European Union'.

In addition to EU pressures, Croatia has signed and ratified many important international and regional agreements and conventions for nature protection. The Agreement on the Conservation of Cetaceans in the Black sea, Mediterranean sea, and contiguous Atlantic Area (1996) (ACCOBAMS) is perhaps the most applicable to the Reserve. This site remains one of the implementation priorities for ACCOBAMS.

'This action proposes to select four areas, each of them containing critical habitat for one of the four priority species, in which pilot conservation and management projects be developed and implemented immediately. Areas should be selected on

⁵ The 'Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora' (Habitats Directive, 1992) is the transposition of the Bern Convention into European law. As such, it is fundamentally coherent with the Convention (Baldock, 1997). The main difference is the territory that they apply to (Scovazzi, 1999).

the basis of sufficient available knowledge and characteristics of the area allowing the creation of a model, which can then be applied to other similar situations in the Agreement area... ..the waters of the Lošinj-Cres Archipelago, Croatia (Mediterranean common bottlenose dolphins). Conservation measures should involve the establishment of ad hoc protected areas encompassing critical habitat for the target species and the adoption of experimental management plans with the involvement of local people and user groups; measures should include intensive monitoring of the cetacean population, targeted research, regulation of impacting human activities, education efforts directed at the local fishing communities and recreational users, and promotion of more compatible, alternative activities (e.g., whale watching) and resource uses' (ACCOBAMS, 2002: Annex 1.4: 76).

ACCOBAMS was concluded in 1996, and as such is still a young Agreement. One issue that undermines its position is the lack of any major structural funding. The Chairman of the Scientific Committee recognises its limitations, but suggests that it still has influence regardless.

Respondent 2: It has no real formal power, but definitely political influence upon the parties. It cannot impose rules on the parties. Croatia has signed and ratified ACCOBAMS, the next Meeting of the Parties will happen there, and hence a good success story coming from the Lošinj Dolphin Reserve is extremely relevant. Informally, ACCOBAMS has the influence to stimulate processes within the country, and there is an incentive to bring results to the ACCOBAMS community. If each party is willing to put the 'heart where the mouth is' not just words, but actions, then ACCOBAMS can be a useful agreement.

In addition to applying political pressure to State institutions, ACCOBAMS has also had a direct influence on the development of the Lošinj proposal. Through ACCOBAMS, funding was provided for the Critical Habitats Report. Politically it has reinforced the status and image of Blue World NGO at both local and national level.

PM: What do you believe is the role of NGOs for ACCOBAMS?

Respondent 30: NGOs are important, as they provide a large amount of help to governments. They are not bound directly to political aspects of governments in the role of conservation. As you know ACCOBAMS has written into its statutes the partnership status for NGOs. There is a common benefit for all of the parties involved.

PM: Was the partner aspect a deliberate policy of ACCOBAMS to recognise and promote NGOs?

Respondent 30: Yes, it was. We believe that ACCOBAMS may help to endorse NGOs with national governments. We have been developing programmes particularly in non-EU States. The EU States are well developed in conservation and therefore require less help than say the North African and Central and Eastern European States.

The role of NGOs in cetacean research is substantial worldwide. The image of the whale is often used in campaigns for nature conservation. Cetaceans belong to the 'charismatic megafauna', which are often outrageously exploited to elicit sympathy and funding from the general public. These aspects of cetaceans and NGOs have an affect on the scientific image of cetology. Within the scientific community, cetology is often regarded as a 'grey' science area. Hence, support from an international Agreement can help to provide institutional respectability, the former coordinator of the ADP, recognises this.

Respondent 1: ACCOBAMS provides a very important respectable institutional umbrella. It puts what you do into a context that has a wider scope. It makes your work more credible as it is supported by international bodies. It increases your funding opportunities, it makes you more visible, and more people talk about you. It provides you with opportunities to affect the wider public, because a public awareness action that is supported by ACCOBAMS is certainly more easily taken on by other campaigning NGOs, such as WDCCS⁶. It makes your message more credible and easy to convey. It provides you with opportunities to improve your work by collaborating with others. On a personal level, particularly if you are a foreigner working abroad, having the support from ACCOBAMS makes a remarkable change, because you can be presented as someone who works within the context of the agreement, and therefore you are not just a foreigner and illegally working there.

NGOs play a major role in science and public awareness of environmental issues in Croatia. However, they are not universally appreciated. There is often suspicion of the motivations or doubts of the capabilities of NGOs from older members of State institutions, where title and affiliation remains an important verification of ability. In recent meetings with State officials the suggestion to add NGOs as partners to a national project was viewed with dismay. Fortunately, the presence of the UNDP representative in the meeting ensured their inclusion. NGOs play a major role in fulfilling the commitments of the Croatia to many of the international agreements that have been ratified.

Respondent 15: NGOs are very important, but you must know that we have two types of NGOs. Enthusiastic NGOs, that don't have experts, but have enthusiasm and want to do something. They usually do bad things. Then you have NGOs that are well organised and have experts, these kind of NGOs are very helpful. I mean that is the case with Blue World because you are doing the research, and it is important for us to gain some kind of data. This aspect of cooperation is important. NGOs provide some expert basis for our work, not only in research, but also in education and other aspects of conservation. We are hoping to have more NGOs in Croatia like that. We have good cooperation with NGOs who are employing experts in other fields of nature protection for instance, ecology, ornithology, etc. We very much rely on them, for instance the preparation of our IUCN red books, all that is done by NGOs that have experts that at the same time are working in the University. In this regard NGOs are

⁶ Whale and Dolphin Conservation Society

important and will play a crucial part in the future, especially when this Natura 2000 programme comes out.

Without doubt ACCOBAMS has had a positive influence on the development of the proposal. Invariably, when the proposal loses momentum phone calls and emails are exchanged between Blue World and the Secretariat. From these, strategies are devised to apply political or media pressure on the organisations responsible for nature protection.

6.4. Institutional Arrangements

Following the final meeting in February 2005 the SINP initiated the expert elaboration. In October 2005, Blue World hosted the SINP for the statutory physical survey of the area. At that point the SINP sent the formal request, to the Directorate for Nature Protection of the Ministry of Culture, to prepare the public hearing. Following that, precautionary protection could then be considered by the Minister. By the end of December 2005 no further action had been taken.

In the meantime, local elections took place in April 2005. Despite local certainty that the sitting Mayor would retain control, a new coalition led by the centre right Hrvatska Demokratska Zijadneza ((HDZ) Croatian Democratic Union) replaced the regional Primorska Goranska Stranka ((PGS) county political party) coalition. This was the first time that HDZ had won a local election on any of the islands. It indicates a change in politics, if not power, on the island. The policy towards island development also changed, and negotiations regarding the Reserve have stalled. Officially, the local authorities still support the Reserve, however, they remain inactive. A planned public presentation and debate, due in the autumn of 2005, was postponed indefinitely.

The following section reviews reaction to the policies forwarded in the Critical Habitats Report and subsequent meetings. It analyses comments made in interviews and meetings with stakeholders and the relevant authorities.

6.4.1. Rules are simple and easy to understand

Heterogenic interests and identities within the marine system require rules that are easy to follow, disseminate, and enforce. Issues, such as being able to verbally describe rules and boundaries, providing pragmatic boundaries following lines of longitude and latitude, reducing the number of boundaries, and simplifying zoning, can aid compliance. Zoning of multiple-use areas is a common method of creating varying rules according to the natural features and use of an area. The Italian system of zoning is simple, it provides for the identification of a core zone surrounded by a buffer zone within a general area. It is also a popular concept with the Croatian authorities, who see clean lines and few variations.

Respondent 15: *I like this zoning system in Italy. It is clear and easy, there are three types of zones, A is a core zone where everything is prohibited, B is the buffer zone, and C is the general zone.*

However, a standard form of zoning may not be applicable to all forms of protected area. The definition of a zone needs to be based on local context and relies on the ability of identifying an appropriate core zone, and then being able to delineate it accordingly. The Italian system suffers from numerous problems related to management, and the zones themselves are rarely enforced. Respondent 3 suggests that most MPAs within Italy are actually dysfunctional.

Respondent 3: *We have 32 MPAs in Italy and maybe the only one that is working is Miramare, which is very small, and is actually a no-take area with only a buffer zone.*

There is little or no enforcement of the existing regulations for boating or fishing around Lošinj. Many of the local interviewees stated that they believe that the current system is failing. The need for some form of working system is highlighted by a local fisherman.

Respondent 34 [09.2003]: *There is a lack of enforcement of laws. In the past many things were sorted. There were areas for non-fishing and areas where they could fish. There was a time when the fish were spawning and you were not allowed to fish. These rules are still there, but nobody is enforcing them now, and there is a question who is for them and who is against them. For sport fishing, for trawling nets, it is only a question of control. Everything is a question of control.*

The current law on marine fishery is based on the 1997 Marine Fisheries Act (Official Gazette, 57/96). The act covers all aspects of fishing from professional to recreational, including tourist licenses. However, this act has been supplemented by numerous regulations on licences, commercial fishing, and minimum landing sizes. Amendments have created widespread confusion within the industry and even within recreational fishing. A local spear-fisher, suggests that the regulations have never been any good and amendments have just complicated the situation.

Respondent 10: *I don't think the current regulations are good. They have been modified and modified again, so a series of modifications of something that wasn't any good at the start. It's total chaos. What you need is good regulations, but I am still for the system of periodical no take areas, and maybe a permanent no take area would be good, something like micro-zones.*

Until the reorganisation of the Fisheries Directorate of the Ministry of Agriculture, Forestry and Water Management in 2004, there were no inspectors tasked with specific fisheries duties. There is now a department for fishery inspection within the Directorate that currently employs ten inspectors for the

whole of the Croatian territorial sea⁷. Like the department for nature protection, administrative capacity is significantly under strength, both with regard to the number of staff and equipment, in order to achieve an effective inspection system (EC, 2005b). Although Respondent 7, the marine police captain, maintains that the procedure for dealing with encroachments is enforceable and working.

Respondent 7: The fishery law is very clear and when we catch someone there is a clear procedure to deal with them. If we are controlling the area and the law exists then we can do something about it.

The current situation for the control of boaters on the sea is no better than in the fishery. There appears to be a general low awareness of the basic laws of the sea. Invariably, boats plane in and out of harbours with little regard for other users. What is even more significant is the disregard for swimmers around the beaches of the island, which is particularly obvious in the summer months. Around the dolphins, boaters' actions are little better, often boats can be seen chasing animals or driving directly into the groups, oblivious of consequences of their actions. Many of the local 'boat trip' operators are little better, despite the legal requirement for the protection of dolphins from 'disturbance' (NPA, 2005: Article 85). Although the law for nature protection mandates for harassment of protected species, to date, no-one has been prosecuted for it (EC, 2004b).

The recommendations for the rules forwarded by the Critical Habitats Report were the instigation and enforcement of the currently applicable laws. In the final meeting with the relevant authorities, Respondent 4 outlined 5 simple rules that could have a significant affect on the area:

1. Enforcement of current laws on sport and recreational fishing;
2. Enforcement of current laws on professional fishing vessels;
3. Exclusion of non Lošinj registered professional fishing vessels;
4. A mandatory speed limit in areas identified as critical habitats for dolphins;
5. A mandatory code of conduct for vessels interacting with dolphins.

Rules one and two follow the current laws for fishery, thereby supplementing rather than supplanting what should be the normal rules of behaviour for the area. An older islander, believes that this would be good for a start.

PM: So, even if the PA enforced all the rules that are currently in place this would be a start?

Respondent 19: For sure, this should be perfect at the beginning. Even if one sport-fisherman gets more fish than he should, then he can't sell it. Even if he has less than the maximum of 5 kilos of fish, he will still sell 2 kilos, but he should not be allowed to do so. Another thing is that all the fish that is caught should only be sold in the official market. There is obviously no control with the fish black market. For gill-netters, when you have the license for 100 metres of

⁷ Covering approximately 33,200km² of Croatian territorial waters.

net you should use 100 metres of net, not keep adding and adding. This could be the first step; to strengthen the current control.

Respondent 13, a local fisherman, illustrates the confusion of the current fishery laws with an example of the pelagic purse seine fishing boats, that use lights to attract fish at night. These boats also use dynamite in the water to 'calm' the fish in the haul, with the significant side effect of killing of dolphins through concussion from the shockwave.

Respondent 13: The law says that these boats should use a certain amount of candles, this is bullshit. They have these huge powerful halogen lights, when you buy one of these, the power in Watts. So, how do you calculate candles to the Watt? Nobody can explain to us how that works. So how do you control and check these people? They need to write how many Watts are allowed. Then it is all clear.

The third rule, of local protectionism, is universally popular on the island with both fishers and non-fishers. There has been an obvious decline in the amount of fish being caught, creating some form of local protectionism should help both the fishers and the dolphins, and has the added bonus of creating support for the Reserve.

The final two rules apply to tourism. Generally there is indifference within the tourism industry towards the process, except the utilisation of the dolphin image. The economic importance of tourism makes negotiations regarding any restrictions fraught with potential problems. Speed limits will have little effect on the local boats or tour boats within the area, but may have a significant effect on tourists passing through. The harbour master, suggests that speed will be a major enforcement issue in the Reserve.

PM: What problems would you foresee for the enforcement of the area?
 Respondent 6: *The main problem will be the speeding. Some boats are moving through the area at 35 knots often speeding within 300m [it is illegal to plane within 300m of the coast in Croatia] of the coast. This is the main issue here in the summer season, due to the swimmers in the water. In the summer we give out 25-30 speeding fines per day.*

Finally, making the current voluntary dolphin watching code of conduct mandatory would again reinforce what should be normal behaviour for boaters. Again, this would reinforce the law in place regarding the harassment of the dolphins. However, there are concerns that a lack of enforcement may undermine all of these rules.

6.4.2. Locally devised access and management rules

Public awareness of environmental issues is increasing in Croatia, yet access to environmental information remains weak (EC, 2004b). The facility for local management of the Reserve featured heavily in the selection of the designation type. However, there is a need to balance broad participation that may legitimise the development of the Reserve, with delays and local parochialism that may derail it. The primary objective is clearly scientific, this is due to commitments made by the Government of Croatia to international agreements such as ACCOBAMS (see section 6.3), but it is important to combine conservation and secondary objectives, such as local protectionism of the artisanal fishery. This requires widespread negotiation between the relevant authorities and stakeholders.

Respondent 32: The process has a defined way of establishment and it includes publicity. So the document is being made by professionals, but all inhabitants, fishermen as well as farmers and City residents are involved in its establishment. They all have the opportunity to argue the reasons for not wanting something or wanting to change something. Moreover, the process of establishing the Reserve is not momentary. It is a process that can last for a long time. So there is no need to bring somebody in front of the 'done deal' and it is not in the interest of the country and the State, which has to conserve some things for the kids that are going to come. So don't look at the conservation with the attitude 'they are coming with the idea to forbid something.'

However, doubts remain at the national level regarding the capacity for local people to govern the area effectively. Other locally managed protected areas have failed, sometimes with dire consequences.

Respondent 15: You have to have a management board, but there is a problem with this. Before it was necessary to have one person from the Ministry on the management board, there is a regulation what kind of persons you have on this management board, representatives of experts, of the Ministry, local authority, the whole picture. The change of the government has changed and put mostly local people, one expert and no one from the Ministry, which is strange as the Ministry is the one who is responsible for this. In many cases there are problematic local people, because of the way in which the areas were designated i.e. centrally with no public hearing. So, it was a decision made in Zagreb and the local people were told 'now you have a protected area here'. In some areas it was OK, but in others it was bad. In some cases they have even set fire to National Parks... ..These boards are organised on political connections, not on expertise, this is the situation now.

This reflects the situation identified by Respondent 2 as having a 'major crippling effect' on management in Italian MPAs (section 5.2.5). The appointment of the steering committee by the founding authority remains a top-down approach, but even more alarming is the possibility of it being tied to local politics. Concerns over local capability to fulfil their nature protection obligations have been referred to in many of the EC documents for Croatia (EC,

2004a; EC, 2004b). However, the local authorities welcome the development of co-management for the area.

PM: How do you feel about the development of a co-management board to which several authorities, including yours, will be required to devolve power?

Respondent 22: *We are not afraid of it, these are all our people, and it is in our interest we [the City] to have our representative in the board. With the law as it is now we don't have any power in managing this area, so this would be one step higher in influence for the City. Our interest is not to control everything, but to ensure that things go in the way that we think is best. Control and enforcement mechanisms should be made. The aim is not to do something and say we did this, but how to keep it running, how to monitor the area. The organisation that does this is secondary in importance, provided that it is done the right way. The people who are doing this will be connected to the City, so the City will still have influence on the management.*

Many locals believe that the imposition of rules from the State do not take into consideration the unique status of the coast and islands. Some older fishers complain about the development of the law and management procedures, by what they regard as unqualified people. Respondent 8 is critical of the fisheries biologist who is the Director of the Fishery Directorate, he reminisces about the old system where rules were made by practioners rather than scientists.

