

ENABLING EFFECTIVE AND EQUITABLE MARINE PROTECTED AREAS:

guidance on combining
governance approaches

Case Study Compendium



CITATION: UN Environment (2019): Enabling Effective and Equitable Marine Protected Areas – guidance on combining governance approaches. *Case Study Compendium*. Authors - Jones PJS, Murray RH and Vestergaard O.

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SERIES: Regional Seas Reports and Studies No. 203 - Case Study Compendium

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PUBLISHED: February 2019

PRODUCED BY: Ecosystems Division, UN Environment

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Introduction

This technical appendix provides a compendium of the 34 case study summaries that form the evidence base for the main volume: UN Environment (2019) *Enabling Effective and Equitable Marine Protected Areas – guidance on combining governance approaches*. Authors - Jones PJS, Murray RH and Vestergaard O.

These summaries are based on the '[Marine Protected Area Governance \(MPAG\)](#)' framework, which is set out in the section after the glossary, and defines all the incentives used, as well as providing further guidance on how these summaries are populated. More information on the rationale behind the MPAG governance approach is provided in Jones PJS (2014) [Governing Marine Protected Areas: resilience through diversity](#). Routledge.

More details on the MPA Governance project are at:

- <https://www.unenvironment.org/resources/marine-protected-area-governance>
- <https://www.ucl.ac.uk/marine-protected-area-governance/>

Glossary

All definitions after Jones (2014)¹ other than where other specific source cited. Italicised words in definitions are also separately defined in this glossary.

Actors

People involved in a given MPA governance initiative, including local users, representatives of governmental and non-governmental organisations, etc.

Basic conflicts

Conflicts based on differences between utilitarian values, focused on exploiting marine resources, and ecocentric-preservationist values, focused on conserving ecosystem health and setting areas aside from direct human uses, often revealed in the context of MPAs between those actors focused more on utilitarian objectives (using resources) and those focused more on conservation objectives (protecting biodiversity).

Biodiversity

The diversity of different ecosystems, habitats and species, including genetic diversity amongst different populations of a given species.

Conservation objective

An objective that is focused on protecting biodiversity and/or related natural resources from the direct and indirect impacts of human activities and related driving forces (also see operational objective). Effectiveness is focused on the degree and extent to which the impacts of users that can undermine the fulfilment of conservation objectives are reduced, and do not take account of operational objectives as these are considered in the MPAG framework in terms of incentives ('the means' by which effectiveness in achieving conservation objectives is reached).

Decentralisation

The transfer of authority from central government to lower-level government levels, quasi-independent government organisations, NGOs or the private sector, degrees and forms of autonomy ranging from deconcentration, to delegation, to devolution.²

Driving forces

The factors that can promote activities by users that can undermine effectiveness, such as increasing human populations, both from local population growth and inward migration, increasing demands from globalised fish and tourism markets, and the increasing aspirations of people to improve their living standards beyond subsistence livelihoods.

¹ Jones, P.J.S. (2014) *Governing Marine Protected Areas: resilience through diversity*. Routledge. Use discount code DC361 for 20% discount at [Routledge](#).

² Rondinelli, D. (2000) What is decentralization? pp2-5 in J. Litvack and J. Seddon (eds) *Decentralization Briefing Notes*, World Bank Institute in collaboration with PREM network, Washington DC; Oxhorn, P. (2004) Unraveling the puzzle of decentralization, pp3-32 in P Oxhorn, JS Tulchin and AD Selee (eds) *Decentralization, Democratic Governance, and Civil Society in Comparative Perspective: Africa, Asia, and Latin America*, John Hopkins University Press, Baltimore

Ecosystem health

A measure of the structural and functional integrity, biological diversity and resilience of marine ecosystems coupled with their capacity to provide sustainable flows of ecosystem services.

Ecosystem services

'The direct and indirect use benefits people obtain from ecosystems'³, such as food provision, nutrient recycling, climate regulation and shoreline protection.

Effectiveness

The degree to which an MPA's conservation objectives have been achieved and related obligations fulfilled, through the control of impacts, involving restrictions on the activities of users to which an MPA's species, habitats and ecosystems are sensitive. See next section for details.

Equity

The fair distribution of costs (related to restrictions on users) and benefits (related to the achievement of conservation objectives) arising from MPAs, including recognition of the importance of local cultures and ways of life, and the rights of local people to participate in decision-making processes that affect them.

Governance

Steering human behaviour through combinations of state, market and civil society approaches in order to achieve strategic objectives.

Incentives

A particular institution that is instrumentally designed in relation to an MPA to encourage actors to choose to behave in a manner that provides for certain strategic policy outcomes, particularly conservation objectives, to be achieved.

Institutions

Prescriptions that humans use to organize all forms of repetitive and structured interactions, including those within families, neighborhoods, markets, firms, sports leagues, churches, private associations, and governments at all scales.⁴

Management

The day-to-day control of users and their activities, including related technical and administrative approaches (see governance).

No-take

Marine areas designated for the conservation and restoration of their ecosystems, where all fishing activities are permanently banned, as are all other activities that involve the removal of living and non-living resources, e.g. recreational angling, shellfish collection, sand extraction. Can apply to a no-take MPA or a no-take zone (NTZ) (also see partially protected).

³ Beaumont, N.J. et al. (2007) 'Identification, definition and quantification of goods and services provided by marine biodiversity: implications for the ecosystem approach', *Marine Pollution Bulletin*, vol 54, pp253-265

⁴ Ostrom, E. (1995) *Understanding institutional diversity*, Princeton University Press, Princeton, New Jersey. p3

Operational objective

An objective focused on 'the means' by which conservation objectives ('the ends') are achieved, e.g. promoting the participation of local people, promoting awareness. These are considered in more detail in terms of incentives in this analysis, but such objectives are often explicitly stated as applying to many MPAs, so they are also listed as operational objectives in this analysis, recognising that such objective are considered in greater detail in later analyses of incentives.

Partially protected

Marine areas designated for the conservation and restoration of particular habitats and/or species, in which some activities that are compatible with such objectives are allowed, on the basis that they do not significantly impact the particular habitats, species, or ecosystems. Such activities include recreational angling and commercial fishing with static gears (traps, pots, set nets, etc.) and pelagic trawls (towed through the water column, but not usually across the seabed). Can apply to an entire MPA or to a zone or zones of an MPA (also see no-take).

Resilience

A measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables.⁵

Social capital

A measure of the degree to which actors reach and implement decisions together through their professional and social networks, placing trust in one other, and having confidence that their cooperation with measures to achieve agreed collective objectives will be reciprocated by other actors.

Stakeholders

People who have a stake in a given MPA as they are direct or indirect users and thereby benefit from ecosystem services. This is generally confined to users, but some definitions are more akin to actors in that they include representatives of state organisations, NGOs, etc., whilst others include wider members of wider society who may gain more distant indirect benefits, sometimes even extending to future generations. Due to the ambiguity of this term, it is only used where appropriate to the case study context.

State capacity

The potential of the national government and related state agencies to govern the activities of the country's people and address their related interests. Based on the World Bank's Worldwide Governance Indicators (WGI) project, which is particularly focused on six dimensions of governance – voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; control of corruption. Calculated by taking the average of the six scores (-2.5 to +2.5) and of the six percentile rankings assigned for that country in which the MPA is located. The 'country profiles' from which these scores and rankings are derived can be accessed at www.govindicators.org

⁵ Holling, C.S. (1973) 'Resilience and stability of ecological systems', *Annual Review of Ecology and Systematics*, vol 4, pp1-23

Users

People who use an MPA on a direct basis, by extracting natural resources, or on an indirect basis, through non-extractive recreational activities, aesthetic appreciation, etc.. For the purposes of this study, users are confined to those who live in the locality of the MPA or who often visit it for direct and indirect uses, i.e. it excludes people in wider society who may gain more distant indirect benefits. Representatives of state organisations are not considered as users.

Marine Protected Areas Governance (MPAG) Framework

The Marine Protected Area Governance (MPAG) framework was developed to systematically analyse the details of MPA governance systems in different case studies around the world. It aims to (a) deepen our understanding of MPA governance systems based on a many case studies around the world in different contexts; and (b) seek examples of 'good practice' governance initiatives that promote effectiveness and equity and can be adapted and transferred to other MPAs order to build capacity. You can refer to [Jones \(2014\)](#) for a full rationale and description of the MPAG analytical framework employed in the project, but the MPAG framework broadly consists of the following headings, each of which should be populated for a given MPA.

Context, including metrics:

- Name of MPA
- Area of MPA
- *National government type*
- *Per capita Gross Domestic Product (GDP)*
- *GDP Growth rate*
- *Population below poverty line (these four available from [CIA World Factbook](#))*
- State Capacity – average of scores for six governance indicators for MPA country and of six percentile rankings (www.govindicators.org, see glossary)
- Human Development Index ([HDI](#))

Objectives of the MPA – legally or otherwise formally and widely recognized, categorized into *conservation* (protecting species, habitats, fisheries, ecosystems, etc.) and *operational* (means by which protection is achieved, such as raising awareness, promoting community participation, etc.) objectives.

Drivers and conflicts – what factors (poverty, migration, etc) are driving incompatible uses and how do the impacts related to these uses undermine the fulfilment of the MPA's objectives?

Governance framework/approach – outline the legal, policy and participative governance structure.

Effectiveness (0-5) – assessment of the degree to which the impacts of different uses, related to conflicts that can undermine the fulfilment of objectives, have been effectively addressed:

- | | |
|---|--|
| 0 | No use impacts addressed; MPA designation may even have increased impacts by undermining previous governance institutions; |
| 1 | Some impacts beginning to be slightly addressed; |
| 2 | Some impacts partly addressed but some impacts not yet addressed; |
| 3 | Some impacts completely addressed, some are partly addressed; |
| 4 | Most impacts addressed but some not completely |
| 5 | All impacts from local activities completely addressed. |

How the flowing five incentives detailed below have been employed and which need to be strengthened or introduced:

- Economic
- Communication
- Knowledge
- Legal
- Participation

How do the incentives interact to support each other?

Cross cutting themes, e.g.

- Equity issues
- Roles of non-governmental organizations, including local groups

- Roles of political will
- Roles of leadership

Against this background, a given MPA can be assigned to one of four governance approach types, based on the way in which the MPA was initiated and the key ways in which it is governed (Table 1).

Table 1: The four main types of MPA governance

MPA governance approach	Characteristics
Governed primarily by the state under a clear legal framework	Decisions are taken by the state with some deconcentration (<i>transfer of responsibilities for implementing decisions, but not for taking decisions</i>) to sectoral agencies and quasi-independent government organizations, which generally only consult local users and other stakeholders on decisions taken at a higher state or sectoral agency level
Governed by the state with significant decentralization and/or influences from private organizations	Implementation is delegated (<i>transfer of some decision-making responsibilities with a degree of control from the central government over key aspects of policy</i>) or devolved (<i>transfer of maximum feasible, but not necessarily total decision-making responsibilities</i>) to local government, quasi-independent government, non-governmental and private organizations, along with the transfer of some decision-making responsibilities, with central governments maintaining some degree and form of control over implementation and decision-making
Governed primarily by local communities under collective management arrangements	MPAs instigated on a bottom-up basis by local users, often through local organizations, with most implementation and decision-making remaining delegated to local users/organizations, but often requiring some degree of state support for enforcement and therefore also involving some influence by central governments
Governed primarily by the private sector and/or NGOs who are granted with property rights and associated management rights	MPAs instigated by private or non-governmental organizations who may, or may not, represent local users and who are granted with the property rights for the MPA and the majority of decision-taking and implementation responsibilities, but often still requiring some degree of state support for enforcement, though central government influence is generally limited to conditions attached to property and associated management rights, coupled with recourse to withdraw such rights if conditions are not fulfilled

The case study MPA may also be considered as a ‘paper park’ (described below) but you should still be able to assign it to one of the above categories based on how it was instigated.

MPAs with no clearly recognizable effective governance framework in place, i.e. ‘paper parks’ – MPAs on paper only with no effective incentives to promote the achievement of MPA objectives or fulfilment of related obligations, central state and/or lower government levels often lacking the political will for effective MPAs and sometimes being involved, in partnership with the private sector, in development proposals that significantly undermine such fulfilment.

The MPAG Framework includes assessments of the following questions in relation to your MPA case study.

- *Which of these incentives are currently applied and how are they applied?*
- *In what ways do the incentives interact with, support and reinforce each other?*
- *Are improvements in the way any of these applied incentives are implemented considered a particularly important priority in order to improve the effectiveness and equity of the MPA in achieving its conservation objectives?*
- *Which incentives could be a particularly important priority to be introduced and could realistically be introduced to improve the effectiveness and equity of the MPA.*

These questions can be considered in relation to the following five categories of incentives described in Table 2.

Table 2: Governance incentive categories

Economic incentives (markets): using economic and property rights approaches to promote the fulfilment of PA objectives (10)

Interpretative or communication incentives (education and awareness raising): promoting awareness of the conservation features of the PA, the related objectives for conserving them, the policies for achieving these objectives and support for related measures (3)

Knowledge incentives (collective learning): respecting and promoting the use of different sources of knowledge to better inform PA decisions (3)

Legal incentives (top down): use of relevant laws, regulations etc. as a source of 'state steer' to promote compliance with decisions and thereby the achievement of PA obligations (10)

Participative or participation incentives (bottom-up): providing for users, communities and other interest groups to participate in and influence PA decision-making that may potentially affect them, in order to promote their 'ownership' of the PA and thereby their potential to cooperate in implementation of decisions (10)

The 36 incentives can be listed as follows:

Incentive Category	Incentive	Associated Governance Approach
Economic	<ol style="list-style-type: none"> 1. Payments for ecosystem services (PESs) 2. Assigning property rights 3. Reducing the leakage of benefits 4. Promoting profitable and sustainable fishing and tourism 5. Promoting green marketing 6. Promoting diversified and supplementary livelihoods 7. Providing compensation 8. Investing MPA income/funding in facilities for local communities 9. Provision of state funding 10. Provision of NGO, private sector and user fee funding 	Market approach
Communication	<ol style="list-style-type: none"> 11. Raising awareness 12. Promoting recognition of benefits 13. Promoting recognition of regulations and restrictions 	Supports all three approaches
Knowledge	<ol style="list-style-type: none"> 14. Promoting collective learning 15. Agreeing approaches for addressing uncertainty 16. Independent advice and arbitration 	Supports all three approaches
Legal	<ol style="list-style-type: none"> 17. Hierarchical obligations 18. Capacity for enforcement 19. Penalties for deterrence 20. Protection from incoming users 21. Attaching conditions to use and property rights, decentralisation, etc. 22. Cross-jurisdictional coordination 23. Clear and consistent legal definitions 24. Clarity concerning jurisdictional limitations 25. Legal adjudication platforms 26. Transparency, accountability and fairness 	State approach/ top-down
Participation	<ol style="list-style-type: none"> 27. Rules for participation 28. Establishing collaborative platforms 29. Neutral facilitation 30. Independent arbitration panels 31. Decentralising responsibilities 32. Peer enforcement 33. Building trust and the capacity for cooperation 34. Building linkages between relevant authorities and user representatives 35. Building on local customs 36. Potential to influence higher institutional levels 	People approach/ bottom-up

Definition of each of the 36 incentives employed in the MPAG framework:

Economic incentives (10)

1. Payments for ecosystem services (PESs)

Direct payments for ecosystems services provided by the MPA through formal markets with open trading between buyers and sellers, i.e. Blue Carbon payments as the marine equivalent of REDD+ payments.

2. Assigning property rights

Assigning or reinforcing property rights for certain areas and resources to appropriate groups of people to promote ownership, stewardship, rational self-interest in sustainable exploitation, etc.

3. Reducing the leakage of benefits

Measures to reduce the 'leakage' of the economic benefits of the MPA away from local people, including measures to promote the fair distribution of such benefits amongst local people, e.g. restricting incoming fishers, promoting ecotourism that maximises the income received by local people through locally operated businesses, home-stay accommodation, employing locals in tourist facilities, commercial operations run by the MPA authority itself, etc.

4. Promoting profitable and sustainable fisheries and tourism

Avoiding 'boom-bust' development trajectories, i.e. promoting sustainable fisheries by providing a refuge for marine organisms in no-take zones in order to safeguard and enhance harvests in adjacent fishing grounds through spill-over/export, insurance against uncertainty, along with the promotion of conventional fisheries management approaches. Promoting the development of tourism in a sustainable 'eco' manner that does not lead to the degradation of the environment to which tourists are attracted.

5. Promoting green marketing

Promoting the 'green marketing' of appropriate tourism, fisheries, etc. within the MPA to increase profits and income, including market premiums for well conserved fishery resources and tourist/diver user fees for access to the MPA or particular zones.

6. Promoting diversified and supplementary livelihoods

Promoting the diversification of livelihoods and supplementary options to gain more income from such livelihoods, including alternative economic development opportunities, which are compatible with the achievement of the MPA's biodiversity conservation objectives, whilst generating sustainable income for local people.

7. Providing compensation

Providing fair economic compensation for those users who carry costs as a result of restrictions on their activities that cannot reasonably be offset through alternative compatible opportunities, e.g. fisheries buy-outs, decommissioning schemes.

8. Investing MPA income/funding in facilities for local communities

Investing some of the income from or funding for the MPA to develop local facilities (schools, medical care, family planning, etc.) and infrastructure (roads and other transport links, electricity, water, etc.).

9. Provision of state funding

Ensuring that a sufficient degree of state funding is available, alongside other funding (see below), to support the governance of the MPA, particularly to enable a longer-term strategic approach, and in relation to enforcement capacity, whilst ensuring that such funding does not allow the state to

'capture' MPA governance by undermining the balance of power discussed below in relation to participation incentives.

10. Provision of NGO, private sector and user fee funding

Seeking corporate, NGO and private funding through endowments, donations, debt conversions, trust funds, etc. to support the governance of the MPA, whilst ensuring that such funders cannot 'capture' MPA governance through an inappropriate degree and type of influence, and that the MPA becomes financially sustainable through a diversity of income sources so that it is not critically vulnerable to the withdrawal of private sector funding. Funding can also be raised through 'user fees' on individual visitors and/or through 'tourism tax' on businesses using the protected area as location for hotels of for diving, recreational fishing, etc., potentially also serving to manage user numbers.

Communication incentives (3)

11. Raising awareness

Using social and local media, TV & radio and other approaches to overcome 'out of sight, out of mind' barriers by raising the awareness of users, local people, relevant authority officers, politicians, etc. about the aesthetic values, ecological importance and vulnerability of marine biodiversity.

12. Promoting recognition of benefits

Promoting recognition of the potential resource benefits of the conserved areas in terms of spillover/export benefits for wider fisheries, insurance/resilience, etc., whilst being realistic about such potential benefits and not 'over-selling' them.

13. Promoting recognition of regulations and restrictions

Promoting recognition of and respect for the MPA's regulations and restrictions, including the boundaries

Knowledge incentives (3)

14. Promoting collective learning

Promoting mutual respect amongst local people and scientists for the validity of each other's knowledge and promoting collective learning and the integration of different knowledges through partnership research, research/advisory groups, participative GIS, participative workshops, etc

15. Agreeing approaches for addressing uncertainty

Explicitly recognising the challenges raised by scientific uncertainty and agreeing approaches to address such challenges, e.g. ground rules for the interpretation and application of the precautionary principle, decision-making under uncertainty, and adaptation in the light of emerging knowledge.

16. Independent advice and arbitration

Seeking independent advice and/or arbitration from recognised and respected experts in the face of conflicting information and/or uncertainty.

Legal incentives (10)

17. Hierarchical obligations

International-regional-national-local legal obligations that require effective MPA conservation, including the potential for top-down interventions.

18. Capacity for enforcement

Following the principles of decentralisation, ensure that sufficient government capacity, political will, surveillance technologies and financial resources are available to ensure the equitable and effective enforcement of all restrictions on all local and incoming users, including related pressures from fisheries and tourism market forces.

19. Penalties for deterrence

Effective judicial system for proportionately penalising illegal resource users in a way that provides an appropriate level of deterrence and helps address conflicts that would otherwise undermine marine conservation objectives.

20. Protection from incoming users

Providing for a degree of legal protection from incoming users, particularly non-local fishermen, as well as tourism operators, recognising that exploitation by incoming users often poses a major threat to local biodiversity and resources.

21. Attaching conditions to use and property rights

Agreeing performance standards, conditions, criteria and requirements related to the MPA's conservation objectives and attaching them to user and property rights, licences, participatory governance structures, etc.

22. Cross-jurisdictional coordination

Legal or other official basis for coordination between different authorities, and between conservation and other government agencies/law enforcement units, to address cross-jurisdictional and cross-sectoral conflicts in order to support the achievement of MPA objectives, e.g. watershed management by pollution authority, fish stock management by the fisheries authority, forestry management by the forestry authority, recognising that the environment authority with responsibility for MPAs often does not have direct jurisdiction over other sectoral activities that can impact the MPA's conservation features.

23. Clear and consistent legal definitions

Clarity and consistency in legally defining the objectives of MPAs, general and zonal use regulations, jurisdictional boundaries, roles and responsibilities of different authorities, decentralisation arrangements, etc.

24. Clarity concerning jurisdictional limitations

Promoting clarity and openness concerning the jurisdictional limitations of the MPA legislation, *i.e.* recognising which driving forces, activities and impacts cannot be directly addressed by the MPA legislative framework and exploring alternative means of addressing such factors.

25. Legal adjudication platforms

Employing legal, customary law and other formal and widely respected decision-making platforms to address and regulate conflicts, when required, especially to promote the legitimacy, accountability and fairness of legal processes and decisions.

26. Transparency, accountability and fairness

Establishing legal provisions to ensure transparency, accountability, legitimacy and fairness in MPA management processes, *e.g.* statutory requirements for public access to information, appeals, public hearings, judicial reviews, etc.

Participation incentives (10)

27. Rules for participation

Clear rules on participation from different groups and the representation of all user groups in participation processes in a manner that minimises the undue influence of particular vested interests and promotes the inclusivity and legitimacy of the participatory processes.

28. Establishing collaborative platforms

Developing participative governance structures and processes that support collaborative planning and decision-making, e.g. user committees, participative planning workshops, etc., including training to support such approaches

29. Neutral facilitation

Bringing in neutral facilitators to support governance processes and negotiations, particularly in relation to collaborative platforms, as deliberations are more likely to progress and agreements to be negotiated if such neutral facilitation is provided for.

30. Independent arbitration panels

Employing neutral and locally respected panels of actors who do not have direct stakes in the MPA and decisions related to it but have relevant sectoral expertise to arbitrate on issues, provide advice and recommend decisions.

31. Decentralising responsibilities

Decentralising some roles, responsibilities and decision-making authorities to local organisations and people through a clear management structure, whilst maintaining an appropriate degree of the authority of and accountability to higher level state organisations, in order to ensure that strategic conservation objectives are effectively met, along with related equity objectives, being open and realistic about the degree of autonomy and influence that local organisations and people can expect.

32. Peer enforcement

Providing for participative enforcement, e.g. peer enforcement, community rangers/wardens, and promoting the potential for cooperation and peer enforcement through the development of a sense of ownership of the MPA and respect for related decisions.

33. Building trust and the capacity for cooperation

Building trust amongst individuals through transparency, face-to-face discussions, equity promotion, etc., promoting cooperation and confidence that this will be reciprocated amongst MPA users.

34. Building linkages between relevant authorities and user representatives

Developing and strengthening linkages amongst relevant government authorities and key user representatives, including mutual trust, in order to promote the fulfilment of legal conservation objectives and build resilient governance structures.

35. Building on local customs

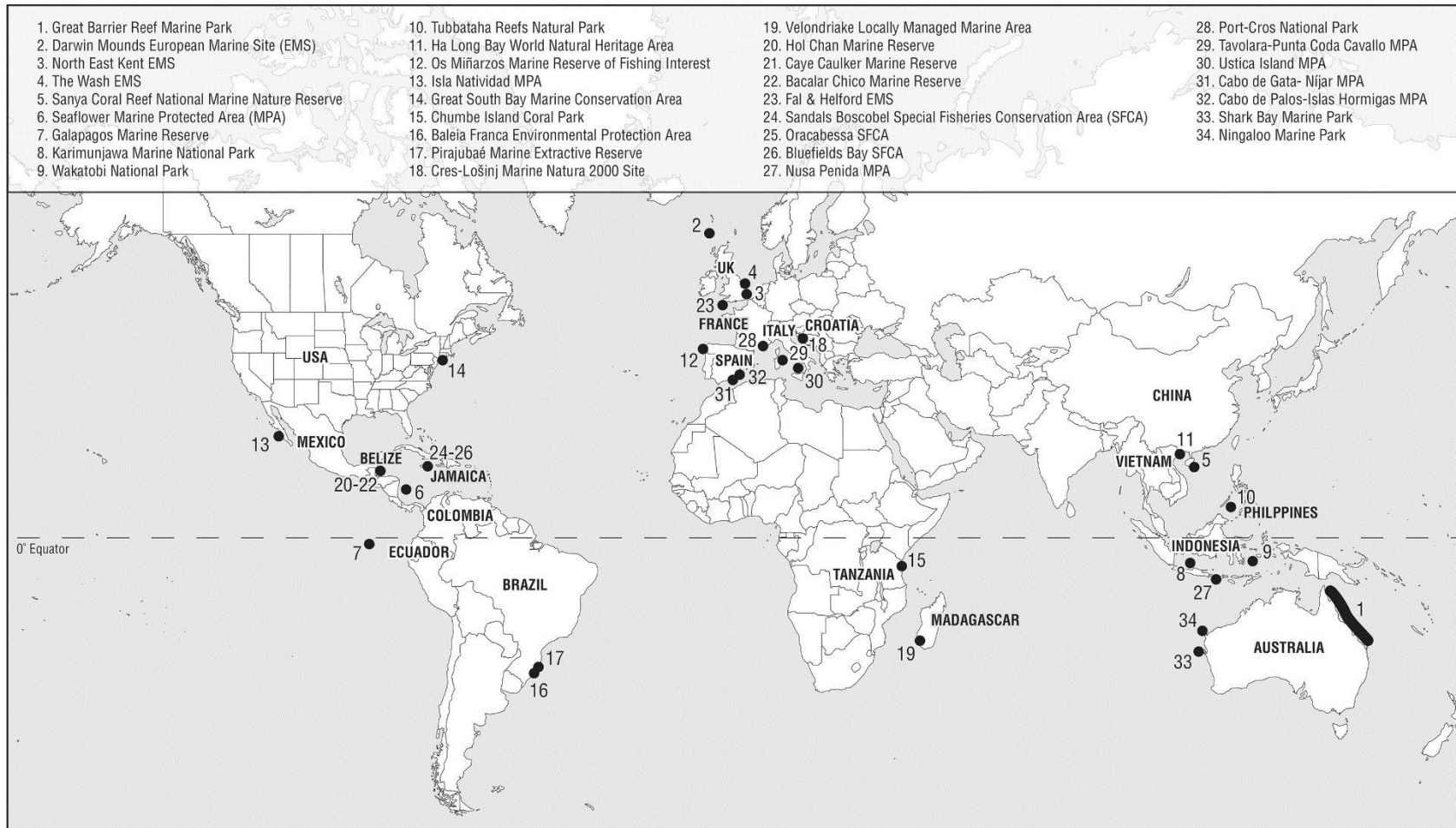
Promoting consistency with and respect for local traditions, customs, norms and practices, in so far as they are compatible with and contribute towards the fulfilment of legal conservation objectives, including scope for flexibility, negotiations and compromises.

36. Potential to influence higher institutional levels

Promoting recognition & realisation of the potential for the participative governance of a given MPA to influence the higher-wider statutory framework, processes and obligations, i.e. that local people can have an influence on higher level institutions as well as being influenced by them in a co-evolutionary manner.

Case study summaries – introduction and map

The rest of this appendix is a compendium of 34 case study summaries based on the MPAG framework on which the main guidance volume draws. These are numbered as indicated on the following map, based roughly on the chronological order in which they were undertaken.



1. Great Barrier Reef Marine Park, Australia – Jon Day et al., Paper (2013, with some updates)

Name	Great Barrier Reef Marine Park	Year of designation	1979, with rezoning 2004
Area	346,000KM ²	State Capacity	1.54 (rank 92.4%, 2016)
GDP Per Capita	US\$48,800 (2016, 26/230)	Human Development Index (HDI)	0.935 (2/188)
GDP Growth Rate	2.9% (2016)	Population below the poverty line	N/A

MPA Objectives:

Conservation	Operational
To provide long term protection and conservation of the environment, biodiversity and heritage value of the Great Barrier Reef Region.	Allow ecologically sustainable use for the purposes of public enjoyment and appreciation; Public education about and understanding of the Region; Recreational, economic and cultural activities; Research in relation to the natural, social, economic and cultural systems and value of the GBRR
	Encourage engagement in the protection and management of the GBRR, by interested persons and groups, including Queensland and local governments, communities, Indigenous persons, business and industry
	Assist in meeting international responsibilities in relation to environment and protection of world heritage.
	Utilise legislated zoning areas as a management tool for the Region

Drivers and Conflicts:

- Commercial marine tourism, fishing, ports and shipping, recreation, defence activities, scientific research and traditional use of marine resources have overlapping impacts with fluctuations, driven by global factors such as fuel prices, human health issues and economic development. The future cumulative effects of all use and ecosystem-level impacts are poorly understood.
- Mining, industry, intensification of agriculture and population growth have significantly increased coastal development and affected coastal habitats that support the GBR. Connectivity between habitats has reduced along with water quality, as sedimentation and poor drainage has increased. Areas intensively farmed have quadrupled in 150 years; population growth in the area has risen faster than the Australian average, especially along the coast; mining and industry is also fuelling growth in ports and shipping with proposals for significant expansion. Sugar farming and aquaculture activities have also increased, reducing water quality from 35 major catchments entering the GBR from coastal Queensland, despite improvements in local land management.

Governance Framework/Approach:

Government led GBR Marine Park Authority manages the MPA on behalf of the federal government as a governmental organisation.

Effectiveness: 3 - Some impacts completely addressed, some are partly addressed. Bans on fishing in NTZs appear to be promoting resilience to COTS outbreaks, storm damage, coral diseases and bleaching (Mellin et al 2016), but the cumulative impacts of proximal activities (agricultural run-off and coal port expansion) remain a concern, particularly given severe and widespread bleaching events in 1998, 2002, 2015 and 2016, and there is no evidence that NTZs are more resilient to recent bleaching (Hughes et al 2017).

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	N	The Great Barrier Reef Marine Park Authority (GBRMPPA) is working in partnership with Traditional Owner groups along the Great Barrier Reef (GBR) to assist with the development and implementation of Traditional Use of Marine Resources Agreements (TUMRAs). TUMRAs are formal agreements developed by Traditional Owner groups and accredited by GBRMPPA and Queensland, describing how Traditional Owner groups work with government to manage traditional use activities. Permits are also given for use in some instances under the zoning regulations. These are not, however, property rights.
3. Reducing the leakage of benefits	N	The benefits that result from the MPA are equitably distributed through re-investment of tourism finance or through the benefits available in adjacent fishing grounds. An assessment by Access Economics demonstrates the level of economic benefits (in 2006/7 tourism contributed AUD\$5.1 billion) that flow to the GBR catchment area and the Queensland economy as well as to the overall national economy. Whilst many benefits flowing from the GBRMP remain within the regional economy, this is not the result of interventions designed to reduce the leakage of benefits.
4. Promoting profitable and sustainable fishing and tourism	Y	The GBR promotes sustainable fishing through multiple-use zoning area allowing a range of sustainable fishing activities. The 2003 rezoning project was primarily to protect the range of biodiversity in the GBR but evidence has shown benefits in adjacent fishing grounds e.g. research shows that coral trout numbers have rebounded by 31-75 per cent on a majority of reefs that were closed to fishing after as little as 1.5 to 2 years (Russ et al 2008), leading to increased export of larvae (Harrison et al 2012), though related increases in wider catches have not offset the losses due to no-take zones (Fletcher et al 2015). The increased fish populations in the no-take zones benefit the tourism industry on the GBR as well as enhancing the resilience and sustainability of reef line fishing in the longer term.
5. Promoting green marketing	Y	GBRMPPA encourages high standard marine tourism operations through an eco-certification process; these high standard operators are ecologically sustainable and are helping to protect and present the GBRMP to a consistently high standard.
6. Promoting diversified and supplementary livelihoods	N	Although nothing has been implemented to directly provide alternative livelihoods, many opportunities have been developed with increasing tourism.
7. Providing compensation	Y	Because of re-zoning a structural adjustment package was initiated for fishers, their employees and other businesses/workers who were significantly negatively impacted by the rezoning of the GBRMP. This package is still being finalised with some components completed (e.g. Licence Buyout Component of the GBRMP Structural Adjustment Package) but the level of economic adjustment has been much greater than anticipated: initial budget AUD\$10 million spiralled upwards to AUD\$250 million (Macintosh et al 2010)
9. Provision of state funding	Y	Considerable funding is provided from a range of sources and the total budget for 2007-08 was AUD \$46.3 million (GBRMPPA Annual Report). This was AUD\$6 million more than the 2006-07 appropriation and was primarily due to new measures to provide for enhanced field management for the GBRMP and the Climate Change Adaptation Program. Through the GBR intergovernmental agreement, 2009, both the Federal and State Government re-affirmed commitment to a joint programme of field management across the whole area, with shared funding on a 50:50 basis.

10. Provision of NGO, private sector and user fee funding	Y	One example is the Great Barrier Reef Foundation; this is an independent investor in science that aims to maximize the sustainability of the GBR. Working in partnership with business, science, government and philanthropy, the Foundation funds research that addresses threats and finds solutions to protect and preserve the GBR.
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Communication

11. Raising awareness	Y	Many examples of regularly using communication and education to raise awareness about the GBR are used, generally focussed on the key message for zoning, best voluntary environmental practices, safety and boating impacts on the GBR's biodiversity. The Outlook Report process and the various products (on-line evidence, fact sheets etc) are also proving very effective in raising awareness in other government agencies as well as with politicians and the public. Transmission of information about the GBR to users and visitors assists with Australian obligations under the World Heritage Convention. The belief is that an educated and aware user is more likely to voluntarily abide by laws governing its protection.
12. Promoting recognition of benefits	Y	Evidence of success and benefits generated from the GBR are communicated through research, examples such as increased fish numbers in no-take zones and the marked reduction of crown-of-thorns starfish outbreaks in no-take areas closed to fishing.
13. Promoting recognition of regulations and restrictions	Y	'Champions' (well recognised celebrities) were used very effectively during the rezoning to raise public awareness. Detailed zoning maps are provided free of charge through more than 300 community access points. All tour operators and other users are also made aware of the regulations and any restrictions.

Knowledge

14. Promoting collective learning	Y	Traditional Owner groups, government and the broader community are working together to improve populations of culturally significant animals, such as green sea turtle and dugong. A combination of expert opinion, stakeholder involvement and analytical approaches were used to identify options for possible zoning networks. RAP – Representative Areas Program. The Indigenous Reef Advisory Committee provides valuable advice to the GBRMPA on activities the Indigenous Land and Sea Country Partnership Program should support.
15. Agreeing approaches for addressing uncertainty	Y	The application of the precautionary principle, and the decision to 'adaptively manage' in the absence of perfect knowledge, are both important factors in the successful management approach in the GBRMP. The precautionary principle is in the legislation and an adaptive management approach involving periodic monitoring against indicators is normal practice.
16. Independent advice and arbitration	Y	An independent Scientific Steering Committee with expertise in GBR ecosystems and biophysical processes was convened to define biophysical operational principles to guide the development of a new representative network of no-take areas in the GBRMP. Another committee guided development of socio-economic- cultural and management principles.