Respondent 8: *Fisheries law, it got worse, for sure. In the ex-Yugoslavia, all the laws were done by people from the sea, who knew what to do. Now the laws are written by people that have never been on the sea, they don't even know the fish, how can they do this. You can study, but then if you are not on the sea, and you don't know the topic, you can't do the laws. To understand something about the sea you have to spend days and days on the sea.*

There is significant distrust in the imposition of marine policies from the land locked capital following the debacle with the EEZ in 2003 (section 5.1). On top of this, during 2005, Croatia started to construct a fleet of large pelagic purse seine boats (see plate, 6.1) contrary to European law (*acquis*) (EC, 2004a). This reverses the trend of the 1990s, which led to the doubling of benthic trawlers in the country and a significant increase in catch effort for demersal fish. Emphasis has now been placed on catching and processing small pelagic fish, deemed as under exploited, as its catch could provide new jobs in the fish processing industry. As a result, subsidies have been available for the development of a new fleet. Although these vessels do not directly compete with local vessels (see plate 6.2) they target the prey species of the fish taken locally. There is a feeling that national policies are undermining local fishery and fishery science:

'such developments neither correspond to a precautionary strategy nor are linked to specific scientific findings' (EC, 2004a: 76).

Not only is this the area of largest overlap in competition between dolphins and fisheries in this area (section 4.3.1), but, as a letter from the fishing guild of Rab Island to their Lošinj counterparts points out, undermines local strategies for development of sustainable fishing practices.

'We have all experienced that when vineyards are neglected and we are deprived of wine. If we kill a few more sheep, soon we would be left without sheep and lambs. Therefore, it is absolutely clear that if we over-fish, there will be no more fish to catch. We are afraid that the famous five minutes to midnight has long ago passed. All the treasures of our ancestors' fishing experience, as well as our own have been included in previous proposals, letters and phone calls. No one knows where they have ended, but we know that they are not where they should be, in the legislative regulations. On the contrary, everybody keeps unmercifully taking everything out of the sea. During the last decade the fishing industry expanded according to petty-political demands. We [local fishermen] are left with the solution to fish what the others cannot. Today we are in the situation where the rush of trawlers [pelagic purse seines] threatens us with total over-fishing and destruction of the fish stocks. Therefore, our intention is to stop the negative flow in the industry and other kinds of fishing. So we propose actions that will save what can be saved, and that will in time gain what has been lost'.

A similar letter was forwarded by the President of the Lošinj fishery guild, also in 2003, to the local and national authorities. The lack of response from the authorities was taken personally.

'After many complaints from the Lošinj and Cres professional fishermen using small fishing tools (scampi, gill nets) I feel obliged to inform you about the almost unsustainable state that the professional fishermen are in and which was imposed on us during last couple of years. Unfortunately, our project for 'communication and alarm' hasn't yet been approved by the authorities, but we hope that it will be accepted this year... ..It's obvious that the cooperation between our observations and your stronger control is necessary. We are using this opportunity to ask you for stronger control and enforcement of the same, and from our side you can expect full support and reports of our observations'.

There is a large amount of frustration within the local fishing community regarding the lack of support from the Ministry. National policies have been pushing the local fishermen to grasp any opportunity to enforce some control locally. Cooperation is becoming more and more vital to sustain the local fishery. However, many islanders believe that without external pressure nothing will change, that the general apathy of the island will undermine the objectives of the Reserve. Respondent 19 suggests that some balance needs to be found between external pressures and local decision making.

Respondent 19: I think it should be done by the local people, but the first impulse should come from above [Zagreb]. Let's try to do the MPA then give the directive to the people and the possibility for the people of the island to decide, possibly some form of referendum. I am against the idea being imposed

from above. It could be a good idea to start with the City and the people to organise these things, lets talk about it and get agreements on what can be done.

In many cases, local interviewees have suggested that even tougher regulations are required to maintain the area. The concept of no-take zones have been promoted in many interviews, but again local knowledge is an important aspect in delineating boundaries since small variations in positioning can have a disproportionate effect on individual stakeholders.

Respondent 18: Oruda and the shallow areas around there are important for fish spawning. Forty years ago that area there was great fishing, now it needs strong protection. Maybe something can be arranged for a tourist attraction, but we need to leave the area open around Punta Kriza, that's where some people live. Around Oruda, nobody lives there, and that is the greatest concentration of shallow water and rocky area around Lošinj, by closing that area it will help to feed the rest of the sea. It may not happen in one or two years, but in a few years there will be a big difference.

There is also an ecological need to get the rules right. Strongly protecting the wrong area may lead to effort being concentrated in other areas of more importance. Hence, all knowledge, be it scientific or local, needs to be treated with appropriate rigor. Diverging opinions are often forwarded by differing groups. The marine police captain maintains that the muddy areas in the region provide fish spawning areas.

Respondent 7: Ten years ago, the Osor channel from Privlaka to Punta Suha was closed to trawlers. All the fishermen know that this is the area where fish are spawning and the shrimp are living. In the last couple of years there are less shrimp than previously. In the past Lošinj channel was famous for shrimp. The powerful trawlers from Rijeka and other areas destroy everything. With the MPA there will be a balance and all the fishermen are saying the same thing, there is less and less fish and something has to be done.

Banning trawling in homogenous mud environment may help protect biodiversity, but will inevitably lead to a decline in the biomass of species, such as the shrimp population that feed on suspended solids. The lay perception is that biomass is equivalent to biodiversity, so a decline in catch would create a feeling that the Reserve is failing, hence regulations need to balance the objectives of different groups. Other locals argue that management and enforcement should be made by professionals who are not influenced by local society. Respondent 10 is a believer of science and a strong hand for enforcement:

PM: Should the management of the Reserve be done by local people?

Respondent 10: You have the planning and management it's a matter of scientific work, the scientists should say what to do. And the enforcement is always the enforcement; every enforcement body should be a State body, not local because you would have wars between different local societies. The coast guard would be perfect.

Others go even further and wish for the old system of command and control of the former Yugoslavia. Decisions were made by politicians and the people did what they were told. The new paradigm of participation and consensus now only complicates matters that were easily solved in the past.

Respondent 4: As far as I understood before, you had the communist party and the leader. They decided to do something locally, or they had the nudge from above, then they carried it out. They promoted it locally and then of course everybody was publicly supporting such ideas, there were no conflicts. Now you have the local power bosses, you have different interests, such as the politicians, local rich guys who want to carry on with their earnings. Then you have the citizens who are completely stupid, illiterate and they have no idea to whom they should look. Even if they organise themselves, they end up with 227 organisations because everybody, at least for once in their lives, wants to be the boss.

Competition with the Italian fishing fleet and external fishers remains a significant worry at local level. Fishermen are starting to view the Reserve as one method to restrict external boats from entering the area. The overlap in objectives for dolphin conservation and the local fishery is leading to greater cooperation.

6.4.3. Ease of enforcement of rules

As mentioned in section 4.5.1, Lošinj is blessed with both natural and man made vantage points, and good remote detection technology. Hills on the island and lighthouses provide good observation of the near-shore area. Only beyond the line of Cres does vision of the shoreline become obscured (see plate 6.3). The marine police captain believes that the area will be easy to control.

Respondent 7: That area is quite open so it is quite easy to control. Regarding illegal fishing, because it very open, you can see and act immediately. It won't be a problem if it happens.

In some instances rules may apply considering the presence or absence of vessels in restricted areas, which may be easy to observe. Others may require boarding and full inspection of a vessel to search for infringements. In this case there is a need for the physical presence of enforcement officers. Boarding of vessels makes enforcement more difficult. One example highlighted is the problem with the use of dynamite in fishing, which is a well known practice in south Croatia. Respondent 7 explains the difficulties in detecting the presence of dynamite on board vessels.

Respondent 7: Local fishermen in this area are not using dynamite. It is traditionally used in Dalmatia around Zadar and the south, but, the blue fish boats [pelagic purse seine boats] that come here from Dalmatia use the same methods here as down there. Quite a lot, but not all of the fishermen are using

dynamite. When they close the nets they use dynamite to calm the fish down and to make it easier to bring them up. Four years ago we had one blue fish boat with dynamite on it, a year earlier we found dynamite on a sponge diving boat, both boats were from Dalmatia. Dynamite it is difficult to find on a blue fish boat as they hide it very well. The problem is the dog used for finding explosives cannot find anything due to the intensity of the smell of the gasoline and the fish. Everybody from the marine police knows who has something to do with dynamite. But, when there is no moon there can be more than thirty boats, we cannot control all the boats, this is always a problem for the police.

The size of the Reserve, the diversity of users, and the overarching legal requirements require the definition of a professional enforcement body. This is also believed locally to be the only way for enforcement to be effective.

Respondent 10: The Sea needs a good set of rules to follow and then a strong power to enforce those rules... ..When you talk about forbidding, I'm talking about a man with a machine gun standing in the middle of the sea, because there is no other way I'm sure. Sadly, the only good authority is having a weapon on your belt. I know what's happening in the sea, how well equipped these people are plundering the sea. To be realistic, if you are talking about taking away revenues of tens of thousands of euros its like dealing with the people who smuggle cigarettes or drugs, it's the same. If you say to someone you won't be able to get that much money anymore these people would react really strongly. Its not organized criminals, far from it, but its groups earning lots of money and having big interests, so you need to be careful. Its not only local groups, but people from Slovenia and Italy with fast boats, not even doing the border, just going directly to some island and illegally fishing, plundering treasures, gathering shells, anything, its still taking the resources.

Since October 2005 there has been a legislative requirement for the coordination of the marine enforcement authorities through the Croatian Maritime Control Act (Official Gazette, 34/05). The Lošinj marine police, harbour authorities, and customs all work together cooperatively. The harbour master, explains how changes in policy have made the enforcement system around the island more efficient:

Respondent 6: The marine police, port authorities, customs, special inspectors, [including fishery] and the navy are now being coordinated to work together on one boat so that these bodies are not overlapping. Once we went to Susak Island and both the Navy and Police were there. This region it is being coordinated out of Rijeka, through the Ministry of the Sea, Tourism, Transport and Development. There are 248 marine police officers, 303 port authority officers, 20 custom officers, 15 special inspectors and the 527 navy personnel. We have 16 ships [>12m], 90 boats [<12m], 6 aircraft, and 4 helicopters for the region. And of course there is the radar.

Gaining access to this system of coordination and resources, particularly the personnel, would be essential to aid monitoring and enforcement. However, as yet, individual protected areas require the approval of the Ministry to enter into

cooperative agreements. There is currently no coordination system between national parks managers or centralised information. Ultimately, the Nature Protection Act of 2005 remains the 'bible' that defines what actions may, and may not be carried out within a protected area.

6.4.4. Graduated sanctions

In contrast to the development of graduated sanctions, many islanders believe that the rules have to be hard and tough from above, and then move to local control. However, consistently throughout interviews islanders expressed the need for rules to be enforced equitably.

Respondent 19: Control should be coordinated with outsiders, dressed in civilian clothes, walking along the coast or in a boat. This should be the real hard control. You have to put into these people that somebody could come to get you, when they have this fear then they will act accordingly. This kind of control should come from above, then the control then could move to the locals. The most important thing is to control the things for fishery, for dolphins, for tourism, for all. The important thing is that these laws should be for all people.

Devising a penalty scheme within the parameters of the controlling statute is not an easy task. All sanctioning within all protected areas is laid down in Articles 193-198 of the Nature Protection Act (2005). The fines within the Articles are based on the seriousness of the infraction, but allow for a degree of flexibility.

		Legal Entity (Kuna) ⁸	Personal (Kuna)
Category 1	Article 193	500,000 - 1,000,000	20,000 - 70,000
Category 2	Article 194	100,000 - 500,000	15,000 - 50,000
Category 3	Article 195	25,000 - 200,000	7,000 - 30,000
Category 4	Article 196	15,000 - 25,000	5,000 - 20,000
Category 5	Article 197	7,000 - 15,000	3,000 - 7,000
Category 6	Article 198		1,000 - 15,000

From Nature Protection Act (2005), Articles 193-198.

This would appear to be the ideal for the development of graduated sanctions within protected areas. However, currently the internal rules and fines for protected areas in Croatia are not set by the individual public institution, at least within National Parks which are controlled by the State. The technical director within one of Croatia's National Parks, states:

Respondent 35 [06.2005]: Fines are set by Law, the maximum fine within the protected area is set at 500 Kuna for individuals and 10,000 Kuna for legal entities. The fine amount that can be charged by the rangers 'on the spot' is always the same, regardless of previous infractions and the seriousness of the action.

⁸ One Pound is equivalent to ten Croatian Kuna

This undermines the system for compliance. In many instances repeat offenders regard the chance of being caught as an occupation hazard. Respondent 10 summarises the attitude of these repeat offenders.

Respondent 10: Even if the law says you cannot do that, it's economically OK, even if you get caught once per year. You pay the fine and that's it. People think like that, and everybody sees the quick way to get money out of the sea.

Although the law states that fines should be regarded as one method for the funding of a protected area (NPA, 2005: Article 74), it is important to divorce the payment of sanctions from the operating costs of the Reserve. There are three reasons for this: firstly, payments are not predictable and that makes monitoring planning difficult. Secondly, it has the potential to skew the motivations of the enforcement agency. Finally, it sends out the wrong signals to users, who then assume that the rangers or managers are 'making money' from the system.

Respondent 8: We all know that the police only have enough money for gasoline to work for the first ten days of the month, after that well it depends on the amount of fines they hand out.

6.4.5. Availability of low cost adjudication

Within Croatia generally, there is scepticism about the system of law. The main problems are the efficiency of the system and the amount of time it takes to hand down judgements. The total backlog of the Croatian judicial system amounts to around 1.6 million cases, up from the 1.38 million cases reported in 2004 (EC, 2005b). In addition, there is the problem that the courts and parts of the State administration do not always respect, or execute in a timely way the decisions of higher courts. Respondent 4 suggests that the system may undermine compliance in the Reserve, and that this underlines the need for local participation in the development of the rules for the area.

Respondent 4: In this country even when the Supreme Court gives a decision it is not abided by the government. I'm not very sure that the locals will obey anything if they don't want to.

Everybody has a story, although not directly related to the Reserve, illustrating how the system works. One of the local mechanics rented a new marina, when he came to move in he found it to be locked. He then threatened to take the owner to court, and the owner just laughed. So the mechanic called an enforcer from Zagreb, who charged him €10,000 to sort the problem. In two weeks the problem was settled and the mechanic started work. Otherwise the court system would have taken years.

Within protected areas disputed fines are sent into the court system. Invariably, these actions are long slow processes, open to appeal, and the result of the court is rarely fed back to the enforcement body. If fines are upheld in court, the funds

are paid directly to the Ministry and not to the public institution for the management of the area. It is recognised by practitioners and the local community that some form of transparent, prompt, and cost effective adjudication system, outside the general court system, is required, but as yet no such facility exists within Croatian law.

6.4.6. Accountability of monitors and other officials to users

Accountability requires transparency in the process of monitoring, enforcing, and sanctioning of users. Third party monitoring and enforcement is a legal requirement for protected areas in Croatia. However, it will also help to reduce favouritism based on relationships between the enforcers and the users. The following quotes draw attention to the problems of favouritism and corruption that may arise in a small island community such as Lošinj:

Respondent 10: *I was competing with a guy who was telling me that he was spear-fishing at night [which is illegal]. I said, 'aren't you afraid of being caught', 'no', he said, 'I always go with one of the police officers'.*

Respondent 19: *Everybody is related. You need to do something that is neutral from local influence, but here in Croatia there are very few neutral people. Everybody is tied to something, to relatives, to business, to politics. Ideally you would need to have partnerships, one local and one non-local on a boat.*

Others maintain that regardless of the initial situation, the system will decline into old ways, sooner or later, but again equity remains the primary issue for enforcement.

PM: Do you trust in the local enforcement, or do you think that somebody from outside would do a better job?

Respondent 8: *After a time they settle and become the same as the others. They make connections, wives, girlfriends, brothers-in-law, and fathers-in-law, you know how it is. If the normal control was equal and fair for all that would be perfect.*

It is true however, that the best monitors are the users of the area, i.e. those that have something to gain or lose from reporting non-compliance. Respondent 21 illustrates the issue, if only in a flawed example:

Respondent 21: *Local fishermen are the best rangers. There are ten trawling boats that are living from this area, lets make them some kind of rangers, and they will have some badges. He will get something, like the opportunity to fish in the no take zone or within 1 nautical mile of the coast and he will guard the area the best. You will have alliance, not enemies and both will profit from that.*

Balancing the development of a third party system with local cooperation is a difficult task, especially in an area where trust of officials is undermined by historic abuse from people in positions of authority.

6.5. Relationship between resource system and institutional arrangements

6.5.1. Match restrictions on harvests to regeneration of resources

In marine systems there may be many different resource units, invariably they are interrelated, for instance as fish stocks decline there is greater interaction and conflict between protected species and fishermen. Adding localised disturbance of the area by tourism in the summer, the collective result may be to push dolphins further and further away from their critical habitats (Fortuna, 2006). There remains a need to balance harvesting to regeneration for all appropriators. Years of unsustainable use are leading to problems, yet there remains a stubborn desire to continue.

Respondent 34: When my father was fishing, the fish were everywhere, now you must go and find the fish. These days there are too many people fishing and the fish have no time to recover. Before 10-12 years, there were more fish, but I will continue to fish until there are no fish, as this is what I do.

It is often the case that traditional users perceive themselves to be under siege from new users. Invariably traditional uses are extractive, and hence it is possible to show some cause and effect. 'New' users such as tourism are perceived to be benign, although this may not be the case, cause and effect is harder to show. Where it is difficult to show individual cause and effect, there may be a long term cumulative effects. These in turn, may be offset by the adoption of carrying capacities or spatial and temporal controls of the use of the resource.

Use of boats in the area does have an impact; anchoring, accidents, and fuel spills are all obvious, yet, perhaps more significant are fuel use, disturbance of both wildlife and people, and aesthetic damage, which can in turn undermine tourism itself. Disturbance to the dolphins in the summer time directly conflicts with the Reserve aims. Maintaining a viable population in this area will require some control of tourism. The fact that this region has reached capacity is recognised by many of the locals.

Respondent 22: Since we live in a specific environment, a narrow island archipelago. One of our main tasks is to protect this area because of this, and poverty, and the interests from more developed countries to build in this area. We also need to protect it from our lack of knowledge of environment. Special accent should be placed on conservation of the environment which means that we have to protect this area for the next few hundred years. Life here is specific you, cannot spread as you can on the land, we have to be cautious of where, what, and how are we building, and which economic activities should be undertaken in this area... ..We are grateful for having what we have and not having polluted the area. I think that it is really important to keep the balance between different species, that's our treasure.

This is also reflected in the comment the President of the chamber of commerce:

Respondent 5: *We have some good natural things here, we haven't over developed. The island is a ship; if it is overloaded then the ship will go down. This means that we must be very careful with construction and industries. We must be careful because we can destroy everything in a period of ten to twenty years.*

As Croatia articulates with external markets the desire to expand, both for individuals and the community may yet place unsustainable pressures on the island and its resources.

6.6. Concluding Remarks

This Chapter has drawn together the negotiations of the various stakeholders and authorities, identifying the many issues each group has in the development of the Reserve. The meetings in section 6.1 highlight several problems for the development of collective action. The first is the absence of experience with participation, historic command and control regimes have made this an alien concept, this was particularly seen at the sustainable development meeting (see box 6.5). The other major aspect to come out of these meetings was the apparent lack of trust in governmental institutions, highlighted by the fishery guild (see box 6.2).

Balancing the conservation objectives with local requirements requires negotiation. The designation of a Reserve as a 'Special Nature Reserve' provides the appropriate capacity for managing scientific requirements, whilst allowing for the development of a public institution at local level. This designation remains the most likely foster an appropriate co-management regime. Underlying the development of the Reserve has also been the role of the international institutions, particularly the EU that has galvanised the development of national policies on conservation. In regard to Lošinj, ACCOBAMS has been the 'friend in a high place', nudging the proposal along at international and national level. In the absence of State capacity the links between civil society and international institutions have been fundamental in the development of the underlying science and the negotiations for the Reserve.

Using Agrawal's (2002) framework for the critical enabling conditions for sustainability on the commons the main issues extracted from the actors appear to be consistent with the development of most co-managed conservation projects. The diversity of users requires the definition of simple, enforceable rules. Although the development of enforceable rules is outwardly welcomed by many of the islanders many illegal actions, fishing in particular, are commonplace. Rule breaking is currently the norm due to the ineffectiveness and bias of the enforcement systems currently in place. There is a widespread belief that the only way the system can function appropriately is through some

form of co-management, but with supervision from the State. However, there remains fear from certain stakeholder groups, that the Reserve will be appropriated by the economically and politically powerful tourism lobby on the island.

Whilst Agrawal's (2002) framework provides an outline for the development of equitable rules to govern the Reserve, this Chapter, more than others, highlights the role of external factors within the negotiations. The role of international and non-governmental organisations has been substantial, and yet these sectors are omitted by the framework. The other main features that are drawn out from the case study is the absence of institutional trust, inexperience with the concept of participation for co-management, and the need for equity in the process for all appropriators, from rule definition to sanctioning.



Plate 6.1: Industrial pelagic purse seine fishing boats in Mali Lošinj Harbour.

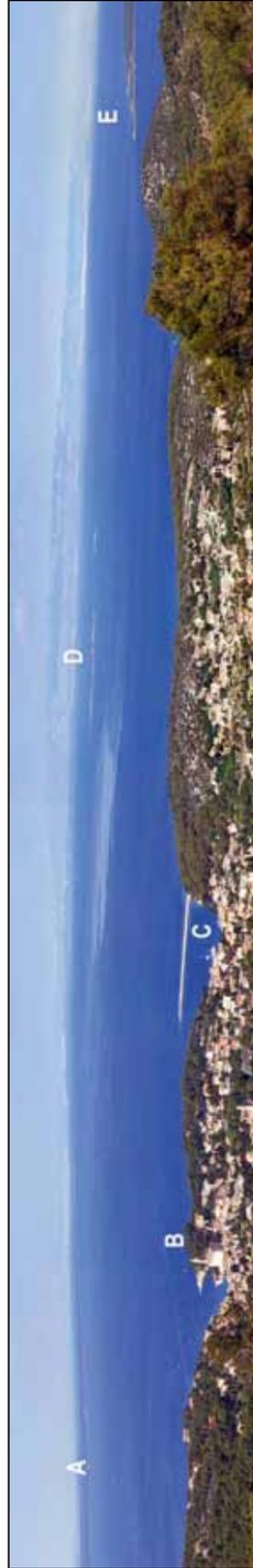


Plate 6.2: Traditional Lošinj Trawler.

Plate 6.3

The view from Saint Ivan above Veli Lošinj incorporates approximately 80% of the proposed reserve.

- A Punta Krisa
- B Veli Lošinj harbour
- C Rovenka harbour
- D Oruda Island
- E Orjule Island



7

General Discussion

Introduction

Although the CPR literature presents a comprehensive list of critical enabling conditions for sustainability on the commons (Agrawal, 2002; Baland & Platteau, 1996; Ostrom, 1990; Wade, 1988), their application and validity will vary from case to case, depending on a range of contextual factors. However, it would be impossible to explore each enabling condition and its interface with the contextual factors. This final Chapter, therefore, draws on the enabling conditions that are particularly applicable to the Lošinj case study. Reflecting on these provides the thesis with the means to contribute to the wider debate on CPRs and MPAs.

This Chapter is divided into four main sections. The first revisits the theoretical underpinnings of the research and interrogates further some of the issues raised. Discussions in the second section focus directly on the research questions from Chapter one, drawing out the empirical findings from Chapters four, five, and six and referring them to the discussions in Chapter two. Section three concludes the study, offering a framework for the investigation of MPAs based on this study. Finally, section four suggests areas for further research.

7.1. A matter of principles

How can the application of the conceptual model of CPR theory inform practitioners of marine protected areas? At the outset MPAs display the two defining characteristics of the CPR model, *subtractability* and *excludability*. All CPRs share these characters (Berkes, 2004; Feeny *et al.* 1990; Ostrom *et al.*, 1999). Yet, the all encompassing term MPA covers a variety of designations, one of which is the managed fishery, a classic CPR (Acheson, 1997; Gordon, 1954; Ostrom, 1990).

The starting point for the development of any strategy for addressing a problem is to take a conceptual model and apply it (Strauss & Corbin, 1998). As the marine system becomes more important for all stakeholders, it becomes imperative to test new and existing theories within the field (Berkes, 2004; Mascia, 2004; Murphree, 2002). Although there remain significant differences between MPAs and the classic CPRs, the problems faced are similar and solutions may be sought from interdisciplinary case studies and theory. In both

instances the search is for the development of sustainable resource management institutions.

The CPR defining principles are based on studies carried out over twenty years ago, in the context of the community management of subsistence fisheries, forestry regimes, grazing areas, and water use models (Jodha, 1986; McKean, 1986; Ostrom, 1990; Wade, 1988). This has led to reviews of the 'defining principles' for the commons in terms of their applicability to multiple-use or complex commons (Edwards & Steins, 1998; Selsky & Crehan, 1996). Agrawal's (2002) 'critical enabling conditions for sustainability on the commons' bring together the older work with new ideas for the complex commons. The critical enabling conditions can provide a useful framework, based on generic knowledge, from which practitioners can build knowledge of the specific site conditions by using a deep ethnographic approach (McCay, 2002). As individuals and groups are embedded within historical, geographical, ecological, and social contexts, the scholarly task:

'is then to determine, for any given case of apparent abuse of common resources, where the failures lie and what can be done about them. To do this requires exploring how property rights are understood by various parties and how those meanings are translated into behavior, custom, and law. It requires understanding the nature of conflicts over rights and responsibilities, the roles of science and other forms of expertise and of larger global processes affecting land and natural resource management throughout the world. It also requires understanding, respecting, and building upon the social and political capacities of local communities, but also of the dis-embedding forces of modern society' (McCay, 1998: 3).

Institutions developed to manage natural resources will be directly influenced by these external drivers (Berkes, 2004). Globalisation has an increasing effect on the development of local markets, technology, and demographics which impact the local community; it is becoming increasingly difficult to delimit which factors are internal and which are external. Increasingly the literature has started to highlight the need for greater study of contextual factors, particularly the State and international policies, demographics, technology, and markets, in the sustainability of CPRs (Agrawal, 2002; Berkes, 2004; Edward & Steins, 1999; Stern *et al.*, 2002).

This thesis has drawn heavily upon Agrawal's (2002) critical enabling conditions for sustainability on the commons, but recognises that rigorously maintaining the framework is not what these principles were designed for. The aim of this Chapter, therefore, is to bring the main findings of the study to a set of conclusions that can be used to further the CPR scholarship and provide suggestions for future MPA policy.

7.2. Informing MPA policy and furthering CPR scholarship

Historically, the primary use of the sea has been for fisheries, hence the development of CPR scholarship into community based fisheries management. However, the marine and coastal area provides many different resource units, both extractive and non extractive, to multiple-users. Utilisation of marine resources in the coastal area has changed from traditional extractive use towards less traditional recreational and tourism use. Invariably, the economic importance of new users has led to traditional stakeholders becoming peripheralised and areas deteriorating environmentally whilst developing economically (Christie *et al.*, 2003; Garaway & Esteban, 2003). These pressing problems are driving scholarship of multiple-use MPAs as complex CPRs (Berkes, 2004; Edwards & Steins, 1998; Jones & Burgess, 2005; Mascia, 2004; Selsky & Crehan, 1996).

Managing the marine environment provides significant challenges, not only for its attributes (see section 2.4.1), but also with regard to property rights. Over the last century the State has expanded its property rights within the marine system from 3nm to 200nm, despite this they remain significantly different to those in the terrestrial system. The mobility of many of the resource units through and between State jurisdictions also makes it difficult to assign property rights to them (Naughton-Treves & Sanderson, 1995). As Young (2002: 271) points out:

'there is little history of private property rights and only limited experience with public property... ...when it comes to the management of human uses of marine resources'

As appropriation rights of the seabed become more important as property rights, the issuance of preferential rights or licenses will become more common place (Juda, 1993). Technological advancement stimulated by market demand will increase the likelihood of these exploitation rights being fulfilled. As markets become more global, demand for marine and coastal environments to provide resources, dilute and disperse pollutants, and offer recreational amenities becomes greater.

As the IUCN protected area categories V and VI become more influential the role of co-management in all its guises will become increasingly important. This is of particular significance considering the disproportional importance of these categories in the marine system. Associated with this will be the development of local participation and greater devolvement of power and responsibility to those that stand to gain or lose the most. As such, MPA policy is rapidly entering the realm of CPRs. Yet, in the case of co-management for protected areas, the 'co' refers to the collaboration of not only the state and the local community, but a wide variety of international, national and local bodies. As Berkes (2003: 628) states:

'To ground conservation effort we need amore nuanced understanding of the nature of people, communities, institutions and their interrelations at various levels'.

The following section returns to the research questions of Chapter one, taking the results of the empirical work and relating them to the theoretical studies reviewed in Chapter two.

1. How have the overarching international regimes and requirements for protection affected the development of the proposal?

Invariably, classic CPRs are locally-based reactions to resource decline with the objective of sustainable resource exploitation (McCay, 2002), whereas MPAs are more often national decrees to achieve statutory marine biodiversity objectives, with international pressure applied (Jones & Burgess, 2005). Despite this, it is surprising that the role of international regimes is omitted from Agrawal's (2002) framework. This is particularly so when considering the spread of globalisation and the associated development of global natural resource policies (Young, 2002; Berkes *et al.*, 2006).

There has always been a form of hierarchy in wildlife management. International conservation policy is often based on the public outcry for particular species, and subsequently environmental discourse has organised itself around these species (Hajer, 1996). Invariably, these species are what is now termed, 'charismatic megafauna'. Marine mammals fall in to this group. Marine mammals are protected under numerous international conventions and agreements (see Chapter 4). Marine mammals are used by UNEP as '*important indicators of the health of marine environments*' (Gerges, 1994: 199). Often these animals move over substantial areas, and even regions, and as such are the focus of conservation actions to protect habitats. The use of focal species for habitat protection has its critics (see section 2.4.1); however, the use of large ocean megafauna, particularly marine mammals and birds, are often used to direct conservation efforts (Hooker & Gerber, 2004).

Undermining conservation efforts within the marine system is endemic uncertainty as accessing sound scientific knowledge is difficult and expensive. This is exacerbated by the nature of cetaceans and their wide mobility. Problems in studying dolphins result in considerable uncertainty as threats to their populations are diverse and there is low statistical power to show any effects (Thompson *et al.*, 2000). Where uncertainty exists there is an international legal requirement for precaution. Principle 15 of the United Nations Conference on the Environment and Development (1992), calls for precaution in the face of scientific uncertainty (see section 2.4.4). The precautionary principle is also emphasised as a guide for EU environment policy, written into the Maastricht Treaty (1994). Where there is a legal mandate for precautionary protection it is legally fraught to equate uncertainty with inaction (Ralls & Taylor, 2000). Yet, international regimes set out generic rules that member states are left to

interpret, and often States will sign agreements that they have little or no intention of complying with (Young, 2002).

There are certain factors that may influence the desire or ability of States to fulfil their international legal obligations. In many cases developing countries may lack the human or material capacity to fulfil their commitments to international agreements. In Croatia there is a lack of human resources at all levels of governance for nature protection (see section 6.3). Exacerbating this is the lack of cooperation between State institutions and the fact that nature protection remains low on the political agenda. This is reflected by the transfer of nature protection to the Ministry of Culture and the subsequent avoidance of the EU delegation by the State Secretary for the Ministry of Culture (see section 6.3).

There is also the issue of compatibility of international law to the practices or procedures for governance within a State (Young, 2002). There is little knowledge or understanding for the development of marine nature protection, outside fisheries, in Croatia. The absence of a framework for the development of MPAs underlines this. In fact, protected areas generally are designated on an *ad hoc* basis. As the Lošinj Dolphin Reserve is the first marine protected area in Croatia, it is a new concept not only for the local community, but also for the national authorities, and the consequences and future actions for area remain unclear. On declaration of preventative protection the sole competent authority becomes the Ministry of Culture (see section 6.2). However, during the period between preventative protection and the formation of the public institution, the site remains in an institutional limbo with little or no monitoring or enforcement of any kind. This reflects the CPR issue of *de jure* governmental control in effect resulting in *de facto* open access (Jones, 2001; Ostrom, 1999). As Croatia harmonises national law with EU law these issues may be resolved.

The role of international organisations has been crucial in promoting the Reserve at national level. There is little doubt that without international pressures bearing down on the national government, particularly from the EU and ACCOBAMS, the proposal would not have got as far as it has. Commitments to harmonise the national law for European integration has obligated the Croatian government to develop protection. The international conservation legislation signed by the Croatian parliament requires that action be taken where there is uncertainty. However, perhaps more importantly, there is the potential for financial aid or possible sanctioning in the accession process. The status of the Reserve as a Natura 2000 site in waiting also applies pressure due to commitments made to the EU in the SAA and provides the opportunity to tap EU funding (section, 6.3). The prospect of external aid to develop protected areas, particularly from supra-national organisations, may also motivate the development of CPRs (World Bank, 1992).