Legal

17. Hierarchical obligations	Y	Several international conventions are relevant to the GBR; one of the more important conventions relates to World Heritage. The GBRMP comprises approx. 99.3% of the GBR World Heritage Area, including the potential for top-down interventions through 'red listing' the GBR; Convention on the Conservation of migratory species of wild animals; Convention on the International Trade of Endangered Species of Wild Flora and Fauna.
18. Capacity for enforcement	Y	Considerable resources and technological advances (e.g. satellite transponders on trawlers = VMS) are used in surveillance and enforcement; without adequate compliance, the management of the GBRMP would not be successful. GBRMPA has always, and will continue, to view education as the most effective strategy to encourage compliance with GBRMP

		management principles. GBRMP inspectors have discretionary power to decide a course of action on a case-by-case basis, including enforcement action, infringement notices and prosecution.
19. Penalties for deterrence	Y	There is an effective judicial system for penalizing transgressors and the legislation has very high maximum penalties if the courts choose to use them (e.g. up to a maximum of 50,000 penalty units = AUD\$5.5 million for an aggravated contravention by a body corporate). Enforcement action and prosecution are two important tools that managers have available to them. Because of the dedication to user education in the GBR, these approaches are not necessarily the tools of first opportunity, nor are they always the tools of last resort. GBRMP inspectors have the discretionary power to decide a course of action on a case-by-case basis with options including enforcement action, infringement notices and prosecution.
20. Protection from incoming users	Y	One of the roles of fishery and related maritime patrols is to protect Australian waters, including GBR, from illegal incoming fishers from other countries
21. Attaching conditions to use & property rights, decentralisation, etc	Y	All TUMRAs are bound by the regulations associated with International obligations and national legislative and policy initiatives. Some special policy initiatives have been introduced to ensure sustainable use with regards to extractions, whilst also recognising the importance of Traditional Use by Indigenous Australians, though there are concerns that restrictions on traditional hunting are being breached through larger-scale harvesting for freezing and commercial gain.
22. Cross-jurisdictional coordination	Y*	The GBRMP Act requires extensive cooperation across a range of Queensland and Federal agencies, especially for surveillance and enforcement purpose. There could be improvement here with regards to decisions made that directly impact the GBR, for example port expansions and mining activity.
23. Clear and consistent legal definitions	Y	Wherever there may be inconsistencies between terminology or definitions, efforts re made to make these consistent to make it easier for users and managers. An example was the landward boundary definitions conflicting with definitions applied by the Commonwealth. There were amended in 2004 to be consistent. Clarity and consistency in defining legal objectives, jurisdictional boundaries, roles and responsibilities of different authorities and organisations has been critical.
24. Clarity concerning jurisdictional limitations	Y	The integrated management approach extends well outside the marine areas to include all the islands, all the tidal lands/tidal waters and many activities in the catchments; furthermore, most of the management approaches today (e.g. addressing water quality issues) are done in partnerships with local government and industries throughout the catchment. The GBRMP's outlook reports have identified the impacts of climate change as having the potential to very significantly impact the MPA's coral reefs, through a combination of ocean acidification, ocean warming and sea level rise. However, it is also made clear that mitigating the effects of climate change is beyond the jurisdiction of the GBRMP authority, though it is critical that these impacts are reduced if the MPA's coral reefs are to survive.
25. Legal adjudication platforms	Y	GBRMPA's decision making processes have various conflict resolution processes built in (e.g. Review rights for permit decisions). The administrative Appeals Tribunal and the Ombudsman provide two further avenues for adjudication if necessary
26. Transparency, accountability and fairness	Y	The management philosophy in the GBRMP is one of balancing conservation with reasonable use as is indicated by the hierarchy of objects in the legislation. The significant changes between the initial zoning, the Draft Zoning Plan and the final Zoning Plan, as accepted by Parliament, are largely the result of additional information received either in public submissions or in another way. Changes to the 'Freedom of Information Act 1982' requires Australian government agencies to publish certain information on their websites, aimed at ensuring a more open and transparent culture across government.

Participation

27. Rules for Participation	Y	Rules requiring a range of participative approaches, particularly postal consultations and advisory committees
28. Establishing collaborative platforms	Y	GBRMPA currently has four expertise-based Reef Advisory Committees (one each addressing water quality, conservation, fisheries and tourism issues) and eleven Local Marine Advisory Committees; these all provide advice and make recommendations to GBRMPA. During the rezoning GBRMPA recognised the need to conduct an effective consultation program; this became the most comprehensive process of community involvement and participatory planning for any environmental issue in Australia’s history. Every major settlement along the Great Barrier Reef coast was visited involving hundreds of stakeholder and public meetings. During the two formal phases of consultation, over 31,000 public submissions were received, clearly showing the vast level of community interest.
31. Decentralising responsibilities	Y	There are significant decision-making responsibilities through the Great Barrier Reef Marine Park Authority.
33. Building trust and the capacity for cooperation	Y	Following the huge level of public interaction during the RAP/rezoning, there was a conscious decision to put additional resources into improved community engagement. The establishment of regional offices in communities along the GBR Coast has been about enhancing the work that GBRMPA is already doing by developing better linkages with, and greater understanding of, coastal communities and enhancing local involvement in decision-making, compliance and stewardship of the Great Barrier Reef.
34. Building linkages between relevant authorities and user representatives	Y	The creation of committees, panels, and consultation programmes has strategically built strong links between appropriate users within the communities. Relationships built across government agencies and departments are also in place to help with the effectiveness of governance.
35. Building on local customs	Y	Providing for traditional harvesting of particular marine species (particularly sea turtle and dugong) under TUMRAs. The recognition of traditional names for areas or sites is a way of showing respect for local traditions relating to places or areas, customs or practices. Once such place names are confirmed with the Traditional Owners for the area, they are shown on the official maps with the traditional name first.
36. Potential to influence higher institutional levels	Y	The Great Barrier Reef Marine Park Authority has the ability to influence decisions within government, utilising research and scientific knowledge to support arguments.

Cross – cutting themes:

Leadership

Strong leadership for the MPA, e.g. from particular people within the community or from local/national/international NGO, agency and political levels. Effective leadership (at both the political and agency levels) was one of the key factors in the success of the GBR rezoning. Long-term vision, consistency and stability of the leadership - While the GBR is recognised as one of the world’s best managed reefs and is likely to survive better under the pressure of accumulating risks than most reef ecosystems, the Outlook Report identifies that the current long-term outlook for the Great Barrier Reef is poor. Unavoidably future predictions of climate change dominate most aspects of the GBR’s outlook over the next few decades. Decisions made in the next several years are likely to determine its long-term future and will depend to a large degree, on the extent to which climate change is addressed worldwide and on the resilience of the ecosystem in the immediate future.

The success of the GBR rezoning, which has been internationally recognised a 'best-practice', could not have happened without effective leadership (at both the political and agency levels) and their influence on many of the above incentives.

Role of NGOs

NGOs played an important role during the GBR rezoning especially by providing a counter-balancing perspective to those who were pro-exploitation. NGOs do not have any greater role in decision-making and governance than any other stakeholder group; like other stakeholders, NGOs are represented on key advisory committees. Recent NGO campaigns highlighting the impacts of coral bleaching on the GBR and the related need to halt the expansion of coal mining, e.g. Adani mine, and mitigate global warming at a global scale.

Equity issues

At the completion of the rezoning, no-one group felt they got everything they wanted. However, all groups agreed they had numerous opportunities to participate and that the final outcome showed significant changes between the draft and final Zoning Plan based on the public submissions and the additional information provided while still maintaining the key operating principles to adequately protect biodiversity.

Stewardship

A relatively new way of doing business in the GBRMP is the development of strategic partnerships with industry (e.g. tourism and the commercial fishing industries) to ensure the GBR is sustainable in the face of threats like climate change. One of the best examples of stewardship in the GBR is a Stewardship Action Plan (SAP) developed by Pro-vision Reef, believed to be a world's first for a fishery. Developed by the aquarium supply fisheries in collaboration with Federal and State management agencies, and coral reef scientists, the SAP establishes a uniform specimen collection standard across the industry. A key component of the SAP involves responding to the challenge of global climate change. A partnership between the GBRMPA and Queensland Seafood Industry Association (QSIA) was recently officially launched and is already showing mutual benefits e.g. economically beneficial for industry and good for the environment. The partnership was formed to meet some key objectives under the GBR Climate Change Action Plan and aims to help the fishing industry "future-proof" itself to be able to adapt to, and mitigate against, the impacts of future change (including climate change). The project is summarized in the QSIA/GBRMPA Climate Change and Fisheries Partnership Project Bulletin. Recent activities with tourism have built upon on existing well-established partnerships that have shown to have mutual benefits.

2. Darwin Mounds European Marine Site, UK – Elizabeth M De Santo, Paper (2013)

Name	Darwin Mounds, UK	Year of designation	2003
Area	1500KM ²	State Capacity	1.42 (rank 87.3%, 2016)
GDP Per capita	\$41,400 (2015)	Human Development Index (HDI)	0.909 very high (2015)
GDP Growth Rate	2.2% (2015)	Population below the poverty line	15% (2013)

MPA Objectives:

Conservation	Operational
To protect a deep, cold water coral reef (<i>Lophelia pertusa</i>) from bottom-trawling. (Annexe 1 of the Habitats Directive)	The area is closed to bottom trawling, but not to pelagic fishing

The Darwin Mounds were first discovered in May 1998 during a seabed survey related to an oil development proposal. Additional areas were discovered in 1999 and the Mounds were investigated further on two occasions during the summer of 2000, when damage from bottom trawling was evident over half of the eastern fields. At the time of discovery, this was a unique example of *Lophelia* growing on sandy mounds, rather than a hard substrate and with a distinctive tail structure not seen elsewhere.

Drivers and Conflicts:

- The amount of fishing around the mounds is believed to be relatively small, but there is evidence of bottom trawling and associated damage. A report into deep sea fisheries of the North East Atlantic reported significant declines in fish populations.
- Oil and gas exploration is potentially a future issue, due to the area containing 17% of the UK's remaining oil reserves and 10-15% of its natural gas. 2011 agreements gave BP the go ahead to invest £4 billion to develop in areas near Shetland.

Governance Framework/Approach:

Government-led - There is a lot of political will for this MPA to succeed, but the governance framework is complicated. The Department for Environment, Food and Rural Affairs (DEFRA) is responsible for implementing legislation, but through devolution, Marine Scotland Compliance (the enforcement division of Marine Scotland) is tasked with the monitoring and enforcing the Darwin Mounds closure. Satellite based vessel monitoring systems (VMS) are used for data to identify vessels in the area, along with air and sea patrols. The Common Fisheries Policy provided for the closure of Darwin Mounds to take place under legislation (De Santo and Jones 2007).

Effectiveness: 3 No infringements have been detected in the area since enforcement (as at 2009) but there is evidence that the *Lophelia* reefs are still being damaged by fishing gears. Legislation requires VMS data, plus sea/air observation for conviction and the patrols conduct both.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic – These incentives didn’t play a role in the designation but were used as a bargaining tool!

Incentive type	Used	How/Why
9. Provision of state funding	Y	There is significant state capacity and funding for monitoring and enforcement, partially due to the overlap in jurisdiction with the North-East Atlantic Fishing Commission (NEAFC) and the fact that Scottish authorities do the bulk of the monitoring and enforcement
10. Provision of NGO, private sector and user fee funding	Y	There is no funding from NGOs, but there is support provided in other ways to promote MPA effectiveness and monitoring is conducted by several NGOs to support the site, eg Greenpeace’s climate change campaign that led to the Greenpeace judgement and WWF’s subsequent “out of sight out of mind” offshore MPA campaign

Communication

11. Raising awareness	Y	A Greenpeace campaign and WWF reports followed by a campaign helped to raise awareness of the area and situation at Darwin Mounds. The media heralded Darwin Mounds as “Scotland’s Barrier Reef” which helped to raise public awareness. Photographic evidence of the effects of bottom trawling on coral reefs was effective with European Commissioners.
12. Promoting recognition of benefits	N*	This could be applied to create closer ties with the public, eg through eco-labelling and videos showing the recovery of the reefs
Promoting recognition of regulations and restrictions	Y	The demersal trawling ban under the CFP is officially notified to all fishermen with a licence to fish the area

Knowledge

14. Promoting collective learning	N	Lack of involvement of broader stakeholders, eg fishermen
15. Agreeing approaches for addressing uncertainty	Y*	The precautionary Principle is a legal requirement under the EU Habitats Directive and the Lisbon Treaty, but better implementation of a precautionary approach is needed in terms of designating more areas and not requiring evidence of damage before doing so.
16. Independent advice and arbitration	Y	This is covered under the EU regulations

Legal – The strongest force for the protection of this MPA

17. Hierarchical obligations	Y	All EU states are obliged to implement directives under a legal requirement. The use of the Common Fisheries Policy and the 2002 reforms provided a mechanism for closing the area faster. Obligations exist under the OSPAR convention to meet additional targets.
18. Capacity for enforcement	Y	There is high capacity for enforcement under the Scottish governments to enforce the Common Fisheries Policy and to monitor and enforce with VMS tracking and sea/air patrol and observations
19. Penalties for deterrence	Y	Scottish Law can penalise for infringement based on evidence from a combination of VMS and sea/air observation.
20. Protection from incoming users	Y	The enforcement patrols apply to incoming users in the same way as for locals, applying the same enforcement restrictions and penalties, although incoming users may not be aware of the regulations

22. Cross-jurisdictional coordination	Y*	There is collaboration between DEFRA, JNCC, MMO, Marine Scotland and the European Commission, but there are tensions due to nature conservation being under the remit of the member state and fisheries management being under the legislative jurisdiction of the European Commission. This could be strengthened by integrating biodiversity conservation and fisheries management policies within the European Commission and streamlining the policy process for restrictions to support achieving conservation objectives.
23. Clear and consistent legal definitions	Y	The area is clearly closed to bottom-trawling and zones are clearly marked with clear definitions for use, eg pelagic fishing. It is also clearly defined that Marine Scotland Compliance are responsible for enforcement
25. Legal adjudication platforms	Y	The European Court of Justice (ECJ) has legal authority over all MPAs in the EU designated under the Habitats Directive.
26. Transparency, accountability and fairness	N*	Although there is a fair procedure for prosecuting infringements, there was a lack of transparency and inclusion with parties outside of government decision-making.

Participation – This didn't play a significant role in the designation as being offshore posed a challenge for participation

31. Decentralising responsibilities	Y*	Some responsibilities are decentralised to government agencies, although this is complex due to the number of agencies involved and the government retains decision-making powers. This could be improved to simplify processes and to provide some autonomy for agencies.
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Cross-cutting themes:

Role of NGOs

A Greenpeace campaign in 2000/2001 halted oil exploitation leveraging the Habitats Directive, which coincided with the discovery of Darwin Mounds. WWF submitted a couple of reports on conserving Darwin Mounds as well as campaigning for MPA's in the North East Atlantic Ocean. These NGOs played a significant role in pressuring the UK government to conserve 'offshore' marine areas using the legal obligations under the European Commission, leading to a case in the ECH that confirmed that the Habitats Directive applies throughout member state waters, not just to territorial waters.

Leadership

There was strong leadership from within the UK regulatory community in leading the initial designation process.

Equity issues

Representatives from the fishing industry felt marginalised by the Darwin Mounds closure, as it was a 'done deal' by the time they learned it was coming. However, offshore fisheries are less locality dependant than their inshore counterparts, so it is not as direct an issue as if this had been an inshore fishery.

Stewardship

An important issue as there was a degree of national pride regarding the presence of coral reefs in the UK that helped facilitate the closure.

3. North East Kent European Marine Site, UK – Thomas Roberts, PhD research (2009), Paper (2013)

Name	North East Kent European Marine Site, UK	Year of designation	1995
Area	22.69KM ²	State Capacity	1.42 (rank 87.3%, 2016)
GDP Per capita	\$41,400 (2015)	Human Development Index (HDI)	0.909 very high (2015)
GDP Growth Rate	2.2% (2015)	Population below the poverty line	15% (2013)

MPA Objectives:

Conservation	Operational
Protection of reefs and submerged or partially submerged sea caves, 250 ha of chalk reef, plus bird species – Breeding Little Tern, Wintering Golden Plover and the Wintering Turnstone. (Annexe 1 of the Habitats Directive).	

The North East Kent European Marine Site (NEKEMS) was designated in 1995, but the management scheme did not launch until 2000 due to a large number of assessments required and challenges related to building partnership capacity and overcoming conflicts between stakeholders. The site covers 22.69km² of coastline and intertidal area and extends out to sea up to 2km and includes overlapping designations: Thanet Coast Special Area of Conservation (SAC), Thanet Coast and Sandwich Bay Special Protected Area (SPA) and Sandwich Bay SAC.

The coastline of Thanet in North East Kent, is dominated by an urban fringe that runs almost unbroken around the eastern point. Historically the area was a traditional seaside area and later supported by Ramsgate Harbour. Tourism has steadily declined, reducing the economic stability of the area.

Drivers and Conflicts:

- There have been successive planning proposals for an 18-metre-wide sea wall across one of the last remaining stretches of chalk cliff and an approach road that would destroy cliffs and caves. The development would impact habitats and biodiversity and has also exacerbated existing conflict with local communities.
- Future expansion plans of Ramsgate Harbour caused concern alongside priority challenges between the designation of the area and economic development. This was overcome with an integrated scheme with specific European funding to boost economic development.
- Shipping pollution is a continued concern from the English Channel. An incident of a vessel losing its cargo in 2009, resulted in a huge quantity of timber washing up on the beaches around Thanet. This illustrates other potential incidents for the future.
- Coastal defences put in place are threatening the reef and potential further plans could impact chalk cliffs.

Governance Framework/Approach:

Government-led – With a management group of ‘relevant authorities’ – councils, government agencies, Fisheries Committee and the Harbour Authority. The Thanet Coast Project (TCP) was formed as a ‘go-between’ between stakeholders to manage the MPA.

Effectiveness: 3 – Some impacts are completely addressed, some are partly addressed.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
3. Reducing the leakage of benefits	Y	As this area was desperate for economic development to regenerate the area, the designation increased eco-tourism and provided opportunities for commercial ventures such as using locations for films and advertising projects. The activity and related financial gain is all maintained within the local community.
4. Promoting profitable and sustainable fishing and tourism	Y	An economic development strategy was developed alongside the EMS Management plan to promote 'green growth' in the area. It successfully increased 'green tourism' as people visited to see the natural environment. The change in the type of tourism reduced disturbance in the area and little tern populations started to recover. Progression towards sustainability for the whole area continues.
5. Promoting green marketing	Y	The MPA has provided the opportunity to promote the coastline as an eco-tourism destination and raised the profile attracting commercial projects to provide additional income.
6. Promoting diversified and supplementary livelihoods	Y	Economic development opportunities were a key driver of the designation and central to the development of the MPA, to provide new jobs for the local community and regenerate the whole area. Economic development continues with the increase of eco-tourism.
8. Investing MPA income/funding in facilities for local communities	Y	The incorporation of the European Objective 2 funding related to the MPA to boost economic development in the area, plus eco-tourism and commercial ventures provide income into the local economy.
9. Provision of state funding	Y*	There is a lack of funding for enforcement which needs to improve to reduce disturbances from impacting activities.

Communication – These incentives were very important in the designation of the MPA

11. Raising awareness	Y*	Locals are informed via newsletters, educational programmes, coastal art projects, community information walks, and a coastal warden's scheme has engaged over 100 local people to act as champions for the MPA (attending a training course and learning coastal ecology, surveying skills and advice on Health and Safety). This could be strengthened further to engage broader groups as there are various activities still creating a significant disturbance, such as driving on the pier, use of mini motorbikes on the beach and jet ski use.
12. Promoting recognition of benefits	Y	Prior to designation, there was a perceived lack of value for the area. The promotion of benefits through the MPA designation and continued collaboration with the local community has generated a sense of pride and recognition of value.
Promoting recognition of regulations and restrictions	Y	Collaboration with the local community and the channels for communicating information for the MPA allows continued promotion of rules and regulations for the MPA to keep it front of mind.

Knowledge

14. Promoting collective learning	Y	Thanet Coast Project work closely with groups such as local Wildlife Trust and groups of scientific advisors to co-ordinate area knowledge, as well as surveys completed by coastal wardens.
15. Agreeing approaches for addressing uncertainty	Y	The management plan was adapted to develop an 'ecosystem approach' to manage the wider ecosystem due to concerns over uncertainty regarding impacts of pollution, sea level rise and other influences which are outside of the control of the MPA. There is an understanding that they may not always have all the answers needed.

16. Independent advice and arbitration	Y	Thanet Coast Project and the management system provide a platform for supporting disputes and for gaining independent expert advice if required.
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Legal

17. Hierarchical obligations	Y	The MPA was designated under the Habitat's Directive and therefore is obliged to implement directives under a legal requirement.
18. Capacity for enforcement	Y*	This MPA is heavily reliant on coastal warden volunteers for enforcement due to lack of resource, but they do not have enforcement powers. The voluntary warden scheme needs to be continued but also augmented with more enforcement by government agency staff
19. Penalties for deterrence	Y*	As part of the legal framework of the Habitat's Directive there are penalties for infringement which can act as a deterrent, although they are unlikely to deter those who are taking part in disturbing activities as they are unlikely to be caught and prosecuted.
22. Cross-jurisdictional coordination	Y*	Collaboration with many organisations, authorities and stakeholder group through the management structure has been effective for this MPA, although there are sometimes disagreements regarding responsibilities regulating certain activities.
23. Clear and consistent legal definitions	Y	All legal definitions are clearly outlined in the management framework.
24. Clarity concerning jurisdictional limitations	Y	Climate change and pollution from local shipping channels (the English Channel) are concerns but are also recognised as conflicts that are beyond the control of the Management team and this MPA, although the decision to adopt an ecosystem management approach goes some way to addressing some of these concerns.
25. Legal adjudication platforms	Y	All legal matters are dealt with under government law or as determined under the Habitat's Directive, and there are appeal mechanisms
26. Transparency, accountability and fairness	Y	Collaboration with locals and the ability to raise issues with the Thanet Coast Project officer provides a fair and transparent situation. Regular newsletters and articles from the stakeholder meetings increase transparency.

Participation

27. Rules for Participation	Y	A designated management structure was implemented, using a management scheme framework within the Habitats Regulations, for collaboration, providing success for the MPA and allowing all stakeholders to understand the rules of engagement.
28. Establishing collaborative platforms	Y	Public consultation with the wider community and related working groups of stakeholders have allowed significant involvement in planning and implementation of the plan. The high level of collaborative management has led to a high level of trust between relevant authorities and the local population.
29. Neutral facilitation	Y	Independent facilitators from the Environment Council (now dissolved) facilitated the initial workshops
30. Independent arbitration panels	Y	The Thanet Coast Project panel acts as a go-between for stakeholders and provides the role of independent arbitrator for the MPA.
31. Decentralising responsibilities	Y	The creation of the Thanet Coast Project decentralised the core management responsibilities of the MPA, whilst maintaining a degree of authority by higher level state within the management structure under the Habitats Regulations.
32. Peer enforcement	Y*	A Coastal Warden's Scheme helps with monitoring and conducts peer enforcement and this participatory process has created a sense of ownership of the scheme among stakeholders. Each warden is assigned a section of coastline to carry

		out regular surveys and report on illegal and anti-social behaviour. However, there is a lack of power for enforcement if transgressors are identified.
33. Building trust and the capacity for cooperation	Y	Regular stakeholder meetings (at least every 6 months) allow stakeholders to feed back into the management group. The Thanet Coast Project Officer is constantly available to discuss issues related to the management of the site. There is a sense of ownership within the community which encourages cooperation and trust between stakeholders.
34. Building linkages between relevant authorities and user representatives	Y	The management structure incorporates Local Authorities and user representatives from port and fisheries authorities. It is important that these relationships are maintained to resolve any conflicts that may occur between fishing and conservation and to continue effective decision making and management.
36. Potential to influence higher institutional levels	Y	Poor relationships that had existed previously were overcome by collaboration and inclusion helping to drive through the designation, allowing the local community to influence the government in a co-evolutionary manner.

Cross-cutting themes:

Leadership

The management structure and the role of the Thanet Coast Project Officer provides a clear direction for leadership for this MPA, which has successfully improved relationships between authorities and local communities.

Stewardship

Getting the balance right between stakeholder participation and government control has been crucial to stakeholder satisfaction. To maintain balance, it is essential for stakeholders to retain a sense of ownership over the site and the management scheme.

4. The Wash European Marine Site, UK – Peter Jones, report (2011, pp. 40-59) drawing on PhD thesis by Roberts (2009), with some updates on recent developments

Name	The Wash European Marine Site, UK	Year of designation	1996
Area	1078 KM ²	State Capacity	1.42 (rank 87.3%, 2016)
GDP Per capita	\$41,400 (2015)	Human Development Index (HDI)	0.909 very high (2015)
GDP Growth Rate	2.2% (2015)	Population below the poverty line	15% (2013)

The Wash and North Norfolk Coast European Marine Site is a rural area with the local population mostly employed in tourism, local government/utilities, port operations, agriculture and fishing. The fishing industry is worth ~£4m per annum with around 90 vessels, specialising in shrimp, cockle and mussel fishing. Traditional activities, including those based on common rights, such as samphire gathering, bait digging, wildfowling and shellfish farming/gathering, are a particularly important aspect of the local culture and economy.

MPA Objectives:

Conservation	Operational
Protection of sandbanks, slightly covered by sea water all the time; Mudflats and sandflats not covered by water at low tide; large shallow inlets and bays; Reefs; Salicornia and other annuals colonising mud and sand; Atlantic salt meadows, Common seal; Shell fishing – Cockles and Mussels The Wash – Little tern and common tern, plus overwintering populations of 19 other species N Norfolk Coast – Marsh harrier, Bittern, Sandwich tern, Little tern and overwintering populations of 5 other species Gibraltar Point – Little tern and overwintering populations of 3 other species	

Drivers and Conflicts:

- There are a range of impacts creating vulnerabilities, such as disturbance by recreational activities and low flying military aircraft, wind farm and gas developments, diffuse agricultural pollution and shipping incidences. However, the main impacts are related to shell fishing, particularly cockles and mussels.
- There is increased market demand for ‘clean’ large mussels from the lays (ranching) and there are declines in yield from natural mussel beds due to a combination of factors, but predominantly overharvesting. Increased technological capacity such as automatic mussel graders and equipment to lay and recover mussels have contributed to the overharvesting. The mud flats and sand flats were deemed to be in an ‘unfavourable declining’ condition because of overharvesting.

Governance Framework/Approach:

Government-led – Based on the European Marine Site partnership policy (Jones and Burgess 2005), a management structure was created consisting of a Core Management Group (six main relevant authorities, local fisheries authority, local land planning, port and nature conservation authorities and the Environment Agency), a Management Group (members of the Core Management Group, representatives of common rights holders and chairs of advisory groups) and Advisory Groups for three distinct geographical areas (including fishermen, farmers and landowners). It was recognised that relevant authorities couldn’t achieve targets without the support of local users.

Effectiveness: 3 - effective in addressing key conflicts between shell fish exploitation and biodiversity conservation.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic – These incentives were least applied in this MPA

Incentive type	Used	How/Why
2. Assigning Property Rights	N	Fishing licences provide access to certain users, but property rights are not formally allocated to harvesters
4. Promoting profitable and sustainable fishing and tourism	Y	Fishermen recognise that shell fish stocks benefit from increased spawning stock biomass, but this has not been used as a means of promoting the recovery plan or the EMS
5. Promoting green marketing	N	There have not been any initiatives to promote the green marketing of shellfish derived from The Wash through local marketing schemes
7. Providing compensation	N	It is the government’s implicit policy not to compensate fisheries exploiters for restrictions imposed by the state to conserve what is recognised as a public resource (Jones 2009). Any concerns about inequities resulting from this lack of compensation appear to have been overcome by the scale and profitability of the mussel farming operations coupled with the mitigating factors such as improved catches, higher prices, etc.
9. Provision of state funding	Y	The MPA is reasonably well funded through the partnership with relevant authorities, with each contributing to the funds to employ an EMS project officer and to support the EMS governance structure and processes. The local sea fisheries authority has sufficient funding to undertake its regulatory functions.

Communication

11. Raising awareness	Y	Market research influenced a marine campaign to increase the engagement levels ‘selling’ our underwater landscapes through posters and staging ‘underwater flight’ simulations through such landscapes at public events, such as dive shows. The creation of graphics and artworks to promote biodiversity values of EMS were used through various media
12. Promoting recognition of benefits	Y	Success of the shell fish recovery programme was promoted as having improved sustainability of shell fisheries within the EMS
Promoting recognition of regulations and restrictions	Y	All fishermen with licenses for the area are directly informed of any revisions to fishing restrictions related to the MPA, along with public notices, web sites, etc

Knowledge

14. Promoting collective learning	Y*	Conflicts between ‘local knowledge’ and ‘scientific knowledge’ is one of the biggest causes of tension between stakeholders and managers. Fishermen and other user groups perceive their knowledge and experience is not taken seriously and in many cases, appears to be the main reason they are unwilling to engage with the EMS. The need to fulfil imposed obligations (Birds Directive and Habitats Directive) has arguably led to greater emphasis being placed on ‘scientific’ rather than local knowledge. The inclusion of local knowledge and strengthening of these relationships would support a more effective governance approach.
15. Agreeing approaches for addressing uncertainty	Y	An ad hoc scientific advisory panel was formed to support decision-making by collating and summarising the current state of knowledge on particular issues and identifying priorities for future research to recognise and reduce uncertainty. The importance of taking precautionary decisions in the face of uncertainty is recognised in the management plan and other EMS policies.

16. Independent advice and arbitration	Y	Independent, external and respected experts, trusted by both sides are commissioned to undertake research to address specific questions and when there is a dispute that needs settling.
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Legal – these were the key drivers in this MPA

17. Hierarchical obligations	Y	Designation occurred under the Habitats Directive and therefore there are obligations to implement the directives as a legal requirement
18. Capacity for enforcement	Y*	Enforcement is undertaken primarily by the regional inshore fisheries authority. iVMS using smartphone technology rather than satellite GPS is planned, to promote compliance of vessels and increase enforcement capacity. VMS is installed on all fishing vessels in and around the EMS. Fishermen are supportive of the initiative and that it will ensure that all comply with the restrictions
19. Penalties for deterrence	Y	This is managed under the Habitats Directive with potentially high penalties for infringement
20. Protection from incoming users	Y	It is legally feasible for UK registered fishers from outside the area to secure a licence from the local fisheries authority to fish within the area, and some vessels are registered at fishing ports outside the area, but the local fisheries authority has gained a Regulating Order for the Wash which provides them with the powers to restrict access to the Wash to a certain number of licensed vessels, so fishers within the area have protection from incoming fishers, though this protection has not, in this case, been conferred by the MPA designation.
22. Cross-jurisdictional coordination	Y	The advisory council and management group requires collaboration across several authorities, agencies and law enforcement units and the cross-sectoral obligations provide for this.
23. Clear and consistent legal definitions	Y	All relevant authorities have a clear role and their obligations are clarified in detail in various official document for the designation and management
24. Clarity concerning jurisdictional limitations	Y*	There is recognition that for example, with creation of offshore wind farms, the designation does not confer any additional protection from such proposals. However, there is frustration that this designation does not provide for resisting such proposals. More could be done by the NCA to communicate that they are actively engaged in requiring ‘appropriate assessments’ from proposed wind farm developers, objecting to proposals, placing conditions on developments etc to allay some concerns.
25. Legal adjudication platforms	Y	A public inquiry process was utilised (2006) in relation to a proposal to deploy bird scarers around mussel ranches and its recommendation to the government to reject the proposal was upheld. Public inquiries were a widely utilised and respected adjudication platform for planning matters, but the decision was ultimately made by the government
26. Transparency, accountability and fairness	Y	A public inquiry allows for transparency and a fair process to be carried out. An example was used with mussel farmers appealing against the license to use bird scarers. There was a transparent process with a detailed decision and it was justified in a clear manner. There is also a process for participation through postal consultations which is a transparent process.

Participation

27. Rules for Participation	Y	It is understood that most users will participate through postal consultation exercises concerning specific proposals and all the consultation responses are summarised along with an explanation of the basis of the final decision by the relevant authority.
28. Establishing collaborative platforms	Y	Postal consultations are employed to gain detailed feedback and suggestions on EMS governance proposals. Postal consultations have also been an important means of raising awareness amongst the wider user community. A key factor

		behind this is that such proposals have already been discussed by the advisory groups, which include representatives of most key user groups, so this appears to have contributed towards developing proposals that consider different perspectives amongst different users. The confidence that many users have that their perspective is actually represented on the advisory group through their representatives appears to be reasonably high. Whilst objections to and critical questions about proposals consulted upon by post are still forthcoming, they are taken into account in the deliberations and decisions of the management group.
29. Neutral facilitation	N	The chairs of advisory groups and management groups function as facilitators and whilst they may not be formally recognised or trained as facilitators and arguably are not 'neutral', their approach to chairing meetings and facilitating meetings appears to have been successful in that there have been no calls or recognised needs for bringing in 'neutral facilitators'.
31. Decentralising responsibilities	Y	There are some decentralised responsibilities held by the advisory groups who play an important role, as various tasks are delegated to them, such as addressing questions and providing local user information on certain issues. They are also encouraged to develop EMS management ideas/proposals for consideration by the management group, and are consulted on ideas/proposals developed by the management group. However, even though the advisory group chairs sit on the management group, the top-down nature of this 'statutory partnership' means that responsibilities and powers related to the EMS can never be entirely delegated/devolved to the advisory groups. This is made clear through the agreement that specifies the roles of the advisory groups.
33. Building trust and the capacity for cooperation	Y	Given the historical lack of a role for the NCA due to the lack of designations that affected marine activities, many users of the site were very suspicious of the nature conservation officers and the role of their agency. Trust in the conservation officers is developing as is trust in the second project officer, who was employed by the EMS partnership, rather than the NCA. This relatively neutral role is one of the factors that has led users to trust him a great deal more and act as a mediator.
34. Building linkages between relevant authorities and user representatives	Y	The personal links that have been established between the project officer and key representatives of local users and relevant authorities appear to have been a factor behind the partnership being resilient enough to withstand the tensions related to the public inquiry. Personal links have also been established and strengthened amongst relevant authority and user representatives, which have also contributed to the resilience of the partnership. Though the strength of such links and their contribution to improving the resilience of the partnership, ie bracing social capital, is too intangible to objectively measure, the view gained through interviews with people involved in the W&NNC EMS partnership is that such linkages have been important in developing and strengthening the partnership. The chair of the EMS management group is the chief fishery officer of the local sea fisheries authority. This has helped a great deal in strengthening the partnership, particularly of building constructive links with local fishermen.
35. Building on local customs	Y	Traditional methods for hand gathering of mussels were allowed to continue and fishermen even proposed a lower TAC than the fisheries agency proposed as it fulfilled their local market requirements.

Cross-cutting themes:

Leadership

This was a critical positive factor that was demonstrated at all levels and has been critical to the success of this MPA, arguably ultimately related to and supported by the obligations under the Habitats and Birds Directives. The Habitats and Birds Directives and the related obligations and enforcement capacity afforded by the European Commission gave strong legal leadership – strong federal lead. The UK government, which is considered by some to 'gold-plate' European Directives,

transposed these obligations and provided strong enforcement capacity, due largely to their obligations as part of the European Union, which have been reinforced by the threat to refer the UK government to the European Court of Justice for weaknesses of fishery restrictions to protect EMSs, leading to strengthening of these restrictions through a 'revised approach' (Clark et al 2017). The local sea fisheries authority had demonstrated a commitment to implementing the designation for both fisheries and biodiversity conservation objectives, where fisheries authorities for other EMSs in the UK have refused to take on and fulfil these obligations. There was also effective coordinating and bridge-building from the EMS project officers.

Role of NGOs

The Royal Society for the Protection of Birds (RSPB) has been a key ally of the NCA, providing considerable support at the public inquiry and in various other ways, including support for the EMS project officer in developing positive links with users such as wildfowlers. Some fishermen, however, resent the interference of this NGO, particularly in undermining the validity of local knowledge and support for the fishermen.

Equity issues

Though fishermen consider that a lack of financial compensation for fishing restrictions represents a social injustice, there are alternative livelihoods within and beyond the fishing industry and a social welfare system that provides a 'safety net'. Whilst equity issues are raised by this case, they are not to the same degree and extent as equity issues in less economically developed countries where there is a more critical reliance on harvesting marine resources for subsistence and livelihood.

Stewardship

The designation of this site as subject to biodiversity obligations to the EC has undermined many direct users' sense of ownership of the area. There is, however, a growing acceptance among many extractive users that compatible economic development opportunities are provided for through the EMS governance approaches. It must also be stressed in this respect that the fisheries were always a public resource to which the fishermen were a granted access rather than proprietorship. The biodiversity conservation obligations continue to lead to restrictions on the activities of some fishermen, over and above those that would be imposed purely for fisheries conservation objectives, and these continue to undermine their sense of proprietorship, though some fishermen feel that they now have a more responsible role as stewards on behalf of future generations of fishermen. The restriction of access rights to certain fishermen that the regulatory order reinforces, however, has reinforced the proprietorship of many fishermen. Many non-extractive users e.g. recreation, wildlife appreciation, tourism, have had their pride in and proprietorship towards the EMS strengthened by this designation. Overall, the emphasis on participation as a means to deliver obligations has assisted in minimising the potentially undermining effects on proprietorship of this imposed designation.