Although the absence of structural funding for ACCOBAMS was cited as a limitation to its effectiveness as an institution (see section 6.3), funding was made available for the development of the 'Critical Habitats Report'. This financing, although not on the scale of many EU projects, provided enough

funding to develop a document that has been instrumental in developing negotiations for the proposal. The Reserve remains one of the ACCOBAMS priority areas to be established before the third meeting of the parties, to be held in Dubrovnik. The personal support of the ACCOBAMS secretariat has also been a major factor, what Nederveen-Pieterse (2003) calls 'a friend in a high place'.

Whilst nature protection may gain strength from direct EU pressure, there maybe conflicting indirect pressure through economics and investment, which may undermine nature protection. Many Croatians feel that the State is taking a submissive position to the EU, which in turn raises suspicions regarding the motivations of the EU and national government (section 5.1). This cross-scale linkage with the EU has caused tensions, especially when considering the recent history of Croatia. There are issues regarding the hard fought right for self-determination still to be addressed in Croatia, this reflects many of the fears expressed by other small states on integration into the EU (Pavlovaite, 2003). On the positive side, a consistent theme running through the interviews was that they many people believe that the EU could bring some accountability to the institutions governing Croatia.

2. What is the role of the emerging national political regime?

The political, cultural, economic, and historical context in which a community resides can help to facilitate or constrain the conservation of resources (Stern *et al.*, 2002). Ultimately the State is the guarantor of property rights within its sovereign boundaries and must play a critical role in the development of CPRs and MPAs. Partly due to the war and the autocratic political leadership, the democratic changes that most of the post-communist countries were passing through in the 1990s were halted in Croatia until the decline of the government that managed the war in January 2000. Only since this date has Croatia been a truly democratic nation.

Communist systems invariably replace voluntary organisations with official organisations and people got used to obeying orders rather than making their own decisions (Chloupkova *et al.*, 2003). Paldam & Svendsen (2002) found that the Soviet regime deliberately destroyed normal social capital whilst 'feeding' negative social capital.

'The official main aim of the 70 years soviet system was to create a new socialist man and eliminate capitalist man. In order to do so, all voluntary organizations were brought under the leadership control of the communist party. By doing this, the party told people what to do, and de facto abolished all unofficial voluntary organizations. Great efforts were made to root out non-system initiatives and even the boy scouts were replaced by official party scouts (pioneers). Strong incentives were given to restrict all activities to the (relatively) safe one of obeying orders. The state made almost all decisions and left no room for entrepreneurship, experiments and voluntary organization into social groups' (Paldam and Svendsen, 2002).

Historically, the Yugoslav period undermined the development of civil society and created a passive reliance on the State. However, Yugoslavia was always more open than most communist States, following the ideological split with Stalinist Russia in 1948. Although there were antagonisms between the States that made up the Federal Republic of Yugoslavia, the suggestion that there were clear ethnic or national groups within Yugoslavia is flawed (Bennett, 1995; Mueller, 2000). Yet, the break-up of Yugoslavia led to the development of a nationalist Croatian State, with non-Croatian ethnic groups regarded as foreigners within Croatia. Although the island remained outside the direct conflict, many families with mixed or Serb parentage were ostracised. Individuals and families who were integrated into island society were suddenly regarded as 'outsiders' within their own community. The development of bonding social capital within ethnic groups acted as a barrier and deepened social rifts. In this case bonding social capital was not beneficial as the strong ties that benefited certain members of the community, particularly refugees, excluded others. Collier (1998) refers to this as the 'dark side' of social capital.

The decline of the communist system created other problems. When the communist regime ceased to exist the informal State control of the black market networks broke down. This led to a flourishing of the black market and widespread corruption (Skrbiš, 1999; Spajik-Vrkaš, 2001). Štulhofer (2004: 7) found that in the period directly following the war, public perception of corruption among civil servants was the most significant factor undermining social capital and trust in institutions in Croatia. This is also reflected in the comments of interviewees in section 5.1.

This period coincided with most of the work for the development of the Reserve in the 1990s. The build-up and instigation of war contributed to the decline of the Island Development Centre and the withdrawal of international funding from the country. This war and post-war period also undermined foreign organisations, such as Tethys, which was led to minimise its profile in a time of intense xenophobia (section, 4.1). The development of Blue World coincided with the liberalisation of the State following the January 2000 election. The new government reversed the trend of the previous one, welcoming foreign investment and partnerships (section 4.2).

In a number of Central and Eastern European countries the transformation of command economies into more market orientated growth models is paralleled with a reorganisation of existing traditional environmental policy systems. In most of these former command economies a detailed system of environmental institutions, laws, and standards have been developed in close relationship with the economic planning system. Although these environmental institutions look impressive on paper, it has been widely acknowledged that their environmental effectiveness proves to be poor, owing to failing implementation, inappropriate price signals, lacking priority for the environment, and shortage of manpower and resources in environmental institutions (Frijns *et al.*, 2000). These issues remain as a hangover from the former communist period (see section 6.3).

Added to this is the continuing fear of reprisals for criticism of the system within State institutions. Further instability is threatened by foreign investment encouraged by the Stability and Association Agreement (SAA). Mol & Sonnenfeld (2000a) suggest that market change in transition countries can lead to a rapid decline in environmental resources. This a particular worry for the fishery which will struggle to compete with the stronger, better organised European fleets (see section 5.1).

Although the island is one of the most prosperous regions of Croatia, movement towards integration will affect its relative wealth compared to other European regions. Many people are aware that integration will bring further prosperity to the State as whole, but competition for limited resources on the island will become stronger. The influx of foreign money for the purchase of second homes in coastal and island areas is pushing Croatia along the route where prices are prohibiting the development of sustainable local populations, as seen in other Mediterranean countries (Selwyn, 2000). Coupled with this is the fear that the exclusion of many of the younger islanders, due to economic pressures, may be exacerbated by integration and the possibilities of migration to other EU countries.

3. What is the role of civil society in the process and how will its structure influence the development of the proposal?

Jorge (1997) recognises three main civil society groups involved in coastal management; coastal residents via community-based organisations, economic cooperatives and chambers of commerce, and conservationist NGOs. Where there is a strong civil society the potential for participation in collective action is normally high (Chloupkova *et al.*, 2003; Pretty & Ward, 2001). However, where it is low there may be a need for a facilitating organisation (Richardson *et al.*, 1998; Warner, 1997). This reflects the situation in Croatia:

'There is limited tradition of civil society in Croatia — its development has been hindered by half a century of communism and totalitarian ideology coupled with a lack of experience with the concept of freedom of association. Citizens' civil engagement, for solving both individual and community problems has not been a common practice among the vast majority of citizens in Croatia. Most citizens consider the government/state responsible for solving their problems. Thus, passiveness and apathy exists in Croatia.' (Bezovan, 2001:1).

NGOs are developing quickly and starting to fill the void between the general public and the State in Croatia (see section 3.2.2). They are becoming more organised at national and local level, instigating and maintaining international links to other NGOs and institutions. Recent research in Croatia suggests that NGOs are now more trusted than central or local government officials, but less than professionals (Cooper *et al.*, 2005). The national government remains in a state of flux, wary of the role of NGOs, but unwilling to dismiss them due to international pressures (Bezovan, 2001).

One significant aspect of the role of civil society in the development of the Reserve has been the role of the Blue World NGO. Blue World is not a typical Croatian NGO, in that it was constructed by foreign scientists and local people. The organisation has had two primary roles in the promotion of the Reserve: the provision of the underlying science, and the facilitation of negotiations between and among stakeholders and relevant authorities.

In the absence of State capacity to provide the underlying science for the Reserve, Blue World sought to develop links to provide financial and scientific support for the proposal. This reflects findings of other authors that suggest that NGOs can be significant in the development of conservation by fulfilling an advisor role to the governmental bodies (Haley & Clayton, 2003; Jamison, 1996; Young, 2002). It was recognised that scientific justification for the Reserve needed to be as broad as possible. As a result, Blue World sought widespread collaboration within the marine biology community of Croatia for the development of the Critical Habitats Report. Within itself Blue World many of the members are fully employed at governmental institutions, but were highly influential in the development of the proposal (section 5.2.5). This is similar to the findings of Rinkevicius (2000) who revealed that many of the actors involved in the development of environmental discourse in Lithuania maintained a 'double identity' working in institutions, but also active members of NGOs. As institutional affiliation remains a significant recognition issue in Croatia; tying the Reserve to professionals working with State institutions and external institutions, such as UCL, coupled with ACCOBAMS partnership status, helped to build scientific and policy support.

The second role of facilitation grew out of recognition that, as Blue World was providing the science for the proposal, it would be Blue World not the State that would be held accountable locally for the Reserve, should it be designated. Jorge (1997) found that in the absence of governmental interest, NGOs can take a facilitating role in developing capacity for coastal management. The lack of other cohesive civil society organisations, and the absence of trust between those organisations that did exist, required that Blue World sought some local support (see section 5.2.4). Consequently a strong coalition developed between Blue World and the local authorities who saw the opportunity of developing the image of the island. This is similar to the findings of Pollnac *et al.* (2001), in the Philippines, where close ties and input from the local authority had a significantly positive effect in the overall success of community based MPAs. The connection between Blue World and the City authorities was particularly crucial. However, some stakeholders felt that the relationship compromised Blue World's position as a research organisation and facilitator (section, 6.1). Tying into the political elites does also raise ethical questions with regards to equal participation and conservation (Murphree, 1994).

In its role as facilitating organisation Blue World also linked the local stakeholders to the national and international policy and science networks. Of particular importance was the links between ACCOBAMS and the SINP to the

local community. Warner (1997) found that NGOs were instrumental in creating links between local stakeholders and relevant authorities in St. Lucia.

'This is an area in which a locally-based NGO such as CANARI could play a key role in helping to bring together people who possess sound knowledge of relevant global issues with members of local community-based resource users groups in order to facilitate dialogue which would help the local groups make choices informed by an understanding of both their immediate setting and the wider forces at work. Such a process could also help information-sharing and the development of alliances between local groups involved in various forms of participatory or community-based marine or natural resources management.'

It was important that facilitation was undertaken by an organisation that was trusted locally, but had national and international contacts. This is a significant difference to the Tethys organisation that did not act as a facilitator and remained a foreign institution, which in turn probably contributed to the failure of the proposal in the 1990s (see section 5.2.4). Other authors also suggest that external facilitating organisations can exacerbate the problem of participation and trust within local communities (Frijns *et al.*, 2000; Sundberg, 2003).

4. How will the island social structure and identity fit with the Reserve proposal and the development of the 'island symbol'?

Heterogeneity within the primary appropriator class can have a major influence on the sustainability of institutions. Although group size will affect the ability of members to undertake face to face encounters, a key principle to facilitating collective action (Ostrom, 1990), it is not the size of the primary appropriator group *per se*, but the diversity of the sub-groups that has a greater effect. In northern Pakistan, Khwaja (2000: 21) found that:

'Community size has no significant effect once land inequality and social heterogeneity are controlled for, suggesting that it is not size per se that matters, but the greater inequality and heterogeneity in larger groups that hinders collective action... ...cooperation is difficult in unequal communities since members of different social, economic or ethnic classes prefer to associate with members of their own class.'

One aspect of heterogeneity that has been under-explored in the development of MPAs and CPRs is social or cultural identity, particularly related to demographic change (Baland & Platteau, 1996; Curran & Agardy, 2002; Stern *et al.*, 2002).

'Cultural heterogeneity exists, then, when there is more than one community of interpretation or community of shared values, among the members of a group. This can overlap with ethnic or social or locational heterogeneity, but need not.' (Bardhan & Dayton-Johnson, 2001: 7).

Lošinj has experienced widespread demographic change over the last century. Yet, this region was famous for its strong identity based on its specific history and links to the western States (Sekulic, 2004). Regime change and migration has eroded regional identity. Raagmaa (2002) suggests that the perception a region may change as people with entirely different values move in, resulting in significant changes in the region's institutional framework or symbols. There is now a considerable diversity of ethnic, social, and interest groups on Lošinj; the three main groups that this thesis has highlighted are based on ancestry or origin. However, within these three origin-based groups there are various subgroups and supra-groups. Individuals may belong to one or many groups simultaneously, mobilising different aspects of their identity at different times, according to the situation within which they find themselves (Sekulic, 2004). As the national situation has settled in Croatia the aspect of regional identity is developing again. The development of regional identity does not necessarily exclude national identity, but rather it is a form of parallel identity, or one of the numerous diverse identities (Mesic, 2004). Many of the islanders with continental ancestry are adopting coastal or island attitudes, even towards cousins and other relatives from the interior, reflecting the coastal-interior divide highlighted by Ballinger (2003) and Bennett (1995). One feature of liminal communities as islands or borderlands, of which Lošinj is both, is the capacity to adopt several multiple scale identities at once (Kaplan, 2000). This leads to an opportunity to mobilise a common geographical identity for the development of collective action.

Many of the families that migrated to the island between the 1960s and 1980s have remained and now have second or even third generations that can be considered as local (section 5.2.3). Stoffle *et al.* (1994) suggests that this provides enough time for individuals and families to develop conservation ethics based on their locality. Although the development of identity, manifested through geographical means, varies from person to person, there will be core values that can provide group consensus and can be used to motivate across communities (Kaplan, 2000; Smolicz, 1981; Smolicz, 1988). The construction of a new identity around a shared vision helps to safeguard the functionality and sustainability of new institutions (Castells, 1997; Healey, 1997).

In the absence of bonding social capital between the islanders, other strategies must be found to develop trust for successful collective action. The World Bank (2000) suggest that it is important to link social capital with other forms of capital, particularly economic and human, recognising that projects that try to mobilise local social capital would achieve little by itself. The development of the island through the promotion of nature tourism, symbolised by the image of 'Lošinj the island of dolphins', provides a shared vision and a link to local economic capital. The image of 'Lošinj, the island of dolphins' provides a symbol of identity that all the primary appropriators of the island can grasp to develop the required social capital for successful collective action. The dolphins are a charismatic species that provide an apolitical, non-ethnic, non-religious symbol that the whole island can adopt without fear of reprisal or ridicule.

Hence, the deeper agenda will be to make nature and natural resources meaningful to a whole new community of 'Lošinjante'.

5. What is the potential for cooperation at the local level and how can it be nurtured, i.e. participation, social capital, institutional incentives?

Rather than directly addressing the social capital constraint, policy initiatives that emphasize project design may be more feasible and have better success in implementation. Although communities may be lacking social capital, success can be achieved through well-conceived and better designed projects (Ahmad, 2003; Khwaja, 2001).

'Specifically, designing projects that face fewer appropriation risks (through better leadership and lower complexity), eliciting greater local information through the involvement of community members in project decisions, investing in simpler and existing projects, ensuring a more equitable distribution of project returns, and employing NGOs can substantially improve project performance even in communities with low social capital' (Khwaja, 2001: 28).

In this way projects can avoid process manipulation and appropriation by dominant stakeholders. However, participation is still a relatively new concept in conservation. Edwards *et al.* (1997) found that in the UK both regulatory authorities and coastal communities are relatively unfamiliar with the concept of community participation. In former socialist countries the concept of participation is even more alien (Chloupkova *et al.*, 2003; Paldam & Svendsen, 2002). Participation is not yet a standard concept within Croatian policy. This issue was highlighted by the inexperience of the facilitators and the participants in the sustainable development workshop hosted by the county (section 6.1: box 6.5). Like many other former socialist States, Croatian citizens are not used to having their opinions sought; they are used to the State making decisions for them (Putnam, 1995).

One of the major problems in seeking participation of local communities in conservation actions is the accurate identification of the appropriate participants (Ostrom, 2000; Rydin & Holman, 2004). Expanding the democratic process can stifle progress, whereas concentrating on specific stakeholders can undermine its legitimacy. Defining rights of access to decision-making processes in multiple-use areas will always be more difficult than in traditional single use CPRs (Edwards & Steins, 1998). There is a need to identify the primary appropriator group and then ensure the rights of access of this group to the decision-making processes for the institution for the Reserve. As the Reserve is tied to the jurisdictional boundaries of the local authority, it would appear justifiable to define the primary appropriators, and hence those with access to the decision-making processes of the management of the Reserve, to the local population living within those boundaries. Garaway & Esteban (2003: 4), reflecting the work of Selsky & Creahan (1996), refer to the community involved in developing MPAs in the Caribbean as:

'community refers to the non-homogenous set of people who live in or around the MPA'

McCay (2002) questions, however, whether it is equitable to limit rights of decision making based purely on locality. Briassoulis (2002) found that external users, i.e. secondary and tertiary appropriators, may interfere with internal rules which may lead to the loss of natural capital of host areas, particularly in islands and remote destinations. This reflects the work of Borrini-Feyerabend (1999) who identifies incoming exploiters as a major threat to protected area management. The designation of the Reserve will help to reactivate a localised control system, which is reflected in both MPA and CPR literatures. Jones & Burgess (2005) suggest that the designation of MPAs may return some of the influence from the new 'interlopers' back to the original users by introducing a degree of local protectionism of the resource system. It is also a classic first reaction to the definition of a CPR (McCay, 2002). The most important issue is to make the process transparent, identify the access rights of the different stakeholder groups and subsequently make those groups aware of those rights (Jentoft, 2000; Pyhala, 2002; Schlager & Ostrom, 1992; White *et al.*, 2002).

In Croatian scientific and policy circles participation is viewed with skepticism and is not consistently utilised according to national policies (EC, 2004b). Although there is a legal requirement for local participation in the development of the Reserve, there seems little will to directly address the issue; the planned public debate having been postponed indefinitely (see section 6.4). There is no legal requirement for public participation beyond the public discussion, despite the fact that defining the primary appropriators on Lošinj would appear to be reasonably easy (see section 6.2).

The two primary stakeholder groups on the island are tourism and fishery. Unfortunately there is little cohesive structure to any of the guilds representing these groups, and significant animosity between these two economic spheres. Tourism dominates the island economy and hence has priority over most other activities, and the local authorities are wary about applying anything but the most relaxed rules for tourists. It is expected that educating tourists and enforcing boating rules will be one of the major problems for the Reserve (see section 4.4.2). Already the Lošinj fishery guild feels peripheralised. There are fears that the conservation interests underlying the development of the Reserve will once again favour tourism at the expense of the fishery (section, 5.2.4). This reflects issues raised by Christie *et al.* (2003) and Garaway & Esteban (2003) that traditional fishers invariably pay the cost of MPA establishment to the benefit of tourism. Some stakeholders will require more assistance than others to become involved in the process. Those industries, such as fisheries, that have been excluded in past decision making regimes now have the opportunity to participate as equals. Involving these stakeholders early in the process is essential, even if this requires some subtle form of preference (see box 6.2 of section 6.1).

Undoubtedly, those industries, companies, and individuals with the means to utilise the development of the Reserve will benefit more than others. Generally, groups with greater access to economic capital or that are better coordinated will be able to exploit the opportunities faster than others (Ostrom, 1990). Developing new alternative industries based on nature and sustainable use will require a significant change in thinking for many of the islanders, particularly those who wish to maintain the *status quo*. The important thing that ran through all of the meetings and interviews was the requirement for an equitable process.

6. How will local bottom-up 'objectives', integrate with the top-down primary objective of the Reserve?

Balancing scientifically driven objectives and the development of democratic institutions for the management of natural resources is a difficult process (Goodwin, 1998; Ostrom, 1990). Invariably protected areas are based predominantly on biological aims. Ray (1999: 612) argues that although social science has a role in conservation:

'The bottom line is that there is no escaping ecological science and monitoring as the primary components for both protected area selection and their future management.'

Centralised control can be insensitive to changes within the resource, whilst community management runs the risk of defining issues purely at the local level (Jones, 2001). Pollnac *et al.*, (2001) found, in the Philippines, that locally initiated MPAs were no more successful than State initiated ones. They also found that the most successful sites combined the devolvement of decision making power to local people and continuing protected area agency assistance during implementation and establishment of the area. This echoes the argument that marine conservation requires the combination of top-down and bottom-up management which is consistent with the development of co-management schemes for MPAs (Jones, 2001). Co-management is even more important in marine systems due to the degree of uncertainty involved in managing marine resources (Kelleher, 1999). Accessing local ecological knowledge is especially important in marine systems and even more so when attempting to manage the whole ecological system. Traditional users that are in direct contact with the sea may hold important knowledge useful to the effective management of the area. Identifying areas for the protection of fish stocks, for instance, requires access to the knowledge of groups and individuals that have been on the sea for decades rather than months (Johannes *et al.*, 2000). Many communities are starting to recognise that the knowledge they possess entitles them to some influence (Berkes, 2003). Traditional users also tend to be the primary appropriators, with a greater intrinsic interest in maintaining the sustainability of the resource (Selsky & Crehan, 1996).

'The co-management strategy is distinct from community-based management in that it explicitly recognizes that government agencies and NGOs often must be involved in a community's affairs, for a variety of reasons including needs for

resources not available in the community. However, it also recognizes the importance of community control over and responsibility for many aspects of resource management.' (McCay, 1998: 1).

In many cases when the State imposes a protected area co-management is offered as mitigation to elicit local support. It is more appropriate to involve communities at the earliest possible stage of the process to deflect potential management problems (IUCN, 1993; Kelleher, 1999). As Geisler (2002: 4) states:

'Protected area discourse generally ignores power or naively assumes that co-management somehow equalizes it. This is the Achilles heel of the counter-narrative. I expropriate you, and then invite you to be my management partner. Precarious power logic; perfidious results.'

Although the designation has a top-down objective, its selection was based on the potential for management at a local level. In this regard this is the most appropriate designation in Croatia to facilitate local participation in the management of the area. National designations such as 'National Park' or 'Park of Nature' require management institutions designed and managed at national level, and other lower forms of protected area do not provide adequate opportunity to fulfil the aims of the area.

Past experiences with the national government, particularly for the fishermen, have not been successful. The frustration of the local fishermen with national policies is tangible, particularly with the EEZ fiasco and the development of the pelagic fishery (see section 5.1). There are significant worries at the local level regarding the knowledge and capability of the national authorities to provide suitable rules (see section 6.4.2). The issue of rules being imposed on the local coastline from a land locked capital in the interior of the country again fosters the issue of the rural-urban, interior-coastal divide within Croatia. However, national institutions believe that if the Reserve is managed at the local level, without the possibility of State influence, then there is a possibility of the Reserve being high-jacked at the local political level (section 6.4.2). The procedure for the selection of the management board, at the local level, and the dominance of tourism would indicate that this fear is justified. Tourism, in its many forms, is the largest user of the area and it remains an issue that the local authorities and tourist board are reluctant to place any restrictions on visitors. This could result in a scenario that the actions of unregulated tourism, attracted to the island by the 'symbol' of the Lošinj dolphin, could be the factor that drives the dolphins away (Fortuna, 2006).

There are concerns that the introduction of new management institutions associated with MPA designation could result in a breakdown of social norms, leading to the overexploitation of the resources that the MPA is trying to protect (Jones, 2001; Nichols, 1999). However, few local users of the area have any faith in the system as it stands, and there are few, if any, pre-existing management systems operating (see section 6.4.1). Increasingly, local people are starting to see the Reserve as a possible method to re-establish some control over what is

essentially a lawless system. As greater concern for the natural resources of the island grows locally, many other institutions are proposing protected areas to impose some control, in some cases diverse objectives may benefit both scientific and local community aims. For example, reduced fishing effort, by limiting the use of the area to the primary appropriators, will not only benefit the local artisanal fishermen, but may also help to provide greater available prey for the dolphins. In 2003 the local fishery guild were already proposing closures and greater control (see section 6.4.2). In addition to this there is a growing concern for the future; assimilation into the EU and the consequences for the fishery and second homes is providing a catalyst for the development of local coalitions to protect the local environment from outsiders.

7. How has the researcher affected the process?

There is an increasing literature encouraging researchers to enter into the activism realm by providing expertise for the development of society (Chouinard, 1994; Fuller, 1999; Maxey, 1999; Routledge, 1996). In Croatia, as in other ex-socialist nations, the dual role of academics working within or together with NGOs and other activist organisations is quite common (Rinkevicius, 2000). Combining work on the thesis with developing MPA policy in Croatia has placed me in a position as both researcher and activist. As one of the primary authors of the latest version of 'The Lošinj Dolphin Reserve' (appendix I) I found myself proposing policies and reviewing both the actions of Blue World and myself in promoting such policies. As I have worked through the various stages of the thesis, it has informed me of the critical aspects I should be aware of when devising MPA policy using the CPR framework. In many ways I have been able to bridge the gap between scholarship and practice. Murphree (2002) maintains that there is an opportunity for scholars to contribute to the debate on CPRs and protected areas:

'Common property scholarship now stands on the cusp of a unique opportunity to insert its scholarship into policy debate on protected areas with the Fifth World Parks Congress scheduled to take place in South Africa in 2003... ..our scholarship can contribute through a constructively critical analysis of the process which has shaped protected area policies' (Murphree, 2002: 3).

Without being involved in Blue World many of the sources accessed in this thesis would not have been available, and hence the thesis would not give a full account of the process. Likewise, without the theoretical backing of this thesis the successful designation of the Reserve would probably not have happened. As Fuller (1999) suggests, I feel that the combination of activism and academia has benefited both the process of this study and the development of the Reserve rather than undermining either, it has allowed a more equitable and thoughtful process develop as a whole.

7.3. Conclusions

One of the main arguments advanced through this thesis is the necessity of understanding the social, economic, cultural, and political dynamics of the communities who interact with, and exploit, marine resources if any effective conservation strategy is to be achieved. As Mascia (2004) points out, MPAs are human constructions developed to control human behaviour and thus are a social phenomenon. Identifying and defining the role of primary appropriators, and subsequently supporting those primary appropriators, who have an intrinsic interest in the resource, is vital to the success of conservation.

Kelleher (1999) suggests the development of interdisciplinary project teams to provide 'whole-view' for the planning of MPAs highlighting marine scientists, ecologists, social scientists, lawyers, and economists among others as 'obvious candidates'. The original four key areas identified by Ostrom (1990), Pinkerton (1989), Baland & Platteau (1996), and Wade (1988) of resource characteristics, group characteristics, institutional arrangements, and external factors, provide the basis for just such an interdisciplinary approach. Applying equal weight to each of these key areas should give a balanced assessment of a CPR or an MPA. The extension of these key areas by Agrawal (2002) provides a generic framework based on a comprehensive review of CPRs. However, it is only in the application of this framework that it can be tested.

In the analysis of the empirical work seven factors are highlighted as being the most important in this case study:

1. The role of international regimes, highlighting the potential for funding or sanctioning.
2. The development of the State and the decline in institutional trust and social capital.
3. Heterogeneity within primary appropriators, particularly relating to identities and the absence of inter-dependency
4. The presence of a facilitating organisation linking local stakeholders to national and international policy makers.
5. Linking social capital to economic capital and the development of the symbol of the dolphin as that of the island of Lošinj.
6. Crises at local level, particularly with regards to the exploitation of fish stocks and possibilities of alternative employment for younger islanders.
7. Equity amongst stakeholders with regards to accessing the processes for management.

There is a huge variety of marine protected areas worldwide and it would be impossible to define critical enabling conditions that will apply to all of them. What I suggest is to define areas for investigation, which perhaps would be overlooked by standard methods of research. In attempting to avoid falling into a normative epistemological trap, I forward these factors as 'investigative fields' rather than 'critical enabling conditions'.

Table 7.1: Framework for Investigating the Development of MPAs

- (1) Resource system characteristics
 - (i) Well defined boundaries
 - (a) External
 - (b) Internal
 - (ii) Predictability
 - (a) Mobility of resource units
 - (b) Storage of resource units
 - (iii) Match restrictions on harvests to regeneration of resources
- (2) Primary appropriator group characteristics
 - (i) Clearly defined boundaries
 - (ii) Social capital
 - (a) Shared norms
 - (b) Past successful experience
 - (c) Appropriate leadership
 - (d) Appropriate facilitation
 - (e) Interdependence among group members
 - (iii) Linking social capital to other forms of capital
 - (iv) Heterogeneity of endowments
 - (v) Homogeneity of identities
 - (vi) Heterogeneity of interests
 - (vii) Stable population
 - (viii) User group residential proximity to the resource
 - (ix) Fairness in allocation of benefits from common resources
 - (x) Gradual change in levels of demand
- (3) Institutional arrangements
 - (i) Rules are simple and easy to understand
 - (ii) Local access to definition of management rules
 - (iii) Equity of enforcement of rules
 - (iv) Graduated sanctions
 - (v) Availability of low cost adjudication
 - (vi) Transparency of operations
 - (vii) Accountability of monitors and other officials to users
- (4) External environment
 - (i) Technology
 - (a) Appropriate & cost effective monitoring & detection technology
 - (b) Time for adaptation to new technologies related to the commons
 - (ii) Articulation with external markets
 - (a) Gradual change in articulation with external markets
 - (iii) Supporting external organisations
 - (a) International
 - (b) State
 - (c) Local
 - (d) NGO
 - (iv) Appropriate levels funding for management & alternative employment
 - (v) Nested levels of appropriation, provision, enforcement, governance

With increasing globalisation local level CPRs will increasingly come under threat and there may come a time when international legislation, coupled with statutory enforcement, will be required to maintain their integrity. Conversely, as MPAs are increasingly being advanced as management tools for multiple-use coastal and near-shore areas, and the overarching legislation calls for equitable participation, they are becoming less like protected areas and more like sustainable development areas (Locke & Dearden, 2005). The underlying problem for both CPRs and MPAs is the establishment of appropriate sustainable resource management institutions. The contextual factors applying pressures to both fields are increasingly similar; hence the solution to the institutional problem would appear to be equally similar. Lessons learnt from CPR theory can help to inform MPA practitioners of the potential collective action problems that await them with the increasing importance of co-management. Equally issues raised in the application of CPR theory to MPAs may help to illuminate other areas of CPR research. As Stern *et al.* (2002) suggest, it is only through extending insights into more CPR situations that the scholarship can advance.

7.4. Areas for Future Study

In conservation issues invariably external institutions play a significant role, formation of alliances, either formal or informal, play a significant role in the development of individual protected areas. Few studies have undertaken investigations of the role of external advocate organisations in to the development of CPRs. As civil society becomes more influential in this field, particularly in newly developed states, the role of external non-governmental advocates will become increasingly important. How will local level institutions create linkages to meet management objectives set internationally? And, how will power relations between institutions and individuals affect the creation of alliances (Steins & Edwards, 1999; Stern *et al.*, 2002)? The post-socialist environment is a critical test bed for emerging ideas about social capital and civil society; it provides an opportunity to monitor the growth, or re-growth of these factors and observe their effects on the development of democracy.

Kaplan (2000) suggests that the transformation of the south eastern European peninsula currently being undertaken, in regards to integration to the EU, is equivalent in its scope to the alterations caused by the first and second world wars in this region. The expansion of the EU raises the issue of the 'continentalisation' of Europe. Prior to the integration of the ten new states in 2005, 12 from 15 EU states had island regions. Following integration 15 from 25 states had island regions, and the subsequent integration of Bulgaria and Romania in 2007 will further erode the importance of these regions for development (Eurisles, 2002). By the time Croatia joins, scheduled for 2009, only 16 from 28 states will have island regions. The decreasing political importance of island regions may have a significant economic impact with regards to support mechanisms from the EU, especially when considering it will require 18 or more States to support special proposals in the European Council. What of the future of the coastal and island regions of Europe within the EU, and what in particular will be the interest in Croatia's thousand islands?

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I

Appendix - Proposal for creation of A Special Zoological Reserve

The Cres-Lošinj Dolphin Reserve
Kvarnerić, Northern Adriatic

Proposal for creation of
A Special Zoological Reserve

Proposal by Blue World, Non-Governmental Organisation

To be cited as:

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SUMMARY

This proposal sets out the benefits for establishing a marine reserve at Cres-Lošinj, a recognised feeding area of the bottlenose dolphin, the only cetacean species known to inhabit Croatian national waters. The proposal validates arguments for selecting Cres-Lošinj for the purpose of marine conservation, given the present well-documented knowledge about the area and the ranges and identities of the cetacean population. This area would supplement current national regulations protecting cetaceans from harassment and provide the prototype for other such areas in Croatian national waters.

Specifically the choice of the Cres-Lošinj area for the marine reserve is due to the need to rehabilitate the marine ecosystem, which has been severely damaged by human exploitation, and it is the only documented area in Croatia with a resident dolphin community. This proposal integrates with current international actions towards the protection of the entire Mediterranean region. Given the special circumstances of this region and the vigour with which environmental protection and conservation measures are being developed by the international community, the Cres-Lošinj area offers Croatia, as an emergent nation of the Mediterranean, the best prospects for securing a satisfactory habitat for cetaceans, and other marine life, long term in the Croatian Adriatic.

Introduction

It is proposed that the County of Primorsko-Goranska designate the waters East of the Cres-Lošinj archipelago as a marine reserve for the protection of cetaceans, (Annex I) in accordance with the law for Nature Protection (1994), (Official Gazette No. 30/94), with the establishment of a 'Special Zoological Reserve'. This status will allow for the protection of the area due to the presence of one or more protected species that are acknowledged as under threat, thus prohibiting actions that may cause disruption to those species for which the reserve is designated.

The primary purpose of this proposal is to contribute to the rehabilitation of the Cres-Lošinj marine environment, by complementing and reinforcing other measures for the conservation of cetaceans, in particular for the resident bottlenose dolphin population known to frequent this area for feeding purposes.

The present proposal is intended to supplement rather than supplant existing regulations on fishing and development in the area. It is generally accepted that a number of complementary measures maybe necessary to address different though related aspects of environmental problems. A marine reserve would focus on the comprehensive restoration of the complex interspecies associations and species-habitat associations. This area is not only important for the resident bottlenose dolphin community but also for the submarine life; historical artefacts; bird nesting sites and it is also believed to be an over-wintering ground for marine turtles (Annex II).