5. The Sanya Coral Reef National Marine Nature Reserve, China – Wanfei Qiu, PhD research (2010), Paper (2013)

Name	The Sanya Coral Reef National Marine Nature Reserve, China	Year of designation	1990
Area	55.68 KM ²	State Capacity	-0.42 (ranking 40.2%, 2016)
GDP	\$3,744	Human Development Index (HDI)	0.727
GDP Growth Rate	16.8%	Population below the poverty line	6.1

MPA Objectives:

Conservation	Operational
To preserve national habitats within the SCRNMNR and to maintain or restore the status of coral reefs and other habitats within the SCRNMNR	To promote sustainable ecotourism activities within SCRNMNR, under the condition that the natural growth and reproduction of coral reefs is maintained and to enhance socio-economic development and environmental protection in Sanya
	To develop SCRNMNR into a base for marine research and environmental education and to manage it to become a model MPA in China.

Drivers and Conflicts:

- Increased tourism is coming from domestic demands as standards of living have increased in China – foreign tourism makes up only 8.5%. This has increased infrastructure development, the building of a marina, hotels and outdoor swimming pools. Diving and snorkelling, anchoring and sedimentation are all directly damaging reef habitats. As tourism increases, all of the conflicts are expected to also increase if measures are not implemented.
- All fishing is prohibited in the SCRNMNR under official regulations, but small-scale and recreational fishing still occurs with gill nets, hook and line and fish traps. Blast fishing still occurs despite a ban on the manufacture and use of explosives. The disappearance of high value species could be responsible for outbreaks of crown-of-thorns starfish. Over-fishing and destructive fishing practices have resulted in prolonged impacts on reef habitats and associated biological communities.
- Mariculture is widely practiced and waste is discharged without treatment, leading to water pollution in the surrounding area. In recent years, the growth has reduced. As tourism has increased there has been a 75% reduction in full time fishers.
- Coastal development has resulted in water pollution and increasing levels of terrestrial run off. There is a lack of sewage treatment capacity in Sanya, though there were plans for six new sewage treatment plants to be initiated (2009).

Governance Framework/Approach:

Government Led – Designated by Central Government, with management decentralised to local government with significant influences from private organisations, although they do not have decision-making powers. Central government can intervene if there is a serious public concern or conflict. SCRNMNR Management Authority was created as a unit within the Sanya Ocean and Fisheries Bureau, under direct supervision of the Sanya Municipal government. Later, to strengthen the authority's legal power and coordination with provincial and central governments, it was taken over by Hainan Province Ocean and Fisheries Department with a delegate from the department appointed as director of SCRNMNR Management Authority. A lack of higher level government investment leads to reliance on local resources and institutions for enforcement, but local government and developers then use their power and influence to promote economic development, often at the cost of the environment and local communities.

The State Oceanic Administration retains final decision, but rarely conducts independent investigations and usually follows recommendations from the provincial government, who are required to consult with the local government, resulting in many powers in reality resting with the SCRNMNR Management Authority and the municipal government. The participation of local communities is limited, other than opportunities for alternative livelihoods and coral conservation.

Effectiveness: 2 – Some impacts are partly addressed but some impacts are not yet addressed.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic – These incentives were the main mechanism for addressing conflict between nature conservation and local development. Fairer distribution of benefits from tourism improved the effectiveness of economic incentives

Incentive type	Used	How/Why
2. Assigning Property Rights	Y	Property rights/sea user rights were issued for tourism development providing the incentive to better manage resources within the tourism area eg, Yalongwan Underwater World Corporation gain user rights for 7.6 ha of sea in the experimental zone of SCRNMNR, subject to a 3-year renewal. They protect the rights of tourism companies from competitors and provide them with the incentive to invest in the protection of coral reef habitats, on which the diving industry depends.
3. Reducing the leakage of benefits	N*	Tourism development has made some areas inaccessible to local fishermen and some coastal farming land has been leased to tourism developers, which is impacting livelihoods but the benefits are going to corporate tourism companies and not the local communities.
4. Promoting profitable and sustainable fishing and tourism	Y*	Tourism can, if well managed, provide more sustainable ways of non-consumptive resource exploitation, but there are risks of impacts from unregulated tourism activities exceeding the impacts of small-scale fishing over time.
6. Promoting diversified and supplementary livelihoods	Y	Tourism development increased the average income of local residents and local employment reached 90%, mainly through tourism related jobs. There was a huge decline in coral reef mining and fishing pressure in nearby coral reefs.
8. Investing MPA income/funding in facilities for local communities	Y	Income from the MPA is going to developers and tourism operators, not the local community, but they have in turn invested in the local infrastructure providing schools, roads, piped water and electricity
9. Provision of state funding	Y*	Mostly funded by tourism developers, more funding is needed from central and provincial governments to provide funding to better support the fulfilment of the MPA's conservation objectives
10. Provision of NGO, private sector and user fee funding	Y*	Funding comes mainly from the private tourism sector, but there is a risk of institutional capture which is leading to a shift of power which is undermining the fulfilment of the MPA's conservation objectives

Communication

11. Raising awareness	Y	Education and outreach programmes – Ocean day events and talks in secondary schools – are held by the SCRNMNR Management Authority on biological features of coral reefs and the importance of protecting coral reefs and other marine resources.
12. Promoting recognition of benefits	Y	Booklets are created to inform on ecosystem services provided by coral reefs which are distributed in the local community
Promoting recognition of regulations and restrictions	Y	Wardens, including those employed by tourism companies, make fishers and tourists aware of restrictions, along with leaflets, signs, etc

Knowledge

14. Promoting collective learning	N*	There is a lack of systematic monitoring, including a failure to involve fishers and tourism companies in monitoring
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Legal

17. Hierarchical obligations	Y*	International environmental obligations and national/regional/local hierarchy for regulations and decision making could be leveraged more to support the enforcement activities and empowering the SCRNMNR Management Authority, as there is political influence by local vested interests in tourism development.
18. Capacity for enforcement	Y*	Decentralisation has impacted the decision-making capabilities and a lack of funding and government capacity is restricting enforcements
19. Penalties for deterrence	N*	Fishing and other forms of direct use of marine resource are legally prohibited in nature reserves, however there are no guidelines on how this should be managed or enforced.
20. Protection from incoming users	Y	Any enforcement carried out mainly targets non-local fishing boats and tourism activities outside SCRNMNR
21. Attaching conditions to use & property rights, decentralisation, etc	Y*	Tourism user rights had several conditions attached, particularly that the developments comply with the MPA restrictions, and whilst it is debatable whether this condition has been met, the state could require compliance or withdraw the rights when they come up for periodic review. The introduction of 'sea user rights', new tourism activities or the extension of existing ones are subject to approval from the State Oceanic Administration.
22. Cross-jurisdictional coordination	N	Nothing formal is set up and the management structure is restrictive to full cooperation and coordination
23. Clear and consistent legal definitions	Y	These are established under the Regulation of Nature Reserves and the Law on Marine Area User Rights. However, the regulatory framework is very vague regarding how the conflict between biodiversity conservation and local development needs can be addressed.
26. Transparency, accountability and fairness	N*	There is a lack of systematic monitoring and results are not made available or, it would appear, used to inform decision-making. There is no statutory requirement for involving local communities and other resource users in management and decision making processes of MPAs in China

Participation

27. Rules for Participation	N	Other than decision making being decentralised to an extent, there are no other rules for providing for the participation of local people in decision making
28. Establishing collaborative platforms	N*	There is a need for collaborative platforms to provide for the involvement of non-tourism related local people in deliberations/decisions
31. Decentralising responsibilities	Y*	Some responsibilities have been decentralised, although the state still retains decision making power. The balance of power has gone too far towards municipal government and related corporate tourism developers and this is arguably undermining the fulfilment of the MPAs conservation objectives through the growing impacts of tourism. In this case there is a need for some central state oversight and steer to keep decentralised decision-making on track towards better achieving the conservation objectives

32. Peer enforcement	Y	The small amount of enforcement at SCRNMNR has been supported by local institutions, the Sanya Ocean and Fisheries Bureau, local police force, local village committees and tourism developers, the latter employing the majority of the wardens related to hotels
33. Building trust and the capacity for cooperation	N*	There is little if any involvement of local communities and the power lies with those who have a vested interest in development and not necessarily in the objectives of the MPA. Trust needs to be rebuilt with non-tourism related local people.
34. Building linkages between relevant authorities and user representatives	N*	Strategic links with key representatives, other than corporate tourism representatives, could improve wider participation and cooperation from communities and more equitable sharing of benefits from development and conservation.
35. Building on local customs	N*	There needs to be recognition and protection of legitimate rights of traditional resource users and equitable sharing of benefits

Cross-cutting themes

Leadership

Weak leadership from the central government, particularly the State Oceanographic Administration, is manifest in the ambiguous legal and policy framework, a lack of funding and resources for MPA management, and ineffective law enforcement. Considering that the SCR-NMNR is a national nature reserve and under the central government’s jurisdiction, strengthened leadership from the central government is clearly warranted, which is particularly important in China given the influence of local vested interests on MPA governance and a lack of non-governmental organisations dedicated to marine conservation in China. The introduction of ‘sea user rights’ and nation-wide marine spatial planning schemes, and the legal authority granted to the State Oceanic Administration through these new legislations, provide opportunities for the agency to lead in establishing marine governance systems responsive to the strategic needs of marine conservation in China. Maritime sectors contribute 9.7%, or approximately 718 billion USD annually, to the nation’s economy and it is important to reinvest a portion of this wealth in improving the ecosystem services that sustain many maritime industries. Leadership by the central government will be essential to achieve this, including overcoming local vested interests, particularly between tourism development and local government.

Equity and stewardship

An inability to address issues relating to equity and stewardship is leading to the loss of community access to vital resources, as a result of tourism development. By allowing tourism but prohibiting other types of traditional, small-scale resource use in official MPA regulations, the SCR-NMNR may have become a vehicle for further depriving local communities of legitimate access to natural resources through displacement by tourism. Access to natural resources has always been a highly contested issue in China, and it is yet to be seen if the introduction of ‘sea user rights’ helps promote transparency and incorporate social and environment objectives in the allocation of such rights for corporate tourism developments. The legislation on ‘sea user rights’ also allows such exclusive rights to be granted to local communities for fishing and various other activities, either on an individual or collective basis, to protect the legal rights of resource users and to enhance local stewardship and incentives for sustainable resource management. However, such ‘sea user rights’ have not been discussed as a means to enhance local stewardship in MPA management, as most small-scale activities, including fishing, are officially prohibited under current MPA regulations. Underpinning this issue is the need for substantial changes in environmental legislation in China which respect the rights of small-scale and traditional marine resource users while maintaining a reasonable balance between sustainable resource use and conservation. Having clearly delineated and regulated areas open to small-scale fisheries, based on territorial fishing rights, may be a better option compared to the current situation, in which small-scale fishing is in fact allowed anywhere in the MPA other than those areas ‘regulated’ by tourism developers. The exclusion and removal of local people from tourism development zones, coupled with their persecution for protesting, has led to injustice and inequity concerns.

6. Seaflower Marine Protected Area, Columbia – Elizabeth Taylor, Mark Baine, Marion Howard and Annette Kilmer. Paper (2013)

Name	Seaflower MPA, Colombia	Year of designation	2005
Area	65,000 KM ² (in 3 sections)	State Capacity	-0.18 (rank 45.1%, 2016)
GDP	\$8,900	Human Development Index (HDI)	0.72
GDP Growth Rate	3.5%	Population below the poverty line	27.8 %

MPA Objectives:

Conservation	Operational
Preservation, recovery and long-term maintenance of species biodiversity, ecosystems and other natural values including special habitats – Coral reef, mangrove and sea grass ecosystems.	Promotion of sound management practices to ensure long-term sustainable use of coastal and marine resources
	Equitable distribution of economic and social benefits to enhance local development
	Protection of rights pertaining to historical use
	Education to promote stewardship and community involvement in management

Drivers and Conflicts:

- There is over exploitation of marine resources from artisanal and industrial fishing and uncontrolled subsistence gathering along the coast and in shallow waters. Development of the industrial fishery sector, both national and international, creates conflict between industrial and artisanal fishers, due to poor enforcement and a lack of local benefits and failure to acknowledge and respect traditional fishing rights.
- High density population and a steady influx of migrants from the mainland have led to extreme competition for scarce resource. It has increased coastal development, while spreading urbanisation and deforestation are also negatively affecting Seaflower’s ecosystems and biodiversity through sedimentation from erosion. Poverty and growing food insecurity have serious repercussions on the coastal and marine environment.
- Water quality is improving from better managed waste disposal on land, but there is still uncontrolled dumping of solid waste, discharge of liquid waste and run-off of contaminated storm water.
- Unsustainable tourism practices, such as poor diving techniques, groundings from watercraft and overuse of popular sites directly impact biodiversity and marine ecosystems. Whilst smuggling of drugs has increased militarization of the archipelago which is impacting the expansion of marine and dive tourism.

Governance Framework/Approach:

Decentralised - CORALINA is the regional autonomous government agency responsible for implementing international and national laws and policies in the archipelago. The MPA was driven by community response to local needs, but designed in accordance with the relevant framework for marine conservation and managed to advance directives and guidelines related to conservation and sustainable development. An area in the Central Section, Old Providence McBean Lagoon, maintains administration with the National Natural Parks System, working closely with CORALINA. Fisheries Management is still controlled separately with the Departmental Fishing Board, of which CORALINA is a member. The MPA is managed in accordance with UNESCO guidelines and the Man and the Biosphere Program’s integrated approach that links conservation with economic and social development.

Effectiveness: 1 – Some impacts are beginning to be addressed. Lack of staff and budget combined with weak institutions and coordination has curtailed CORALINA’s ability to achieve MPA objectives.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	Y*	Work is being done here to strengthen local control over resources (traditional property rights) for raizales.
3. Reducing the leakage of benefits	Y	Several artisanal fishing zones for exclusive use by traditional fishers are located adjacent to the no-take-zone to ensure that the benefit of any export/spillover go mainly to local fishermen. Jobs related to the MPA are only given to island residents.
4. Promoting profitable and sustainable fishing and tourism	Y*	Work is done with the local fishing cooperatives to promote the idea of sustainable fisheries and to explore alternative livelihoods to reduce pressure on fish populations.
5. Promoting green marketing	Y	CORALINA has provided small business and marketing support to develop green markets. Markets have been developed for seafood sourced from the MPA as a green sustainable product.
6. Promoting diversified and supplementary livelihoods	Y	CORALINA works with local fishing cooperatives and trains fishers in underwater photography and as tour guides, exploring low-tech aquaculture and providing small business and marketing support to help develop green markets. All MPA jobs go to the local community, reducing unemployment and creating sustainable income opportunities. Pilot projects are developed with vulnerable stakeholders, including setting up a community run mangrove park, seaweed, breadfruit and iguana farming, as well as marine tourism led by artisanal fishers.
8. Investing MPA income/funding in facilities for local communities	N	CORALINA supports the local community where possible with limited funding.
9. Provision of state funding	Y*	There is a lack of sufficient funding for the MPA and is expected to cover sustainable livelihoods development, creation of new jobs, revenue generation as well as meeting conservation objectives. The lack of financial resources for MPA management has been the major factor limiting and defining which incentives have been most used.
10. Provision of NGO, private sector and user fee funding	N*	Some funding received from GEF to assist, but there are no frameworks for regular income. CORALINA is introducing diverse mechanisms to generate revenue including an entrance fee, payment for ecosystem services, licensing fees, a trust fund and fines and compensation for damages.

Communication

11. Raising awareness	Y	A number of methods are used to create public awareness and are a major component of the MPA Programme. Information is made available, events are run, presentations are held and formal school curricula content has been created on coastal and marine ecosystems.
12. Promoting recognition of benefits	Y	The benefits of protection are communicated through the various methods stated above.
Promoting recognition of regulations and restrictions	Y	The rules and regulations of a site are communicated to locals through the same methods as noted above.

Knowledge

14. Promoting collective learning	Y	This is central to the approach, utilising both indigenous and technical knowledge. All stakeholders can voice their opinions and have an opportunity to be consulted and have their ideas incorporated into MPA planning, management, education, research and monitoring. Scientists, managers and MPA users regularly work together on initiatives. Joint planning
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		workshops between users and scientists helped build trust which in turn promoted the sharing of knowledge as a basis for MPA design.
16. Independent advice and arbitration	Y	Advisory committees with representatives from institutions and marine user groups, plus an International Advisory Board (IAB) who can be solicited for advice by CORALINA at any time at the request of the MPA project team, the Stakeholder Advisory Committee (SAC) or the Inter-Institutional Committee (IIC)

Legal

17. Hierarchical obligations	Y	There are many directives that this MPA is associated with and therefore has a number of legal obligations at varying levels: Millennium development goals, CBD, ILO Convention 169, UN Declaration on the Rights of Indigenous Peoples, UNEP Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region. CORALINA was successful with legal action to prevent the state going ahead with proposals to license oil exploration and production activities in the MPA on the grounds that it would breach CBD obligations.
18. Capacity for enforcement	N*	Colombia commits substantial resource to marine enforcement related to trafficking of drugs, arms and humans, however little funding, time and effort remain to tackle issues of marine issues such as illegal fishing. Management is actively working to improve enforcement through an array of soft and hard methods executed by MPA personnel and community support teams. MPA rangers selected from small scale fishers were trained and hired to bring infractions to the authorities and to educate and reach out to reduce the number of infractions. They do not have the power to make arrests. Community based enforcement will continue to be introduced, including joint patrols, volunteer inspections, citizen observers on commercial fishing vessels. Community support teams to work with MPA rangers and community surveillance on land.
19. Penalties for deterrence	Y*	The legal procedures are well defined with a graduated penalty structure and an education-based approach. Lawyers and managers are very accessible to the public. Legal procedures need to be streamlined to become more efficient.
20. Protection from incoming users	Y	Enforcement and associated penalties cover incoming users as well as locals. All boundaries were being incorporated into nautical charts.
22. Cross-jurisdictional coordination	Y*	CORALINA is responsible for all environmental planning, management and education, as well as being the sustainable development agency, placing it in an excellent position to work with a range of other authorities at departmental, regional and national levels. CORALINA strives to promote partnerships with other government institutions, but state capacity is limited, as is political will.
23. Clear and consistent legal definitions	Y*	This could benefit from some simplification for enforcement and penalties
25. Legal adjudication platforms	Y*	A conflict resolution programme to support MPA management and decision making is to be developed and training in conflict resolution will be provided to stakeholders.
26. Transparency, accountability and fairness	Y	Informal public meetings are a regular feature of MPA management with open dialogue encouraged.

Participation

27. Rules for Participation	Y*	There are many opportunities where local community, stakeholders etc can all participate. There could however, be more formalised procedures for communicating how participation has been recognised in results and decisions made.
28. Establishing collaborative platforms	Y	Committee and open meetings, stakeholder workshops, training and special events, community outreach, consultations and neighbourhood programmes, all provide platforms for collaboration, planning and decision making.

29. Neutral facilitation	N*	This could improve effectiveness but has not been brought in, as no one is trusted to be neutral and there are no financial resources to bring in someone truly independent.
31. Decentralising responsibilities	Y	Many of the responsibilities and decision making powers have been given to CORALINA, allowing regional management whilst under national declaration.
32. Peer enforcement	Y	MPA rangers selected from small scale fishers were trained and hired to bring infractions to the authorities and to educate and reach out to reduce the number of infractions. They do not have the power to make arrests.
33. Building trust and the capacity for cooperation	Y*	Intrinsic to CORALINA's approach is to promote equity and justice – although this needs to be formally stated, structured and discussed.
34. Building linkages between relevant authorities and user representatives	Y*	CORALINA plays a central role in bringing together the necessary authorities and user representatives through a number of platforms. However, this could be improved to build better linkages between the raizales and the mainlanders. CORALINA strives to promote partnerships with other government institutions, but state capacity is limited.
35. Building on local customs	Y	This was a driving factor in the development of this MPA. The process emerged from the local community and the management structure is collaborative. There is respect for
36. Potential to influence higher institutional levels	Y	In collaboration with experts and the community, CORALINA developed Population Policies and an Action Plan. The Departmental Fishing Board is also working on improving fisheries management in collaboration with CORALINA. CORALINA was successful with legal action to prevent the state going ahead with proposals to license oil exploration and production activities in the MPA on the grounds that it would breach CBD obligations.

Cross-cutting themes:

Equity

The MPA mission statement includes – enhancing equitable benefits for the local community.

Leadership

There is weak leadership, as CORALINA lacks funds and technical support, but a stronger lead is required to help solve issues that originate in the nation and are identified as threats to MPA effectiveness and drivers of conflict.

7. Galápagos Marine Reserve, Ecuador – Veronica Toral-Granda, Alex Hearn, Scott Henderson, Peter J S Jones. Paper (2013)

Name	Galápagos Marine Reserve	Year of designation	1998
Area	140,000 KM ²	State Capacity	-0.53 (rank 31.4%, 2016)
GDP	\$7,500	Human Development Index (HDI)	0.732
GDP Growth Rate	3.7%	Population below the poverty line	25.6%

Designated to integrate a vital part of the Galápagos ecosystem into the terrestrial protected area and provide adequate protection for the biodiversity which is dependent on both land and sea for its survival and wellbeing.

MPA Objectives:

Conservation	Operational
To protect and conserve the coastal-marine ecosystems of the archipelago and their biological diversity, for the benefit of mankind, the local inhabitants, science and education.	Support of local fishers to maintain and improve their social and economic status, by ensuring fishing activities that are compatible with biodiversity conservation. Conserve marine-coastal ecosystems as the economic basis for controlled tourism and to prevent and mitigate any impacts caused by tourism. Promote science aimed at understanding marine biodiversity and areas and sites affected by human activities.
12 specific objectives include long term conservation of marine and coastal habitats, endemic and vulnerable species and resource species, including management actions for their recovery where necessary	Management must be participative and adaptive with the need for technical information on which to base decisions.

Drivers and Conflicts:

- Tourism is the main driver of the Galapagos economy and accounts for 78% of all employment, with less than 5% in fishing. Between 1992-2006, tourist numbers increased by 150%. The main effects are indirect from vessel groundings, fuel spills, population and infrastructure growth. The population grew from 6,000 to 25,000 during 1982-2012, through internal migration from mainland Ecuador, stimulated by tourism and fishing incomes. There has also been an increase in desire for a more affluent lifestyle rather than a subsistence 'sustainable island livelihood' lifestyle.
- International demands from Asian fish markets increased the fishing pressure and also raised local expectations as a result of lucrative but unsustainable fisheries. Collapsing stocks have hindered this to an extent, but recovery of fish stocks could see demand increase once again.
- There is relatively weak participation from the local community which provides a false perspective that there are insufficient benefits being accrued from supporting biodiversity conservation efforts. The lack of willingness to comply with regulations undermines the potential for benefits to support the local community and results in a leakage of benefits.

Governance Framework/Approach:

Decentralised - The marine reserve is designated under the Galápagos Special Law, with an emphasis on a more participatory approach through a devolved governance process. A Participatory Management Board (PMB) represents locals in the tourism, naturalist guide and fishing sectors. The science, conservation and education sector was formed in 2008 and is also expected to have a vote. The PMB meets monthly to agree management proposals on a consensus basis. The Inter-Institutional Management Authority (IMA) is the higher decision making body of the Galápagos Marine Reserve, which approves PMB decisions on which consensus

has been reached or takes them where consensus could not be achieved. It is presided over by the Ministry of the Environment, plus Tourism, Fishing and Defence Ministries. The local fishing sector, local tourism sector and environmental NGOs also have a representative. The Charles Darwin Foundation and Galápagos National Park Services play an advisory role.

Effectiveness: *2 Some impacts partly addressed but some impacts not yet addressed.* Some of the impacts of commercial fishing and tourism have been partly addressed, including through attempts to control internal migration through stricter controls, but many impacts remain to be addressed.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	Y	Rights to operate tourism vessels ‘Cupos’ are allocated to Galapagos residents.
3. Reducing the leakage of benefits	Y	Excluding incoming vessels by confining access to the MPAs fishing grounds to Galapagos vessels. Only allocating rights to operate tourism vessels to Galapagos vessels.
Promoting profitable and sustainable fishing and tourism	Y*	Closed seasons, restricted licences, etc. measures in place to promote sustainable fishing but these are undermined by the need for consensus, civil unrest when a fishery is closed, insufficient enforcement, etc. There are also concerns that tourism is transitioning to a more ‘mass’ model with greater impacts and lower income per tourist.
5. Promoting green marketing	N*	Potential for the green marketing of tourism and fish products is declining as the conservation status of fish populations and wider biodiversity declines, market demand for both being so large as to potentially be a driving force of depletions.
6. Promoting diversified and supplementary livelihoods	Y	Develop the capacity for local people to process, market and export seafood products in order to maximise their income from fishing and thereby reduce fishing pressure. This has included support for women’s groups interested in processing seafood products and value-added fishing products.
Provision of sufficient state	Y*	There is not enough funding from the government leading to a dependency on NGO funding. This is needed to improve governance and to provide increased political will
10. Provision of NGO, private sector and user fee funding	Y	Much of the research to inform the management of the MPA is funded by the Charles Darwin Foundation, which receives its support from other foundations and donors. Many of the initiatives to support the governance of the MPA through various incentives are NGO funded. There is investment for staffing of the Participatory Management Board and also to underwrite foregone fishing income for when fishers take part in PMB meetings. There is funding supplied from NGOs, however there is now an over reliance and dependency on this funding

Communication

11. Raising awareness	Y*	There is awareness provided through the Charles Darwin Research Centre informing visitors about the islands and the conservation efforts that are taking place, including some focus on specific programmes of activity and outreach programmes by the Ecuadorian Navy. However, there is a need to scale up the efforts to increase awareness to promote pride in and ownership of the GMR
Promoting recognition of regulations and restrictions	Y*	Efforts are made to ensure that locals and tourists are aware of restrictions on their activities at sea but there is much scope for improving recognition of such restrictions in order to help promote cooperation and compliance

Knowledge

14. Promoting collective learning	Y*	Fish stock monitoring undertaken with the participation of fishermen. Both scientific and local knowledge is drawn upon to support decision making. Science is continually rejected in favour of a belief that natural occurrences alone are responsible for the depletion of fish stocks and biodiversity. Fisheries databases need updating to be able to effectively provide effective data.
15. Agreeing approaches for addressing uncertainty	N*	The management plan stipulates that the precautionary principle must be taken into account in decision-making, but in reality many decisions are compromised either by a lack of precaution when they are being taken or a lack of implementation, one of the grounds for the latter being uncertainty.
16. Independent advice and arbitration	N*	The Charles Darwin Foundation and the GNPA are utilised as an advisory board, but in reality this does not operate effectively.

Legal

17. Hierarchical obligations	Y	The GNPS has legal powers and has encouragement and support from international organisations, such as UNESCO World Heritage Committee, CBD and conservation NGOs. However, the political instability in Ecuador is an underlying factor that is preventing much of the implementation required to make this marine reserve effective. Designated under a specific national law for this MPA but there is a lack of clear national strategic steer through obligations for MPAs in general. The disproportionate political influence of the Galápagos electorate is a factor that has led to some MPA objectives being undermined by other political priorities, but interventions from an international level under the World Heritage Convention have been very significant in prioritising MPA objectives over other national and municipal political priorities.
18. Capacity for enforcement	Y*	Enforcement is carried out by the Navy, but conflicts between the Navy and GNPS have led to breaches. It is a major challenge due to the size of the area, so a VMS system was implemented to aid that. This could be improved. VMS has helped exclude illegal incoming vessels and enforce restrictions on local vessels, and an Automatic Identification System (AIS) has recently been introduced to improve this, funded mainly by an NGO, but ensuring that these are fitted and operational on all local fleet vessels will be a challenge. IUU fishing by local and incoming fishermen remains a challenge due to a lack of capacity to intercept and detain vessels. There needs to be the inclusion of effective legal processes to prosecute transgressors and enforce penalties; NGOs are currently funding and supporting the development of such deterrence capacity
19. Penalties for deterrence	N*	The implementation of an automatic identification system (AIS) will assist to support evidence of transgressors but there needs to be adequate penalties for transgressors defined in the legal framework, coupled with the judiciary capacity to gain effective prosecutions and political will to apply penalties that are sufficient to deter offender and others
20. Protection from incoming users	Y*	A ban was enforced for incoming vessels and on long-lining/‘industrial fishing’ but illegal fishing still occurs from outside vessels. The tourism industry is under pressure from external pressures for growth.
21. Attaching conditions to use & property rights, decentralisation, etc	N*	The rights to operate tourism vessels (‘cupos’) include the condition that they cannot be rented to foreign-owned cruise vessels, but enforcement of this condition could be more effective. Wider initiatives to include property rights as a means to improve resource stewardship would need legally enforceable conditions regarding meeting pre-defined and agreed sustainability targets for tourism and fishing resources. Failure to meet the targets should lead to forfeiture of the property rights.

22. Cross-jurisdictional coordination	Y*	The creation of the PMB and the IMA provides an element of coordination between different authorities within the region. There needs to be a higher level of political will though and also there are often decisions made through various routes that undermine the effectiveness of the GMR. A lack of coordination between the GNPS, the navy, the air force and municipal governments has hampered enforcement but this is improving, with the encouragement of the World Heritage Committee and as Ecuador steadily recovers from a long period of political instability and chronic underfunding.
23. Clear and consistent legal definitions	Y*	The legal framework has been highly effective in reducing illegal fishing by large-scale, commercial vessels in the GMR. However, this could be improved with extension to the legal framework to ensure that all users deploy and properly maintain transponders on their vessels with failure to do so resulting in penalties.
26. Transparency, accountability and fairness	N*	There are often decisions made outside of the regulatory channels that have been put in place and there are concerns that such unofficial decisions are undermining effectiveness and equity

Participation

27. Rules for Participation	Y*	There are rules concerning who will participate and how they will participate in both the PMB and IMA but the need for consensus in the PMB is undermining the effectiveness of this decision-making body
28. Establishing collaborative platforms	Y*	The participatory management system aims to represent all key stakeholders which enables discussions and joint decision making. The inclusion of local recreational users of the GMR would help to improve the inclusion of the Participatory Management Board.
31. Decentralising responsibilities	Y*	Attempts for the PMB to manage some issues at a local level have been undermined by fishing associations who tend to resort to using their power of veto provided by the requirement for consensus on the PMB and to resorting to external support from mainland-based politicians to achieve their aims when they perceive that local processes are failing their short-term exploitation interests.
33. Building trust and the capacity for cooperation	N*	There is still considerable antipathy between fishing and the GMR actors, as well as amongst other actors including tourism, based on a history of protests, civil unrest and direct action by fishers.

Cross-Cutting themes

Equity – There have been stricter controls on internal migration from mainland Ecuador, including through repatriations of illegal settlers. Whilst these are raising humans rights concerns, they are arguably necessary if the major driving force of internal migration is to be effectively addressed.

Leadership – A lack of strong leadership from GMR and other state authorities, due to political instability and a lack of political will to address the driving forces, greatly undermines the use of legal incentives and MPA effectiveness.

Role of NGOs – Several, including the Charles Darwin Foundation, provided funding and technical assistance in the implementation of various incentives

8. Karimunjawa Marine National Park, Indonesia – Stuart J Campbell et al. Paper (2013)

Name	The Karimunjawa Marine National Park, Indonesia	Year of designation	1986. In 2001 all marine areas in Karimunjawa National Park were designated as a marine conservation area
Area	1,106.25 KM ²	State Capacity	-0.18 (rank 44.8%, 2016)
GDP per capita	\$3,900	Human Development Index (HDI)	0.684
GDP Growth Rate	6.1%	Population below the poverty line	11.3%

MPA Objectives:

Conservation	Operational
To protect biodiversity, ecosystems and resources for sustainable use and livelihoods, particularly coral reefs, sea grass meadows, fish spawning aggregation sites, mangroves, cetaceans, water bird nesting areas and turtle nesting sites.	To provide effective management for community prosperity and national obligations.
To preserve natural marine and terrestrial species;	

Drivers and Conflicts:

- 70% of the local community are involved in fishing related activities, yet fisheries resources have declined over the past 20 years and mariculture activities are expanding in the park. Cyanide fishing and the use of illegal fishing gears are prohibited, though they still occur in the National Park. Around 10% of fishers are estimated to still use destructive fishing practices. Demand from international and local markets for live reef fish encourages cyanide fishing
- Tourism has increased in the area and corals are impacted by anchoring and trampling. The majority of tourism is domestic, with less than 12% international tourism, 1998 - 2008. There is an expectation for tourism to continue to rise and development and sewage pollution are increasing concerns.
- Coastal development, including new hotels and new village infrastructure, has increased in recent years, yet there is inadequate sewage treatment and there is increasing run off into the ocean. Cyanide fishing is also adding to water pollution which is negatively impacting coral habitats.
- An increase in mariculture is also polluting the water due to the practices used and inputs of organic nitrogen impacting benthic habitats.

Governance Framework/Approach:

Government-led. Managed by the Karimunjawa National Park Authority (KNPA) of the Ministry of Forestry (MOF). The KNPA is a central government authority providing finance and management of national parks and reserves. It has some autonomy at site level and has the primary management role, although district government agencies concerned with fisheries, tourism and development have responsibilities and jurisdiction of activities in the National Park. A collaborative management forum initiated in 2007 aims to align district government policies and activities with those of the national park, as fisheries and tourism policies often contravene national park regulations.

Effectiveness: 2 *Some impacts partly addressed but some impacts not yet addressed.* Destructive fishing practices are still occurring but are significantly reduced and the poaching of clams in no-take-zones has been addressed, as has fishing in no-take-zones, which has 70-90% compliance. However, cyanide is still used for fishing live fish for trade and the impacts of many mariculture farms have not been extensively documented. These impacts need to be addressed.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables).

Economic

Incentive type	Used	How/Why
4. Promoting profitable and sustainable fishing and tourism	Y*	Government agencies have worked with communities to promote sustainable fisheries which has increased compliance within no-take zones from 88% in 2004 to 94% in 2009. Marine zones allocated for aquaculture practices such as seaweed and grouper mariculture and some restrictions on fishing gears and bans on destructive fishing have helped. There is a tendency to focus more on strategies to restrict fishing gears rather than fishery closures, as many fishers depend on subsistence fishing for food security more than income. Destructive fishing practices need to be further addressed to protect biodiversity and support the survival of future fisheries.
6. Promoting diversified and supplementary livelihoods	Y	Micro-finance schemes and technical support by NGOs to promote the development of seaweed, clam and fish farming for domestic markets have been implemented, whilst controlling and minimising related environmental impacts. Marine zones have been created for aquaculture with over 2000 fishers legally involved in seaweed and grouper mariculture, under conditions that they cease destructive fishing practices and comply with fisheries regulations.
8. Investing MPA income/funding in facilities for local communities	Y	A community group created by the local district government has been formed to manage local tourism activity and revenue from tourism has funded the building of schools, mosques and other facilities, including water sanitation infrastructure.
9. Provision of state funding	Y*	There is inadequate funding from the state to support requirements for enforcement. Reliance on funding from NGOs could pose future problems if this level of support was reduced.
10. Provision of NGO, private sector and user fee funding	Y	The Wildlife Conservation Society (WCS) has allocated \$700,000 over 5 years for assisting the KNPA develop and implement management and zoning plans. The KNPA has an annual budget of approximately \$400,000 to manage the park. WCS has conducted an analysis of this in relation to conservation objectives and concluded that some activities such as enforcement and implementation of management with communities are not adequately funded.

Communication

11. Raising awareness	Y	The KNPA, NGO's and community groups have organised various education and outreach programmes (eg. Independence Day events), on the importance of protecting coral reefs and other marine resources. Environmental education programs including Seagrass Watch and Coral Reef Monitoring have been conducted at village schools raising awareness of the marine environment and issues affecting its health.
12. Promoting recognition of benefits	Y	Community workshops disseminate information on management evaluations using data from ecological, fisheries and socioeconomic surveys.
Promoting recognition of regulations and restrictions	Y*	1000 posters of the new zoning regulations were disseminated by local park rangers and NGO's to local communities in 2006 to raise awareness among communities of the park regulations and boundaries. They also discussed the regulations in face-to-face meetings with stakeholders. Evaluation of community perceptions of new park regulations has led to a plan to increased signage at strategic areas to improve knowledge and awareness of the park regulations.