Characteristics & choice of an appropriate marine reserve

A 'Special Zoological Reserve' is described as; 'an area in which one or more unchanged natural parts is specially significant, and of special scientific meaning'; and within its boundaries 'actions that could endanger the reasons why it was proclaimed reserve are prohibited' (Article 7, Official Gazette No. 30/94).

The establishment of a 'Special Zoological Reserve' must be declared by the county assembly; '*the measures for the protection of protected natural areas shall be determined by the county authorities*' (Article 29, Official Gazette No. 30/94). Prior to this declaration approval must be given by the Ministry of Environment, Protection & Physical Planning (Article 13, Official Gazette No. 30/94). Thus this proposal supports the adoption of physical plans regulating the measures for the protection, management, promotion and use of a specifically protected area falling within the competence of the county and municipal assembly.

The primary objective of the marine reserve will be the restoration and maintenance of the population of bottlenose dolphins in the Kvarnerić at a viable¹ level. Additionally this proposal seeks to ensure that the Kvarnerić provides the environmental and ecological processes necessary for the achievement of this primary objective, subject to natural change.

This will be the first Croatian marine reserve dedicated to the protection of cetaceans hence it will fulfil many of the intentions expressed in the National Strategy and Action Plans for the conservation of biodiversity (1999):

- Development of protected areas for protected species;
- Protected areas for all species of dolphins;
- Estimation of the size, population trend and protection of dolphins, through the use of a pilot marine park.

‘Particular emphasis will be placed on the protection of species listed as endangered on a global, European or national scale’

Further considerations regarding the selection of the Cres-Lošinj marine reserve

Currently Cres-Lošinj is the only documented feeding and nursery area in Croatia (Bearzi *et al.* 1992, Holcer & Fortuna 2000), however there is dearth of basic information on breeding areas of this population. In general it is not known whether breeding grounds are localised or extensive and there are suggestions that there may be genetic flow between populations within the Adriatic sea (Natoli & Hoelzel 2000). This may necessitate a more complex and progressive approach to protection, as far as breeding areas are concerned. It may also imply that national legislation will become more important in protecting these areas.

In June 2000, the Croatian parliament ratified many of the international environmental agreements, thereby bringing into force the procedures for the implementation of marine protected areas (Annex III). Many of the commitments that the Croatian Parliament has made by ratifying these treaties, in particular the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS), and Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, Barcelona (1976) and the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean, Barcelona (1995), can be met through the designation of the proposed area (Mackelworth *et al.* 2001).

ACCOBAMS states (Article 2); ‘parties shall cooperate to create and maintain a network of specially protected areas to conserve cetaceans’; ‘parties shall endeavour to establish and manage specially protected, corresponding to areas which serve as habitats or feeding areas’; and ‘specially protected areas should be established under the Barcelona convention (1976), or its relevant protocol or within the framework of other appropriate instruments’.

The boundaries of the Cres-Lošinj marine reserve

Although bottlenose dolphins are highly mobile, they have tight 'home ranges' on feeding grounds. The Cres-Lošinj population is known to consistently use the proposed area for feeding (Annex I) hence the preliminary boundaries for the reserve are based on the 15 years research carried out by the Adriatic Dolphin Project (Bearzi *et al.* 1992; 1999). There is no other area in Croatian waters with evidence of long-term use by a resident population of dolphins (Notarbartolo di Sciara & Bearzi 1993).

There is a need for more extensive research in the contiguous areas to the proposed marine reserve to ascertain 'home range' and clarify the optimal boundaries for the reserve to fulfil its

¹ Viable Population is defined as; A secure and enduring population that is able to sustain itself in the long term. This is dictated by minimum and maximum breeding age, adult and calf survival rate and annual birth rate (SNH 1999)

objectives. There should be the potential to expand or reduce the preliminary boundaries based on the results of further research work (Fortuna *et al.* 2000).

Other supportive and supplementary activities

This proposal for protected status not only fulfils Croatian obligations to ACCOBAMS but will also help to protect other essential and important habitats for other species important in the Mediterranean. For this reason this area could also be recommended as a Specially Protected Area of Mediterranean Importance (SPAMI), through the Regional Activity Centre, Specially Protected Areas (RAC/SPA).

Designation could also lead to inclusion into the Emerald Network of the Bern convention, thereby advancing the potential for large scale financial support through the LIFE 3rd Countries scheme of the European Union, supporting the economic and social changes that will occur in the area.

Research & monitoring

A long term monitoring programme should be set up for those species and habitats listed in Annex II coordinated by the specialist groups and the competent authority, being the county authorities, supported and sponsored by the relevant national ministries. Research should start immediately to provide a baseline for the subsequent analysis of the effectiveness of the marine reserve.

Duration of the marine reserve

The duration of the reserve will be declared by the competent authority, being the county authorities, generally; *'the reserve will exist for as long as there is a need under which it was established or until the reason for establishment become extinct'*. It is suggested that the reserve should be established for an indefinite period of time; with periodical reviews every five to ten years.

Recommendations

- Time is required for further and more extensive research, however in the mean time a precautionary approach should be maintained;
- Emphasis should also be given into the study of the problems facing the dolphin community, in particular, dolphin-fishery interaction, dolphin-tourism interaction and localised pollution effects including noise pollution;
- Analysis of the upstream effects on the reserve, such as pollution from the industrial centres located in the Adriatic catchment area;
- Study of the socio-economic impact of the protected designation on the local community;
- Analysis of protection techniques, such as zoning, allowing more restrictions in areas of greater sensitivity.

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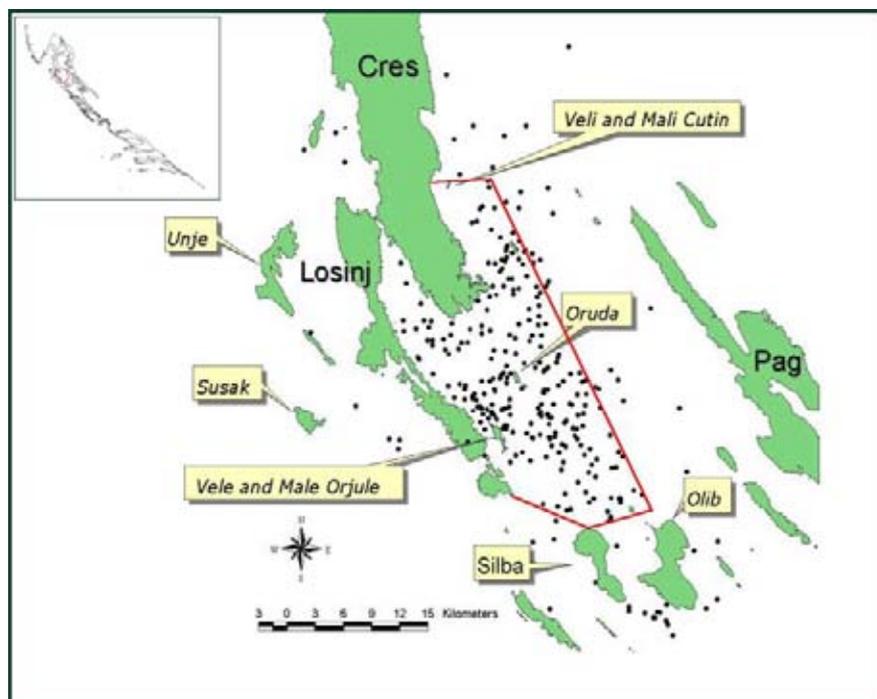
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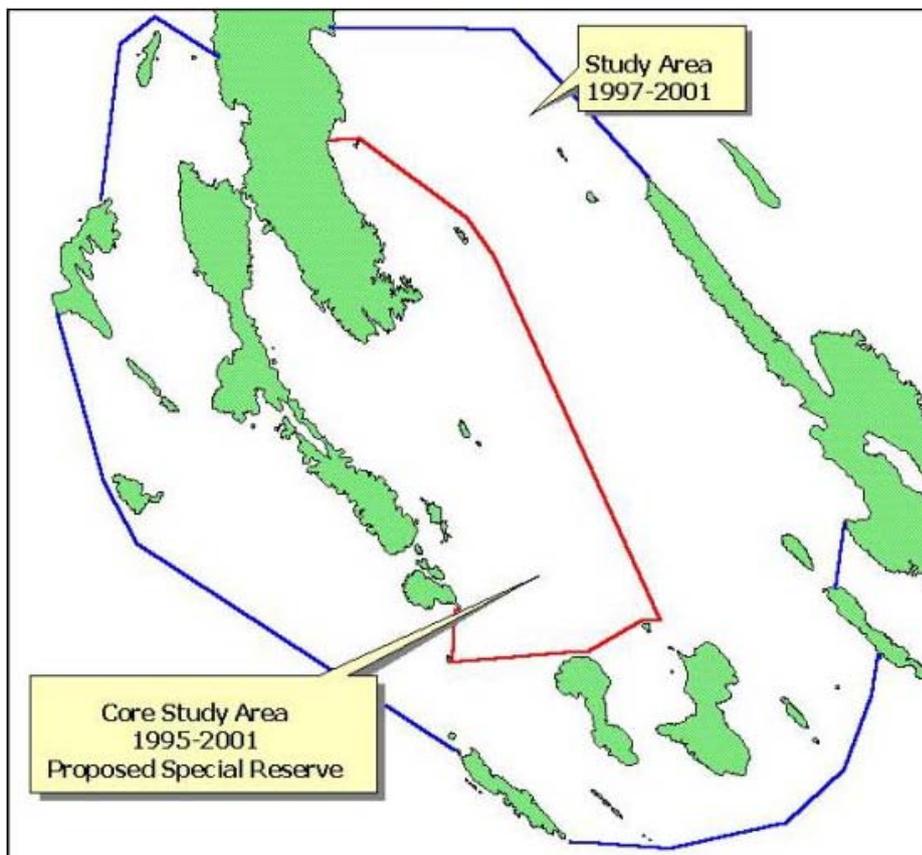
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Annex I

Map 1 – Dolphin Sightings, 1995-2001.



Map 2 – Study Area & Proposed Preliminary Dolphin Reserve Boundaries



Annex II

Environmental & Cultural Features of the Cres-Lošinj Marine Reserve

Bottlenose Dolphin (*Tursiops truncatus*).

Dolphins are top predator and a symbol of a healthy environment. The Adriatic Dolphin Project has been studying the resident bottlenose dolphin (*Tursiops truncatus*) population since 1987 and hence is one of the longest ongoing studies in the Mediterranean sea. The size of the bottlenose dolphin community is currently estimated at 113 dolphins (95% CI = 107-121, SE = 6.967) (Fortuna *et al.* 2000). This is well below the IUCN classification of an isolated population of 250 individuals as 'critically endangered'. There have been suggestions of some gene flow from other populations within the Adriatic (Natoli & Hoelzel 2000), however undoubtedly this population is at risk and requires further monitoring and protection. The rocky areas south of Cres, surrounding the islands of Trstenik, Oruda and Palacol, and the coastal area east of Lošinj are favourite sites for feeding and socialising, and are used as nursery areas by groups of females (Bearzi *et al.* 1992, 1997). This population is under threat from many sources including over-fishing, pollution and boat disturbance mainly due to tourism in the summer months. In the past the common dolphin (*Delphinus delphis*) was also often found in this area, however this species is now believed to be geographically extinct. For further information please contact: Blue World, Zad Bone 11, HR-51551 Veli Lošinj, Croatia; Tel: +385 51 236 406; Fax: +385 51 520275; Email: adp@adp.hr; Website: www.adp.hr

Submarine Life

Throughout the main proposed marine protected reserve there are large areas of *Posidonia spp.* with its associated marine life can be found, and as yet have not been mapped. The submarine area of the Cutin Veliki and Cutin Mali islands and their surroundings are also encompassed by the proposed scientific reserve. They are of particular interest due to the presence of many different species at shallow depths (IDC 1997; Zibrowius & Grieshaber 1975). This area has a highly developed coral community dominated by calcified algae, corals, mosses and sponges, and characterised by a great variety of coral morphologies. These corals only grow in areas of good water clarity with low suspended solid loading. In this area many rare species can be found, some of which are protected: *Paramuricea chamaelon* and *Palinurus elephas*. However the accessibility of these species places them under threat from divers. A higher grade of protection is needed here and a scientific study of the area is required. The threatened brown and white sea dates (*Lithophaga lithophaga*, *Pholas dactylus*) can also be found here, however they are being illegally extracted from the reefs which, besides causing the depletion of these slow growing mollusc, is causing widespread destruction of the substrate. For further information please contact: Ms. Antonieta Pozar Domac, Department of Zoology, Division of Biology, Faculty of Sciences, University of Zagreb, Rooseveltov trg 6, Zagreb or Ms. Milvana Arko Pijevac, Natural History Museum of Rijeka, Lorenzov prolaz 1, Rijeka.

Archaeological Importance

This area was an important trading route and it is believed that a large number of important wrecks remain undiscovered. The archaeological site at Orjule is also encompassed in the proposed marine reserve. In 1999 a statue of a Greek athlete 'Apoksimenos' scraping himself after competition was discovered by divers and is now in Zagreb, it is believed to be one of only six Greek originals discovered in the Mediterranean region. A high grade of protection is required around those sites known to contain wrecks, greater survey work is required around other areas believed to have wrecks. For further information please contact: Mr. Ferdinand Meder, Croatian Restoration Institution, Nike Grskovica 23, Zagreb or Croatian Archaeological Society, Bogoviceva 1, Zagreb.

Bird Nesting Sites

Currently 185 species of birds, all of which are protected under Croatian law, have been identified on the Cres-Lošinj archipelago (Sušić 1992 cited in IDC 1997). This is the highest number recorded for any of the Adriatic islands. Many of the smaller uninhabited islands in the area have important nesting sites that are currently undisturbed. This includes the islands of Oruda and Palacol within the suggested protected area that are particularly important for nesting shags (*Phalacrocorax aristotelis desmaresti*). Other sea birds can be also spotted, like the Mediterranean shearwater (*Calonectris diomedea*), the yellow legged-gull (*Larus cachinnans*) and the pallid swift (*Apus pallidus*). Currently insufficient research has been undertaken to give accurate estimates around the other islands in the region. For further information please contact: Mr. Goran Sušić, Eco Center Caput Insulae, Beli bb, Beli, Croatia.

Sea Turtles

All sea turtles are protected under Croatian law. In particular the loggerhead turtle (*Caretta caretta*) is often seen in the region. It is believed that a portion of the Greek nesting population forages and over-winters here. Hibernating turtles are regularly brought up in trawling nets over the winter period (Lazar in press). Other species such as the green turtle (*Chelonia mydas*) and the leatherback turtle (*Dermodochelys coriacea*) have been sighted in the region (IDC 1997). These are globally threatened species that require more study in the area. For further information please contact: Mr. Bojan Lazar, Department of Zoology, Croatian Natural History Museum, Demetrova 1, HR-10000 Zagreb, Croatia.

Annex III

Status of signature/ratification of relevant international agreements (Trošelj, & Klasić-Stanković, 2001): The Republic of Croatia has accepted the internationally established legal framework for the nature and environmental protection by succession, setting its constitutional determinants accordingly. Conclusion and Enforcement of International Treaties of 1991, in particular to the Resolution on Enforcing Multilateral International Treaties, the Republic of Croatia has become a Party to numerous international treaties, through ratification, or notification of succession.