Knowledge

14. Promoting collective learning	Y	Local community groups have been involved in regular fish catch and compliance monitoring to raise awareness of the importance of fishing regulations and provide information on compliance with the zonation plan. Standardised monitoring protocols are used by KNPA and different research groups working within the park.
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Legal

17. Hierarchical obligations	Y	There are obligations associated with the CBD and domestic acts relating to the conservation of natural resources and protected area management.
18. Capacity for enforcement	N*	Enforcement is hampered by insufficient financial resources for patrols and an underlying lack of political will for enforcement, in the face of strong forces driving infringements, particularly market demand coupled with local poverty, but enforcement is improving as more infringements are being reported by users to community rangers funded by the government and NGOs, and by the improved integration of the MPA and district fishery authority's enforcement programmes.
19. Penalties for deterrence	N*	There are laws that are in place, but there are too few successful prosecutions and fines are low due to insufficient national-local state capacity and political will for deterrence. As there is a lack of enforcement of laws and regulations, there has only been a small number of prosecutions of clam poachers. There needs to be a much stronger approach to enforcement and prosecution of rule-breakers.
21. Attaching conditions to use & property rights, decentralisation, etc	Y	Families are allocated use rights to generate income from mariculture in designated marine zones, on conditions that they must comply with fisheries regulations and cease the use of destructive fishing practices.
22. Cross-jurisdictional coordination	N*	There is a need for government to improve working across jurisdictions, such as national parks, fisheries and tourism, as well as the KNPA to fulfil legal obligations related to the park and improve effectiveness.
23. Clear and consistent legal definitions	N	Inconsistent application of law is an important barrier for community support for fishing restrictions. There are national laws and policies, but legislation is needed at a local level and needs to be more effectively enforced in order to address drivers impacting fishing resources and undermining conservation objectives.
26. Transparency, accountability and fairness	Y	The involvement of the local community implies a degree of transparency.

Participation

27. Rules for Participation	N*	It is important that there are clear rules for the communities to participate to ensure equal involvement across the surrounding villages and prevent any communities being marginalised.
28. Establishing collaborative platforms	Y	The urgency for government agencies and communities to work together to implement consistent policies and actions for sustainable marine resource use resulted in the KNP collaborative management forum. The KNPA facilitates the forum to identify threats and appropriate interventions. Multiple government departments and community groups have collaborated since 2007.
31. Decentralising responsibilities	Y*	There is an element of decentralised responsibilities through the KNPA working with community groups. Increased involvement of village institutions in community decision-making related to park management and enforcement is needed to reduce conflicts among fishers and support legal measures to protect fishery resources.

32. Peer enforcement	Y	Recent developments by the KNPA have involved villages in a community-based surveillance program that aims to allow local fishers to report infringements which are supported by National Park laws and legal deterrents. Village forums received training and resources to participate in monitoring of the MPA, in particular surveillance and reporting of destructive fishing offences. Community involvement in reporting infringements has risen since their involvement in park management.
33. Building trust and the capacity for cooperation	Y	The level of involvement of villages in governance processes builds trust and cooperation across the whole community that helps to implement the management plan.
34. Building linkages between relevant authorities and user representatives	Y	The process of “Rencana Strategis” or “Renstra” (strategic planning) was initiated in Parang Village in 2007 and produced a community management plan to guide economic development and conservation. In 2009, the district regional body responsible for planning and development (BAPPEDA), the Jepara Fisheries Service and the KNPA adopted the Parang Village Management Plan as a coordinating mechanism for community village management within the KNP.
35. Building on local customs	Y	Traditional fishing practices provided for and accommodated within the zonation scheme and related permitted uses

Cross-cutting themes:

Leadership

The establishment of village institutions and forums for community decision making and leadership encourage communal norms and practices and the ability to respond to changes in access to natural resources, by allocating resources in accordance with the preference of the majority of residents or ecosystem users. The ability to adapt to support local fishery closures and fishing restrictions and take advantage of positive opportunities that may result from changes in fishing access can feed back to improve management of networks of protected areas in Indonesian national parks.

The role of NGOs

The Wildlife Conservation Society has been involved in supporting the development of management and zoning plans, as well as the support of livelihood programmes. They have also provided significant financial support, on which the MPA has become over-reliant.

Stewardship

Through recognising the rights of local users in zoning plans, with traditional fishing permitted in 83% of the park, building infrastructure and skill training in tourism and mariculture within the KNP, there is a sense of stewardship amongst local communities.

9. Wakatobi National Park, SE Sulawesi, Indonesia – Julian Clifton. Paper (2013)

Name	Wakatobi National Park, SE Sulawesi, Indonesia	Year of designation	1996
Area	13,900KM ²	State Capacity	-0.18 (rank 44.8%, 2016)
GDP per capita	US\$505	Human Development Index (HDI)	0.684
GDP Growth Rate		Population below the poverty line	11.3%

MPA Objectives:

Conservation	Operational
Key habitats and species comprising coral reefs, seagrass meadows, fish spawning aggregation sites, mangroves, cetaceans, water bird nesting areas, turtle nesting sites and economically valuable marine species are identified as priorities in the management plan. No targets are included other than maintaining existing levels of hard coral cover, estimated at 35-40%	Establishment of a sustainable environment with benefits to local resident communities and for regional development.

Drivers and Conflicts:

- Dynamite fishing is seen as an efficient method, where other techniques yield lower returns as stocks are over-exploited. There may also be cultural connections in the Bajau for using this method, as catch sharing remains a tradition. Once those using the method have taken the amount they require, they allow other fishermen to collect fish. Those who do this are held in high esteem and the practice may be seen as a way to gain prestige in the marginalised and poor community. Cyanide fishing is used for the ornamental fish trade with Asia and the extension of air transportation provides quick transportation of live fish out of the region. Trade of turtles is an ongoing problem and although it is banned, they are regularly seen awaiting export, live. Napoleon Wrasse are protected under national law, but are still exported to Asian markets. Declining fish catches are reported with specific declines in octopus and sea cucumber. An increase in engine-powered boats by 16% has increased the range of fishing grounds and related impacts. The introduction of cheap and durable nylon nets has enabled fishermen to operate individually rather than within groups, which has increased fishing effort. 2% of boats in 2000 were mechanised, rising to 18% by 2003.
- Population growth and temporary migration is seen as a contributing factor, although changes in fishing technology may constitute a more significant factor.
- The development of a nearby public airstrip has increased tourism from 5,000 to 20,000 in a year, yet there is no infrastructure to support these numbers, especially regarding waste disposal.

Governance Framework/Approach:

Decentralised - The Ministry of Forestry retains authority for managing the national protected areas estate through its implementing agency, the Directorate General of Forestry Protection and Nature Conservation (PHKA). It provides inputs to management plans and policy adaptations at a local level. The involvement of NGOs eventually resulted in a 'Strategic Partnership' involving alliances between TNC/WWF and PHKA, the newly created Kabupaten Wakatobi and tour operators, the main emphasis being to eradicate destructive and illegal fishing and marine resource usage, through heightened enforcement.

Effectiveness: 2 *Some impacts partly addressed but some impacts not yet addressed.* Impacts are localised spatially and are inconsistent due to the reliance on patchy patrols. The MPA is considered to be stable and investment from international NGOs has considerably improved the expertise, data and resources available,

but the commitment of NGOs is uncertain, with funding recently declining and less contribution to local management activities. It is not possible to specifically identify any specific improvements and there is a risk that the driving forces behind overfishing may not be influenced by heightened enforcement in the long term.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables).

Economic

Incentive type	Used	How/Why
4. Promoting profitable and sustainable fishing and tourism	Y*	Efforts have suffered due to a lack of awareness or recognition of the cultural context within which such activities take place. Past introductions of fish-aggregating devices created disputes and ultimately abandonment of the devices.
7. Providing compensation	N	Compensation equivalent to US\$500 is paid to each village in return for a cessation of all fishing activity in 'reef lease' areas. The money however, is spent on public building repairs and transport infrastructure. Subsistence line fishers generally have low levels of literacy and education and are excluded from village bureaucracy and public meetings, therefore are marginalised from compensation.
8. Investing MPA income/funding in facilities for local communities	Y	Repairs to public buildings and transport infrastructure are funded by compensation provided by dive tourism operator under the 'reef leasing' scheme. The compensation noted above is invested into facilities for the local community.
9. Provision of state funding	Y*	The provision of sufficient state funds to enable effective MPA governance in Indonesia remains a remote prospect, more state funding is needed to address the conflicts.
10. Provision of NGO, private sector and user fee funding	Y*	NGO and dive tourism operators have provided considerable funding, though there are concerns about the risks of institutional capture related to tourism developments coupled with the vulnerability of the MPA to the reduction of NGO funding.

Communication

11. Raising awareness	Y	Public awareness raising exercises take place via village meetings, leaflet distribution, establishing markers around core zones and providing information displays.
12. Promoting recognition of benefits	N*	Scientific explanations of the benefits of MPAs, such as spill over, are difficult to transpose into local cultural context, whilst the implied acceptance of delayed benefits also conflicts with the emphasis on meeting daily subsistence needs, common with local fishing communities. The concept of reduced fishing and changes in fish stock characteristics is not shared by many local fishers.
Promoting recognition of regulations and restrictions	Y	Leaflets, notices, etc employed to make locals aware of MPA restrictions

Knowledge

14. Promoting collective learning	Y*	Attempts are made to promote collective learning, but there is a continuing gulf of understanding and empathy between researchers and local residents. There are conflicting views between residents and scientists. This could be developed further to derive activities that effectively integrate local knowledge into management activities.
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Legal

17. Hierarchical obligations	N*	Effective enforcement of international conventions such as CITES could help to address impacts, but remains a distant prospect.
18. Capacity for enforcement	N*	Enforcement is hampered by insufficient financial resources for patrols and an underlying lack of political will for enforcement, in the face of strong forces driving infringements, particularly market demand coupled with local poverty, with additional challenge of poor links with Bajau communities. Enforcement has recently been improved by funding from NGOs and tourism operators for fishery patrols.
19. Penalties for deterrence	N*	The lack of political will surrounding enforcement is impacting any penalties for deterrence being implemented.
20. Protection from incoming users	N	
21. Attaching conditions to use & property rights, decentralisation, etc	Y*	The payment of compensation is a condition of the reef leases but any future assignments must have appropriate conditions attached to them to ensure that the rights of artisanal fishers and marine resource dependent communities are addressed to promote equity and integration
22. Cross-jurisdictional coordination	N*	There are uncertainties regarding jurisdiction in an era of decentralisation and vested political interests promoting economic development within the WNP.
23. Clear and consistent legal definitions	N*	The absence of a clear and consistent legal framework across all relevant sectors is a hindrance to effective park management. There is potential to build on district level government laws and existing village institutions, but the state capacity for this is uncertain.

Participation

27. Rules for Participation	N*	Contradictory policies and confusions over responsibilities impact the effectiveness of management and governance activity.
28. Establishing collaborative platforms	Y*	There have been efforts to establish participatory planning, instigated by NGOs and private tourism operators, but they are vulnerable to being dominated by certain fishing community groups. The Kaledupa-based Darwin Initiative project plans to establish new village-based institutions (termed Village Fishers Forums) involving all fishermen and a representative of the BPD.
29. Neutral facilitation	N	The concept of 'neutral facilitators' is difficult to conceive in the WNP context
31. Decentralising responsibilities	N*	The PHKA has no power to influence policies developed at a central level and has been unable to implement any coherent management policies locally. They are also overpowered by the local tour operators who have established their own no take zones in favour of dive sites as opposed to protecting areas of ecological value. In more recent years this has been influenced to a degree by the partnership with some NGOs who prioritised eradicating destructive fishing and illegal marine resource use, primarily through heightened enforcement.
33. Building trust and the capacity for cooperation	N*	Often live turtles, protected and endangered species, can be seen waiting for export in Bajau villages and generally elicits little response from park authorities, whose reluctance to intervene is indicative of the poor relations between enforcement officers and Bajau communities. This is similar for other protected species, such as the napoleon wrasse, which is also exported. These activities significantly undermine the conservation objectives of the MPA and show little cooperation with rules, regulations and legislation.

34. Building linkages between relevant authorities and user representatives	N*	Although this could be beneficial, there are limitations on effectiveness to address the main drivers emanating from national and international forces.
35. Building on local customs	N*	Some of the local customs undermine the objectives of the MPA, such as bomb fishing which still carries traditional values. There needs to be education and understanding around the effects on sustainability for more compatible local customs to be built upon.

Cross-cutting themes

Role of NGOs

They have been instrumental in funding, delivering and monitoring key activities to improve effectiveness. Involvement has also developed WNP as a site of international significance contributing to knowledge and communication incentives. There are concerns about a reliance on NGO funding and the institutional capture of MPA through ‘unholy alliances’ between NGOs and tourism operators.

Equity

There are issues with the Bajau community being marginalised both economically and socially, leading to differences in perception of marine resources. Also related concerns about institutional capture of MPA through ‘unholy alliances’ between NGOs and tourism operators.

Stewardship

This is seen as a potentially more effective approach, based on local ownership rather than a more abstract concept of MPA designation. Based on village level regulations and a focus on fishing rights assigned to individual villages.

10. Tubbataha Reefs Natural Park, Philippines – Marivel Dygico, Angelique Songco, Alan T. White & Stuart Green. Paper (2013)

Name	Tubbataha Reefs Natural Park, Philippines	Year of designation	1988
Area	970KM ²	State Capacity	-0.35 (rank 39.5%, 2016)
GDP per capita	\$3,300 (Philippines)	Human Development Index (HDI)	0.668
GDP Growth Rate	4.6% (Philippines)	Population below the poverty line	25.2%

MPA Objectives:

Conservation	Operational
Biological diversity and ecological processes are protected from unnatural threats and direct human impact	Legal and management structures are effectively maintained
	Stakeholder participation and representation are ensured
	Public understanding of the benefits of conserving the TRNP is improved
	Revenues from ecosystems targeted for conservation are enhanced.

Over-arching policies:

- The TRNP shall be managed under a no-take policy to conserve and protect its values for the enjoyment of present and future generations;
- In accordance with the above, any exploration, exploitation or utilisation of non-renewable resources within the TRNP shall not be permitted;
- Active collaboration and participation from all stakeholders shall be fostered to engender a sense of ownership and promote compliance to regulation.

Drivers and Conflicts:

- Illegal fishing from communities in mainland Palawan and the nearby provinces of Visayas are an issue as they continue to enter the park, targeting endangered or threatened species that have a high commercial value in illegal trade, such as Napoleon Wrasse, top shells and sharks.
- The threat of energy exploration in the Sulu Sea, resulting from rising costs of imported fossil fuel, poses an increasing threat to marine mammals and other species.
- Water pollution is increasing due to solid waste materials entering the park from various origins, brought in through tidal currents and wind.

Governance Framework/Approach:

Decentralised – Initially protected in 1998 by Presidential Proclamation, in 2010 the MPA was established as a Protected Area under the National Integrated Protected Areas System (NIPAS-R.A. 7586) and the Strategic Environmental Plan (SEP-R.A. 7611) for Palawan. The Tubbataha Protected Area Management Board (TPAMB) was created as a multi-sectoral body that formulates policies for Tubbataha (formerly the Multi-Sector Task Force Tubbataha under the Department of National Defence). It consists of 21 representatives from the national, provincial and municipal governments, Cagayancillo people’s organisation, NGO’s, local universities and dive-tourism sector. They meet quarterly with a separate monthly meeting for its Executive Committee (ExeCom) to provide operational guidance. This includes representatives from WWF-Philippines, Palawan Council for Sustainable Development (PCSD), Department of Environment and Natural Resources (DENR), Provincial Government, Municipal Government of Cagayancillo, Philippine Navy, Philippine Coast Guard, Saguda Palawan and Conservation International. Day to day management is carried out by the Tubbataha Management Office (TMO), the executive arm of the TPAMB, solely dedicated to implementing the management plan and maintaining a presence in the park. TRNP is also designated as a World Heritage Site and a Ramsar Site.

Effectiveness: 3 *Some impacts completely addressed, some partly addressed* - the Park's governance is evaluated yearly. All the governance indicators showed positive change in 2009, though areas of concerns were also identified. Highest recorded fish biomass in the Philippines and some populations are increasing, with signs that spillover/export is increasing CPUE in nearby Cagayancillo, indicating that the no-take restrictions are effectively enforced, but concerns remain over continued poaching and incoming pollution, including the threat from nearby shipping lanes.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic - The economic incentives serve as the pillar of governance of TRNP. They balance the Park's no-take policy and provide the platform to generate the financial resources as well as the institutional partnership needed to sustain the management of TRNP. These incentives can be improved in combination with communication incentives by promoting the ecological and tourism values of the Park.

Incentive type	Used	How/Why
3. Reducing the leakage of benefits	Y*	Residents on islands in the municipality of Cagayancillo are given preferential consideration in employment opportunities in the MPA. Levy of entry fees for each tourist covers some MPA costs but these may have to be increased or the MPA authority could start operating tourism vessels itself to minimise the leakage of benefits to external vessel operators.
4. Promoting profitable and sustainable fishing and tourism	Y	The Tubbataha Management Plan devotes a program on sustainable resource management for Cagayancillo, populated by 6,000 households. At a larger scale, TRNP is the source of fish and coral larvae seeding the fishing grounds in the greater Sulu Sea, specifically in the eastern coast of the mainland Palawan. This involves about 200,000 fishing households with members averaging five. Increased CPUE in fisheries around the MPA, more than tripled in some cases.
5. Promoting green marketing	Y	Promoting the MPA as a premier boat-based diving location, capitalising on its World Heritage Site status including charging an entry fee for dive tourism vessels as a means of financially supporting the MPA.
6. Promoting diversified and supplementary livelihoods	Y	Micro-finance schemes were established by NGOs to promote alternative livelihoods, such as running a homestay or eatery, trading in household commodities, weaving mats and producing coconut vinegar. Seaweed farming was attempted but was not viable.
7. Providing compensation	Y	Ten per cent of the tourism entry fees are paid to the municipal government to fund an alternative livelihoods programme.
8. Investing MPA income/funding in facilities for local communities	Y	Seven to ten per cent of the tourism entry fees are used to fund infrastructure improvements, such as new roads and the improvement of public facilities on islands in the municipality of Cagayancillo. Fees also support the better management of fisheries outside the MPA for Cagayancillo fishermen.
9. Provision of state funding	Y*	Contributions from the National Government have always been 'in kind', through manpower and logistics provided by the Philippine Navy and Coast Guard. The DENR, provincial government and the Department of Agriculture have provided funds, channelled through the TMO to ensure the implementation of activities in line with the approved work and financial plan. However, support is diminishing, with an increasing reliance on NGO funding
10. Provision of NGO, private sector and user fee funding	Y*	Nearly 90 per cent of the MPA funding comes from NGOs as the tourism entry fees are not sufficient to cover the running costs and there are concerns about over-reliance on NGO funding and the leakage of benefits to dive boat operators as entry fees are arguably too low

Communication - Instilling the values of the Park and the rationale of protective measures to a wider audience becomes instrumental in encouraging stakeholders and partners to support park management and increase compliance to Park rules. Designing campaigns for specific target audience can improve the effectiveness of these incentives.

11. Raising awareness	Y	Through leveraging the 'New 7 Wonders of Nature' campaign the park has been very successful in raising awareness of the park. Regular dives with high profile people are also helping to raise awareness. Information, communication and education campaigns in local schools, communities and organisations improve awareness and enlarge the constituency for the park and marine conservation in general.
12. Promoting recognition of benefits	Y	Benefits from the park are made known to the public through forums with local stakeholders on results of scientific studies – monitoring the status of the reefs and other marine life, larval dispersal and contextualising these considering relating pressing issues on health, poverty and climate change.
Promoting recognition of regulations and restrictions	Y	Instilling the values of the park and the rationale of protective measures is instrumental in encouraging stakeholders and partners to support park management and increase compliance with regulations.

Knowledge - Providing credible and well documented reports on Tubbataha have increased knowledge and had a major influence on decisions of the TPAMB, partners and stakeholders to better manage the area. A research agenda relevant to specific management issues can be further promoted to partners, particularly in academia, to ensure that informed decision-making processes will continue.

14. Promoting collective learning	Y	Standardised resource monitoring protocols are agreed and applied by local people in collaboration with scientists in order to integrate the principles of science with traditional knowledge and to guide the process of learning.
15. Agreeing approaches for addressing uncertainty	Y	The precautionary principle was employed as the basis for the decision to designate a 10-nautical mile partially protected buffer zone around the no take MPA.
16. Independent advice and arbitration	Y	Experts from universities in the Philippines lead most of the scientific studies undertaken annually in TRNP

Legal - Several laws provide the legal framework of Tubbataha. The formulation of internal guidelines, procedure and protocol to harmonize applicable provisions of existing laws was most helpful in simplifying, clarifying and making more practical the enforcement procedures. Passage of the Tubbataha Bill into law will greatly improve the legal position of Park management.

17. Hierarchical obligations	Y	There are several national laws supporting the enforcement of TRNP rules and regulations and the MPA is a UNESCO World Heritage Site and a RAMSAR Wetland site.
18. Capacity for enforcement	Y*	Permanent presence of 10–12 MPA authority, navy, coastguard and municipal personnel on a ranger station is effective through observations and patrols, but maintaining sufficient capacity is very dependent on NGO funding.
19. Penalties for deterrence	Y	Strong support from prosecutors and legal counsel and adequate enforcement equipment are provided to ensure that illegal users are brought to court.
20. Protection from incoming users	Y	Enforcement is applied to all rule-breakers and are all prosecuted under the same legislation.
21. Attaching conditions to use & property rights, decentralisation, etc	Y	Legal conditions are attached to licences to operate dive tourism vessels and undertake research activities

22. Cross-jurisdictional coordination	Y	There are many authorities and government organisations, as well as NGOs involved in this MPA. The coordination across all is highly effective with the use of regular meetings and effective implementation of decisions. Jurisdictional coordination now extends to international shipping: recent introduction by IMO of PSSA to reduce risk from nearby shipping lanes.
23. Clear and consistent legal definitions	Y*	All legal definitions are consistent and understood by all required parties, however, there is a need to clarify and translate the components into operational terms regarding rules and regulations, penalty provisions, zoning plans and jurisdictional boundaries.
24. Clarity concerning jurisdictional limitations	N*	There is a need to identify mechanisms that are responsive to emergent challenges and recent developments.
25. Legal adjudication platforms	Y	This is conducted through the regular courts. The DENR also provides a channel for arbitration of conflicts, based on a written opinion from the Supreme Court, whereby it should provide supplementary function to the Strategic Environmental Plan (SEP). The Palawan Council for Sustainable Development, who presently chairs the TPAMB and implements the SEP, has jurisdiction over administrative cases filed by the TPAMB.
26. Transparency, accountability and fairness	Y	The involvement of locals and the government provides transparency and fairness to all stakeholders involved in this park.

Participation

27. Rules for Participation	Y	The TRNP Management Plan specifically indicates that participatory mechanisms shall be used in the formulation of specific plans and in the evaluation of results. The multi-sectoral Tubbataha Protected Area Management Board (TPAMB) and its consensual decision-making process allows for participative governance.
28. Establishing collaborative platforms	Y	The multi-sectoral Tubbataha Protected Area Management Board TPAMB provides a platform for user participation. The monthly and quarterly meetings between stakeholders provide appropriate platforms for regular collaboration
30. Independent arbitration panels	Y	The TPAMB can deliberate, negotiate and arbitrate on conflicts amongst stakeholders
31. Decentralising responsibilities	Y	The TPAMB can make decisions that are decentralised from the central government,
33. Building trust and the capacity for cooperation	Y	Encouraging the community of local stakeholders to participate in the initial planning of the Park has proven to be a key element of success because this group consciously decided to forego their fishing access in Tubbataha. Lines of communication with various stakeholders are kept open so that inputs may be given to TMO at any time.
34. Building linkages between relevant authorities and user representatives	Y	The creation of the TPAMB enabled the linkages to be established and increasingly built upon over time.
35. Building on local customs	Y	The involvement of the local community from the beginning has enabled this to ensure their customs are not ignored or eradicated.

Cross-cutting themes:

Role of NGOs

They played a big role in honing the present leadership of the Park under the government structure. They facilitated the development of management systems to support the long term vision of the TRNP, in the form of funding, technical assistance and networking.

Equity and stewardship

It was important for the TPAMB to recognise the foregone opportunities of the Cagayancillo fishermen when the NTZ was established and the negotiation of sharing tourism revenues as a compensatory mechanism. It helped the local residents to claim co-ownership of the vision and take pride in it.

11. Ha Long Bay Natural World Heritage Area, Vietnam – Bui Thi Thu Hien, report (2011, pp.136-146)

Name	Ha Long Bay Natural World Heritage Area, Vietnam	Year of designation	1962
Area	1,533KM ²	State Capacity	-0.34 (rank 41.4%, 2016)
GDP per capita	\$2,800	Human Development Index (HDI)	0.666
GDP Growth Rate	6.2%	Population below the poverty line	11.3%

MPA Objectives:

Conservation	Operational
In the core and buffer zones, landscape, geology, environment and ecosystems must remain unchanged and protected in a pristine state.	All buildings to be constructed must have a suitable architectural design, contributing to the beautiful scenery of Ha Long Bay.
	All socio-economic activities operating on the Bay must strictly comply with legislation and implement the commitment not to cause negative impacts to the scenery and eco- environment.

Drivers and Conflicts:

- Fishing is intense in Ha Long Bay with some fishing communities living in floating villages in the Bay itself. Unacceptable techniques are used including dynamite and poison, with indications that available fish stocks are decreasing due to over-fishing. Some fishermen have started selling coral collected from the reef.
- Tourism is growing and therefore increasing impacts with litter pollution and actual damage through overuse. Tourist boat transport needs to be planned and well managed to avoid accidents, spills and water pollution.
- Urban development is increasing sewage discharge, litter and waste pollution and mangrove forests are reducing as areas are cleared for new construction.
- Deep water ports are increasing with impacts of grounding, fuel spillage, cargo spillage and collisions. Main shipping routes go straight through the HLB WHA.
- Coal loading operations were moved from the area, but barges continue to carry coal to waiting ships through the inshore waters of the bay and shipping routes to the new port still go through HLB WHA.
- Sedimentation from uncontrolled forest clearing in the hinterland to service mines and the timber industry, as well as cement and brick manufacturing industries, are impacting corals and other aquatic biodiversity.

Governance Framework/Approach:

Decentralised - The Ha Long Bay Management Department (HLBMD) has 290 members of staff and is responsible for the protection of values and overall management of the area, including the exploitation and use of resources. It is structured into 13 divisions dealing with administration and tourism guidance, management and marketing.

Effectiveness: 2 *Some impacts partly addressed, some impacts yet to be addressed.* The MPA is lacking appropriate resources to develop strategically and several weaknesses have been identified that need to be addressed. There is a lack of project management and monitoring skills, limited policy and technical skill levels and

inappropriate management structures and techniques. Field enforcement staff have had some training in current laws and regulations and management of environmental activities, but this has been introductory and requires strengthening through a more focused program.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables).

Economic

Incentive type	Used	How/Why
4. Promoting profitable and sustainable fishing and tourism	N*	Overfishing continues to be an issue driven by increasing population pressure and the development of more effective/destructive fishing gears such as fine mesh nets and continued use of illegal gears. Most landings are sold or consumed locally, but plans need to be put in place to control fishing activity.
5. Promoting green marketing	N*	Communicating the environmental and cultural significance of Ha Long Bay could improve the quality of tourism in the area. Building capacity for environmentally friendly tourism practices could relieve some tourism pressure. A certification system recognising environmentally friendly practices could also help.
6. Promoting diversified and supplementary livelihoods	N*	Identifying diversified livelihoods in this densely-populated area could relieve some pressure on the volume of fishing that is taking place and allow over-exploited resources to regenerate.
8. Investing MPA income/funding in facilities for local communities	Y	Tourism fee income is reinvested to improve living conditions and provide educational facilities on the floating villages. It is also combined with major development bank funding to improve industrial and domestic waste water treatment in the city to reduce land-based pollution.
9. Provision of state funding	Y	There is funding from the state, mainly through the agreed allocation of 45% of user fees that the state collects along with some other state funds
10. Provision of NGO, private sector and user fee funding	Y	Technical and financial support is sought from UNESCO, IUCN, FFI and other organisations to predominantly focus on education and awareness. Development bank funding for collection and treatment plants to reduce land-based pollution. Tourism fees are charged and 45% of these are invested in the management of HLB WHA

Communication

11. Raising awareness	Y	Projects and research work on environmental protection and world heritage values are being implemented effectively and as a result awareness of the local government and communities has been enhanced. The eco-boat programme, designed for environmental education, has also generated positive outcomes for raising awareness, especially with youth.
12. Promoting recognition of benefits	N*	Communication of the benefits of protection could go some way to reducing impacts on the area.
Promoting recognition of regulations and restrictions	Y	The HLB WHA regulations are clearly laid out with encouragement to include communities in awareness-raising regarding the regulations and the requirements that should be complied with

Knowledge

14. Promoting collective learning	Y	A combination of implementing advanced technologies, coordinating with relevant local departments and national and international experts for research has been able to promote collective learning across a range of areas to benefit from expertise.
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Legal

17. Hierarchical obligations	Y	As a designated World Heritage Area, there are legal and regulatory requirements to maintain standards that influence the designation and can provide incentives to deliver to them, particularly through assisting in gaining funding from development banks.
18. Capacity for enforcement	Y*	An inter-organisational inspection team consisting of HLBMD, marine police, tourism, aquaculture and transportation departments is established for environmental enforcement and surveillance. HLBMD manages the team to identify violations, supported by the Quang Ninh Provincial People’s Committee, but the declining state of fisheries and increasing litter, rubbish and sewage pollution problems indicate that better enforcement is needed, along with more restrictions
20. Protection from incoming users	Y	The patrolling mechanisms in place cover local and incoming transgressors but pollution by incoming tourists as well as by the local and incoming operators that accommodate them at sea remains a problem
22. Cross-jurisdictional coordination	Y*	There is some coordination across different jurisdictions with technical guidance and supervision provided by the Ministry of Culture, Tourism and Sport and the UNESCO Committee of Vietnam. This could be improved to include areas such as urban development.
26. Transparency, accountability and fairness	Y	The management structure and related policies are clearly laid out

Participation

31. Decentralising responsibilities	Y	The HLBMD has decision-making responsibilities in day-to-day management and broader responsibilities surrounding the MPA.
33. Building trust and the capacity for cooperation	Y	There have been efforts to cooperate with local, national and international organisations to attract the participation of the local communities in heritage conservation and management.
34. Building linkages between relevant authorities and user representatives	Y	The HLBMD has established a public profile in the stakeholder community and developed important linkages with other relevant agencies.
35. Building on local customs	Y	Populations from the fishing villages rely on fishing, seafood cultivation and tourism and there is guidance provided by the Quang Ninh Province People’s Committee (QNPPC) to encourage respect for their historical practices

12. Os Miñarzos Marine Reserve of Fishing Interest, Spain – Lucia Perez de Oliveira. Paper (2013)

Name	Os Miñarzos Marine Reserve of Fishing Interest, Spain	Year of designation	2007
Area	20.74KM ²	State Capacity	0.86 (76.3%, 2016)
GDP	\$34,600	Human Development Index (HDI)	0.876
GDP Growth Rate	1.1%	Population below the poverty line	21.2%

MPA Objectives:

Conservation	Operational
To protect and favour the regeneration of fishing resources.	To promote artisanal fishing and sustainable development.
To conserve and protect the flora and fauna of the marine environment and their diversity.	To encourage environmental awareness about the marine environment
	To promote fishing and environmental values of Galician coasts.
	To favour scientific studies about resource protection and fisheries management.
	To facilitate the development and application of fisheries management models, with the participation of fishers and shell fishers in their design and implementation.

Drivers and Conflicts:

- Considerable overfishing raised concerns over the state of local fish stocks, particularly the highly valued goose barnacle, which fetch up to 300 Euros per kg over Christmas, when the Galician delicacy *percebes* is traditionally enjoyed. The modernisation of the fishing fleet in the last 20 years had an important effect on fishing effort, as well as the return of the locals after a migration movement in the late seventies and early eighties. Poachers from outside the village and nocturnal illegal fishing by scuba divers was a large issue prior to designation, especially before the Christmas season when some shellfish species have their highest market value. This impacted the resources but also lowered the market price.
- An oil spill in 2002 severely impacted the ecology of the area around the ‘Death Coast’ with very slow recovery and significant effects to the local fishing grounds.

Governance Framework/Approach:

Community-led – The Os Miñarzos Marine Reserve of Fishing Interest (OMMRFI) is managed under the authority of Xunta de Galicia, the government of the Autonomous Community of Galicia. It lies within territorial waters, which grants the right to be entirely managed by the Autonomous Community of Galicia. It was proposed as a solution to several problems faced by the fishing community in recent years, such as overfishing, illegal fisheries and the consequences of the Prestige oil spill, and was designated by the Fisheries and Maritime Affairs Council (now Council of the Sea) of Xunta de Galicia, following a proposal by the local fishing community in partnership with scientists from the University of Coruna and the NGO WWF/Adena. Once the proposal had been accepted, it was made official on release of a legal document, Decree 87/2007 12 of April 2007 by Xunta de Galicia. A management body was appointed shortly after, with three members of the regional fishing authority, one member of the regional environment authority and four representatives of the fishing sector: two from Lira’s *cofradia* (‘a corporation with legal jurisdiction and decision-making capacity for accomplishment of its aims and functions’, as defined by the Galician Fishing Act) and two from the Galician Federation of *cofradias*.

Effectiveness: 3 - *Some impacts completely addressed, some are partly addressed.* Whilst access to the OMMRFI is now restricted to *cofradia* members and sustainable exploitation by them is being promoted, the enforcement of the exclusion of incoming fishers remains a challenge and there are still poaching impacts.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables).

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	Y	Limiting the access to the MPA was considered crucial to obtain an overall reduction of the fishing effort in the area. It was decided to introduce territorial user rights for fishers (TURFs), for those fishing within the MPA. Such rights refer to the right to exploit a resource in a particular area rather than an ownership, and they cannot be sold. The mechanism favours local fishermen to promote collective management and restricts fishermen from outside the local village from having access.
3. Reducing the leakage of benefits	Y	The exclusion of non-local fishers helps ensure that as large a proportion of fishing income as feasible flows into the local economy
4. Promoting profitable and sustainable fishing and tourism	Y	There has been an increase of revenue by the restoration of fishing resources and tourism has been boosted given the attention received in the media since the creation of the marine reserve.
5. Promoting green marketing	Y	The MPA has been used to promote green tourism through activities such as underwater photography competitions, tourist trips on working fishing boats and seafood cookery workshops.
6. Promoting diversified and supplementary livelihoods	Y	The promotion of 'pesca-tourism', in which fishers take tourists for trips to participate in traditional fishing, has helped supplement the income of some fishers
9. Provision of state funding	Y*	The state initially funded surveillance of the area, although this was then removed as a new government was introduced. More financial support is needed from the state to ensure future enforcement capacity.
10. Provision of NGO, private sector and user fee funding	Y	WWF funded and organised the initial biological survey and monitoring of the MPA, as well as other activities such as workshops with fishers, social surveys, campaigns of public awareness and running a volunteering programme.

Communication

11. Raising awareness	Y	Part of the teamwork between the different stakeholders promotes traditional fishing values and communication between the fishing sector and society. To promote these values and those of sustainability of fisheries they developed different initiatives, such as fishing workshops for schools and the general public and international networks of artisanal fishing communities to encourage sustainable fishing.
12. Promoting recognition of benefits	Y	The potential benefits for the exploitation of resources, particularly those due to the permanent closure of NTZs, were explained to the users from the earlier stages of the process.
Promoting recognition of regulations and restrictions	Y	Various official means of making fishers aware of local fishing restrictions and the exclusion of incoming fishers are employed, e.g. notices of legal restrictions, gazettes, etc

Knowledge

14. Promoting collective learning	Y	Academic scientists, fishermen and NGO researchers collaborated in the surveys and monitoring studies that informed the design of the MPA proposal, providing for the integration of scientific information with traditional ecological knowledge. GIS system developed to collate geographical, environmental and fishery data, including operations and catch data provided by fishermen.
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15. Agreeing approaches for addressing uncertainty	Y	It was acknowledged at the outset of the MPA initiative that it was very difficult to predict the fisheries and ecological benefits of protection therefore the initiative should be considered as a pilot experiment.
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Legal

18. Capacity for enforcement	Y*	Surveillance is undertaken mainly by a private company contracted by the regional government and under the coordination of the MPA management body, but surveillance resource has been reduced due to austerity and related financial restrictions; this poses a major challenge, as local fishermen lack the capacity to enforce restrictions themselves. The management body can inform the Fishing Council of any breach of the regulations within the MPA for the Fishing Council to give the appropriate sanction.
19. Penalties for deterrence	Y	Successful detection and prosecution of fishers breaching the restrictions leads to fines
20. Protection from incoming users	Y	TURFS restricted to fishermen with a track record above a minimum number of days, favours local vessels and prevents exploitation by incoming fishermen, including recreational divers, being a key motive for the community-based designation of this MPA.
21. Attaching conditions to use & property rights, decentralisation, etc	Y	The submission of annual stock assessments is a condition of the TURF to ensure consistency with sustainable fisheries policies.
23. Clear and consistent legal definitions	Y	Changes in regulations are providing clear and consistent approaches to appropriately addressing impacts on resources and biodiversity.

Participation

27. Rules for Participation	Y	The local communities understand the roles that they play with regards to the MPA and their relationship with the regional government is very clear.
28. Establishing collaborative platforms	Y	The proposal of this MPA was developed in partnership between fishers, scientists, an NGO and members of the autonomous government through different meetings and workshops in a participatory process.
31. Decentralising responsibilities	Y	The autonomous community within regional government and the management body has some decision-making powers decentralised from central government.
33. Building trust and the capacity for cooperation	Y	Trust, mutual respect and exchange of ideas between scientists and fishers, achieved through years of previous teamwork, was essential to the success of the process and is one of the main strengths of this MPA.
34. Building linkages between relevant authorities and user representatives	Y	There are strategic links between the <i>cofradia</i> and the regional government who collaborate and consult on many issues. Also, strategic links with a local anthropologist from the university was highly influential in building linkages with the local fishing community, as there was existing trust through years of common work and initiatives.
35. Building on local customs	Y	The traditional and sometimes hazardous method of hand collecting shellfish amongst breaking waves has been integrated into the OMMRFI, along with other customary fishing practices
36. Potential to influence higher institutional levels	Y	The national administration retains exclusive responsibilities in the elaboration of basic legislation but the Autonomous Communities can carry out and expand this legislation.

Cross-cutting themes:

Leadership

Some stakeholders played a key role in the success of the MPA thanks to the long-term vision, consistency and stability of their leadership. This leadership had an important role in facilitating the use of incentives and bringing good MPA governance. It was of vital importance the role of an anthropologist of UDC, a local expert trusted by the fishing community through years of common work in different initiatives, who has a good understanding of their needs and aspirations. The secretary of Lira's *cofradía* has also shown a strong commitment to promote sustainable fishing getting involved in numerous local and international initiatives.

Equity

An important fact in the success of the marine reserve is that it did not represent an imposition to the fishers, since the *cofradía* welcomed the idea from the beginning and participated actively in all the stages of the implementation. The inclusion of the fishers in the decision-making process and the use of their traditional ecological knowledge in the design of the reserve were crucial for promoting a better understanding of its benefits, an improved compliance of the fishing regulations and an outcome that was more equitable through protecting the customary rights of local fishermen from incoming transgressors.

Stewardship

A key factor in the effectiveness of the MPA is the sense of ownership generated by stakeholder participation, protectionism from incoming users, use of local knowledge and provision of property rights. The promotion of the MPA as a green initiative to raise awareness about sustainable fishing through the different local and international initiatives has spread a sense of pride within the community. Both fishers and non-fishers within the village act as ambassadors of the MPA, which is seen as an emblem of sustainability and concern about the health of marine ecosystems.

13. Isla Natividad MPA, Baja California Sur, Mexico – Wendy Wiseman and Bonnie McCay (2011, pp.156-163)

Name	Isla Natividad MPA, Mexico	Year of designation	2005
Area	7 KM ² (amongst six no-take zones)	State Capacity	-0.28 (rank 40.7%, 2016)
GDP per capita	\$10,326	Human Development Index (HDI)	0.756
GDP Growth Rate	2.2%	Population below the poverty line	52.3%

MPA Objectives:

Conservation	Operational
To re-build lucrative abalone populations in fishing grounds surrounding the island, protecting breeding grounds and larval settlements and protection of juveniles.	Fortify claims to resource access rights in the long term To reduce the impact from 'outsiders' and defend against poaching

Drivers and Conflicts:

- Overfishing has reduced abalone populations, often through illegal fishing and poaching, around the area of Isla Natividad, which residents of the island are very reliant on for their livelihood (abalone can retail for >\$300 per kg), as they are nearly all directly or indirectly actively engaged in the local fishing cooperative's activities.

Governance Framework/Approach:

Community-led – The fishing cooperative of Isla Natividad is ultimately responsible for the MPA. The cooperative has partnerships with relevant organisations for support and expertise, such as NGOs and scientific organisations. The cooperative has the legitimacy and the power as an institution to insist on compliance and to discipline those who do not comply and the involvement of government is merely seen as a way of legitimising these local efforts. This legitimacy underlies the MPA.

Effectiveness: 3 – Some of the impacts have been addressed through the cooperation of local users, but there are some issues such as prevention of poaching by incomers and coordination of tourism activity that still need to be addressed. The increasing risk from private competition in the area from incoming fishers and tourism operators would result in leakage of benefits from the MPA and potentially increase requirements for enforcement, putting pressure on capacity and related resources.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	Y	The fisheries harvesting concessions are allocated to the local fishermen's cooperative.
3. Reducing the leakage of benefits	Y*	'Intrusion' by incoming diving and surfing operators are restricted so that locals can capture the benefits by running such activities themselves, but improvement is needed in coordinating these efforts. The fisheries harvesting concessions are allocated exclusively to local fishing cooperative members but there are concerns about poaching by incomers.
4. Promoting profitable and sustainable fishing and tourism	Y	The MPA was established to promote profitable and sustainable fisheries. Results have shown slightly greater body sizes and densities of pink abalone populations in NTZs enhance recruitment in the vicinity of the NTZs, particularly after a climate

		driven hypoxia episode, as unexploited pink abalone populations seemed to be more resilient to hypoxia (Micheli et al., 2012).
5. Promoting green marketing	Y	Whilst accreditation by the Marine Stewardship Council and access to new lobster markets did not prove to be beneficial, abalones are marketed as coming from this sustainable source.
6. Promoting diversified and supplementary livelihoods	N*	There is potential for this in the future through tourism, if there can be agreement and coordination within the cooperative of how to proceed and prevent private operators taking advantage of the benefits from the MPA.
8. Investing MPA income/funding in facilities for local communities	Y	Some of the income from the fishing cooperatives is used to fund improvements in electricity and water supply infrastructure. Whilst this is mainly targeted on shellfish processing plants, houses and other buildings in the vicinity also benefit.
9. Provision of state funding	N	Due to the nature of the community-led MPA, there is no requirement for government funding, other than to support stock assessments and enforcement, as everything is managed from a local level.
10. Provision of NGO, private sector and user fee funding	Y	The Mexican NGO, COBI, worked in partnership with the fishing cooperative, providing technical and financial support for the MPA, including brokering additional funding from another foundation. A California NGO fund and support the MPA monitoring programme.

Communication

11. Raising awareness	Y	All activity within and around the island is in support of the MPA and all awareness raising and communication comes from the cooperative.
12. Promoting recognition of benefits	Y	The cooperative communicate the benefits that are generated from the MPA, sometimes supplemented by scientific publications from supporting organisations.
Promoting recognition of regulations and restrictions	N	All locals are already familiar with the NTZs and related fishing restrictions through their close association with the small community

Knowledge

14. Promoting collective learning	Y	The fishing cooperative themselves initially began experiments to close and monitor areas and these were further developed in collaboration with NGO's and academic scientists, guided very significantly by the fishermen's knowledge.
15. Agreeing approaches for addressing uncertainty	N	There isn't a formal agreement for addressing uncertainty, though the MPA includes experimental no-take zones to allow for testing the effects of the MPA through annual monitoring, which shows some willingness to act in the face of uncertainty.

Legal

18. Capacity for enforcement	Y	The members of the fishery cooperative have the capacity to enforce no-take MPA restrictions on locals, but enforcement on incoming boats is a major challenge, as they are also often engaged in drug running, etc., so more state enforcement is needed, but this is lacking due to a focus of the enforcement capacity on other crimes, along with inefficiency and corruption.
20. Protection from incoming users	Y	Only cooperative members can harvest fishery resources, which excludes incoming fishermen.
21. Attaching conditions to use & property rights, decentralisation, etc	Y	Renewal of fishing concession is contingent on annual stock assessments which demonstrate that the stocks are being managed sustainably.

23. Clear and consistent legal definitions	Y	There is a clearly defined criminal law as well as fisheries management law that applies directly to the cooperative.
26. Transparency, accountability and fairness	Y	The level of participation within and between the fishing cooperatives promotes transparency and fairness across all activities.

Participation

27. Rules for Participation	Y	The cooperatives fully understand how to comply with the MPA and the rules and regulations and their role within the surrounding environment.
28. Establishing collaborative platforms	Y	The cooperatives work well together to collaborate over issues and have become national and international 'models' of cooperative organisation
31. Decentralising responsibilities	Y	Fisheries management responsibilities have been devolved to the fishing cooperative
32. Peer enforcement	Y	Cooperative members are largely responsible for enforcing restrictions on each other, on local people who are not members of the cooperative, and on incoming fishers, though the latter is a particular challenge.
33. Building trust and the capacity for cooperation	Y	The general legitimacy of the cooperative and practices aimed at fairness, transparency, democratic decision-making and balances of power that are part of the cooperative's <i>modus operandi</i> all work towards building trust and cooperation.

Cross-cutting themes:

Stewardship

The devolution of fisheries management responsibilities to the local cooperative and their reliance on fisheries resources have helped engender a sense of stewardship towards their resources for self-governance and sustainable use.

Equity

The local community could be described as a 'hierarchy of wanabees' in that whilst the Mexican constitution indicates that anyone may use natural resources for subsistence, only cooperative members are allowed to exploit the fisheries. Whilst other locals can gain benefits through employment in canneries, etc, there are equity concerns that this actually represents a local hierarchical structure based on local entitlements, with those not gaining such entitlements being marginalised from decisions and benefits (Jones 2014, p.120).

Role of NGOs

NGO technical and financial assistance has been important to build on the cooperative's initial proposal to establish NTZs. It is important to note, however, that the idea for setting areas aside from harvesting came originally from the local cooperative.

14. Great South Bay Marine Conservation Area, USA - Carl LoBue and Jay Udelhoven. Paper (2013)

Name	Great South Bay Marine Conservation Area, USA	Year of designation	2002 and 2004
Area	54KM ²	State Capacity	1.24 (rank 84.7%, 2016)
GDP per capita	\$48,000 (US)	Human Development Index (HDI)	0.899 (4/188)
GDP Growth Rate	1.3% (US)	Population below the poverty line	15%

MPA Objectives:

Conservation	Operational
Re-establishing the hard clam population for the purposes of ecosystem health/enhancement and sustainable harvest.	Reducing pollution to ensure sufficient water quality to support the viability and sustainability of habitats, species and human uses.
Maintaining existing salt marshes, increasing salt marshes where possible, and enhancing functionality of salt marshes.	Increasing the environmental stewardship ethic on Long Island.
Maintaining and increasing existing acreage of seagrass meadows	
Ensuring the long-term functioning of barrier island habitats	

Drivers and Conflicts:

- Unsustainable harvesting of native shellfish populations has resulted in the collapse of Great South Bay oyster (Blue Points) populations. Hard clams which were once thriving are now absent from the majority of the bay, after being overexploited, impacting the natural ecosystem and resulting in the loss of hundreds of jobs.
- Water quality within the bay has degraded with nutrient rich waters creating harmful algae blooms and impacting the natural ecosystem. The removal of hard clams that naturally filtered the water in the bay and the increase of population in the area has added to the impacts.

Governance Framework/Approach:

Private – The MPA is owned and managed by The Nature Conservancy (TNC), covering approximately 22% of the bay, after acquiring ownership rights to two parcels of underwater land. TNC collaborates with public and private partners and an advisory board, the Bluepoints Bottomlands Council, formed of relevant natural resource managers, scientists and other stakeholders to develop and help implement long-term ecosystem restoration and informal plans for the Great South Bay.

Effectiveness: 2 – *Some impacts have been partly addressed but some impacts have not yet been addressed.* There are challenges to addressing impacts that originate outside the reserve, but collaboration with organisations and councils with community planning processes will enable progress.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	Y	Property rights were assigned with the purchase and resulting ownership by The Nature Conservancy of the 'underwater

		land'. Use rights also held by NGO were employed to end shellfish harvesting in the MPA.
4. Promoting profitable and sustainable fishing and tourism	Y	A major re-stocking programme has increased the density of hard clams, which has significantly benefited surrounding hard clam fisheries through the export of propagules.
9. Provision of state funding	N	This MPA is privately owned and therefore does not request state funding.
10. Provision of NGO, private sector and user fee funding	Y	The MPA is entirely funded by The Nature Conservancy, including the purchase of the area.

Communication

11. Raising awareness	Y	Outreach and education activities about the area and restrictions have been conducted with the local community, through public meetings, volunteer opportunities, newspaper, magazine and internet articles, school programmes and celebrity spokespeople.
12. Promoting recognition of benefits	Y	Education programmes promoting the recognition of ecosystem services provided by shellfish are key governance incentives applied in the MPA.

Knowledge

14. Promoting collective learning	Y	The conservancy and public collectively agree to manage the bay in a way where shellfish are much more abundant and where seagrass can grow. Applied research and monitoring provide information and guidance on actions to make this possible.
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Legal

17. Hierarchical obligations	N*	Being privately owned there are no legally mandated biodiversity conservation objectives, however, as a no-take shellfish management area, local law enforcement can take action without the Conservancy's direct complaint. The entire estuary could benefit from legal obligations that require public agencies to sustainably manage the whole Great South Bay and its watershed.
18. Capacity for enforcement	Y*	Enforcement capacity largely provided by municipal authorities but this is hampered by a lack of commitment from some authorities and confusions amongst town, county, state and federal enforcement agencies when violations are reported.
19. Penalties for deterrence	Y	Illegal shellfish collection prosecutions can lead to fines but the lack of enforcement capacity related to a lack of jurisdictional coordination undermines the effectiveness of this deterrent
20. Protection from incoming users	Y	Shell fishing near the area is only allowed by local residents.
21. Attaching conditions to use & property rights, decentralisation, etc	N	The property rights at this site are awarded to TNC under the private title of ownership and allow almost complete control over human uses on the site. There are no legally mandated objectives associated with the site, though TNC has implemented a 60-year organisational objective to protect plants, animals and natural communities, in collaboration with public and private partners.
22. Cross-jurisdictional coordination	N*	There needs to be better integration between town, county, state and federal enforcement agencies to detect and deter illegal shellfish gathering
26. Transparency, accountability and fairness	Y	TNC are the clear owners of the MPA and strive to use publicly inclusive and transparent decision making in management planning for the conservation area.

Participation

28. Establishing collaborative platforms	Y	Establishment and participation on the Bluepoints Bottomlands Council, organised by a group of public and private individuals who represent local, state and federal interests are working together to create a long-term vision for Great South Bay
31. Decentralising responsibilities	N	All responsibility lies with TNC.
33. Building trust and the capacity for cooperation	Y	TNC have built trust within the local communities through their open and effective communications. Through involvement with the local communities they have increased public concern in the wider area which may indirectly result in mitigating some estuary wide issues.
34. Building linkages between relevant authorities and user representatives	Y*	Many of the impacts to the area require collaboration with stakeholders outside of the conservation area, which TNC are actively engaged with. However, there have been some relationship issues with stakeholders who have an interest in harvesting shellfish outside of the conservation area which need to be addressed.
36. Potential to influence higher institutional levels	N*	The lack of capacity for TNC as a private sector actor to influence town, county, state and federal institutions and policies remains a challenge for the promotion of conservation measures in the Great South Bay MCA and wider environment

15. Chumbe Island Coral Park, Tanzania – Lina M Nordlund, Ulrike Kloiber, Eleanor Carter and Sibylle Riediller. Paper (2013)

Name	Chumbe Island Coral Park, Tanzania	Year of designation	1994
Area	0.33 KM ²	State Capacity	-0.41 (rank 35.5%, 2016)
GDP per capita	\$US 955	Human Development Index (HDI)	0.521
GDP Growth Rate	7%	Population below the poverty line	67.9%

MPA Objectives:

Conservation	Operational
To protect and manage the marine and forest ecosystems in the MPA	To promote environmental education through the Chumbe Education Programme
To promote the conservation of rare and endemic species	To manage and promote the Chumbe eco-lodge as a model for sustainable tourism development at the same time as providing a high-quality service to visitors, on a not-for-profit basis, whereby revenue generated supports the MPA management and associated activities
	To encourage benefit streaming from MPA activities to local communities
	To promote the employment of Zanzibari's from local communities, and to provide on-going training and capacity building for local people.
	To maintain the sites of historical and cultural importance in the MPA in collaboration with the relevant associated organizations
	To operate in a sustainable, transparent manner, involving all stakeholders
	To encourage close cooperation between all agencies and to promote good public relations
	To monitor management performance against planned activities and effectively evaluate the project overtime
	To fulfil all legal and contractual obligations
	To promote research in the MPA in support of management
	To develop and implement the biodiversity monitoring systems for both the marine and forest habitats in the MPA

Drivers and Conflicts:

- Unsustainable fishing methods such as dynamite fishing and beach seining, causing destruction to coral reefs. Coral mining, pollution from coastal development and intensive agriculture also impact. Turtles, sea cucumbers, seahorses, shells and shark fins are harvested mainly for export purposes.
- Coastal population is growing rapidly, contributing to environmental degradation of coral reefs and coastal forests, including that caused by sewage. Uncontrolled garbage disposal contributes to coastal run-off and waste treatment facilities are often not in place at many hotels which discharge untreated waste into the sea. Plastic bags can also often litter the sea.
- Local livelihoods are dependent on natural resource and a healthy marine ecosystem. Poverty can drive the use of destructive fishing practices and rule breaking, noting that this MPA is amongst the lowest HDI, per capita income and state capacity metrics of all the case studies
- Lack of understand regarding the local environment has resulted in destructive and unsustainable practices.

Governance Framework/Approach:

Privately owned - Chumbe Island Coral Park Limited (CHICOP) is a private limited company, in many respects managed like an NGO, including the participation of a wide variety of stakeholders. The Advisory Committee has two representatives from CHICOP and nine representatives from different stakeholder groups and institutions, mainly Government of Zanzibar departments, research institutions and leaders from adjacent villages. They work in collaboration with the Department of Fisheries for any legal prosecutions needed to enforce the 0.33 KM² NTZ.

Effectiveness: 4 – *Most impacts have been addressed but some not completely.* Due to the island status and the committed work of park rangers and environmental programmes, enforcement has not been a major problem since 1995 and poaching incidents have remained low.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	Y	CHICOP has been granted a lease to Chumbe by the government
3. Reducing the leakage of benefits	Y	CHICOP employs people from nearby communities – of 43 employees, 95% are Tanzanians, over two thirds from local communities and 5% expatriates.
4. Promoting profitable and sustainable fishing and tourism	Y	Biomass of commercially exploited fish inside no-take MPA has increased and yields in vicinity of MPA reported by fishermen to have increased.
5. Promoting green marketing	Y	The MPA has won many international awards as a premium and effective high-end ecotourism destination, which has helped in advertising and in ensuring a sustainable flow of tourism income on which the funding of the MPA depends.
6. Promoting diversified and supplementary livelihoods	Y	The ecotourism resort has an exceptionally high staff–tourist ratio in order to promote jobs for local people, as well as providing livelihoods related to tourism, e.g. food and handicrafts market on island, provision of craftsmen and building materials for resort maintenance, outsourcing of road and boat transport.
8. Investing MPA income/funding in facilities for local communities	Y	Tourism income used to provide environmental education facilities and opportunities. Warden patrol boat also serves as a rescue boat for local fishermen outside the MPA.
10. Provision of NGO, private sector and user fee funding	Y	The MPA was originally privately funded by a lead individual as NGOs considered such a venture to be too politically and economically risky, the operational funding being entirely derived from high-end ecotourism income.

Communication

11. Raising awareness	Y	Media coverage through TV, radio and the internet has been high due to eco-tourism awards and nature conservation. There is also a visitor’s centre on the island which has a classroom for children, community groups and fisher associations.
12. Promoting recognition of benefits	Y	There is a broad recognition of the benefits, as fishermen openly communicate about spill over and better yields in their fishing areas since the MPA was designated. There is a reef module in the local school curriculum to help educate children on such benefits.
Promoting recognition of regulations and restrictions	Y	There are guided visits above and below the water to allow people to fully integrate with the area and understand the regulations and restrictions. Interactive materials in the visitor centre also communicate about the MPA.

Knowledge

14. Promoting collective learning	Y	Long-term research has been taking place at Chumbe through the University of Dar es Salam and academic institutions linked with the IMS co-operation programs, as well as shorter studies conducted by various academic and independent researchers from around the world. This has been shared at international conferences in the field of marine conservation and responsible tourism, as well as forming insight for the Advisory Committee for decision making.
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Legal

17. Hierarchical obligations	Y	The Republic of Tanzania is a signatory to the Convention on Biological Diversity and the Nairobi Convention of 1985, committing to targets which the objectives of this MPA support the achievement of.
18. Capacity for enforcement	Y	The private enterprise that created this MPA funds surveillance by unarmed rangers, in collaboration with local fishers. They rely primarily on education and warnings, but there is recourse to the arrest of persistent poachers by armed police based on the island.
20. Protection from incoming users	Y	The NTZ is protected from users from mainland Zanzibar
21. Attaching conditions to use & property rights, decentralisation, etc	Y	The lease from the Tanzanian government includes conditions related to sustainable use of the island's natural resources
22. Cross-jurisdictional coordination	Y	The wide range of stakeholders involved in the Advisory Committee and the CHICOP Management provides effective coordination across several departments, areas and jurisdictions. The consistent meetings and relationships developed with clear agreements provides this effective approach.
23. Clear and consistent legal definitions	Y	All laws are provided under the Department of Fisheries and Marine Resource. Management plans define the objectives, activities, research regulations and 'Do's and Don'ts' for staff and visitors ensuring clear representation of the definitions
26. Transparency, accountability and fairness	Y	The regular meetings of the Advisory Committee provide transparency and fairness to actions and decision-making ensuring that all relevant parties have the opportunity to be present and input to proceedings.

Participation

27. Rules for Participation	Y	Participation is through the Advisory Committee and the village leaders conduct village meetings for further inclusion of the local communities.
28. Establishing collaborative platforms	Y	An Advisory Committee comprises of government departments, fisheries, forestry, education and the leaders of four neighbouring fishing villages, as well as representation from the Institute of Marine Sciences from the University of Dar es Salam. This provides the opportunity for all parties to share knowledge for development of plans and processes.
33. Building trust and the capacity for cooperation	Y	The inclusion of village leaders in the Advisory Committee and their capacity to consequently deliver village meetings maintains an open and transparent approach which builds trust with communities and organisations to effective cooperation.
34. Building linkages between relevant authorities and user representatives	Y	The inclusion of key stakeholders in the Advisory Committee provides strategic links between the required departments and organisations for effective collaboration and coordination of activities and decision-making.
36. Potential to influence higher institutional levels	Y	CHICOP and its Advisory Committee has the capacity and capabilities to challenge government decisions if they were to impact the objectives of the MPA.

Cross-cutting themes:

Leadership

The very strong leadership and commitment of the founder of CHICOP has been vital to the establishment and effectiveness of CHICOP, including the need to address some major politically based challenges to this MPA. This is arguably a factor that makes this effective private MPA challenging to transfer to other contexts, as this leadership role was crucial.

Role of NGO

This MPA is regarded as a flagship of private MPAs based on a lease to CHICOP Ltd, which functions as an NGO, but this private MPA is critically dependent on continued political will to continue this lease, which could be a challenge given the potential for corruption related to corporate tourism development opportunities on the island.

16. **Baleia Franca Environmental Protected Area, Brazil** – Macedo, Vivacqua, Rodrigues and Gerhardinger. Paper (2013)

Name	Baleia Franca Environmental Protected Area, Brazil	Year of designation	2000
Area	1561 KM ²	State Capacity	-0.15 (rank 46.0%, 2016)
GDP per capita	US\$11,727	Human Development Index (HDI)	0.755
GDP Growth Rate	0.1%	Population below the poverty line	21.4%

MPA Objectives:

Conservation	Operational
Protect, in Brazilian waters, the Southern Right Whale (<i>Eubalaena australis</i>)	Organise and guarantee the rational use of regional natural resources
	Organise the occupation and use of water and land
	Organise recreational and touristic use, activities of research and the traffic of boats and airplanes

Drivers and Conflicts:

- Illegal fishing and the development of shrimp farming are impacting the marine area and there are conflicting interests between small-scale fisheries, industrial fisheries, sport and professional spear fishers.
- Tourist activities for whale watching expeditions are conflicting with conservation objectives and are creating disturbance in reproductive sites.
- Housing construction in ecologically fragile and legally protected ecosystems are driven by the expansion of need from mass tourism. Although it provides jobs, money and house rents and increase in commerce, it also introduces problems of disordered land occupation, drugs and changes in local traditions. Development is stimulated by some municipal and state public institutions, causing conflict between government executive institutions and the marine protected area.
- Sand mining in dunes, extraction of calcareous shells in lagoons and subterranean coal mining is prohibited within Environmental Protection Area, but the definition is subject to various interpretations, providing for these activities to often be permitted or tolerated.

Governance Framework/Approach:

None – ‘paper park’ – All federal protected areas in Brazil are governed by the Chico Mendes Institute of Biodiversity Conservation (ICMBio), which is a government agency. A Management Council (MC) is theoretically responsible for gathering actors to participate in the various actions surrounding the MPA, although activities are restricted to consultation processes to inform decisions ultimately taken by the ICMBio. Officials within the ICMBio have authorised agreements that directly conflict with the objectives of this MPA and undermine mediation with sectoral actors, conducted by the Management Council for the MPA. A distinct lack of political will is preventing progress towards effectiveness for this MPA and there is no recognisable governance approach.

Effectiveness: 1 – *Some impacts beginning to be slightly addressed.* There are many challenges with the MPA that are preventing effective protection of the marine and coastal area. Some of the impacts have been recognised, but many have not yet been addressed and without a governance framework the potential for achieving objectives is minimal. Progress is being made with building relationships, but this is still in the early stages.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
4. Promoting profitable and sustainable fishing and tourism	N*	The conflicts between industrial fishers, small-scale fishing and tourism with whale watching is impacting a sustainable long term future. There needs to be a strategy for managing these human activities in a way that can satisfy economic requirements as well as delivering towards the conservation objectives
8. Investing MPA income/funding in facilities for local communities	N*	The focus on mass tourism through whale watching is detracting from the needs of the local communities as they become marginalised in favour of bigger business from tourism and coastal development.
9. Provision of state funding	Y*	There is not enough political will or funding to provide for the success of this MPA. The conflicting approach of municipal and state departments is severely impacting the efforts of the Baleia Franca Environmental Protected Area (BFEPa).
10. Provision of NGO, private sector and user fee funding	N*	Due to very limited resources the MPA could benefit from the support of an NGO for human resource as well as financial contribution.

Communication

11. Raising awareness	Y*	A communication consultant was assigned to improve information flow between all relevant parties and raise awareness of the MPA. The use of local media via radio and online resources as well as booklets for information, including training materials was important for generating awareness of the objectives and actions developed by the BFEPa. Limited funding has resulted in this being a short-term strategy. Negative and misleading information is too often communicated to manipulate public opinion providing an ongoing challenge.
12. Promoting recognition of benefits	N*	A belief that the MPA is solely to 'protect the whales against fishermen' is reducing the opportunity to recognise the benefits that it can provide. Promoting the benefits would help to counteract this and potentially improve relationships between fishermen and BFEPa.

Knowledge

14. Promoting collective learning	Y*	A committee of residents, tourism, fishermen associations and public agencies, was created for the opening of the Ibiraquera's lagoon, promoting collective learning, especially using fishermen's knowledge of shrimp larvae and fish ecology. While this is a positive action, the collective learning activity within the Management Council, considered as a learning community gathering people with shared interest in learning-by-doing through partnerships to solve governance problems, favours individuals with higher education which can leave non-scientifically literate groups, such as fishermen, in a more passive situation.
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Legal

17. Hierarchical obligations	N*	The lack of binding obligations to effectively achieve the objectives of this MPAs is arguably a key reason why it has proved to be ineffective in the face of major driving forces. One way of improving effectiveness may be the extension out to sea of the politically encouraging and enabling role of the CBD and related institutions that have improved the effectiveness of terrestrial MPAs in Brazil.
18. Capacity for enforcement	N*	Enforcement capacity falls far short of that required to ensure effectiveness, due to a lack of funding and an underlying lack

		of political will, e.g. enforcement of all environmental regulations in Baleia Franca (130km coastline, 1560km ² , including 10 cities) is undertaken by five employees with no boats, only two cars and an operational budget of less than \$15,000.
23. Clear and consistent legal definitions	N*	Most of the legal framework resides under existing environmental legislation which is fragmented and disconnected from other coastal policies and governance frameworks. A strategy is under development to integrate the coastal marine governing system.

Participation

28. Establishing collaborative platforms	Y*	The Management Council provides a platform for collaboration between 42 representatives from varying relevant social actors. Technical Chambers also exist within the Management Council to focus on specific major threats to conservation objectives and allows additional parties to be involved. The Management Council and Technical Chambers are also able to designate Working Groups to deal with more specific and temporary issues. More could be done to collaborate with a broader set of stakeholders and users, such as fishermen.
29. Neutral facilitation	Y*	Independent external facilitation has been used for several discussions and developments, but changes in funding have resulted in this not being a permanent option.
33. Building trust and the capacity for cooperation	Y*	A lot of trust was built up using an independent and neutral facilitator. However, since the end of their contract BFEPa relevant authorities are facing obstacles in establishing and maintaining partnerships with representatives that existed previously. Through working in partnership with small-scale fishermen, it is hoped that some of these challenges can be overcome.

17. Pirajubaé Marine Extractive Reserve (RESEX), Brazil – Gerhardinger LC et al. Report (2011, pp.194-205)

Name	Pirajubaé Marine Extractive Reserve (RESEX), Brazil	Year of designation	1992
Area	14.44 KM ²	State Capacity	-0.15 (rank 46.0%, 2016)
GDP per capita	US\$10,200	Human Development Index (HDI)	0.755
GDP Growth Rate	5.1% (2008)	Population below the poverty line	21.4%

MPA Objectives:

Conservation	Operational
To safeguard the extractive use of the valuable mussel ‘berbigão’ (<i>Anomalocardia brasiliensis</i>) and the protection of mangroves and sandy shoals.	To protect local culture, including its productive practices closely related to natural resources (RESEX – Reserva Extrativista)
	To guarantee that local communities do not affect the integrity of the natural environment.

Drivers and Conflicts:

- Small-scale traditional fisheries utilise the borders of the MPA and crab fishing is taking place which is prohibited in this area. The growth of external demand for berbigão, has increased exploitation of this resource.
- Development in the area from the coastal highway to nearby airport - the decision to build this and reclaim littoral areas that were important traditional ‘pegada’ shrimp fishing grounds using sediment dredged from sand shoals within the MPA, which destroyed around 1/3 of the MPA area, being announced at the same time as the RESEX designation.
- Related developments and gas stations are leading to pollution of the estuary and consequently the ocean. Domestic developments are also impacting due to sewage waste and increasing infringements of reserve borders, especially impacting mangroves.

Governance Framework/Approach:

None – There is no evidence of a governance framework, impacted by the fragmented and flawed National System of Protected Areas (see Gerhardinger et al, 2011). Designation of any RESEX must follow community demand and articulation, with management shared amongst local stakeholders, but the balance of power favouring traditional populations. The government role is to mediate or facilitate participatory processes and guarantee sustainable use of the area, yet there are no legal mechanisms in place and actions by the federal government environment agency are directly impacting the MPA.

Effectiveness: 0 – No use impacts addressed; MPA designation may even have increased impacts by undermining previous governance institutions. There is a lack of clear objectives and weak institutional capacity for implementation, which has resulted in substantial changes in the natural and social environment. The extent and condition of habitats in the MPA has seen major reductions since its designation.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	N*	Property rights were designated to a traditional community but a lack of organisation and agreement over the 'true' beneficiary of the RESEX limits the effectiveness of any such rights. The MPA could benefit from this if there could be effective organisation and agreement.
4. Promoting profitable and sustainable fishing and tourism	N*	A lack of coordination, organisation and agreement in the area is impacting sustainable use.
7. Providing compensation	N*	Compensation could be awarded in the future to assist local communities via the Santa Catarina State Infrastructure Department.

Communication

11. Raising awareness	Y*	Posters and banners were created to inform locals, but the knowledge of the MPA remains low. This could be significantly improved to improve engagement.
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Knowledge

14. Promoting collective learning	N*	Plans for a working management council to enable collective learning, knowledge sharing/construction and an arbitration platform could improve the sharing and use of knowledge.
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Legal

17. Hierarchical obligations	N*	A lack of binding obligations to effectively achieve the objectives of this MPA is arguably a key reason why they have proved to be ineffective in the face of major driving forces. These forces came from the state itself in relation to the highway construction project that drastically undermined the effectiveness of the MPA. One way of improving effectiveness may be the extension out to sea of the politically encouraging and enabling role of the CBD and related institutions that have improved effectiveness of terrestrial MPAs in Brazil.
18. Capacity for enforcement	N*	Enforcement capacity falls far short of that required to ensure effectiveness, due to lack of funding and an underlying lack of political will.
23. Clear and consistent legal definitions	N*	The MPA lies within a consistent national legal basis, however there are no legal mechanisms in place here.

Participation

28. Establishing collaborative platforms	Y*	Participative meetings are held in the community, but a lack of coordination, organisation and understanding of who is managing the MPA is impacting collaborative efforts.
29. Neutral facilitation	Y*	The Environmental Education Programme plays a neutral facilitation role in many discussions.
33. Building trust and the capacity for cooperation	Y*	Work is being done by the Environmental Education Programme to build trust and reconstructing and strengthening a community 'identity'. But historical behaviour and lack of action makes this a challenge as many feel that 'nothing ever happens' after meetings.

34. Building linkages between relevant authorities and user representatives	N*	The development of strategic links with key stakeholders needs to be developed
35. Building on local customs	N	The airport highway construction actually reclaimed the majority of the traditional grounds for 'pegada' shrimp fishing

Cross-cutting themes:

Leadership

A new officer, appointed in 2009, publicly admitted the prior negative approach and decisions put forward by the federal government environmental agency. They were given the opportunity to lead the implementation of the MPA and most local stakeholders acknowledged significant changes and a positive response, due to the transparent and democratic style of facilitation adopted.

Equity and stewardship

The unclear definition of who is the 'traditional community' raises recurrent discussions regarding the merits, roles and responsibilities of different groups, developing equity issues and consequently a lack of stewardship.

18. Cres- Lošinj Special Marine Reserve – Mackleworth P, Holcer D and Fortuna CM. Paper (2013)

Name	Cres- Lošinj Special Marine Reserve, Croatia	Year of designation	2006
Area	526 KM ²	State Capacity	0.44 (rank 66.1%, 2016)
GDP per capita	\$ 16,100	Human Development Index (HDI)	0.818
GDP Growth Rate	4.8%	Population below the poverty line	19.5%

MPA Objectives:

Conservation	Operational
Restoration and maintenance of the population of bottlenose dolphins in the Kvarneric at a viable level.	
To ensure that the Kvarneric provides the environmental and ecological processes necessary for the achievement of this primary objective, subject to natural change.	
To provide protection of the habitat of the loggerhead sea turtle – a summer habitat for foraging and a winter habitat for hibernation.	
Provide protection of sea grass meadows as well as coral biocenosis	
Protect islands and coast that are nesting and breeding sites for protected bird species.	
Protect underwater archaeological sites.	

Drivers and Conflicts:

- Tourism is the primary economic driver and greatest threat to the islands and coastline with related and additional threats coming from urbanisation and unregulated development. Local physical plans for the islands and coastline were targeted by speculators to profiteer through the planning system before joining the EU. The increase in marine tourism, including an expansion of the Mali Lošinj harbour, adjacent to the MPA and the development of nautical tourism, particularly the use of personal watercraft, has a direct effect on the environment. Physical and noise disturbance displaces the dolphins in the summer months when the amount of registered boats on the island quadruples (Rako et al, 2012).
- Professional fishing accounts for less than 1% of employment on the island, though its effect on the marine system is larger due to the multiple gears used in the area and the large ‘recreational’ fishery. The area is fished by bottom trawlers, purse seiners, static gill and trammel nets, long-lines, rods and spear guns. In all niches fish are exposed to at least one gear. ‘Recreational’ fishing is a major impact since many of the seasonal tourist workers supplement their income outside the summer season by fishing. External fishers, including professional purse seiners and bottom trawlers, use the area; in addition, purse seiner vessels have been implicated in the illegal use of explosives. There is a general trend of decline both in the index of fish biomass of total catch and catch of the commercial species in the area. The opening of the external EU market has recently led to many of the fish from the Lošinj region being exported to Italy, exacerbating the problem.
- Water quality is declining due to only a limited part of the island serviced by a sewerage system. Wastewater from many of the hotels is biologically untreated and disposed of directly into the sea. The system is adequate only for the residents of the archipelago.

Governance Framework/Approach:

None - Although there were some potential elements of a protective legal framework under the Nature Protection Act Law on which the CLSMR was based, the temporary (three years) designation as a special reserve led to no actual governance initiatives and was allowed to lapse in July 2009, in order to provide for a marina development to go ahead, and there has been no apparent governance framework, no management plan, no budget and no enforcement.