Table 1- Status of signature and ratification on international legal instruments

International legal instruments	Signed	Ratified
<i>Convention on Biological Diversity (CBD)</i>	✓	✓(1996)
<i>Convention on Wetlands of International Importance Especially as Waterfowl habitat (Ramsar Convention)</i>	✓	+ (1993)
Convention Concerning the Protection of the World Cultural and Natural Heritage	✓	+ (1993)
<i>Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1999).</i>	✓	+ (1999)
<i>Convention on the conservation of European wildlife and natural habitats Bern (1979). Amended 1996 to cover all Mediterranean Cetacean species;</i>	✓	+ (2000)
<i>Agreement on the conservation of cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area (ACCOBAMS) Monaco (1996).</i>	✓	✓(2000)
<i>Convention on Migratory Species, Bonn (1979);</i>	✓	✓(2000)
<i>Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, Barcelona (1976) and the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean, Barcelona (1995).</i>	✓ ✓	+ (1993) *
<i>Agreement on the conservation of Africal-Euroasian migratory waterbirds (AEWA)</i>	✓	(2000)

The principal activities in the Adriatic aimed at environmental protection with international co-operation are implemented within the UNEP-MAP, all within the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution (1976,1996) and Protocols

Table 2 – Status of signature and ratification of Barcelona Convention and its Protocols

Convention for the Protection of Mediterranean Sea against Pollution (Barcelona Convention)	✓	+ (1993)
- amendments to the Barcelona convention	✓	✓ (1998)
The Protocol for the Prevention of Pollution of Mediterranean Sea by Dumping from Ships and Aircrafts (Dumping Protocol)	✓	+ (1993)
-amendments to the Dumping Protocol	✓	✓ (1998)
The Protocol Concerning Co-operation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency (Emergency Protocol)	✓	+ (1993)
The Protocol for the Protection of the Mediterranean Sea against Land-based Sources and Activities (LBA Protocol)	✓	+ (1993)
- amendments to the LBA Protocol	✓	-
The Protocol Concerning Specially Protected Areas and Biological Diversity in Mediterranean (SPA Protocol)	✓	+ (1993)
Protocol concerning Specially Protected Areas & Biological Diversity (SPA Protocol)	✓	*
The Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration of the Continental Shelf and the Seabed and its Subsoil (Offshore Protocol)	✓	*
The Protocol in the Prevention of the Pollution of the Mediterranean Sea Resulting from the Trans-boundary Movement of hazardous Wastes and their Disposal	-	-

✓ Ratified, + Taken by Succession, * In Preparation for Ratification, - Not Ratified

- All Cetaceans are protected under appendix II, Bern Convention; and appendix II of the Barcelona Convention.
- *Paramuricea chameleon*, *Lithophaga lithophaga*, *Pholas dactylus* are protected under appendix II, Bern Convention; *Posidonia oceanica*, *Pholas dactylus*, *Lithophaga lithophaga* are protected under appendix II Barcelona Convention ; *Corallium rubrum* and *Palinurus elephas* are protected under appendix III of the Barcelona Convention.
- The Apoksimenos site is protected under the World Cultural and Natural Heritage Convention.
- *Phalacrocorax aristotelis*, *Apus pallidus* are protected under appendix II, Bern Convention; *Phalacrocorax aristotelis* is protected under appendix II of the Barcelona Convention.
- All Sea Turtles are protected under appendix II, Bern Convention; and appendix II of the Barcelona Convention.

II

Appendix - Critical Habitats Executive Summary

The identification of critical habitats and the analysis of the management procedures for the future Lošinj-Cres marine protected area

EXECUTIVE SUMMARY

Peter Mackelworth, Caterina Fortuna, Draško Holcer, Annika Wiemann, Luca Giannoni and Bojan Lazar



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Veli Lošinj, 10th December 2003.

Report prepared for the Ministry of the Environment & Physical Planning, under the contract Klasa 112-04/02-01/134, Ur.br. 531-06/1-02-1

INTRODUCTION

This summary is based on information presented in the Interim (January 2003) and final (December 2003) reports. Included within, is a summary of the findings of the two reports, with emphasis on current best practise management techniques, suggestions for viable pragmatic boundaries; and finally recommendations for the development of the Lošinj Dolphin Reserve. This executive summary further identifies areas of uncertainty and suggests means to reduce that uncertainty.

There are certain conservation actions that should be carried out without delay according to the principles of precaution as recommended by international legislation and agreements signed by the Croatian parliament, in particular the formation of a local management authority and the instigation of measures for habitat protection. The establishment of the protected area in the area of Lošinj and Cres would benefit both direct conservation of the unique resident bottlenose dolphin community and help create an ecological network in the Adriatic sea according to the priorities of the Bonn, Berne

and Barcelona conventions and the Agreement for the Conservation of the Cetaceans of the Black sea, Mediterranean sea and the contiguous Atlantic area (ACCOBAMS).

1. IDENTIFICATION OF CRITICAL FACTORS

1.1 Dolphins

In order to define the possible impact - either negative or positive - on dolphin distribution in the area, seven parameters were analysed. Such analysis allowed us:

- To clarify which, among the chosen factors, affect dolphin ecology;
- Hypothesise the origin of the uncertainty of the proposed models;
- Subsequently inform on the real meaning and consequences of the proposed MPA boundaries.

1.1.1 Natural Parameters

Three physiographic variables and one geographic variable were analysed: depth; bottom variability; slope; and distance from the nearest coast. Of these variables depth was found to be highly significant; and slope was found to be significant. This indicates that areas of greater depth and low slope seem to be attractive to dolphins. To understand the reasons why these parameters have such a high impact we should look into our knowledge of bottlenose dolphin ecology in the region. Bottlenose dolphin distribution is believed to be directly affected by the presence of its major prey species, such as hake in this region. During the eight year (1995-2003) monitoring period, depth decreasingly affected dolphin distribution, possibly indicating local changes in demersal fish stock or a growing impact of other factors linked to various anthropogenic activities.

1.1.2 Anthropogenic Parameters

Three anthropogenic factors were analysed: distance from marine petrol stations; distance from the Mali Lošinj - Rab 'highway' through Privlaka bridge; and known trawling areas. The distances from three main marine petrol stations and from the ML-Rab 'highway' were found to be significant and have a negative impact on the dolphins' distribution. Trawling areas were found to be highly significant, positively attracting bottlenose dolphins. During the whole research period (1995-2003), the factor "distance from the ML-Rab 'highway'" was found to increasingly impact dolphin distribution, denoting a strong negative trend due to the increase in the number of passing recreational boats. Years 2001, 2002, and 2003 showed the strongest avoidance of this area by dolphins, consistent with the increasing tourism. Results showed that there was an attraction to trawling areas; this may be attributed, not only to a documented exploitation by the bottlenose dolphins of the bottom trawling activity, but especially to the overlapping of the target species, for example hake, that both the dolphins and the bottom trawling fishery exploit. It should be concluded that although trawling is positive attracting factor in this analysis, the long-term conservation aspect could well indicate negative impacts on the habitat and dolphin population.

1.2 Fishery

Fishery catch has been in decline and has been recognised as such. This not only affects the protected species here but also the viability for the fishery. This has been recognised by the fishery guilds of the region; *'it is absolutely clear that if we overfish, there will be*

no more fish to catch. We are afraid that this has already happened, and that the famous five minutes to midnight has long ago passed... ..Furthermore, it is essential to abolish the possibility of expanding any kind of sea fishing, as this possibility nullifies all our efforts to decrease the rush of all kind of fishing industries.'

1.3 Sea Turtles

This region hosts critical marine habitats for the loggerhead sea turtle (*Caretta caretta*) belonging to the Ionian–Adriatic management sub-unit. Results of spatio-temporal analyses have shown that this species resides in Lošinj-Cres Archipelago on a year-round basis. These waters host summer foraging as well as over-wintering habitats shared by juvenile and adult loggerheads, mostly belonging to the Greek nesting stock. High levels of loggerhead's by-catch incidents in trawls are reported by local fishermen (10-100 turtles/trawl/year), particularly in the winter months; interactions with other fishing gears are not yet quantified. Mediterranean loggerhead population is classified as endangered, and listed under Appendix 2 of the Bern and Barcelona Conventions. Two other sea turtle species are recorded in the region, both being classified as critically endangered in the Mediterranean: the green turtle (*Chelonia mydas*) and the leatherback turtle (*Dermochelys coriacea*). Both species are also listed under Appendix 2 of the Bern and Barcelona Conventions.

1.4 Benthic

Throughout the main proposed marine protected reserve large areas of *Posidonia oceanica* with its associated marine life can be found as yet have unmapped. There are also areas with a highly developed coral community dominated by calcified algae, corals, mosses and sponges. Northern Adriatic facies of *Paramuricea clavata* are only known to be in 2-3 locations in the Kvarner bay. These corals only grow in areas of good water clarity with low suspended solid loading. Coral species that can be found here include, *Paramuricea chamaelon*, *Corallium rubrum* other species such as *Palinurus elephas*, *Lithophaga lithophaga*, *Pholas dactylus* are also found here. *Paramuricea chamaelon*, *Lithophaga lithophaga*, *Pholas dactylus* are protected under appendix II, Bern Convention; *Posidonia oceanica*, *Pholas dactylus*, *Lithophaga lithophaga* are protected under appendix II Barcelona Convention; *Corallium rubrum* and *Palinurus elephas* are protected under appendix III of the Barcelona Convention. Natural History Museum in Rijeka has proposed the islands of Veli Ćutin and Mali Ćutin, based on a preliminary study on the biological importance of the seabed to be included in the physical plan of the County of Primorje and Gorski kotar as a protected area. There is a suggestion that this area could be included in a larger protected area: *'due to the numerous proposed natural sites within the wider region of Cres-Lošinj archipelago the option of inclusion of the islands within the larger protected area by using of zoning as a tool in setting the appropriate protection regime must be seriously considered'* .

1.5 Birds

Currently 185 species of birds, all of which are protected under Croatian law, have been identified on the Cres-Lošinj archipelago. This is the highest number recorded for any of the Adriatic islands. Many of the smaller uninhabited islands in the area, that are currently undisturbed, are particularly important for nesting and brooding shags (*Phalacrocorax aristotelis desmaresti*) the Mediterranean shearwater (*Calonectris diomedea*), the yellow legged-gull (*Larus cachinnans*) and the pallid swift (*Apus*

pallidus). *Phalacrocorax aristotelis*, *Apus pallidus* are protected under appendix II, Bern Convention; *Phalacrocorax aristotelis* is protected under appendix II of the Barcelona Convention.

1.6 Archeological

This area was an important trading route, between Greece and Venice in particular, and it is believed that a large number of important wrecks remain undiscovered. In 1999, a statue of 'Apoksimenos' - a Greek athlete scraping himself after competition was discovered near the island of Orjule. It is believed to be one of only six Greek originals discovered in the Mediterranean region. The 'Apoksimenos' site is protected under the World Cultural and Natural Heritage Convention, and also encompassed by the proposed reserve.

2 AREAS OF UNCERTAINTY & AREAS OF FUTURE RESEARCH

2.1 Dolphins

1. Home range identification of the Lošinj population segment, together with links with other segments of the Adriatic meta-population through:
 - a. Comparison of ADP matching catalogue with other catalogues from Kornati, Istria, Trieste and Slovenia.
 - b. Analysis of genetic differentiation within the Mediterranean and Adriatic Seas.
2. The effects of recreational boat traffic (physical and acoustic disturbance) and dolphin watching activities (disturbance and code of conduct).
3. Anthropogenic Noise (monitoring of acoustic pollution all year-round).
4. Local pollution linked with tourism (sewage).
5. Comparative analysis of dolphin prey (stomach contents) with commercial fish stocks.

2.2 Fishery & Fish Biology

1. Collection of fishery statistics and data on fishing gear and fishing area (mapping).
2. Cooperative work with the fishing guild, identification of important fishery grounds.
3. Fish biology:
 - a. Identification of specific biology of target species of interest for small scale fishery (e.g. hake), through the analysis of catch and scientific hauls.
 - b. Data collection on local sea currents.

2.3 Sea Turtles

1. Identification and mapping of critical habitats and study of behaviour and habitat utilization through remote sensing.
2. Assessment of population size and abundance by capture-recapture study, and aerial surveys.
3. Analysis of fishery by-catch by on-board observers.
4. Experimental introduction and assessment of the Turtle Excluder Device in bottom trawls in order to reduce by-catch mortality.

2.4 Benthic & Archaeological

1. Cooperative mapping work with dive operators.
2. Mapping of the biocenoses with side scan sonar.

3 MANAGEMENT RECOMMENDATIONS

The first step is to involve the stakeholders such as fishermen, tourist agencies, divers, local people, and non governmental organisations in partnership with the relevant authorities of the city government, county authorities and national ministries in the construction of specialist working groups identifying the stresses that may be affecting the area. There is no vocal dissent regarding the current proposal, however further negotiations with the stakeholders and relevant authorities is required.

3.1 Formation of a co-management board

A new institution consisting of stakeholders and relevant authorities, including representatives from fishing organisations, tourist bodies and local authorities must be established. This would allow the collection of data from all sources for addition to the protected area and the subsequent assimilation of this data into management procedures for appropriate governance. Based on the Law on Nature Protection (2003) such a body can be created within or as part of the advisory body to the public institution that will manage the protected area. Creation of a local nature protection public institution would greatly improve the image of protected area among the local inhabitants. It has been seen in many other situation that the support of the local population is essential for the successful management of protected areas.

3.2 Enforcement

Rules and regulations must be transparent and simple. However, monitoring and enforcement of these rules are paramount to the success of the protected area. A statutory monitoring/enforcement authority should be established answering directly to the public institution. One possibility may be to have professional rangers supported by the pro bono civil service/national service scheme. Cooperation with the local fishermen and organisations using the area is also essential. The availability of information to all users of the area is essential to increase awareness of the potential for the area and to reduce enforcement costs.

3.3 Funding

Basic funding for initial creation of the public institution and protected area should come from the local, county and state authorities. External funding is necessary for the advancement and management of the established protected area. In most cases LIFE funding has been forthcoming from the European Union and this has been the case for the Moray Firth cSAC and Cardigan Bay cSAC. Hence it is recommended that LIFE 3rd Countries funding is sought. There are other sources of funding that may be investigated, ranging from the commercial sponsorship to international institutional funding or the issuance of licenses and the collection of protected area usage fees.

4 REGULATORY RECOMMENDATIONS

Below are some possible recommendations based on the activities being currently undertaken in the proposed protected area. It should be possible to adapt, alter and introduce the rules and regulations according to proposed changes in the use of the area over time. These recommendations have been taken from the research of the Adriatic Dolphin Project, others from suggestions, particularly from the fishing guild and others are examples taken from the analogous cases studies.

4.1 Fishery

- Registration of all current commercial and recreational fishermen using the area;
- Closure of the area to all commercial fishing vessels apart from those registered in Mali Lošinj and that are using the area on designation or have a historical use of the area;
- Enforcement of the current sport fishing laws regarding fishing gear, distance from the coast that tackle may be used and limitation of sale of catch by sport-fishermen;
- Closure of certain areas during spawning periods of fish species with the potential for permanently closed areas to act as supply areas for the whole area;
- Zoning of areas recognised as important as critical habitats for protected species.

4.2 Tourism

- Registration of all tourist boats using the area, including all temporary tourist boats;
- Statutory speed limit for all tourist boats;
- Statutory code of conduct around groups of dolphins for tour operators and tourist boats;
- Introduction of fixed mooring points and/or prohibition of anchoring around areas with sensitive and protected species/habitats;
- Closure of areas known to host protected bird species during breeding;
- Zoning of areas recognised as important as critical habitats for protected species.

4.3 Dive Tourism

- Registration of all current diving organisations using the area, with a statutory code of conduct for both dive operators and divers;
- Regulation of diving activities within the area with special emphasis on particular behaviour of divers near important or sensitive undersea sites;
- Closure of areas of archaeological important or areas of biological importance or vulnerable to disturbance;
- Zoning of areas recognised as important as critical habitats for protected species.

4.4 Commercial Shipping

- Commercial shipping lanes should not cross the area;
- Ferry lines should not extend beyond what is currently in place.

4.5 Extractive Industries

- The capacity of extractive industry should not extend beyond what is currently in place.

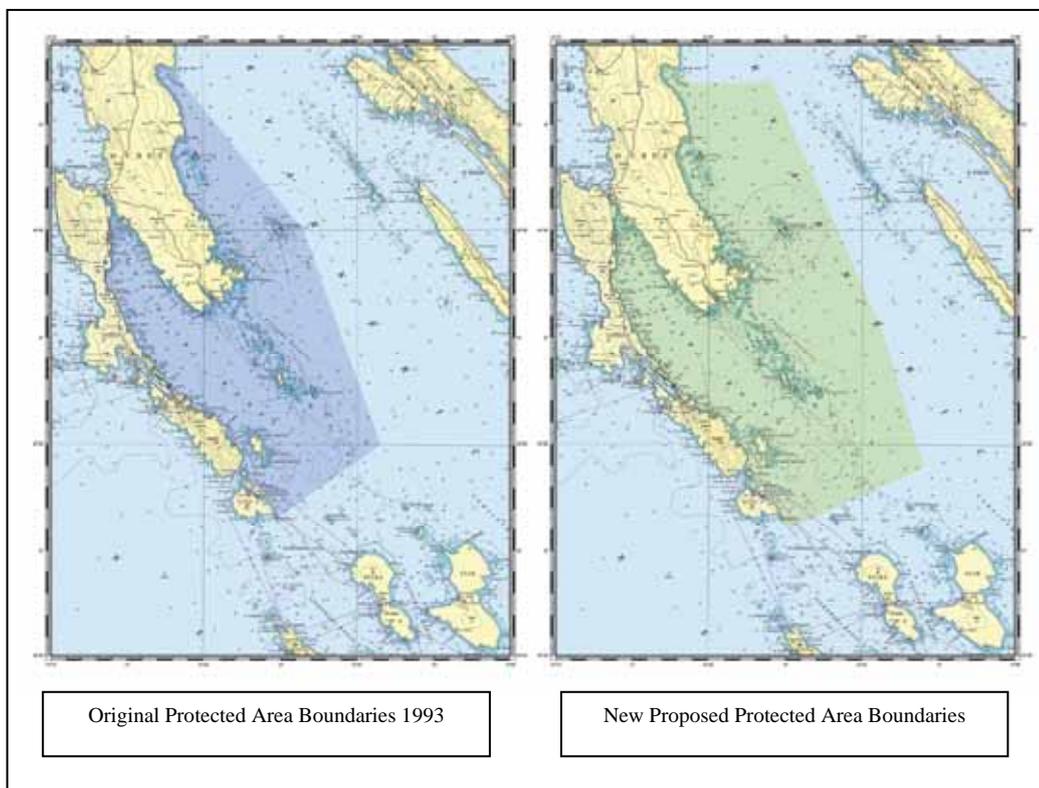
4.6 Fish Farming

- The capacity of fish farming should not extend beyond what is currently in place.