Effectiveness: 1 - *Some impacts beginning to be slightly addressed.* The construction of the Nerezine marina was only halted temporarily, yet was reduced in size after permission was granted for its development to continue. General disturbance and boat traffic remains with only small improvements occurring as tourism operators recognise the economic benefits that the dolphins bring to them. Attention was brought via the media to illegal fishing practices, yet nothing has been implemented to prevent this. No real impacts were addressed at all, other than a slight reduction in the size of the eventually permitted marine.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic – The second most important set of incentives for this MPA.

Incentive type	Used	How/Why
4. Promoting profitable and sustainable fishing and tourism	N*	Opposition from adjacent islands and the leaders of the Lošinj fisheries guild in cooperation with developers highlights the requirement for agreements to support sustainable fishing in the interests of economic benefits as well as conservation objectives.
6. Promoting diversified and supplementary livelihoods	Y*	Some bottom trawlers provide tourist day trips for dolphin watching, combined with pesco-tourism trawling trips. Additional options to leverage tourism and also diversified fishing efforts could benefit here.
9. Provision of state funding	N*	Funding from the state is a necessity for resource and implementation for this MPA but is currently not provided.
10. Provision of NGO, private sector and user fee funding	Y*	The MPA has been almost entirely driven and funded by the local NGO Blue World, which was established specifically for this initiative. They gain their funding from paying volunteers, corporate donations and a European Commission programme, but this is unsustainable with no long term plan.

Communication

11. Raising awareness	Y*	The media was used to promote the initial concept as the first MPA for dolphins in the Mediterranean and it influenced the implementation of preventative protection, although some media outlets sought to exacerbate problems with inflammatory stories. An education centre was created to provide local focus for sustainable development and extra-curricular activities on the island. Tourists were attracted in the summer months and at other times, schools and colleges. Awareness raising alone, however, has proved insufficient to address the basic conflicts related to the CLSMR
12. Promoting recognition of benefits	Y*	A series of brochures have been published highlighting the advantages of the protected area for local management and the economy.

Knowledge

14. Promoting collective learning	N*	With the introduction of preventative protection, cooperative projects with the local fishery guild ceased along with their inclusion in research on shark and marine turtle populations. There is also a poor reputation of the institutional scientific community – ‘rife with nepotism, favouritism and corruption’.
16. Independent advice and arbitration	N*	There was a dispute between NGO scientists, backed by peer reviewed reports, and an academic scientist over the significance of the potential impacts of a proposed marina on dolphin populations. Supporters of the marina promoted the latter’s views, the role of an independent arbitration panel to resolve this dispute being identified by the NGO as a critically important need.

Legal – Lack of ownership, political will and laws with definition are creating confusion and are open to manipulation and misinformation. It's the most important incentive to get right.

17. Hierarchical obligations	N*	ACCOBAMS is needed to pressure the government for success of CLSMR. The lack of binding obligations to effectively achieve the objectives of this MPA is arguably a key reason why they have proved to be ineffective in the face of major driving forces. In this case Croatia having recently become a member of the EU could be a key way of improving effectiveness, as accession requires that all directives be fulfilled, including the species conservation obligations of the Habitats Directive, this MPA being focused on the conservation of bottlenose dolphins and cetaceans, these being a priority species under the directive. The NGO Blue World has played a key role in this respect in its involvement in notifying the EC of the ineffectiveness of this MPA under the Habitats Directive.
18. Capacity for enforcement	N*	Enforcement is needed to prevent the impacting behaviours from occurring to achieve conservation objectives.

Participation

28. Establishing collaborative platforms	N*	Participation is a relatively new concept in Croatia so it is difficult to create true opportunities for effective citizen participation where there is little or no experience with these processes by the citizens themselves or the institutions that should be facilitating participation.
34. Building linkages between relevant authorities and user representatives	N*	Strategic links between state representatives, NGOs and key users, such as the fisher's guild, would go some way to developing agreement around activities surrounding the MPA

Cross-cutting themes:

Leadership

The absence of clear leadership at individual level, and over the competent authority, has undermined the development of the CLSMR. Loss of local support and political will for the conservation of the CLSMR, through a change in local Mayor in 2005, was also a significant setback. The inactivity of the competent authority after declaration of preventive protection undermined any trust that had previously been created with the greatest effect on the legal and participative incentives.

Role of NGOs

NGOs have played a significant role in all the incentives. In particular, they provided the principal source of scientific knowledge, play a major role in the communication incentives through the Lošinj Marine Education Centre, and lobby at international level, the best prospect for the reinstatement of the CLSMR being legal pressure from the European Commission, to whom the NGO have officially complained about the lapsed designation. Initially, NGOs also pushed for participation, but due to the disinterest of the state they have reduced this role.

Equity

Participation in Croatia remains in its formative stage as the country is emerging from a previous centralised regime. Generally participative approaches concentrate on 'the usual suspects' and there has been little attempt by the authorities to do little more than minimum consultation. Additionally, consultation has concentrated on attempting to placate the opposing stakeholders, at the expense of the biological objectives, rather than seeking widespread views.

Stewardship

Due to the demographic changes to the archipelago it is hard to identify a defined indigenous or local 'community'. Transience and seasonality make it difficult to create critical mass for the development of collective action to lead to the stewardship of the island as a whole.

19. Velondriake Locally Managed Marine Area, Madagascar – Laura Marziali, MSc dissertation (2014)

Name	Velondriake Locally Managed Marine Area, Madagascar	Year of designation	2009
Area	680 KM ²	State Capacity	-0.69 (rank 24.5%, 2016)
GDP	\$1,000 (2013)	Human Development Index (HDI)	0.51
GDP Growth Rate	2.6% (2013)	Population below the poverty line	75.3%

MPA Objectives:

Conservation	Operational
To protect marine and coastal biodiversity, while improving livelihood sustainability in the Velondriake region.	Fisheries development; nature conservation; economic development; solidarity between local communities; education; sustainable biodiversity use, preservation of biodiversity for future generations and ecotourism.
	6 permanent reserves – 5 coral reefs and one mangrove with no extraction allowed.

Drivers and Conflicts:

- Over exploitation of fish resources has increased as population has grown due to high birth rates, increasing the number of fishers reliant on resources for food and income. The region also opened to the global fisheries market, increasing the pressure and attracting more people from the mainland for jobs. Fishing methods remain traditional, but target species of octopus and sea cucumber are being exploited.
- Pressures from outside markets and illegal fishing is increasing the impact on the area.

Governance Framework/Approach:

Community-led - The management structure is a community based association (CBO), the Velondriake Association, which in 2009 became the Velondriake Locally Managed Marine Area (LLMA). It consists of a general assembly, a central committee, three regional sub-committees (representing a sub-region), an executive committee comprised of representatives of an international NGO (Blue Ventures), and the local government. All decision making must pass through all levels of the association before a decision is made or implemented. The Velondriake Association has representatives from all local villages to ensure benefits filter back into the community.

Effectiveness: 3 – most impacts have been addressed but many need improvements.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
Payments for marine ecosystem services (PES)	N*	Could provide a future opportunity for providing alternative income for the MPA.
4. Promoting profitable and sustainable fishing and tourism	Y	Temporary octopus reserves were established to show the community the economic benefits from the act of sustainably managing marine resources. A ban on destructive gears was implemented and the creation of NTZs. data collected between 2003 and 2010 showed that this measure improved fishers income and their catch per unit efforts as well as that the economic benefits outweighed any potential negative effects (Benbow and Harris, 2011)
6. Promoting diversified and supplementary livelihoods	Y	Aquaculture has been introduced to ease some pressures on the marine resource and provided independent small businesses for local families, providing an additional source of income.
7. Providing compensation	N*	This could improve the governance structure and steer
9. Provision of state funding	N	This MPA is community-led and has no government/state involvement. The state also lacks capacity and financial resource to support the MPA
10. Provision of NGO, private sector and user fee funding	Y	Funding for the MPA and for diversified livelihoods development comes from an international NGO, heavily involved with this MPA

Communication

11. Raising awareness	Y	Awareness building is done throughout the community through meetings and other verbal communication
12. Promoting recognition of benefits	Y	Local monitors snorkel and count the number of fish inside and outside the reserve, comparing data and reporting back the results to the rest of the community. Community meetings are held to explain the value of the permanent reserves and the benefits that they generate
Promoting recognition of regulations and restrictions	Y	Village representatives are responsible for communicating existing and any new regulations. Posters are also used to communicate regulations, especially to incoming users, to deter the use of destructive fishing gears.

Knowledge

14. Promoting collective learning	Y	Local and scientific knowledge is shared on an ongoing basis, and was particularly important for the creation of the MPA and the demarcation of the boundaries, as well as for ongoing discussion on conservation activities within the protected area.
16. Independent advice and arbitration	N*	There are conflicts between stakeholders concerning the management of the MPA with issues of conflicting information. A form of independent arbitration could manage some of these conflicts.

Legal – Due to the lack of involvement of the state, there are no legal incentives in use at this MPA.

17. Hierarchical obligations	N*	There is no top-down measure to ensure that Velondriake is reaching wide-scale biodiversity conservation objectives, as the LMMA is not a part of the System d’Aire Protégée du Madagascar (SAPM).
18. Capacity for enforcement	N*	There is only self or peer enforcement carried out at this MPA and there are no legal powers to be able to deal with enforcing rules and regulations onto incoming users and other rule-breakers. There are increasing issues from big commercial fisheries. There are only 3 monitoring vessels, 8 speedboats, 18 inspectors and 22 observers in the whole of Madagascar.

19. Penalties for deterrence	N*	Although the Dina has legal requirements, relying on the community for enforcement and penalties are not sufficient and other means are required, possibly state involvement.
20. Protection from incoming users	N*	A temporary two-year protection status was issued by the government in 2010 to provide protection from outside pressures, but this was not extended. A permanent level of protection was being sought to provide greater legal protection.

Participation

27. Rules for Participation	N*	There are no documented rules for participation and many of the local fishermen feel that they are not adequately included.
28. Establishing collaborative platforms	Y	There are a number of committees that have been established to enhance collaboration. There are also member workshops to build capacity and management skills. All permanent residents are members and allowed to participate in decision making and management, however there needs to be increased transparency in the decision-making process.
29. Neutral facilitation	N*	This could improve the governance structure and steer to facilitate a participative process and ensure better transparency in decision making, as the president of the Velondriake Association has final decision making power
30. Independent arbitration panels	N*	There is no method for arbitration and with the lack of legal incentives, there is no avenue for addressing any issues.
31. Decentralising responsibilities	Y*	All responsibilities have been decentralised and are in the power of the local communities. However, this can often lead to conflict between what the locals want and the biodiversity conservation goals.
32. Peer enforcement	Y	All enforcement is done by peers under rules of self-enforcement. The penalties for infringement are high.
35. Building on local customs	Y	The MPA has been completely built around the local community and therefore their customs.

Cross-cutting themes:

Leadership

A big role was played by the NGO Blue Venture in supporting and working with the community to designate and effectively manage the MPA. Over time this has reduced to be more supportive as the leadership has moved over to the Velondriake Association. There is one clear leader in the President of the Association, which presents a challenge if they were to leave, as there is no other leadership figure.

The Role of NGO's

Blue Ventures is very active in Velondriake, providing scientific knowledge, analytical skills, management leadership and funding. The community is very reliant on the NGO presence.

Equity issues

Some fishermen feel that they are not benefiting from the conservation measures of the MPA and that there is unequal sharing of the benefits generated from the MPA. Increased communication around the benefits from the MPA would settle some of these perspectives.

20. Hol Chan Marine Reserve, Belize - Ruth Murray (MSc Dissertation 2014)

Name	Hol Chan Marine Reserve, Belize	Year of designation	1987
Area	53.97km ²	State Capacity	-0.26 (rank 40.8%, 2016)
GDP Per capita	\$8,800 (2013)	Human Development Index (HDI)	0.709 (106/189 2016)
GDP Growth Rate	2.5% (2013)	Population below the poverty line	41%

Hol Chan Marine Reserve was the first MPA designated in the country as fishermen recognised decreases in fish numbers. The site has had a series expansions since the original designation and is the most visited site in Belize.

MPA Objectives:

Conservation	Operational
To maintain a sample coral reef ecosystem in its natural state	To provide recreation and tourism services and preserve the value of the area for fisheries
	To provide an area for education and research
	To conserve genetic resources

Drivers and Conflicts:

- Rapid increases in levels of mass tourism have become unsustainable for the region. HCMR is the most visited site in Belize and is a stop off point for cruise ships, with 50% of visitors diving and 75% snorkelling, directly impacting reefs with coral breakages and sedimentation disturbance. Liquid waste and pollution from the ships is likely influencing the levels of nutrients in the waters, impacting reefs and algal growth.
- Coastal development has consequently increased with a high level of international investment to expand tourism, but with poor construction management leaching sediments and pollutants into the ocean. The rate of removal of mangroves has been high and dredging is a concern for future developments. Sewage treatment plants are insufficient for the growing number of people and visitors, with only the core town area of San Pedro having any sewage treatment facilities.
- Fishing is a significant contributor to the economy for both local consumption and high volumes of fish caught for export. Increased tourism is adding further pressure to local demands with recognised declines in fish numbers over the years. Illegal fishing still occurs but not as much as other areas of Belize.
- Aspiration for wealth is influenced by wealthy tourists, driving a lot of illegal fishing and tour guides ignoring regulations in the hope of bigger tips.

Governance Framework/Approach:

Decentralised – Although the Belize government is ultimately responsible for the MPA under the Ministry of Agriculture and Fisheries, significant decision making powers are decentralised to a 'Board of Trustees' who are responsible for financial control and resource allocation for the MPA. This MPA has managed to become self-sustainable due to the governance approach.

Effectiveness: 2 – The governance approach and financial stability this MPA has enabled some of the impacts to be partly addressed, through enforcement and income flowing back into the local economy, providing education and integration to some extent, whereas other impacts, particularly related to tourism, have not been addressed at all and continue to negatively impact the MPA compounded by a lack of political will and lack of focus on the primary conservation objectives.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	N*	A pilot scheme tested in Belize in 2014 for 'managed Access' may be rolled out here to provide further levels of ownership and responsibility for designated fishing areas. Success is reliant on full inclusion for all fishermen and honesty within the scheme.
3. Reducing the leakage of benefits	N*	The rise in tourism has attracted a high volume of international investment, which is positive for the economy, but the majority share of benefits is not going to the local people. Many are able to obtain jobs, but there are restrictions on progression and sometimes entry for new small businesses. This could be prevented with equitable sharing of benefits between international and local businesses.
4. Promoting profitable and sustainable fishing, tourism, etc	Y*	Gear restrictions, closed seasons and bans on certain fishing methods were introduced to increase sustainability. This was communicated to the fishermen with understanding for the reasons. The MPA also has a designated no take zone to allow regeneration and encourage spill-over. Effective patrolling also supports the enforcement of these restrictions. The growth trajectory of tourism, however, still has the potential to be unsustainable, with many local ecological and social impacts.
5. Promoting green marketing	N	Once promoted as an eco-tourism destination, the area has more recently given way to mass tourism, especially cruise ships.
6. Promoting diversified and supplementary livelihoods	Y	The growth of tourism has presented ample opportunities for alternative livelihoods, with many fishermen having moved into hotel/restaurant ownership or tour guiding, either full time or combined with the opening of the season.
8. Investing PA Income/funding in facilities for local communities	Y	Funding from the MPA has helped to develop educational opportunities for the local community, including a research centre and indirectly the growth of tourism resulting from the MPA has improved infrastructure for the local community.
9. Provision of state funding	Y*	More resource is needed from the state. Reliance on funding from tourism could cause issues if tourism declines. There are also concerns over current tourism volume, which could be undermining the conservation objectives as economic exploitation takes precedent.
10. Provision of NGO, private sector and user fee funding	Y	User fees from tourists are fed straight back into the management of the MPA, allowing it to have become self-sustainable.

Communication

11. Raising awareness	Y	Awareness activity is high throughout the local community, including school visits from the HCMR management team, yearly 'Reef Week' activities that all locals can get involved in.
12. Promoting recognition of benefits	Y	The effects of spill-over and a healthy ecosystem are regularly communicated to the local community and through local media reports.
13. Promoting recognition of regulations and restrictions	Y	Tour guides receive yearly 1:1 meetings with updates on rules and regulations as well as community events that anyone can attend

Knowledge

16. Independent advice & arbitration	Y	The Board of Trustees provide an independent platform to address issues and if required will call on experts for independent advice.
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Legal

17. Hierarchical obligations	Y	There are many international obligations that this MPA is aligned to and therefore these institutions could enforce some form of intervention if it was deemed necessary.
18. Capacity for enforcement	Y*	Due to the self-funding nature of this MPA from tourist user fees, there is enough financial and human resource for adequate patrols and management of the MPA. An area of concern is the planned expansion to the MPA with no plans for increased enforcement capacity and the skills and resource available for enforcement is low, which could impact the conservation objectives.
19. Penalties for deterrence	N*	Although some penalties do exist they are either endured or cast aside due to their inadequacy, or there is the ability to call a political friend or resort to bribery. There needs to be significant improvement in the methods for deterrence as well as capacity to follow through.
20. Protection from incoming users	N	Due to the location of the MPA being very close to the island with lots of boat traffic, there is little impact from incoming users.
21. Attaching conditions to use and property rights, decentralisation, etc	N	If the 'managed access' programme reaches this MPA there would need to be conditions attached to the use of the programme.
22. Cross-jurisdictional coordination	N*	A lack of coordination between government organisations is restricting the effectiveness of this MPA. If it wasn't for the Board of Trustees, it would be in a much worse position. The role of the Coastal Zone Management Act needs to be re-established to conduct effective impact assessments regarding coastal development.
23. Clear & consistent legal definitions	y	There are legal frameworks in place for this MPA which are consistent
26. Transparency, accountability and fairness	N*	There is a lack of transparency of how the funding is allocated to the community and re-purposed, leading to mistrust within the community.

Participation

27. Rules for Participation	N*	There is clear delineation as to who is responsible for which parts of the governance processes between financials and day to day management, but advice from the Coastal Zone Management Authority, who are supposed to provide independent advice are ignored. There is also a lack of understanding and inconsistency regarding how and when local users can be involved in discussions.
28. Establishing collaborative platforms	Y*	There are meetings every 2 months for the Board of Trustees to collaborate and progress any developments or issues. This could be improved further with broader community involvement
29. Neutral facilitation	Y*	The breadth of the representatives on the Board of Trustees provides the opportunity for Neutral Facilitation as there is not necessarily a vested interest in a decision one way or another. The inclusion of the CZMA would improve this.
31. Decentralising responsibilities	Y	Part of the responsibilities for the MPA have been decentralised to the Board of Trustees, in particular financial management. This is the only model of its kind in Belize and is not embraced by the financial ministry within the government who would like to take control. There has not been any other MPA in the region allowed to have this structure.

32. Peer enforcement	N	Many of the local fishermen have now become involved in the tourism industry and only fish occasionally.
33. Building trust and the capacity for cooperation	N*	Greater transparency would help to build trust with the local community, if they could understand how budgets are being spent from the high levels of tourist income.
36. Potential to influence higher institutional levels	Y*	The Board of Trustees has the power to influence the Government of Belize in this MPA. The inclusion of the CZMA would strengthen this position.

Cross-cutting themes:

Leadership

The Board of Trustees provides more of a leadership role than seen in other neighbouring MPAs, as there is more autonomy due to the decentralised responsibilities that they hold. The ability to respond to situations quicker with less bureaucracy allows for a more agile management approach to the site, though there needs to be more focus on the health of biodiversity and less on the economic status of the MPA.

Stewardship

There is a real sense of pride around this MPA with locals feeling that they were responsible for its development and they have a desire to offer protection to maintain its notoriety. However, neighbouring fishermen do not feel the same as they are not able to reap the same benefits as they are not able to capitalise on tourism opportunities in the same way.

Equity issues

There are some equity issues with regards to the sharing of benefits which appears to be driven by economic development and the influx of large international investment. Continual sales of property and land to international investors is preventing locals from being able to develop their own businesses and therefore reducing the opportunities available to them. This could lead to hostility in the future and a loss of pride in the area that could have negative impacts around the protection of the MPA.

21. Caye Caulker Marine Reserve, Belize – Ruth Murray, MSc Dissertation (2014)

Name	Caye Caulker Marine Reserve, Belize	Year of designation	1998
Area	39.13km ²	State Capacity	-0.26 (rank 40.8%, 2016)
GDP	\$8,800	Human Development Index (HDI)	0.709 (106/189 2016)
GDP Growth Rate	2.5%	Population below the poverty line	41%

MPA Objectives:

Conservation	Operational
To preserve and maintain in optimal working condition, representative samples of the ecological systems (including coral reef, littoral forest, Caye mangroves and seagrass) in its natural state on and around Caye Caulker, for all people, for all time.	To preserve the value of the area for fisheries and tourism, including export of larva; and adult marine and terrestrial life in addition to other important marine and terrestrial genetic resources and resource- based activities.
	To provide natural areas for the promotion of education and research
	To develop sustainable and ecologically balanced recreational and tourism services, that enhance the economic and social benefits of the area.

Drivers and Conflicts:

- Rapidly rising level of mass tourism has become unsustainable for the region. Caye Caulker is often visited by cruise ship visitors, with 50% of visitors diving and 75% snorkelling directly impacting reefs with coral breakages and sedimentation disturbance. The shallow waters in this area lead to people standing up on the reefs and a lack of buoys for boat mooring leads to anchors being dropped on the reef. Liquid waste and pollution from the ships is likely influencing the levels of nutrients in the waters, impacting reefs.
- Coastal development has also increased with a high level of international investment to grow tourism, but with poor construction management with sediments and pollutants washing into the ocean. The removal of mangroves has been high and dredging is a concern for future developments. There are no sewage treatment plants on the island which is leading to sewage discharges to the ocean.
- Fishing is a significant contributor to the economy, both local and national, with high volumes of fish caught for export. The increase in tourism is adding pressure to the local demands. Fish numbers have declined over the years, as shown by the numbers that are visible, and illegal fishing is widespread from both local and outside fishermen.
- Aspiration for wealth is influenced by wealthy tourists, driving a lot of illegal fishing and tour guides ignoring regulations in the hope of bigger tips.

Governance Framework/Approach:

Government-led - Controlled directly by the Belize Fisheries Department under the Ministry of Agriculture and Fisheries.

Effectiveness: 1 – Some fishing impacts beginning to be slightly addressed. Until there is sufficient political will and resource the effectiveness of this MPA will be compromised. The lack of resource to carry out adequate patrols and trustworthy resource to progress infractions, is allowing illegal extraction activities to continue, which is one of the main impacts to this MPA. The lack of compliance with regulations by tourism developers and operators is also directly impacting the reef.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	N*	A pilot scheme tested in Belize in 2014 for 'managed Access' provided some level of ownership and responsibility for designated fishing areas. Schemes like this can help to prevent illegal fishing, but success is reliant on full inclusion for all fishermen and honesty within the scheme by all parties.
3. Reducing the leakage of benefits	N	The rise in tourism has attracted a high volume of international investment resulting in the majority share of benefits not going to the local people. Many can obtain jobs, but there are restrictions on progression and sometimes entry for new small businesses. This could be prevented with a fairer balance between international development and local businesses.
4. Promoting profitable and sustainable fishing, tourism, etc	Y*	Gear restrictions, closed seasons and bans on certain fishing methods were introduced to increase sustainability. This was communicated to the fishermen with understanding for the reasons. The MPA also has a designated no take zone to allow regeneration and encourage spill-over. However, illegal fishing continues and the growth trajectory of tourism still has the potential to be unsustainable, with many local ecological and social impacts.
6. Promoting diversified and supplementary livelihoods	Y	The growth of tourism has presented ample opportunities for alternative livelihoods, with many fishermen having moved into hotel/restaurant ownership or tour guiding, either full time or combined with the opening of the season.
8. Investing PA Income/funding in facilities for local communities	N*	Although there are funds generated from the MPA through tourism, as this MPA is wholly managed by the government, the funds go straight there and are not re-invested back into the MPA or the local community.
9. Provision of state funding	Y*	There is insufficient state funding, including funds derived from user fees, and recent cuts are impacting further. There are many missing buoys for demarcation that have been missing for several years as there are no funds to replace them. Human resource is also lacking for patrols, etc
10. Provision of NGO, private sector and user fee funding	N*	User fees are charged but go to central government and not being fed back into the MPA: severely impacting this MPA. There is not sufficient state funding and any user fee funding remains with the central state.

Communication

Incentive type	Used	How/Why
11. Raising awareness	Y	A large amount of awareness is raised in the local community through school visits from the HCMR management team, yearly 'Reef Week' activities that all locals can get involved in. This is done in collaboration with Hol Chan Marine Reserve due to their financial stability.
12. Promoting recognition of benefits	Y	The effects of spill-over and a healthy ecosystem are regularly communicated to the local community and through local media reports. Despite this there is still illegal fishing
13. Promoting recognition of regulations and restrictions	Y*	Regulations and restrictions are communicated to tour guides with yearly updates on any changes in rules and regulations. They are also communicated through community events. Communications with fishermen could be improved.

Knowledge

Incentive type	Used	How/Why
14. Promoting collective learning	N*	Initially the local fishermen were included and their knowledge was utilised, but they were then cast aside and ignored after designation. There is a severe disconnect between the local community and the government at this MPA, which is preventing local knowledge on fishing grounds and continuing impacts to coral reefs and species populations from being utilised.

16. Independent advice and arbitration	N*	As there are such fractious relationships surrounding this MPA, there could be significant benefit from independent arbitration on knowledge related issues to improve the effectiveness of the governance approach.
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Legal

Incentive type	Used	How/Why
17. Hierarchical obligations	Y	There are many international obligations that this MPA is aligned to and therefore these institutions could oblige some form of intervention if it was deemed necessary.
18. Capacity for enforcement	N*	Capacity for enforcement in this area is poor, due to lack of funding and resource for patrols. Enforcement is also impacted by corruption and illegal practice by patrol officers. Although there are often reports from local users of illegal activity they are rarely followed up.
19. Penalties for deterrence	N*	The penalties are either endured or cast aside due to their inadequacy, or there is the ability to call a political friend or resort to bribery.
20. Protection from incoming users	N*	A lack of trustworthy resource, open access to fisheries, inadequate patrols and ability to easily obtain fishing licences are all negating protection from illegal fishers. There are impacts particularly from neighbouring countries illegally fishing in this MPA.
21. Attaching conditions to use and property rights, decentralisation, etc	N	If the 'managed access' programme reaches this MPA there would need to be conditions attached to the use of the programme.
22. Cross-jurisdictional coordination	N*	A lack of coordination between government organisations is impacting this MPA significantly, as well as preferential consideration for development over conservation activity. The role of the CZMA needs to be re-established to appropriately coordinate discussions and decisions affecting the MPA and surrounding areas. The advisory board should also be re-instated.
23. Clear and consistent legal definitions	Y	There are clear legal frameworks in place for this MPA with consistent definitions
26. Transparency, accountability and fairness	N*	There is a large amount of disproportionate political influence and corruption which is impacting fair practices and transparency.

Participation

Incentive type	Used	How/Why
28. Establishing collaborative platforms	N*	An advisory board was initially set up for collaboration, but this has ceased to be active. This should be re-instated to provide a platform to address concerns regarding future planning and coastal development.
29. Decentralising responsibilities	N*	This MPA is wholly managed by the government with no decentralised responsibilities. The involvement of a strong NGO could greatly benefit the productivity of the management and improve governance effectiveness.
33. Building trust and the capacity for cooperation	N*	There needs to be involvement of the local community to improve the effectiveness of the MPA. There are many local people who are willing to be involved, but they are being restricted by government officials and are losing pride and gaining frustration at the impacts that they continue to see.
34. Building linkages between relevant authorities and user representatives	N*	As there is little connection with the local community, the creation of strategic relationships with influential community representatives could go a long way to improving trust within the community and therefore greater cooperation.

Cross-cutting themes:*Role of NGOs*

Initially an NGO was involved in supporting management of this MPA, but relationships deteriorated and now the MPA is managed solely by the government which has caused many social issues in the local community. The influence of a strong NGO could be very beneficial for this MPA.

Leadership

There is a distinct lack of leadership in this MPA. With a very small resource, some of which suffers from corruption, there are serious challenges undermining the conservation objectives. Strong leadership is needed with adequate supporting resource to implement the required regulations and management to address the increasing impacts.

Equity issues

There are severe equity issues and increasing levels of frustration surrounding this MPA from the local community. They feel that they are being marginalised by the government who are reaping the benefits from the tourism generated from visitors to the MPA, presenting inequitable sharing of benefits. Similarly, some fishermen gave up traditional fishing grounds that had been passed down through generations, in favour of the designation of the MPA, only to find that those same fishing grounds had been given to fishermen from the neighbouring island 'one rule for us and another for them'. Fishermen from further around the island who frequently fished the reefs around the MPA are also suffering from inequality as they cannot benefit from tourism activity and have been excluded from this fishing ground. They therefore still openly fish here illegally.

Stewardship

The poor treatment of the local community is eroding the previous stewardship that was present in this area. Whereas once there was a desire to protect and preserve the area in the MPA for the long-term future, frustration at illegal practice by patrol officers and an inability to positively impact the activity around the MPA is depleting the energy in key players to make this work. There needs to be a significant shift in the way that this MPA is managed and governed to improve the effectiveness and protect the biodiversity from mass cruise ship tourism.

22. Bacalar Chico Marine Reserve, Belize – Ruth Murray, MSc Dissertation (2014)

Name	Bacalar Chico Marine Reserve, Belize	Year of designation	1996
Area	62.8 KM ²	State Capacity	-0.26 (rank 40.8%, 2016)
GDP Per capita	\$8,800 (2013)	Human Development Index (HDI)	0.709 (106/189 2016)
GDP Growth Rate	2.5% (2013)	Population below the poverty line	41%

Bacalar Chico Marine Reserve was designated as a World Heritage Site and has been on the ‘in danger’ list since 2009. Once an area with pristine coral reefs, it is under increasing threat from illegal fishing and coastal development.

MPA Objectives:

Conservation	Operational
To provide protection to the physical and biological resources of North Ambergris Caye in a region targeted for extensive further development	To provide an area for education and research
	To preserve the value of the area for fisheries and other important genetic resources
	To develop recreational and tourism services.

Drivers and Conflicts:

- The levels of tourism in Bacalar Chico are relatively low at present, predominantly bringing in visitors from other parts of the island. However, there are concerns over plans for further development to allow easier access for people to stay in the northern area. Coastal development in this area uses poor construction management, with sediments and pollutants washing into the ocean. The rate of removal of mangroves has been high and dredging is a concern for future developments. Sewage treatment does not occur in this area so as the number of people in the area rise, this would be a high concern.
- Fishing is a significant contributor to the economy with high volumes of fish caught for export. The area around BCMR is susceptible to illegal fishing from neighbouring countries, as well as some locals.
- Aspiration for wealth is influenced by wealthy tourists, driving a lot of illegal fishing and tour guides ignoring regulations in the hope of bigger tips.

Governance Framework/Approach:

The governance approach is government led, controlled by the Belize Fisheries Department under the Ministry of Agriculture and Fisheries, with minor involvement of an international NGO for reef monitoring data.

Effectiveness: 1 – Some impacts beginning to be slightly addressed, but some have yet to be addressed. Until there is sufficient political will and resource, the effectiveness of this MPA will be compromised. The lack of resource to carry out adequate patrols and trustworthy capacity to progress infractions, is allowing illegal extraction activities to continue, which is one of the main impacts on this MPA, along with the impacts of tourism developments and activities.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	N*	A pilot scheme tested in Belize in 2014 for 'managed access' provided some level of ownership and responsibility for designated fishing areas, but is no longer operating. Schemes like this can help to prevent illegal fishing, but success is reliant on full inclusion for all fishermen, honesty within the scheme by all parties and the continued support of the state.
4. Promoting profitable and sustainable fishing, tourism, etc	Y*	Gear restrictions, closed seasons and bans on certain fishing methods were introduced to increase sustainability. This was communicated to the fishermen with understanding for the reasons. The MPA also has a designated no take zone to allow regeneration and encourage spill-over, but illegal fishing continues. The growth trajectory of tourism still has the potential to be unsustainable, with many local ecological and social impacts.
6. Promoting diversified and supplementary livelihoods	Y	The growth of tourism in neighbouring areas has presented ample opportunities for alternative livelihoods, with many fishermen having moved into hotel/restaurant ownership or tour guiding, either full time or combined with the opening of the season. Due to the placement of this MPA the displacement of fishermen has been minimal.
9. Provision of state funding	Y*	There is insufficient state funding and further cuts introduced are impacting further. The MPA location spans both sides of the island, requiring significant boat travel from the ranger station for patrols, but there is not enough finance for fuel to have regular patrols.
10. Provision of NGO, private sector and user fee funding	N*	Although tourists visit this marine area for fishing or other recreational activities, there are no user fee funds being fed back into the MPA.

Communications

11. Raising awareness	Y	As the area is not heavily populated currently and with low levels of tourism, awareness raising is undertaken alongside Hol Chan Marine Reserve as a joint venture covering both sites with education programmes and the yearly 'reef week' activities to incorporate the whole local community.
12. Promoting recognition of benefits	Y*	The effects of spill-over and a healthy ecosystem are regularly communicated to the local community and through local media reports. Despite this there is still illegal fishing. There needs to be greater understanding regarding the costs and benefits of the MPA.
13. Promoting recognition of regulations and restrictions	Y*	Regulations and restrictions are communicated to tour guides by neighbouring Hol Chan Marine Reserve as the tour operators serve both locations. They have yearly updates on any changes in rules and regulations. Communications with fishermen could be improved.

Knowledge

14. Promoting collective learning	N	All knowledge regarding this site has come from external resource, from initial site designation to ongoing reef monitoring.
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Legal

17. Hierarchical obligations	Y	Several international agreements and financial arrangements require obligations to be upheld and delivered upon which provides additional levels of legislation in this area, particularly UNESCO World Heritage that has placed this MPA on the 'In Danger' list
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18. Capacity for enforcement	N*	Capacity for enforcement in this area is poor, due to lack of funding and resource for patrols. Enforcement is also impacted by corruption and illegal practice by patrol officers.
19. Penalties for deterrence	N*	Although some penalties do exist they are either endured or cast aside due to their inadequacy, or there is the ability to call a political friend or resort to bribery. There needs to be significant improvement in the methods for deterrence as well as capacity to follow through.
20. Protection from incoming users	N*	A lack of trustworthy resource, open access to fisheries, inadequate patrols and ability to easily obtain fishing licences are all undermining protection from illegal fishers.
21. Attaching conditions to use and property rights, decentralisation, etc	N	If the 'managed access' programme reaches this MPA there would need to be conditions attached to the use of the programme.
22. Cross-jurisdictional coordination	N*	A lack of coordination between government organisations is impacting this MPA significantly as well as preferential consideration for development over conservation activity. The role of the CZMA needs to be re-established to appropriately coordinate discussions and decisions affecting the MPA and surrounding areas. The advisory board should also be re-instated.
26. Transparency, accountability and fairness	N*	There is a large degree of disproportionate political influence and corruption which is impacting fair practices and transparency.

Participation – There are no residents around this MPA so there has been little requirement for involvement of community

28. Establishing collaborative platforms	N*	An advisory board was initially set up for collaboration, but this has ceased to be active. This should be re-instated to provide a platform to address concerns regarding future planning and coastal development.
31. Decentralising responsibilities	N	This MPA is wholly managed by the central government with no decentralised responsibilities.

Cross-cutting themes:

Role of NGOs

An international NGO is locally active conducting monitoring on the reef which feeds into the Meso-American reef studies, but there is no funding allocated from the state.

Leadership

There is a lack of leadership to effectively manage the issues concerning this MPA, which is evidenced by inadequate action to deal with the proposals from UNESCO World Heritage to enable BCMR to be removed from the 'in danger' list. Improved cross-jurisdictional coordination and re-establishing the Coastal Zone Management Authority to effectively manage the area would be significant progress.

23. Fal & Helford European Marine Site, UK – Sally-Ann Smurthwaite, MSc Dissertation (2014)

Name	Fal & Helford European Marine Site (EMS), UK	Year of designation	1996
Area	63.6 KM ²	State Capacity	1.42 (rank 87.3%, 2016)
GDP Per capita	\$41,400 (2015)	Human Development Index (HDI)	0.909 very high (2015)
GDP Growth Rate	2.2% (2015)	Population below the poverty line	15% (2013)

MPA Objectives:

Conservation	Operational
To maintain the features of the site: salt marsh, mudflats, subtidal sandbanks and large, shallow bays and inlets, estuaries and reefs, whilst enabling its continued and diverse human use. They must be maintained in 'favourable condition,' under the EU Habitats Directive.	

Drivers and Conflicts:

- There is an ongoing threat of dredging in this area for commercial reasons, which to date has been held off due to the environmental impacts in this area, but there are concerns that this will continue to be an issue. Commercial development and exploitation appears to be dominating over the interests of achieving the conservation objectives from a political perspective, with a lack of willingness to compromise or respect the legal obligations of the site.
- Illegal netters in the estuary and the Bay operate at night when enforcement patrols are not present. Small and large-scale fishermen have an ongoing conflict believing that both are impacting the other. Fish stocks have declined in general and there are no regulations around juveniles or nursery grounds.
- Contamination of the area due to sewage, agricultural run-off and tributyl tin is an ongoing problem, especially for eelgrass beds.

Governance Framework/Approach:

Government-led - Federal system with hierarchical obligations under the European Commission. Some responsibilities have been decentralised to the Management Forum, who act as a representative body to involve all relevant authorities in the ongoing management of the site, but they retain no direct decision-making powers, these being retained by the relevant sectoral authorities, subject to the conservation agency's advice. An advisory group represents stakeholder interests and reports to the Management Forum.

Effectiveness: 2 – *Some impacts partly addressed but some impacts not yet addressed.* Scallop dredging has been banned, but there is still some illegal scalloping as well as netting, and there are still some other impacts that appear not to be adequately addressed, such as anchoring, moorings, contamination of the marine environment and the threat of channel dredging for cruise ships.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
4. Promoting profitable and sustainable fishing and tourism	N	There are local and national measures to promote sustainable fishing but these are independent to the MPA
9. Provision of state funding	Y*	There needs to be increased state funding for this MPA to support participative governance structures and to provide a stronger leadership position, as well as a related increase in political will
10. Provision of NGO, private sector and user fee funding	Y*	There is some private sector funding for scientific research and raising awareness. Current tourism income from cruise ship mooring and berthing fees could help to provide additional funds if this was leveraged to support the MPA, currently it is not.

Communication

11. Raising awareness	N*	This incentive would be of benefit to the MPA to raise awareness of the EMS features and the associated roles that they play in the ecosystem. It would also be advantageous to promote the role of the Management Authority and the Advisory Board to explain how the local community can get involved.
12. Promoting recognition of benefits	N*	This incentive is needed to support the understanding of the EMS, including making related scientific monitoring and research findings publicly available.
Promoting recognition of regulations and restrictions	Y	Cornwall Inshore Fisheries and Conservation Authority (CIFCA) promote awareness of the rules and regulations of this MPA

Knowledge

14. Promoting collective learning	N*	There is opportunity to take advantage of local knowledge that is not currently being utilised. This would also provide a better experience for the local community to engage with the EMS. There is not enough focus on monitoring of the site and the associated features. Scientific monitoring and research is sometimes not released and shared with local people despite large amounts of monitoring and research being carried out.
15. Agreeing approaches for addressing uncertainty	N*	Whilst the Treaty that has established the European Union includes a legal obligation to adopt the precautionary principle, in reality the government's emphasis on an evidence-based approach and presumption in favour of development undermines the application of the precautionary principle and an agreed role of this principle could help in addressing this.
16. Independent advice and arbitration	Y	Natural England and the Cornwall Inshore Fisheries and Conservation Authority provide independent advice and arbitration. However, there needs to be broader focus on protection of features. There is also a lack of trust in these authorities that is impacting the effectiveness of the advice.

Legal

17. Hierarchical obligations	Y	This area was designated as a Special Area of Conservation (SAC) under the EC Habitats Directive. All EU states are obliged to implement directives under the European Treaty. A management scheme was developed to ensure the requirements of the Habitats Directive would be followed and all relevant authorities are obliged to exercise their functions in a manner that supports the fulfilment of the SAC objectives, other than where 'imperative reasons of over-riding public interest' apply.
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18. Capacity for enforcement	Y*	There is enforcement capacity to detect illegal activities through fisheries patrols, but a lack of resource is enabling illegal netters to still fish during periods when patrols are not present. There needs to be stronger enforcement.
19. Penalties for deterrence	Y	There are penalties in place and adequate levels of enforcement to deter most illegal activity.
20. Protection from incoming users	N*	There needs to be some level of protection from incoming users, particularly illegal netters
21. Attaching conditions to use & property rights, decentralisation, etc	Y	All fishing licences have conditions attached to them, which can include variations and restrictions related to the MPA
22. Cross-jurisdictional coordination	N*	Whilst the regulations that implement the Habitats Directive require all relevant authorities to heed the conservation agency's advice to ensure each sectoral authority effectively exercises its functions in supporting the fulfilment of the conservation objectives, the liberal interpretation of 'imperative reasons of over-riding public interest' undermine this coordination, particularly with regards to the harbour channel dredging proposal. There need to be improvements of coordination between different authorities and organisations, with stronger leadership required from the Management Forum to promote cross-sectoral integration.
23. Clear and consistent legal definitions	Y	This is laid out as part of the Habitats Directive and the UK regulations that 'transpose' them, with very clear regulations
25. Legal adjudication platforms	Y	There are appeals processes for users who feel that decisions related to the MPA were unfairly taken and/or unfairly discriminate against them
26. Transparency, accountability and fairness	N*	Whilst most documents related to official decision-making processes are made publicly available, there is a need to make some monitoring and research findings more publicly available.

Participation

27. Rules for Participation	Y*	The Management Forum and Advisory Group clearly sets out the rules for participation, although this could be communicated more broadly to enable wider participation. The Advisory Group represent stakeholder interests and feed back to the Management Forum yet the management Forum could be more accountable to the Advisory Group.
28. Establishing collaborative platforms	Y	There are several ways in which people can be involved and collaborate around this MPA, from the advisory group who represent stakeholders to public consultations where locals can raise issues.
30. Independent arbitration panels	Y*	An application for a licence to undertake an activity in the SAC could be 'called in' by the Planning Inspectorate and a local inquiry held, but this has not yet been implemented, despite some major conflicts related to the dredging proposal. Ultimately, the case could be referred to the European Court of Justice for a final decision.
31. Decentralising responsibilities	Y	Some responsibilities for the SAC have been decentralised to the Management Forum, whilst sectoral decision making powers are retained by relevant authorities
33. Building trust and the capacity for cooperation	N*	There have been major breakdowns in trust between relevant authorities and the public, and amongst relevant authorities, some actors considering some authorities, particularly the conservation authority, to have been 'captured' by the development priority of other authorities and the presumption in favour of development.
34. Building linkages between relevant authorities and user representatives	N*	This is needed to assist with developing social capital with local stakeholders and to address the breakdowns in trust.

35. Building on local customs	Y	Traditional oyster dredging from sail and row driven vessels and hand dredging is provided for in the MPA to promote customary activities
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Cross-cutting themes:

Stewardship

Local groups such as the Helford Voluntary Marine Conservation Area Group and the Falmouth Bay and Harbour Action Group do work at the local level to raise awareness of the EMS and the issues it faces, in order to promote local stewardship. They also produce posters and leaflets and hold educational events.

24. Sandals Boscobel Special Fisheries Conservation Area, Jamaica – Natalie Tellwright, MSc Dissertation (2014)

Name	Sandals Boscobel Special Fisheries Conservation Area (SBSFCA), Jamaica	Year of designation	2010
Area	1.07 KM ²	State Capacity	0.18 (rank 58.5%, 2016)
GDP Per Capita	\$9,000 (2013)	Human Development Index (HDI)	0.719
GDP Growth Rate	0.4% (2013)	Population below the poverty line	16.5%

MPA Objectives:

Conservation	Operational
To increase fish stocks and improve coral reefs and seagrass habitats	

Drivers and Conflicts:

- Tourism is a large contributor to the country's economy so there is a high reliance on tourism through the Sandals Resort. There is competition with local fishermen who feel that they have been ostracised in favour of tourism. The lack of understanding by people in the tourism industry has led to situations such as washed up seagrass being removed for aesthetic reasons, removing key habitats.
- There have been increased reductions in the volume of fish which has improved since the designation of the MPA, but displaced spear fishermen are now creating pressure either side of the boundary line as other areas are too deep for them to fish or too far to swim. There is overfishing of juveniles due to lack of regulation and a desire to have a fish the right size to fit on a plate, as well as poverty driving a desire to have individual fish, to appear fairer within families (everyone gets a fish each!). This is impacting the regeneration of fish stocks. Also, parrot fish is the choice for most islanders to consume, which is impacting coral and reef health due to depletions of these functionally important populations.
- There is a high level of poaching that takes place in the small window when patrols are not out which is impacting the rate of recovery of the reef and fish stocks. Enforcement is low with unarmed wardens facing poachers with spear guns and fines are too low to act as a deterrent.
- Waste dump sites are located on the coast line, resulting in rubbish falling into the MPA

Governance Framework/Approach:

Decentralised - The MPA operates in a decentralised manner and is managed by the private sector through the Sandals Foundation, which has decision-making powers. There is a Memorandum of Understanding partnership between the Ministry of Agriculture and Fisheries and the Sandals Foundation. Regulations flow from two government organisations – the National Environmental Planning Agency and the Ministry of Agriculture and Fisheries.

Effectiveness: 2 – *Some impacts partly addressed but some impacts not yet addressed.* Many conflicts and impacts are yet to be addressed. Enforcement only began in 2013 although designation occurred in 2010.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
3. Reducing the leakage of benefits	Y	Preferential consideration is given to local residents for warden positions with the MPA, in an effort to reduce the leakage of benefits.
4. Promoting profitable and sustainable fishing and tourism	N*	Broader understanding of the reasons for and benefits of sustainable fisheries would help to enhance the value of resources to users. Potential to encourage spear fishing of invasive lionfish in the MPA by specifically allowing this (MOAF permit has been applied for) and encouraging partnerships with tourist restaurants to encourage eco-dining on lionfish.
5. Promoting green marketing	Y	Sandals promote the MPA through participation in the Earth Check Programme which enhances sustainable tourist activities. They also promote through brochures and other marketing activities to attract tourists. Potential to encourage eco-dining by tourists on lionfish.
6. Promoting diversified and supplementary livelihoods	N*	This would be of benefit to assist the displaced fishermen and to prevent illegal fishing/poaching
8. Investing MPA income/funding in facilities for local communities	N*	Income from tourist activity could be reinvested to help provide infrastructure such as waste disposal units
9. Provision of state funding	Y*	Additional funding would support increased capacity for enforcement.
10. Provision of NGO, private sector and user fee funding	Y	The Sandals Foundation provides funding for the MPA through enforcement and adaptable management systems by employing SFCA managers and wardens. There is also NGO funding for ecological surveys to monitor progress.

Communication

11. Raising awareness	Y	Sandals Foundation has organised various educational programmes in local schools on the environment and the importance of marine ecosystems. The wardens are trained in environmental issues and marine ecology so that they can explain to locals the importance of the SFCA. Fishermen’s Week, created by the government to support development and conservation of the fishing industry, consists of fishing competitions, conferences and regattas, with flyers containing information on Jamaica’s fisheries, closed seasons, and C-FISH initiatives.
12. Promoting recognition of benefits	Y	Presentations are conducted at community meetings on the issues around the SBSFCA such as invasive species and the importance of improving the fisheries and the benefits that protection generates.
Promoting recognition of regulations and restrictions	Y*	Whilst local fishermen are made aware of the SBFSCA and its boundaries/restrictions, other awareness raising approaches are needed to inform incoming users about the SBFSCA and the rules and regulations.

Knowledge

14. Promoting collective learning	Y*	There has been an element of collective learning across government organisations, NGOs and scientists, but there has been a distinct lack of involvement from the local community.
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Legal

17. Hierarchical obligations	Y	Commitments to several international conventions require some international obligations – CBD, Caribbean Challenge, CEP, Caribbean Community CARICOM – Treaty of Chaguaramas.
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18. Capacity for enforcement	Y*	Private sector funding currently allows for 18 hour patrols, but poaching still occurs. There is a lack of coordination between marine police (none are nearby so there are travel delays) and wardens so transgressors are hard to detain. Increased funding and back-up state enforcement capacity is particularly needed.
19. Penalties for deterrence	Y*	Penalties are applied but they are too low and it is hard to even get people to a stage of being prosecuted. Judges also do not take the fines seriously. There needs to be more willingness from the judicial system to impose the law and deter illegal fishers.
20. Protection from incoming users	N*	Incoming poaching fishers and some tourists pose a particular challenge
21. Attaching conditions to use & property rights, decentralisation, etc	Y	The Memorandum of Understanding between Ministry of Agriculture and Fisheries and the Sandals Foundation that gives the latter some use rights includes various conditions.
22. Cross-jurisdictional coordination	Y*	There is some coordination between different authorities, including the potential for eventual back-up from the police, but there is a lack of support from the judicial system, in particular for deterrence. There is also a conflict in regulations coming from the NEPA and MAF. Greater political will and government support could improve this. Most coordination is facilitated the manager who also manages a neighbouring SFCA (Oracabessa). Delay in MOAF granting permit to target invasive lionfish for spearfishing (eco-dining) is illustrative of the need for better cross-jurisdictional coordination.
23. Clear and consistent legal definitions	Y	The legal definition is clear, boundaries established and the whole area is a no-take zone.

Participation

27. Rules for Participation	N*	Clear rules are needed on the means and levels of participation that are available, especially for local users.
28. Establishing collaborative platforms	N*	Collaborative platforms such as user committees or local public consultations would greatly benefit the community
29. Neutral facilitation	N*	An independent facilitator would help with collaborative platforms, as all the immediately involved actors have too great a stake in the SBSFCA to provide an effective facilitation role
31. Decentralising responsibilities	Y*	The Sandals Foundation has decentralised responsibilities with overall management of the MPA, however there needs to be more political will from the state to improve effectiveness and cooperation within the community.
33. Building trust and the capacity for cooperation	N*	There needs to be focus on building trust between different actors and the local community
36. Potential to influence higher institutional levels	Y*	There is a new management plan proposed that could provide an opportunity for locals to participate and therefore influence the existing framework

Cross-cutting themes:

Leadership

CARIBSAVE played a vital role with monitoring equipment, training and community-based initiatives, such as the C-Fish craft programme, though the funding for this NGO has since ceased and remains to be seen if another NGO or organisation will continue this leadership role.

Equity

There is currently an imbalance regarding the use of the MPA and the fishermen have 'lost out' to tourism. They have been marginalised by what could be described as an 'unholy alliance' between corporate tourism and the state (Jones 2014, p.109), and therefore there are significant equity issues. However, the creation of a new zoning plan may help to address this by freeing up some areas to allow fishermen back in where they have previously been excluded, especially spear fishermen.

25. Oracabessa Special Fisheries Conservation Area, Jamaica – Mette Erbs, MSc dissertation (2014)

Name	Oracabessa Special Fisheries Conservation Area (SFCA), Jamaica	Year of designation	2010
Area	0.961 KM ²	State Capacity	0.18 (rank 58.5%, 2016)
GDP	\$9,000 (2013)	Human Development Index (HDI)	0.719
GDP Growth Rate	0.4% (2013)	Population below the poverty line	16.5% (2009)

MPA Objectives:

Conservation	Operational
To Increase biodiversity in Oracabessa Bay [in order] to improve the livelihoods of the local community:	Funding and financial management; Habitats and species management; enforcement; environmental education; training; sharing

Drivers and Conflicts:

In the 1970's a large portion of reef was destroyed when the government created an artificial peninsula, which compromised the surrounding ecosystem. Since then the impact of local fishing and invasive species has reduced the volume of fish stocks. The area is open access, there are no regulations for juvenile fish and not all fishermen have licences.

Governance Framework/Approach:

Decentralised - The Special Fisheries Conservation Area (SFCA) was designated by the government with a Memorandum of understanding between the government and an NGO. The Ministry of Agriculture and Fisheries retains authority for decision making, but some responsibilities have been decentralised. The sponsor of the NGO also owns 71% of the SFCA coastline and agreed to a private/public partnership with the local fishermen's cooperative to gain stakeholder participation (unique in Jamaica). The management structure includes a Board of four Directors and the sanctuary manager, responsible for managing wardens and other staff members.

Effectiveness: 3 – *Some impacts completely addressed, some are partly addressed.* There are still issues to be addressed, but the site has shown impressive increases in coral cover and biomass, plus increased numbers and sizes of fish catch.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
3. Reducing the leakage of benefits	Y*	Local fishermen are employed by the sanctuary and the locals fishing the area are benefitting from the spill-over effect, but some of these benefits are reduced by poaching by locals and incoming users
4. Promoting profitable and sustainable fishing and tourism	Y*	The benefits of spill-over are widely recognised in the community and there is high recognition of the no-take-zone, providing sustainable fisheries. However, some level of fisheries management is needed outside the NTZ to ensure the 'spill-over' is not also compromised.
5. Promoting green marketing	N*	Services, such as diving tours could be promoted rather than other products to generate additional income and job opportunities for people around the sanctuary. Potential plans for coral-planting are proposed to attract scuba-divers.

6. Promoting diversified and supplementary livelihoods	N*	Promotion of alternative livelihoods through diving tours, including for coral planting, for fishers to run or become involved in.
9. Provision of state funding	Y*	Currently the MPA does not receive consistent, prompt or adequate funds from the state. Current contribution is barely enough to cover the warden's salary and is often delayed by up to six months. This needs to be addressed for continual effectiveness.
10. Provision of NGO, private sector and user fee funding	Y*	Funds are received from an NGO and the private sector, positively contributing to the function and effectiveness of the sanctuary. However, it is unreliable and inconsistent posing problems for stability. One private funding option is to charge user fees for tourists diving and snorkelling in the sanctuary

Communication

11. Raising awareness	Y*	NGO workshops and an educational video were used during designation of the SFCA. On an ongoing basis there are weekly meetings, education for violators on the water and yearly community events at a local level. More awareness is needed at a national level for increasing political will.
12. Promoting recognition of benefits	Y	The spill-over effects and therefore the benefits of the MPA have been widely promoted through community meetings and an educational film.
Promoting recognition of regulations and restrictions	Y	The regulations are simple and are promoted with the use of buoys and signs.

Knowledge

14. Promoting collective learning	Y*	Local fishermen were very involved with the selection of the SFCA site (it's not the best scientifically). Combining scientific knowledge in the future could improve effectiveness, now that the local fishermen have seen and understand the benefits that can be achieved.
15. Agreeing approaches for addressing uncertainty	Y*	There isn't a formally agreed approach, however potential issues of uncertainty that could arise are discussed at weekly meetings.
16. Independent advice and arbitration	Y	Sometimes independent advice is sought from the scientists at the University of the West Indies, although the government retains the final decision making power.

Legal

17. Hierarchical obligations	Y	The Fishing Industry Act mandated by the Fisheries Division provides local legal obligations. There could be benefit from intervention by international organisations where there is alignment with International agreements to ensure that the government maintains financial support and to increase enforcement capacity. Jamaica is aligned with several international agreements, e.g. CBD, Caribbean Challenge (20% MPAs in all participating countries by 2020).
18. Capacity for enforcement	Y*	There is not enough financial support or political will to ensure adequate enforcement, especially for incoming users and if tourism was to develop in the area. There is no comprehensive plan to involve the ground and marine police force, which needs to be addressed.
19. Penalties for deterrence	Y*	The current penalties are extremely low and poaching cases are generally dismissed by the court due to other priorities.
20. Protection from incoming users	Y*	There have been major poaching incidents during the night, e.g. when fishers from a nearby town were tipped off that the patrol boat was out of action around Christmas 2013, ~JAM\$450,000 (~£2,500) worth of grouper were poached by incoming divers on a vessel equipped with a compressor, wiping out years of recovery. Sufficient cover for enforcement capacity

		needs to be provided to ensure continuous enforcement, as the recovering stocks become very attractive to poachers, particularly incoming ones who do not gain spillover and tourism benefits from the replenished NTZ
22. Cross-jurisdictional coordination	N*	Fisheries regulations are mandated by the Fisheries Division, whereas environmental protection and MPAs are under the National Environmental Planning Agency. However, the Fisheries Division is in charge of the SFCAs and cannot control impacts through several point-and nonpoint sources. Coordination between the different governmental departments, state enforcement agencies and SFCA staff is lacking.
23. Clear and consistent legal definitions	Y	The legal definitions are very clear, no extraction activities are allowed, except for lion fish culling and research.
24. Clarity concerning jurisdictional limitations	Y	There is awareness that there are issues that cannot be addressed within the SFCA legislative framework. Steps are being taken to address related potential conflicts.
25. Legal adjudication platforms	N*	No such platform exists, but could prove beneficial to the SFCA and the community if conflicts were to arise.

Participation

27. Rules for Participation	Y	There are two seats on the Board to represent the fishing communities' interests and one seat for a community stakeholder.
28. Establishing collaborative platforms	Y	Weekly open meetings provide a platform for collaboration of the broader community. The Board of Directors also work together for planning and workshops with input from the weekly meetings.
29. Neutral facilitation	Y	Initially a neutral facilitator assisted in establishing the rules of governance and future participation.
31. Decentralising responsibilities	Y	The decentralisation of responsibilities takes the form of 'delegation', with the transfer of some decision-making powers decentralised to the Board of Directors and the government retaining final decision making power and responsible for auditing the SFCA.
32. Peer enforcement	Y*	Local community members take on enforcement informally and contact wardens regarding violators, although 'whistleblowing' can be frowned upon so this could be improved.
33. Building trust and the capacity for cooperation	N*	There is a lack of trust in the government amongst local users and general scepticism of their plans and motives. This is impacted further by the continual delays of state funding and too few opportunities for resource users to meet with government officials.
34. Building linkages between relevant authorities and user representatives	N*	There is not enough time dedicated to this from government officials which has resulted in a lack of trust regarding government plans and motives. More frequent opportunities to meet government representatives would help. There needs to be strengthening of linkages between relevant actors both horizontally and vertically
35. Building on local customs	Y	The involvement of the local community in designation and ongoing management has ensured that local practices have not been impacted in any way that may disrespect or marginalise locals.
36. Potential to influence higher institutional levels	Y	The SFCA management has been able to influence the Fisheries Division decisions to its benefit through discussions and negotiations.

Cross-cutting themes:

Role of NGOs

They have played an important part from the beginning, from day-to-day management and funding, to ecological and socio-economic monitoring in the SFCA. Caribsave's role has been mainly that of donor, but they have also conducted ecological and socio-economic monitoring.

Leadership

The executive director of Oracabessa Foundation, the local NGO, has been an instrumental leader, as well as a designated member on the Board employed by the Oracabessa Foundation. These members are not funded by the Oracabessa SFCA allowing grants received by donors to go directly to the sanctuary. These individuals show strong leadership, though there are other areas where wardens are not adequately fulfilling their roles and this is having negative impacts.

Equity issues

Initially there were some equity issues as spear fishers were restricted by the NTZ, as they had to swim across it to be able to fish. Some have since been recruited by the SFCA in the lionfish culling programme or as a rotational warden. There is also some conflict between fishers with some claiming to have been excluded, although all weekly meetings are open to all and there have been many opportunities for participation.

26. Bluefields Bay Special Fisheries Conservation Area, Jamaica – Claire Thorpe, MSc Dissertation (2016)

Name	Bluefields Bay Special Fisheries Conservation Area, Jamaica	Year of designation	2009
Area	13.6 KM ²	State Capacity	0.18 (rank 58.5%, 2016)
GDP	\$8,600	Human Development Index (HDI)	0.719
GDP Growth Rate	0.5%	Population below the poverty line	16.5%

MPA Objectives:

Conservation	Operational
Conserve healthy marine ecosystems and resources as the primary aim	Promote research and monitoring to guide effective management
Conserve marine biodiversity, particularly corals, mangroves and sea grass	Increase compliance with MPA regulations
Increase fish stocks and spill-over	Educate and endorse MPA benefits to the local community to engender a sense of ownership and support
	Improve sustainable livelihoods in areas adjacent to MPAs
	Facilitate sustainable recreation
	Efficiently manage MPAs to support their sustainability
	Develop and implement financial plans to ensure conservation is possible

Drivers and Conflicts:

Poaching, organisational politics, wetland removal, pollution, invasive species

Governance Framework/Approach:

Community-led - Governed primarily by local communities under collective management arrangements'

Effectiveness: 3 - Some impacts completely addressed, some are partly addressed. With the implementation of the proposed management plan this could become a 4 in the foreseeable future. Good coral cover and increasing catches inside and outside the sanctuary indicate conservation objectives are being met and enforcement is effective. A lack of will to control development in the area and inability to become financially independent may be problematic.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
3. Reducing the leakage of benefits	N*	Some non-local vessels from Savannah-La-Mar travel to Bluefields Bay for higher catches and this needs to be addressed through licence restrictions.
4. Promoting profitable and sustainable fishing and tourism	Y	The area is all no-take and there are technical restrictions (minimum mesh sizes) to reduce juvenile catches. Fishers reported an increase in CPUE implying increasingly profitable fisheries, although some fishermen have noted no change, particularly young fishers who do not remember the 'bad old days' of depleted stocks and low catches.

5. Promoting green marketing	N*	Needed – the fisheries management, wildlife watching and symbolic benefits of the MPA could be better used to promote 'eco'-tourism
6. Promoting diversified and supplementary livelihoods	Y	To be improved – local crafts people are encouraged to sell their products from the Bluefields' Peoples Community Association buildings where there is currently a sewing shop making artisanal products for Sandals tourist shops.
9. Provision of state funding	Y	Government funding is sufficient. It is often late but its provision is written into legislation.
10. Provision of NGO, private sector and user fee funding	Y	Long-term agreements with many NGOs. The wardens are skilled at report and account writing to generate funding.

Communication

11. Raising awareness	Y	Work is undertaken with the community to raise awareness of the work of the MPA and general marine conservation issues, including education programmes targeted at fishers, particularly a leaflet campaign in the early years of BBSFCA explaining the boundaries, restrictions and penalties, including diagrams for illiterate fishers. Partners work towards promoting awareness of the MPA and a local NGO (Bluefields Environmental Protection Association) works with tourist resorts to inform guests of conservation issues and tours of BBSFCA
12. Promoting recognition of benefits	Y	Knowledge of the benefits that the MPA was beginning to see in the fishing grounds was widespread. Awareness of marine conservation is much higher than in neighbouring areas with many fishers demonstrating knowledge of spill-over benefits and penalties for defying regulations
Promoting recognition of regulations and restrictions	Y	Wardens promote training days and inform fishers on regulations and have provided wire for pots so that juvenile fish cannot be caught. The community understand the consequences of trespassing or poaching.

Knowledge

14. Promoting collective learning	Y	Local fishermen have contributed to discussions involving the boundaries of the MPA and their knowledge and expertise have been used to develop new projects. Visiting scientists often use fishers to help them find the best locations for research
15. Agreeing approaches for addressing uncertainty	Y	To be improved - The sea beyond the boundaries of BBSFCA is unmanaged but inside is strictly no-take, so zonation to integrate these distinctly different areas could help achieve conservation objectives and incorporate the precautionary principle into management.
16. Independent advice and arbitration	Y*	It is difficult to find a truly neutral knowledge deliberation and arbitration panel members in such a small area and more needs to be done to address this, perhaps seeking experts from further away on the island who have less stake. There is some independence from researchers to give advice without bias and some are happy to challenge leadership figures within BBFFS over knowledge issues.

Legal

17. Hierarchical obligations	Y	There are national legal obligations for this MPA
18. Capacity for enforcement	Y	Police patrol daily from the nearby marine police station (which the Bluefields Bay Fishermen Friendly Society successfully lobbied for) in addition to 24 hour warden patrols. Wardens have the power to arrest poachers and report wider environmental damage but they rely on the police for back-up.
19. Penalties for deterrence	Y*	Courts need to be more willing to pursue fishing prosecutions and levy fines that are sufficiently large to deter poachers. Political will to increase deterrents is increasing as the Fishing Bill is introduced to parliament.

20. Protection from incoming users	Y	Some non-local vessels travel to Bluefields Bay for higher catches; all fishing vessels should be licenced with licence to fish in Bluefields Bay only being allocated to local fishers.
22. Cross-jurisdictional coordination	N*	Coordination between government departments is better than between NGOs, although priorities within government are more focussed on tourism development than conservation goals and these state sectors, along with fisheries, could be better integrated.
23. Clear and consistent legal definitions	Y	Legal definitions and jurisdictions are clearly defined and widely understood by the community.
26. Transparency, accountability and fairness	Y	All partners are required to produce accounts of monies spent and reports towards progressing conservation goals. Wardens are available for discussion if a community member feels that something unjust has occurred.

Participation

27. Rules for Participation	Y	Participation rules are clearly set set out in the rule book for BBFFS
28. Establishing collaborative platforms	Y	Monthly meetings between various subsets of stakeholders allow grievances to be discussed and actions taken when possible or necessary.
31. Decentralising responsibilities	Y	The majority of the responsibilities rest with the local communities and other non-governmental organisations.
32. Peer enforcement	Y	Fishers will discuss patterns of infringements but are reluctant to inform on individuals
33. Building trust and the capacity for cooperation	Y	Trust has been built up predominantly due to decentralised governance.
35. Building on local customs	Y	Various partnerships built up by BBFFS have built social capital and maintained traditional ways of decision making and discussion
36. Potential to influence higher institutional levels	Y	There is a strong tradition of BBFFS influencing government from the conception of the MPA by petitioning the government for the allocation of a nearby marine police station

Cross-cutting themes:

Leadership

This has been strong from the president of Bluefields Bay Fishermen Friendly Society but there are concerns as to whether this will change as the president has now left. There is a high amount of leadership from the fishers themselves as wardens and leading by example.

Role of NGOs

They play an essential role in the management and are the main source of funding, as well as galvanising political will. Communication between NGOs needs to improve as there have been conflicts of interest and case of non-coordination of initiatives in the past.

27. Nusa Penida MPA, Indonesia – Julian Clifton and Dinah Yunitawati, MSc Dissertation (2015)

Name	Nusa Penida MPA, Indonesia	Year of designation	2010
Area	20 km ²	State Capacity	-0.18 (rank 44.8%, 2016)
GDP per capita	Bali: \$1292 (2010)	Human Development Index (HDI)	Bali: 74.11 (2013)
GDP Growth Rate	Bali: 6% (2013)	Population below the poverty line	Bali: 4.2% (2011)

MPA Objectives:

Conservation	Operational
To conserve reefs, mangroves and seagrass beds which supply essential ecosystem services	To manage the park via a collaborative, sustainably financed and strong legal framework
To conserve flagship species of tourism value, particularly sunfish (<i>Mola mola</i>) along with dugong, turtles, rays and sharks	

Drivers and Conflicts:

- The use of destructive fishing practices (dynamite and cyanide) by fishers from elsewhere in Indonesia; local fishers targeting protected or endangered species including turtles, thresher sharks and other sharks and rays; local fishers causing overfishing of popular reef species including grouper and snapper;
- Physical damage to reefs and seagrass beds due to diving; conflict between tourist operators and seagrass cultivators;
- Pollution from tourist facilities; plastic waste;
- Illegal resource usage through mangrove logging, sand mining and coral souvenir trade.

Governance Framework/Approach:

Decentralised - Managed by the government with significant decentralisation and/or influences from private organisations. The Nature Conservancy (an international US-based NGO) initiated the process through collecting background socio-economic and biological data from 2008 to 2010. TNC established a working group via government decree in 2010, including government, NGOs and community representatives, who disseminated the MPA concept via 32 public meetings in villages. In a separate concurrent process, boundary delineation was negotiated by TNC with Indonesian government and community representatives. The MPA was formally declared by Klungkung District (Kabupaten) government in 2010. Following national legislation, MPA management is being transferred from the Ministry of Forestry (MoF) to the Ministry of Marine Affairs and Fisheries (MMAF). This is a slow process with regards to established MPAs but does mean that new MPAs such as Nusa Penida involve partnership between Klungkung district government and MMAF, rather than the highly centralised management structure of the MoF. In 2010, TNC transferred its Nusa Penida activities to the Coral Triangle Centre (CTC). The CTC was formed in 2000 as a training programme by TNC in Indonesia and played a central role in the establishment of the Coral Triangle Initiative. Since 2010, the CTC has assisted in developing a zonation plan, technical implementation unit, financing plan and management plan for Nusa Penida. These were completed in 2014 and Ministerial recognition of the MPA was also declared in 2014, thereby completing the process of MPA designation. From a governance perspective, this is unique in that the activities formerly conducted under the international NGO auspices have been transferred to a domestic NGO which imbues the latter with a considerable degree of financial and technical backing. Although describing itself as a 'small-scale, domestic NGO', the CTC clearly operates as the local arm of TNC in terms of implementing the Nusa Penida MPA within the broader CTI objectives.

Effectiveness: 2 - *Some impacts partly addressed but some impacts not yet addressed.* Biological surveys indicate positive trends in fish biomass and density from 2010 to 2012, but these cannot be placed in a longer timeframe. Impacts related to conflicts listed above continue to undermine the fulfilment of conservation

objectives, though some impacts have been reduced, but total fish catches around Nusa Penida rose from 93,700 tonnes in 2007 to 105,500 tonnes in 2009, with fishers stating they need to fish longer and travel further to maintain catches, raising sustainability concerns.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	N	Zonation plan demarcates areas to be used by fishers, tourism operators and seaweed cultivators. Traditional fisheries zone (84% of MPA) for local fishers only. Temporal allocation of rights in marine tourism zone (6% of MPA) also allows sharing between fishers (4pm-9am) and tourism operators outside of these hours. However, these are use rights only and not property rights.
3. Reducing the leakage of benefits	Y*	The traditional fisheries zone's restriction to local fishers helps ensure that spillover/export benefits from the no take zones are mainly yielded by local fishers, but there are concerns that whilst many locals are employed by tourism operators, including part-time fishers, many of the benefits of tourism are yielded by incoming tourism operators.
4. Promoting profitable and sustainable fishing and tourism	Y	Sustainable fisheries promoted through establishment of the core zone (2% of MPA) to assist in stock replenishment, coupled with some gear restrictions to promote sustainability in the traditional fisheries zone.
9. Provision of state funding	Y*	There is a need for the long-term provision of funding from MMAF and the district government coupled with proposed user fee funding
10. Provision of NGO, private sector and user fee funding	Y*	CTC funding has assisted in MPA establishment but future contributions are uncertain now that the MPA is designated: priority is for MPAs to be self-financing. Plans for MPA entrance fee system to fund management but not yet implemented due to need for district government approval.

Communication

11. Raising awareness	Y	Meetings at village and district level organised by the working group described above took place in 2010, involving fishers, seaweed farmers, tour operators, government officials, teachers and traditional leaders. These focused upon raising agreement on the need for conservation through highlighting the stresses facing the marine environment and the evidence of declining catches reported by fishers.
12. Promoting recognition of benefits	Y	As above. The benefits of conservation in terms of longer term fish stocks were promoted.
Promoting recognition of regulations and restrictions	Y	Publicity material including zonation maps were distributed to village government and schools and were also handed out to boat operators at sea.