5 DESIGNATION BOUNDARIES

The boundaries presented in the Proposal for the establishment of Lošinj Dolphin Reserve (Map 1) were proposed based on the research undertaken by the ADP. The boundaries were set mostly based on the current knowledge of distribution of bottlenose dolphins within the study area (see map of sightings).

The boundaries presented in Map 2 are based on the eastern jurisdictional boundaries of the City of Mali Lošinj and include identified critical habitats for bottlenose dolphins within the study area. They are presented as a pragmatic solution to the definition of clear defined boundaries with which the proposed management institution can work.



6 RECOMMENDATIONS FOR CREATION OF LOŠINJ DOLPHIN RESERVE

Based on the review of the current nature and species protection legislation, primarily the Law on Nature Protection (2003), we propose the creation of a marine protected area with status of special zoological reserve (in the sea). At present we suggest that there are two options that could be followed in designation

Option 1.

Designation of Lošinj Dolphin Reserve based on current scientific information

The Lošinj Dolphin Reserve can be designated using the information presented above and in the interim and final reports, upon which this summary is based. Designation should follow Map 2, allowing for the Mali Lošinj jurisdictional boundaries, forming a pragmatic designation with the seat of management established on the island.

This designation should be viewed as following the precautionary principle of setting up the current suggested area with a possibility to expand in the future based on negotiations with stakeholders, relevant authorities and further scientific work. Designation would allow for the protected area to be debated in the public arena and come into effect as soon as consensus is achieved. Furthermore this would fulfil many of the European policies for cooperative management within the field of environmental protection.

Option 2.

Delaying designation for further scientific information regarding the home range of the 'Lošinj' dolphins.

Currently the scientific information regarding the complete home range of the 'Lošinj' dolphins is incomplete. Delaying the designation would allow for further research to be undertaken, however, the period of time and expense required to finish the research may be prohibitive for the current research institution. Delaying designation may lead to further degradation of the area eroding the objectives for protection and hence falling foul of the precautionary principle.

Delaying the designation would also allow for further negotiations between stakeholders and relevant authorities. As the science would inevitably require a larger protected area probably entering into the jurisdiction of other communities such as Krk, Rab and Pag, and hence the county area of Zadar.

THE BLUE WORLD INSTITUTE OF MARINE RESEARCH AND CONSERVATION FAVOURS OPTION 1.

III

Appendix - Meetings, Interviews & Research Diary

Meetings and events attended as observer or participant			
		Location	Date
1.	Blue World / ACCOBAMS Secretariat & RAC/SPA	Rome, Italy	10 May 2001
2.	Blue World / City	Veli Lošinj	3 August 2001
3.	9 th Dolphin Day	Veli Lošinj	4 August 2001
4.	Blue World / ACCOBAMS Secretariat & Government of Monaco	Monaco	25 September 2001
5.	10 th Dolphin Day	Veli Lošinj	3 August 2002
6.	Blue World / State Department for Nature Protection	Zagreb	30 September 2002
7.	11 th Dolphin Day	Veli Lošinj	2 August 2003
8.	Sustainable Development Meeting	Mali Lošinj	28 September 2003
9.	Fishery Meeting	Mali Lošinj	23 October 2003
10.	County Sustainable Development Meeting	Mali Lošinj	9 June 2004
11.	Blue World / Fishery Meeting	Mali Lošinj	7 July 2004
12.	12 th Dolphin Day	Veli Lošinj	7 August 2004
13. *	Blue World / City Meeting	Veli Lošinj	10 September 2004
14.	Blue World / Fishery Meeting	Veli Lošinj	11 September 2004
15.	ACCOBAMS Meeting of the parties	Palma, Majorca	8-13 November 2004
16.	Tourism Meeting	Mali Lošinj	14 December 2004
17.	Island Sustainable Development Meeting	Cres	19 February 2005
18. *	Blue World / Relevant Authorities Meeting	Veli Lošinj	21 February 2005
19.	Sustainable Development Meeting	Zagreb	24 February 2005
20.	Island Sustainable Development Meeting	Mali Lošinj	28 February 2005
21.	13 th Dolphin Day	Veli Lošinj	6 August 2005
22.	Expert Elaboration Visit	Veli Lošinj	12 October 2005
* indicates the meeting was recorded, translated and fully transcribed			

Research Diary

<p>Enrolled UCL, March 2001 Part Time</p> <p>Worked Summer season in Lošinj from March 2001 to September 2001 started keeping notes with regards to the protected area.</p>
<p>October 2001- April 2002</p> <p>Working under contract for Instituto centrale per la ricerca scientifica e tecnologica applicata al mare (ICRAM) Italian Institute for Applied Marine Research in Rome. Whilst working on the cetacean database for Asinara National Park I also had access to the ICRAM library and to the experts of ICRAM. In this period the new proposal for the protected area was researched and written. The format of the document follows that used for the proposal for the Southern Ocean Sanctuary proposed by the French delegation of the International Whaling Commission.</p>
<p>May - September 2002</p> <p>Started formally keeping research diary.</p>
<p>October 2002- April 2003 Changed to Full-time enrolment</p> <p>First opportunity for me to spend a significant period of time at UCL. This allowed for the development of theory and the opportunity to develop interviewing and facilitating skills subsequently used in this thesis and the development of the marine reserve.</p>
<p>April - September 2003</p> <p>Maintained research diary</p> <p>Preliminary interviews undertaken</p>
<p>October 2003- April 2004</p> <p>Second opportunity to spend time in London developing theory and skills.</p>
<p>April 2004 - December 2005 Returned to Part-time enrolment</p> <p>Maintained research diary until December 2005</p> <p>Major meetings held from September 2004-February 2005 (see section 6.1)</p> <p>Main period of empirical research</p>

IV

Appendix - Interview Check List & Codes

Semi Structured Interview Check List
<p>Introduction:</p> <p>I am conducting this research as part of my PhD thesis based in London. I am as you know also promoting the protected area through my role in Blue World. My aim is to gain an understanding of the perception of the proposed Lošinj Dolphin Reserve and how its design and management may be negotiated.</p> <p>With your permission I would like to record this interview, I will then transcribe it and give you a copy to authorise, if there are any comments you would prefer to be stuck off the record or if you prefer to remain anonymous please let me know. I expect the interview will take approximately an hour, if at any point you wish to end this interview please feel free to do so. I am interested in your opinions.</p>
<p>Biographical Information:</p> <p>Birthplace Age Profession</p>
<p>Types of Questions Asked:</p> <p>How are you involved in the process of the proposed LDR?</p> <p>What is the role of the organisation that you represent?</p> <p>How do you believe that the protected area will affect you personally?</p> <p>How do you believe that the protected area will affect the organisation you represent?</p> <p>How do you believe that the protected area will affect the industry that you work in?</p> <p>How do you think the protected area should be organised to make management fair and equitable?</p>

What are the major issues of the protected area?

Do you think that there is support for the protected area within your organisation?

Concluding Remarks:

Do you have any questions for me in either my role as research from London or as researcher from Blue World?

Is there anybody that you think I should also speak to regarding the proposal?

Codes	
<i>'A priori'</i> Code	Emergent Code
	1. Adriatic
	2. Alternative Employment
	3. Apathy
4. Balkan	
5. Blue World	
	6. Boat Traffic
7. Bottom-Up	
	8. Bureaucracy
	9. By-catch
	10. Centralisation
11. Cetacean Conservation	
	12. Chaos
13. Co-management	
	14. Communication
15. Conservation	
	16. Cooperation
	17. Corruption
	18. County Authorities
	19. Credibility
20. Critical Habitats	
21. Croatia	
	22. Culture
23. Democracy & Capitalism	
	24. Development
	25. Disturbance
26. Dolphin	
	27. Dolphin Distribution
	28. Dolphin Image
	29. Economic Migration
	30. Economics
31. Ecosystem Approach	
	32. Education
33. Enforcement/Control	
	34. Environment
	35. Equity
	36. Europe
	37. External Expertise & Funding
	38. External Fishermen
	39. Facilities/Entertainment
	40. Fish Stocks
41. Fishing	
42. Flag-ship Species	
	43. Foreign Investment
	44. Funding
	45. Future
	46. Gillnets
	47. Gotovina
	48. IDC

49. Identity	
	50. Illegal Fishing
	51. Independence/Independent
	52. Informal Contacts
	53. Infrastructure
54. Insularity	
	55. Integration
	56. Interaction/Competition
57. International Policy	
	58. Investment
	59. Island Constancy
	60. Island Independence
61. Island Isolation	
	62. Island Spirit
	63. Law
64. Lošinj Dolphin Reserve	
65. Local Ecological Knowledge	
	66. Local
	67. Local Apathy
68. Local Authorities	
	69. Local Climate
70. Local Community	
71. Local Fishermen	
	72. Local Image
	73. Local Importance
	74. Local Power
	75. Local Tourist Board
	76. Macro-Economics
77. Protected Area Management	
	78. Manipulation
	79. Marine Authorities
80. Mass Tourism	
	81. Media
	82. Mediterranean
	83. Mentality
	84. Mesic
	85. Migration
	86. Military
	87. Local Trade
88. Marine Protected Area	
89. National Authorities	
	90. Nature
91. Non Governmental Organisation	
	92. Objectives
	93. Opportunity
	94. Outsiders
	95. Protected Area Selection
96. Participation	
	97. Police
	98. Policy/Vision/Planning
	99. Political Change

100.Politics	
	101.Pollution
	102.Poverty
	103.Professional Fishermen
	104.Protection
105.Protectionism	
	106.Public Awareness
	107.Quality of Life
	108.Quality Tourism
	109.Refugee
110.Relevant Authority	
	111.Religion
	112.Repression/Persecution
113.Rules/Regulations/Restrictions	
114.Science	
115.Scientific Uncertainty	
	116.Seasonality
	117.Secure/Stable
118.Socialism	
	119.Specialist Tourism
	120.Sport-fishing
121.Sustainability	
	122.Tethys
123.Top-down	
124.Tourism	
	125.Transport
	126.Trawler
	127.Trust
	128.Tudjman
	129.War II
130.War of Independence	
	131.Zoning

V

Appendix - Supporting Letters

*Accord sur la Conservation des Cétacés de
la Mer Noire, de la Méditerranée et de la
zone Atlantique adjacente*



*Agreement on the Conservation of Cetaceans
of the Black Sea, Mediterranean Sea and
contiguous Atlantic Area*

Monaco, 18th March 2004

Dr. Drasko Holcer
Blue World Institute of Marine Research
and Conservation
Kastel 24
51551 Veli Losinj,
CROATIA

Our ref. : MCVK/Rm/2004 - 70

Application for "ACCOBAMS Partner" Status

Dear Dr. Drasko Holcer,

I am very pleased to inform you that referring to your request for Blue World Institute of Marine Research and Conservation to become an ACCOBAMS Partner, the Members of the Bureau of ACCOBAMS welcomed your proposal with a great interest.
Please find here enclosed the official logo "ACCOBAMS Partner" and the Resolution 1.14 referring to its use.

I do believe that the cooperation with your Organization will not only facilitate the awareness on cetacean conservation in the region but also enhance the establishment of scientific based conservation actions.

Yours sincerely,

Marie-Christine VAN KLAVEREN
The Executive Secretary

Enclosure 2

Secrétariat Permanent - 16, boulevard de Suisse
MC 98000 MONACO
Tél : (377) 93 15 80 / 20 78 Fax : (377) 93 15 42 08
e-mail : mcvklaveren@accobams.mc - <http://www.accobams.mc>

STATEMENT OF THE REPUBLIC OF CROATIA

Second Meeting of the Parties to ACCOBAMS, 9th-12th November 2004

Mr. Chairman, Honourable Ministers, distinguished Delegates, Ladies and Gentlemen,

Allow me to extend my gratitude on behalf of the Government of Republic of Croatia to the Government of Spain for hosting the second Meeting of the Parties to the Agreement on the conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS).

Cetaceans represent one of the most valuable parts of the marine biological diversity and yet one of the most sensitive to the anthropogenic impacts. We must be aware that such impacts pose a constant threat to the conservation of cetaceans in the Black Sea, Mediterranean Sea waters and the contiguous Atlantic area. In this regard, we see the ACCOBAMS Agreement in the framework of the Bonn Convention as one of the crucial "players" to ensure long-term conservation of cetaceans. It is of particular significance that in reaching this goal, the Agreement recognizes and obliges all Countries to cooperation and harmonization of conservation efforts. After all, animals do not recognize state borders.

The Bonn Convention and its ACCOBAMS Agreement are significant for the Republic of Croatia for providing conservation of cetaceans in the Adriatic Sea and ensuring their favourable conservation status. The Bonn Convention entered into force for the Republic of Croatia in October 2000, while the ACCOBAMS Agreement was ratified in July 2000 and entered into force on 1 June 2001. Croatia developed and adopted the National Strategy and Action Plan for the Protection of the Biological and Landscape Diversity (NSAP) in 1999, which laid down elaboration of several action plans concerning the protection of cetaceans. Let me also remind you that the Republic of Croatia ratified all international agreements aimed at conservation of marine biological diversity. As the candidate state for European Union membership, the Republic of Croatia also started to implement the obligations arising from the relevant EU Directives. In this regard, in October 2003 the Croatian Government adopted the new Nature Protection Act that addresses nature protection as an integrated activity based on species, habitat and protected area conservation. It also aims at ensuring a rational and sustainable use of natural resources by all sectors.

The new Act establishes the State Institute for Nature Protection as the central institution that performs special tasks in nature conservation, including responsibility for organizing and implementing biodiversity inventoring, monitoring and preparation of proposals for designation of the ecological network and protected areas.

We believe that the ratification of the ACCOBAMS Agreement contributes significantly to implementation of the nature conservation policy in Croatia. At this point, we would like to extend our gratitude to the Principality of Monaco and its support that enabled the former Ministry of Environment Protection and Physical Planning in cooperation with the Blue World Marine Institute to prepare the ground for designation of Losinj-Cres archipelago as the first marine area protected for cetaceans. This is the area where the most intensive studies of bottlenose dolphins have been carried out. Research has shown that it represents a critical habitat of the only known resident population of bottlenose dolphins in the Croatian part of the Adriatic Sea, as well as other significant marine species. Particular emphasis is put on the human-cetaceans interaction. To achieve this balance is the must for designation of any protected area and its successful management; The Republic of Croatia will make these additional efforts prior to final designation of this protected area. This intention corresponds to the obligations of Croatia as a party to the ACCOBAMS Agreement, regarding creation of protected zones important for the feeding, breeding and birthing of cetaceans.

I would like to express the commitment of the republic of Croatia to continue its work and to contribute to implementation of the ACCOBAMS Agreement. The competent Ministry of Culture with the State Institute for nature Protection and relevant scientific institutions and NGOs will expand research and conservation efforts to the other part of the Adriatic Sea. As already mentioned, the human – cetaceans interactions is the issue that will be given particular importance in the near future.

We would also like to remind you that we will continue to share our experience and results so as to contribute to the cetaceans conservation at the international level. Let me remind you that the Croatian representative played an important role as the member of the ACCOBAMS Scientific Committee. Republic of Croatia was also a host to the 4th International Symposium of the Pan-European Ecological Network on Marine and Coastal Biodiversity and Protected Areas, held in Dubrovnik in October 2003 that resulted in the Dubrovnik declaration, stressing also the importance of conservation of marine biological diversity and strengthening the international cooperation.

Mr. Chairman, Ladies and Gentlemen,

Once again, I would like to emphasize that the Republic of Croatia will make every effort to continue activities for conservation of cetaceans in the Adriatic Sea and beyond. This exceptional natural value requires utmost attention of all Countries in the region benefiting from it.

I must also point out the work of all the bodies that contributed to preparation and enforcement of the Agreement. In that regard, let me extend our gratitude to the Principality of Monaco that has assumed the responsibility to manage the Interim Secretariat of the ACCOBAMS Agreement and to the Interim Secretariat itself for doing such an excellent work.

Furthermore, I would like to thank both the Secretariat of the Bonn Convention for its endeavours in the realization of the Agreement, as well as bodies of other relevant international conventions related to the Agreement.

Let me finish by saying that the ACCOBAMS Agreement gives us the opportunity for an effective protection of cetaceans and obliges us to make joint efforts and cooperate in reaching this common goal.

Thank you, Mr. Chairman