Knowledge

14. Promoting collective learning	Y	The village forums allowed for several instances of collective learning which influenced the zonation plan. Some core zones were reduced in size following fishers' concerns regards access to well-established fishing grounds. The temporal zonation described above was another outcome of collective learning and agreement between fishers and tour operators in these forums. Finally, locally recognised physical markers were identified which were subsequently used in the designation of MPA boundaries.
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16. Independent advice and arbitration	Y*	The CTC is widely recognised as an 'independent' arbiter in the process of MPA designation, despite the underlying links to TNC outlined above. However, this has led to difficulties in MPA implementation as described below (28. Establishing collaborative platforms).
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Legal

17. Hierarchical obligations	Y	Nusa Penida's designation is in the context of the national target for MPA coverage of 20 million ha by 2020 along with improving existing management regimes and other commitments in the context of both the Aichi Targets and the CTI goals. Furthermore, various national decentralisation laws passed since 2004 encourage and empower district governments to establish MPAs (often called Locally Managed Marine Areas or LMMAs) in partnership with MMAF in order to both improve fisheries sustainability and contribute towards the national targets. Nusa Penida MPA is therefore under local district management and sits within national objectives and obligations.
18. Capacity for enforcement	Y*	Official park rangers patrol to enforce restrictions with support from 'seashore security' and other community surveillance groups (see Peer enforcement) but there are concerns that the lack of commitment from the district government to implementing the zonation scheme is undermining the enforcement of zone restrictions.
19. Penalties for deterrence	Y	National rules apply for infringements (e.g. penalties of up to 6 years for banned destructive fishing practices) but it is unclear if these penalties are effectively applied and if they are sufficient to deter
20. Protection from incoming users	Y*	Zonation allows fishing activity within the 'Traditional Fisheries Zone' by local fishers only, although the mechanism for identifying local fishers (eg boat plates or numbers) has not been developed. There are concerns about the impacts of tourists, particularly day visitors from Bali, and their impacts (coral trampling, boat anchoring, fish feeding, over-use of popular dive sites leading to coral damage, etc)
21. Attaching conditions to use & property rights, decentralisation, etc	Y*	Only local fishers are allowed to use the 'Traditional Fisheries Zone' and other conditions of use are in development. There is a code of conduct for tourism operators in the tourism zone but there are no licence restrictions on which companies can operate vessels in this zone (arguably needed to promote compliance and manage capacity) and the code of conduct is weakly enforced and complied with.
22. Cross-jurisdictional coordination	N*	The transfer of governance responsibility from forestry (MoF) to fisheries (MMAF) ministries negated the need for cross-jurisdictional coordination at a national horizontal level but there is scope for improved coordination between MMAF and the district government, particularly with regards to the commitment of the district government to the MPA and related controls on tourism.
23. Clear and consistent legal definitions	Y	This was a focus of the CTC meetings whereby legal encodification was specifically sought on zonation
26. Transparency, accountability and fairness	Y	This was an objective of the CTC meetings records of which were made publicly available

Participation

28. Establishing collaborative platforms	N*	CTC took a lead role in organising village level meetings and consultation prior to the MPA being designated. However, they do not hold a role in implementation, which is the responsibility of the district government, therefore the influence of these collaborations is arguably limited. The district government has not become active enough in taking a leadership role which has led to many problems including loss of collaborative inertia through a lack of continued collaborations with local users, along with confusion as to why CTC is not involved.
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31. Decentralising responsibilities	N*	In theory, the district government is empowered as a result of national decentralisation legislation but in practice these decentralised MPA implementation responsibilities are not being fulfilled.
32. Peer enforcement	Y	New initiatives in community-based enforcement have been developed. Pecalang segara (literally 'seashore security') are local fishers with diving ability who act in surveillance and enforcement roles alongside official park rangers on patrol. POKMASWAS (Kelompok Masyarakat Pengawas or Community Surveillance Groups) are land-based village co-operatives supported by the Ministry of Marine Affairs and Fisheries (MMAF) to combat destructive and IUU fishing through reporting any incidents to MMAF.
33. Building trust and the capacity for cooperation	N*	This is lacking due to the absence of district government in taking on its implementation responsibilities.
34. Building linkages between relevant authorities and user representatives	Y*	Such linkages had been established through the Coral Triangle Centre meetings but they are falling into abeyance since MPA designation as the CTC's role has been taken up by the district government, who have neglected this role.
35. Building on local customs	Y	Local customs (adat) remain particularly strong in Bali and customary traditions co-exist alongside official institutions created by the government. These are reflected in the community-based enforcement activities described above. In addition, the 'sacred temple zone' was created to ensure that boat-based diving activities do not offend local sensitivities due to divers changing in sight of the temple.

Cross-cutting themes:

Equity

There are concerns about the leakage of tourism benefits from locals to incoming users and the impacts of tourism, including sewage pollution, on their livelihoods, which are undermining the wellbeing of some locals, though other locals do benefit from employment in tourism and related trades. There are also growing equity concerns about the impacts of incoming fishers, mainly from Bali and other regions of Indonesia, who tend to use banned destructive fishing practices.

Role of NGOs

The big international NGO TNC was the original driver of this MPA and the related CTC but their focus on promoting 'non-consumptive' tourism over fishing, in partnership with the tourism operators and the district government, arguably represents an 'unholy alliance' (Jones 2014, p.109) that is leading to inequity concerns amongst partly displaced (banned in tourism zones 9am-4pm) local fishers.

Leadership

Strong roles are provided by traditional leaders and TNC; but traditional leaders may be influenced by the short-term benefits flowing from the tourism sector. It was planned that the District government would take over the leadership role of TNC but so far they have only provided very weak leadership, particularly with regards to the control of tourism impacts, partly influence by economic priorities but also influenced by unstable political conditions.

28. Port-Cros National Park, France – Katie Hogg, Pedro Noguera-Méndez and María Semitiel-García, PhD research (2013)

Name	Port-Cros National Park, France	Year of designation	1963
Area	Terrestrial/coastal 10KM ² , marine 16KM ² , marine adherence area (buffer zone) 123km ²	State Capacity	1.04 (rank 79.9%, 2016)
GDP per capita	US\$35,700 (2013)	Human Development Index (HDI)	0.884
GDP Growth Rate	0.3%	Population below the poverty line	7.9%

The original area of the park was created in 1963 following a typically top- down process. Between 2012-2016 the park has undergone a collaborative decision-making process, drafting new plans for the park, to extend the area to cover Porquerolles Island and several mainland communes. At the end of 2016 the communes will decide whether to agree to the charter and extension of the park. The information provided in the report refers to the marine part of the park.

MPA Objectives:

Conservation	Operational
To protect the unique biodiversity and cultural heritage.	Organisation of public reception and control of visitor numbers
Preservation of the natural heritage	Dissemination of environmental education and transmission of knowledge
Preservation of the landscape and cultural identity of the island	Reinforcement and development of partnerships for sustainable development of the territories

Drivers and Conflicts:

- In the area of Port-Cros National Park, there is an annual charter signed by fishers to abide by the rules of the area and to be allowed to fish in the area. This, however, is not the same for the area around Porquerolles Island where both artisanal and recreational fishing continue to present a serious management challenge. A NTZ (~0.5 KM²) was designated on the southern coast of Porquerolles in collaboration with local users to restrict all recreational fishing and in other areas recreational fishing is limited seasonally. But trawlers from Hyeres were reported to operate in the area and were perceived as a significant threat to the park’s effectiveness. There are 700 boats authorised to fish recreationally within the MPA, but those who have a licence from before 2007 are not restricted, causing additional management concerns for the park and questions about the balance between fisheries development and conservation.
- Incoming external fishers are a serious issue as budget cuts, staff reductions and vigilance has reduced significantly since the economic crisis in 2007. Recreational fishers have also increased illegal fishing to supplement income, creating potential conflicts between user groups. Both situations are reducing stocks and impacting market prices for fish.
- There is a need to better balance the tourism industry to ensure that it is economically beneficial whilst minimising environmental impact. PCNP is a top tourist destination attracting high-end tourists and many pleasure boats. The local government focus is on economic development which is often in conflict with conservation objectives. The growth of activities has increased environmental degradation. Impacts from diving and snorkelling, anchoring, sedimentation and tourism-related infrastructure development are increasing. The increases in tourism have not been adequately addressed as in peak seasons amenities are overrun and the infrastructure is stretched, with high levels of disruption for local residents. Anchoring and mooring regulations have been introduced to manage pleasure boat visits, but this is expensive to install and maintain, creating additional financial burden for the park, and breaches of regulations remain common. This has also been connected with the introduction of invasive species. Diving has been regulated with specific areas designated, but there are no official carrying capacity limits on diver numbers in place. The growth of the dive industry has created conflicts between them and fishers. Collaboration with dive operators and involvement with monitoring of the marine environment and reporting of invasive species keeps them

involved and there is a satisfaction with the levels of growth, but more could be done to respect fishing activities and to encourage profits from the dive industry to remain within the community.

Governance Framework/Approach:

Government-led - There are increased elements of decentralisation and substantial community participation. The government retains overall control with daily management conducted by the government agency Parcs Nationaux de France, supported by a management board. The management board includes representatives from the central government, the regional government, and members chosen for their national or local relevance (eg landowners, residents, users and representatives of environmental NGOs or sectoral trade organisations). The management board is further supported by scientific councils to ensure decisions are evidence-based and there is also a social and cultural committee. Since 2006 the reform of French National Parks has redefined governance: it is still government led but participation is now legally required. During the development of the N-PCNP charter extensive meetings have been held which were open to the public and representatives of the different sectors were involved. In 2012 park staff were officially granted as ‘environmental police’ by law with the status to enforce park regulations and issue sanctions. Recent processes to develop the Charter of the National Park to discuss, modify and improve the charter has included a largely ‘bottom-up’ approach including residents, users and elected representatives. It was approved by the French Environmental Ministry. The increase in public participation has helped to resolve many existing issues and improve overall public acceptance and support for the park.

Effectiveness: 2 - *Some impacts partly addressed but some impacts not yet addressed.* The impacts of recreational and commercial fishing and of tourism continue to challenge the effectiveness of this MPA and it remains to be seen if the 2012 revisions will address these.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
3. Reducing the leakage of benefits	Y*	Restrictions on incoming commercial fishers should retain related benefits amongst local fishers, but illegal incoming fishers continue to undermine this. The local economy derives major economic benefits from tourism but concerns remain at the leakage of benefits related to incoming tourism operators.
4. Promoting profitable and sustainable fishing and tourism	Y	The promotion of a balance between conservation and sustainable fishing is at the heart of the 2006 French National Park reform , which is focussed on through the management of fisheries to promote sustainability in this MPA.
5. Promoting green marketing	N*	Previously a green marketing scheme was piloted with a few fishers, but it was challenging to ensure that they were meeting the necessary standards. A more clearly defined green marketing approach would be very beneficial, but a system is required that ensures standards are met. It is believed that these schemes would increase the value of the products and recognise the traditional techniques applied.
6. Promoting diversified and supplementary livelihoods	N*	Employment opportunities on the island are very limited and the younger generation are generally leaving as there is not sufficient employment. Fishing and tourism are the main sectors of employment, but they are associated with environmental impacts that need to be better addressed, and there is considerable leakage of related benefits to incoming fishers and tourism operators, both issues that providing better livelihoods for local people in tourism and sustainable fishing would help address
8. Investing MPA income/funding in facilities for local communities	N*	The public/ local acceptance of the park is increasing. Investing some MPA funding in the local infrastructure would further increase public acceptance and potentially increase community stewardship.

9. Provision of state funding	Y	There is currently sufficient support from the government and national park resource in terms of human and financial resource, but recent cuts threaten to undermine effectiveness.
10. Provision of NGO, private sector and user fee funding	N*	State funding cuts are increasingly threatening the ability of the staff to achieve their conservation objectives. Additional funding is required to increase the number of staff and resources to reduce impacts and NGO, private sector and/or user fee funding could help address this.

Communication

11. Raising awareness	Y*	Awareness remains low amongst tourists and some locals despite public meetings, volunteer opportunities, websites, school programmes, guided tours and conservation signage.
12. Promoting recognition of benefits	Y	The benefits of the MPA are communicated through all of the channels noted above.
Promoting recognition of regulations and restrictions	Y*	The rules and regulations are all communicated through the media channels and other routes to address the local surrounding community and visitors but more could be done to make tourists aware of regulations and restrictions.

Knowledge

14. Promoting collective learning	N*	At present, data used is mostly if not all scientific and dominated by the scientific committee. More effort is required to harness local knowledge to build confidence and trust in the data and related knowledges being used to make decisions.
16. Independent advice and arbitration	Y	Advice is often sought from scientists not involved in the MPA for expert knowledge. Port Cros has a management board supported by two scientific committees and a more recent cultural and social committee.

Legal

17. Hierarchical obligations	Y	This MPA is part of the Natura 2000 Network and is declared as a SPAMI as well as being part of the MedPan Network, all of which require set obligations to be delivered.
18. Capacity for enforcement	Y*	Park staff are granted Environmental Police status to enforce park regulations and to issue sanctions but there are concerns that state budget cuts will lead to reductions in surveillance and enforcement capacity.
19. Penalties for deterrence	Y	Penalties (fines) are provided for in the overall legal framework.
20. Protection from incoming users	N*	There were concerns regarding the trawlers that are permitted to operate in the adherence area. Also, regulations that are applied to recreational fishing licencing were seen to be inadequate and created a threat to commercial fishers. Furthermore, tourists regularly fished in areas that they are not permitted to do so due to the lack of awareness/knowledge. In Port Cros, local fishers are protected from incoming users as there is a specific fishing charter. However, this does not extend to Porquerolles (the area of extension) leaving these fishers more vulnerable to incoming users.
22. Cross-jurisdictional coordination	Y	A management board consists of representatives from central and local government, landowners, users and representatives of environmental NGOs to enable coordination of activities and actions across different jurisdictional areas, but there is a need for improved coordination and for other authorities to exercise their functions in a way that better addresses conflicts, e.g. to establish limits on tourists and vessel numbers.
23. Clear and consistent legal definitions	Y	Legal definitions are created under the Environmental code.
25. Legal adjudication platforms	Y	This legal process is managed by the state and there are routes and platforms to appeal decisions

Participation

27. Rules for Participation	Y	The legislative framework makes providing for stakeholder participation obligatory, including details on which sectors and groups should be represented on the management board and related committees and the need to be open to the public.
28. Establishing collaborative platforms	Y	The 'Charter of the National Park' established several such collaborative platforms in various locations with residents, users, electoral representatives, etc.
31. Decentralising responsibilities	Y	Many responsibilities are decentralised to the management board and, in turn, to related committees and public meetings.
32. Peer enforcement	N*	During peak season, there are a lot of tourists to manage and monitor and insufficient park staff to do so. In addition, the difficulties created by locals vs tourists related to local privileges when it comes to regulation application is an issue that needs to be addressed. Also it was reported that some individuals were still unsure about the park and the restrictions. A volunteer warden scheme could overcome some of these issues, increasing awareness regarding the benefits of the regulations and increasing the sense of stewardship
33. Building trust and the capacity for cooperation	Y	The involvement of users and locals in the Charter of the National Park helped to resolve many existing issues of public participation and improved the overall acceptance of and support for the park.
34. Building linkages between relevant authorities and user representatives	Y	Strategic relationships were built with key user and local representatives to enable the creation and implementation of the Charter of the National Park and the investment in these relationships is ongoing.

Cross-cutting themes:

Leadership

Strong leadership from the national government and the French national park agency characterise and influence the governance of PCNP. It results in a strong top-down governance structure. Participation is increasing but again this is driven from the top-down included in the parks legal mandate;

Equity

Issues with equity exist in the implementation of MPA regulations in summer vs. winter months and between locals vs. tourists;

Stewardship

Previous public opposition to the national park prevented park extension. Increased use of participative incentives and transparent decision-making processes is increasing acceptability for the park, and community stewardship towards the MPA is gradually increasing

29. Tavolara-Punta Coda Cavallo MPA, Italy - Katie Hogg, Pedro Noguera-Méndez & María Semitiel-García, PhD research (2013)

Name	Tavolara-Punta Coda Cavallo MPA (TPCC), Sardinia, Italy	Year of designation	1997
Area	154 KM ²	State Capacity	0.49 (rank 67.5%, 2016)
GDP per capita	US\$29,600	Human Development Index (HDI)	0.872
GDP Growth Rate	-1.8%	Population below the poverty line	29.9%

MPA Objectives:

Conservation	Operational
Protect the marine environment	Spread and disseminate knowledge of the coastal area
Protect the biological resources and geomorphology of the area	Carry out education programs to improve knowledge of ecology and marine biology
	Promote socio-economic development compatible with the protected area and supporting artisanal and traditional activities

Drivers and Conflicts:

- There are pressures from recreational and commercial fishing and these activities are restricted through a zonation scheme: Zones A integral reserves (0.53 KM², i.e. 0.35% of MPA) where all forms of fishing are prohibited; Zone B partial reserve (31.1 KM²) where small-scale commercial fishing is allowed; and Zone C general use (117.2 KM²) where recreational (except spear fishing) and small-scale commercial fishing is allowed. All commercial fishing is restricted to local professional fishermen that are formally resident in coastal villages within the MPA, with just 15 remaining boats (sector in decline) fishing regularly within the MPA, mainly using trammel/gill nets and longlines.
- Recreational fishing is considered to be the greatest management concern, both through excessive effort in Zone C and overfishing near the boundary of the MPA.
- Incoming fishers are a serious issue as budget cuts, staff reductions and vigilance has reduced significantly since the economic crisis in 2007. Recreational fishers who sell their catch (so actually illegal commercial anglers) have also increased to supplement their income, creating potential conflicts between user groups. Both situations are reducing stocks and impacting market prices for fish.
- TPCC is a highly developed tourist area. The local government focus is on economic development which is often in conflict with conservation objectives. The increasing activities have increased environmental degradation. Impacts from diving and snorkelling, anchoring, sedimentation and tourism-related infrastructure development are increasing. The increases in tourism have not been adequately addressed as in peak seasons amenities are overrun and the infrastructure is stretched with high levels of disruption for local residents.
- Anchoring and mooring regulations have been introduced to manage pleasure boat visits, but moorings are expensive to install and maintain creating additional financial burden for the park and breaches of regulations remain common.
- Diving has been regulated with specific areas designated, though there are no official quotas in place. The growth of the dive industry has created conflicts between user groups. Collaboration with dive operators and involvement with monitoring of the marine environment and reporting of invasive species keeps them involved and there is a satisfaction with the levels of growth, but more could be done to respect fishing activities and to encourage profits from the dive industry to remain within the community.

Governance Framework/Approach:

Decentralised - The governance approach is government-led with significant decentralisation. Local governments are increasingly being granted more responsibility. A consortium between three municipalities (Olbia, Loiri-Porto San Paolo and San Teodoro) is responsible for management of the MPA. A management authority employs nine staff members who work closely with several associated organisations. The MPA is monitored using cameras and is enforced by the management authority and the coast guard. Dive centres and long term researchers contribute through self-management practices. There is however, limited capacity for enforcement as they don't have the power to issue sanctions to transgressors and instead are reported to authorities that have higher enforcement powers. It allows greater participation and involvement at a local level, although there is potential for local level politics and economic development to influence the effectiveness and management outcomes of the MPA. Local governments want to control the direction of the MPA, but if they do not understand the importance of the MPA they may hinder its progress through failure to provide appropriate resources and support.

Effectiveness: 2 - *Some impacts partly addressed but some impacts not yet addressed.* The impacts of recreational over-fishing coupled with illegal commercial angling and of tourism continue to challenge the effectiveness of this MPA. Di Franco et al (2009) found no difference in assemblage structures, density, size and biomass between the partially protected TPCC MPA zones and locations outside the MPA, though there were differences in biomass (due to greater size of fish rather than increased density) between the NTZs and the partially protected MPA zones/locations outside the MPA.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
3. Reducing the leakage of benefits	N*	Considerable income leaks to incoming tour operators and illegal anglers
4. Promoting profitable and sustainable fishing and tourism	Y	There are plans to promote the artisanal fishing sector and the profitability of its traditional sustainable fishing practices, including through enforcement of the ban on commercial angling by non-professional fishers
5. Promoting green marketing	N*	There are plans to promote the use of eco-labels to mark sustainably caught products This incentive is needed to increase the value of the resources and respect local traditions
6. Promoting diversified and supplementary livelihoods	Y	Dive tourism is promoted as an alternative livelihood to commercial fishing, although the profit margins are not as high as fishing and the logistics for taking tourists on fishing boats is a deterrent.
9. Provision of state funding	Y*	The National Government provides annual funding based on performance and the TPCC management authority tries to secure additional project funding. The local government also provides a large proportion of funds and resource. However, in Italy MPAs are funded depending on their performance. TPCC is one of the best performing MPAs and is therefore quite well funded. However, each year the budget available is reducing. Furthermore, as the local municipalities provide a majority of the funding they have been hit badly by the economic crisis. The MPA staff are 'employed' on 8 month contracts as there is no guarantee of long term funding. This is creating issues for staff and for long term project planning.
10. Provision of NGO, private sector and user fee funding	N*	The potential to charge user fees, including fees for commercial operators within the MPA and potentially some NGO funding needs to be explored to address funding shortages.

Communication

11. Raising awareness	Y	An educational cinema runs in peak seasons and there is a team of volunteer tour guides to inform visitors about the MPA.
12. Promoting recognition of benefits	Y	All of the benefits of the MPA are communicated through the channels above
Promoting recognition of regulations and restrictions	Y	As above

Knowledge

14. Promoting collective learning	Y	The knowledge of artisanal fishers was drawn on in the design of the MPA and is drawn on in its assessment and management.
15. Agreeing approaches for addressing uncertainty	Y	Through collaboration with the university there has been acknowledgment that they do not have answers for everything and therefore use some experimentation which is openly communicated but there is not a formal agreement or process.
16. Independent advice and arbitration	Y	Data has been published in high quality international peer-reviewed journals giving confidence in the quality and reliability of the data used in monitoring and applied to decision-making. This improves the quality of the management of the MPA. The use of peer review acts as a form of independent advice.

Legal

17. Hierarchical obligations	Y	The designation as a SMPAMI and SCI and inclusion in the MedPan Network requires certain obligations to be met.
18. Capacity for enforcement	Y*	The MPA staff have no jurisdictional power to enforce the regulations. If they catch transgressors, they are only able to tell them that the area is protected and their activities are not permitted. They are reliant on the coast guards to enforce the regulations, but the Coast Guard have limited capacity and often cannot respond to reports, and MPA staff suggested that they are less influenced by local politics and could therefore enforce the MPA more effectively and equitably. The park staff were very aware of the system in France (where park staff have police status) and saw this as one of the most beneficial potential improvements for their MPA.
19. Penalties for deterrence	Y	There are penalties for deterrence in the form of fines and this is written into the government law.
20. Protection from incoming users	N*	Increased enforcement is needed to protect local commercial and recreational fishers from incoming illegal commercial anglers.
22. Cross-jurisdictional coordination	Y*	Coordination is managed across various jurisdictions within the government and local government with a consortium of management from three municipalities, the TPCC management authority and associated organisations. There could be improvements made to increase effectiveness, particularly through improved coordination with the Coast Guard
23. Clear and consistent legal definitions	Y	All legal definitions are contained within the government law and under specific zonation plans which is regulated by the management authority.
25. Legal adjudication platforms	Y	The government manages all adjudication through the traditional legal channels.

Participative

27. Rules for Participation	N	Clear rules are needed for participation and to ensure more regular meetings and wider participation
28. Establishing collaborative platforms	Y	A working group was created to facilitate meetings and workshops related to MPA decision-making and to develop strategic partnerships with key community groups, research institutes and key industries

33. Building trust and the capacity for cooperation	N*	Although meetings are held, some consider that these are not frequent enough and that more effort is needed to bring the different groups together in decision-making processes and to build trust
34. Building linkages between relevant authorities and user representatives	N*	Improved linkages between relevant authorities and user representatives could be established through more regular meetings

Cross-cutting themes:

Leadership

Strong leadership is driven by the MPA director who has been responsible for recruiting competent staff, fundraising and building social capital with key actors. Reliance on one leader leaves the future of the MPA vulnerable, once that leader retires;

Equity

Lack of enforcement capacity by MPA authority staff leaves the responsibility of issuing sanctions to public administrative bodies, who are perceived to be more influenced by local politics and there are concerns about clientelism

Stewardship

The use of communication incentives has increased local community stewardship of the MPA, but community support for the MPA remains relatively low.

30. Ustica Island MPA, Italy - Katie Hogg, Pedro Noguera-Méndez and María Semitiel-García, PhD research (2013)

Name	Ustica Island (UIMPA), Sicily, Italy	Year of designation	1986
Area	159KM ²	State Capacity	0.49 (rank 67.5%, 2016)
GDP per capita	US\$29,600	Human Development Index (HDI)	0.872
GDP Growth Rate	-1.8%	Population below the poverty line	29.9%

MPA Objectives:

Conservation	Operational
Protect the marine environment	Carry out investigation and scientific research in the fields of ecology, marine biology and environmental protection, to ensure systematic knowledge of the site
Protect and enhance biological resources and repopulation of the area	Spread and disseminate knowledge of marine coastal areas
	Carry out educational programs to improve knowledge of ecology and marine biology

Drivers and Conflicts:

- There are zoned areas to restrict and manage certain types of fishing in each zone. Changes in EU legislation for tuna and swordfish have resulted in larger artisanal boats being used for inshore artisanal fishing, rendering the fleet's activities economically unsustainable. Recreational fishing is allowed in zones B&C with gear and catch restrictions, but retired fishermen continue to fish and sell their catch illegally in the local fish market. Strong cultural tradition is allowing this to continue as the norm, despite the negative consequences for licenced commercial fishermen: such illegal catching and selling has rapidly reduced stocks and impacted market prices for fish. New laws are being pursued to manage this better.
- Tourism is very small scale and limited. Recently the areas accessible to tourists were expanded as they were seen to pose very low threat to the environment. However, extensive signage and outreach campaigns have also been developed to ensure that visitors are more environmentally responsible.

Governance Framework/Approach:

Decentralised - The MPA is led by the government with significant decentralised responsibilities to Ustica Municipality and daily management with the UIMPA Management Authority. The Management Authority does not have the power to enforce regulations and is reliant on the coast guard to follow up on transgressors. An advisory committee supports decision-making processes. For a time (2003-2013) the MPA returned to being fully government-led, being handed back to the municipality in 2013. There is a combination of patrolling methods using cameras, the coast guard, MPA staff, dive centres and local fishers. A lack of funding is, however, providing some serious management challenge as local residents expect the same economic returns as in past years. The success is greatly determined by local political will and economic development priorities, in particular the mayor's personal interest in the MPA and conservation issues.

Effectiveness: 2 - *Some impacts partly addressed but some impacts not yet addressed.* The impacts of illegal commercial angling coupled with the recent growth of commercial artisanal fishing and, to a lesser degree, of tourism continue to challenge the effectiveness of this MPA. It is difficult to objectively assess the effectiveness of the MPA given that no data has been collected for over 10 years.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
4. Promoting profitable and sustainable fishing and tourism	Y*	Only the locals fish in the area around the MPA which is far from mainland Sicily so does not attract outside fishing pressure. Big trawlers are not allowed in the MPA and there is high promotion of good fishing practices with the landing of certain species banned and some fishing gears also restricted, but the recent growth of artisanal fishers displaced by new EU restrictions on swordfish and tuna fishing coupled with illegal commercial angling continues to pose challenges.
5. Promoting green marketing	N*	More effort needs to be made to promote the produce of the island and respect traditions. Some agricultural producers are promoting the slow food movement through their production of wines and olive oils. It was suggested that these same principles could be applied to the fishing industry in combination with restaurants. This may also offer an incentive for retired fishers to be more respectful of the regulations and restaurants more considerate regarding from who they buy their produce.
6. Promoting diversified and supplementary livelihoods	Y	Pesca-tourism is promoted as an alternative livelihood to commercial fishing and illegal angling, although the profit margins are not as high for fishermen and also the logistics of taking tourist on fishing boats is often a deterrent.
9. Provision of state funding	Y	Funds for the MPA are allocated by the state, though this has decreased in recent year with economic decline and austerity measures.

Communication

11. Raising awareness	Y	Signage and flyers with strong conservation message are used alongside guided tours, school programmes, a visitor centre, website and public meetings have been introduced in the last few years.
12. Promoting recognition of benefits	Y	The benefits of the MPA are communicate through the channels noted above.
Promoting recognition of regulations and restrictions	Y	The rules and regulations of the MPA are communicate through the channels noted above.

Knowledge

14. Promoting collective learning	N*	In the past the MPA was very well funded and was very attractive to researchers. As more MPAs were introduced researchers began to go elsewhere. During the period of 10 years when the MPA was under government control , the infrastructure became run down and was not used. There have been no studies in the area for almost 10 years. It is recommended that researchers and locals work together to recreate the history of the MPA and undertake collective research on trends in fish populations, habitats, etc.
15. Agreeing approaches for addressing uncertainty	Y	There is acknowledgment that there is not enough information but agreements have been reached to proceed in the face of uncertainty. There is no formal process, but there is awareness of the challenge of uncertainty and this is being built upon continually.
16. Independent advice and arbitration	N	Evolving processes on how to address uncertainty in decision-making could benefit from independent advice and arbitration on knowledge issues, but this is not considered a priority

Legal

17. Hierarchical obligations	Y	This MPA is included in the Natura 2000 Network as a SCI under the Habitats Directive and is also part of the MedPan Network, all of which carries obligations that have to be met.
18. Capacity for enforcement	N*	The MPA staff have no jurisdictional power to enforce the regulations. If they catch transgressors, they are only able to tell them that the area is protected and their activities are not permitted. They are reliant on the Coast Guards to enforce the regulations. However, the MPA staff suggested that the MPA staff are less influenced by local politics and therefore could enforce the MPA more equitably. The park staff were very aware of the system in France (where park staff have police status) and saw this as one of the most beneficial moves for their MPA. A request to position cameras in the port was declined by the local Mayor.
19. Penalties for deterrence	Y	Fines and are used within the legal framework, but they are not often applied and there is a lack of will to impose the fines.
20. Protection from incoming users	Y	This is included within the legal framework which protects from larger boats specifically under the legislation, plus the distance from any other land offers increased protection as it's a long way for smaller boats to travel.
22. Cross-jurisdictional coordination	Y*	There needs to be stronger cross-jurisdictional support to improve effectiveness, particularly between the MPA authorities on the island and the Coast Guard
23. Clear and consistent legal definitions	Y	All legal definitions are contained within the government law and under specific zonation plans which is regulated by the management authority.
25. Legal adjudication platforms	Y	The judiciary manages all adjudication through recognised legal channels and platforms for appeals.

Participation

28. Establishing collaborative platforms	Y	An advisory committee supports the decision-making process with input from a variety of user and interest groups.
29. Neutral facilitation	N	The municipality of Ustica is not familiar with participatory processes and there are few trained and experienced persons to adopt a facilitation role
30. Independent arbitration panels	N*	Ustica island is small and strongly influenced by 'local' needs, therefore independent advice and arbitration, free from local politics and with the capacity to build participatory decision-making, is required to ensure the plans for the MPA move forward.
31. Decentralising responsibilities	Y	The Ustica Municipality is responsible for the MPA and the daily management is undertaken by the AIMPA Management Authority
32. Peer enforcement	N*	As a very small Island- peer enforcement systems could be very effective. There is a strong sense of pride in the Island's heritage and culture. This could be promoted through a volunteer warden scheme to ensure that the Island is being respected by all individuals and tourists. It could also help overcome the issue with retired fishers if they understood the negative impact they were having on legitimate commercial fishers.
33. Building trust and the capacity for cooperation	Y	Coast Guards, MPA staff, dive centres and local fishermen are involved in "patrolling and monitoring" as the management of the MPA was entrusted to the USTICA Municipality building local trust and cooperation
34. Building linkages between relevant authorities and user representatives	N	Attempts are being made to build partnerships with key community groups, research institutes and local industries after a long period of national government management, to re-build key strategic linkages.
35. Building on local customs	N	Local cultural norms related to fishers are arguably an issue as they promote acceptance of illegal commercial angling by retired fishers

Cross-cutting themes:

Leadership

Within the community there are several strong advocates for the MPA, though there is no clear leadership. The lack of leadership from the central government during the 10-year period under Coast Guard management has had a huge influence on the governance of UIMPA. It has resulted in a lack of local financial and institutional resources, destruction of MPA infrastructure, MPA 'visibility' and support from local community;

Equity

Lack of enforcement capacity leaves the MPA vulnerable to influences from local politics and clientelism. Islander privileges and cultural traditions often override enforcement and deterrence needs

Stewardship

This has been greatly affected by the 10-year gap in management. Community sense of stewardship is good, but in the past the MPA had brought more benefits to the community, and given the current economic climate it is unlikely to provide the same benefits as it did in the past.

31. Cabo de Gata-Nijar National Park/MPA - Katie Hogg, María Semitiel-García & Pedro Noguera-Méndez, PhD research (2013)

Name	Cabo de Gata-Nijar, (CGN) Marine Protected Area (MPA)/National Park NP), Spain	Year of designation	MPA 1995, NP 1987
Area	120 KM ² (MPA 46.5 KM ² , NP 73.5 KM ²)	Unemployment Rate	26.3% (2013)
Coastline Length		State Capacity	0.86 (rank 76.3%, 2016)
GDP per capita	US\$30,100 (2013)	Human Development Index (HDI)	0.869
GDP Growth Rate	-1.3% (2013)	Population below the poverty line	21.1% (2013)

MPA Objectives:

Conservation	Operational
protect the territorial waters adjacent to the pre-existing CGN-NP	
contribute to the regeneration and development of fishing resources	
offer particular protection to seagrass beds	

Drivers and Conflicts:

- As part of a larger terrestrial National Park (NP), development is tightly restricted. However, tourism and tourist activities are popular. Many kayak businesses operate in the area and are unmonitored. This has opened up opportunities for illegal spear fishing to become a greater issue. Diving is a popular activity, yet there are few centres and the divers are spread out across a much larger area, again making enforcement of restrictions on diving difficult to enforce.
- The lack of integration in enforcement of restrictions on small-scale artisanal fishing between the NP waters managed by the regional administration and the MPA waters managed by the national government is a major issue. The existence of a census, through which local fishers are identified and allowed, for the MPA waters yet not for regional waters, and different fishing regulations between the two designations are creating very serious enforcement issues. Many fishers reported that the Servicio Marítimo de la Guardia Civil (Maritime Service of the Civil Guard) and their surveillance service provider TRAGSIA, who enforce the area, are not aware of or do not understand the NP/MPA restrictions. The breaching of fishing regulations by illegal commercial fishers, anglers and divers is therefore becoming a bigger conflict. The drive to increase catches is being driven by the economic crisis. The crisis is also cutting funds available for enforcement so the problem is becoming circular.

Governance Framework/Approach:

Spain is a decentralised country with much governance devolved to autonomous regions. CGN consists of a natural park (NP) which extends to the regional limits (internal waters baseline) and is under the control of the regional government (Junta of Andalusia - Council of Environment and Rural Development and Environmental Spatial Planning), and then the MPA which is in territorial waters and is under the control of the national government (Ministry of Agriculture, Food and the Environment). The NP/MPA is divided into core zones (~20%) and buffer zones. The core zones are highly protected no-entry areas where only authorised research is permitted. Extractive and non-extractive use of marine resources, including low impact 'eco'-tourism, particularly through diving, is permitted within the buffer zones, but there are no limitations on the number of dive operator permits or on the number of divers. Small-scale artisanal fishing is also permitted in buffer zones, and restricted to local vessels through a census to limit access, gear type, fishing seasons and vessel size. Trawling, purse seining and surface long-lining are effectively banned, with gill nets, trammel nets and bottom long lines being the main artisanal methods. Alternative traditional methods such as 'moruna' (fixed fishing nets for big demersal fishes) and pots for octopus are also used in regionally controlled internal waters and outside the MPA's boundaries. Fishermen dispute the restriction

of these methods in the nationally regulated MPA (territorial waters outside the baseline) given they are traditional techniques and considered to be more selective than the permitted gill nets and trammel nets. The number of fishing vessels has dwindled in recent years, as a result of a lack of generational renewal, lack of institutional support and feelings of marginalisation within the fisheries sector. The younger generation are being attracted by jobs in the tourism sector, and despite the long cultural tradition within fishing families, the older generation see no future or support for the artisanal fishing sector and prefer their children to seek alternative livelihoods. Such trends raise concerns for the traditional fleets, especially when this MPA was created specifically to support this sector.

A census was taken to determine the number of artisanal fishers that should be permitted to fish in the national waters of the MPA. The census identified boats at each port and on beaches and subsequently allocated permits to 36 boats (of which only 10-12 fish regularly). However, the exercise was controversial since in failing to consult the two associated *cofradías* (Almería and Carboneras) and local fishers, the census excluded a number of legitimate vessels that were at sea at the time. This was reported to have exacerbated negative attitudes towards the administration. No census or restriction exists for the regionally managed internal waters under the control of the autonomous community of Andalusia, hence any vessel can fish. The different regulatory regimes applied in the internal and territorial waters in CGN-MPA creates great complexity and controversy, with inconsistencies regarding schedules and permitted uses, causing difficulties for daily planning and management, and confusion among both users and authorities.

Recreational fishing used to be prohibited throughout the MPA but privately funded research initiated by a recreational fishers association resulted in this prohibition being lifted for the buffer zones in 2011. Quotas do not exist to restrict the number of recreational fishing licences and the number of authorised recreational vessels registered in 2013 exceeded 350, far outweighing the number of professional fishers. Although regulations do apply regarding catch limits (4kg per permit per day), calendar and gear type, permitting recreational fishing in a MPA has caused much controversy, with many claiming that such an activity is inconsistent with a protected area. Within internal waters calendar restrictions for recreational fishing do not exist, complicating enforcement further. The lack of any other scientific studies, or fisheries records, and the power and financial support behind the recreational fishing sector makes this a powerful and influential actor, further exacerbating feelings of abandonment and negative social standing within the commercial fishing community.

Theoretically there is a joint management committee between the regional and national authorities, but this has not met for the last six years. The CGN-NP has a participatory body (board of governors for internal waters), which includes scientists and dive operators, but does not include the fisheries sector. Regulations regarding the composition of governing boards are notoriously complex in Andalusia, and this has contributed to the continued exclusion of the fisheries sector.

Effectiveness: 2 - *Some impacts partly addressed but some impacts not yet addressed.* The impacts of tourism (particularly spear fishing including for commercial purposes), illegal commercial angling and encroaching commercial fishing remain a concern. There are very few studies in this area that can confirm whether or not the MPA is having any real effect.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
3. Reducing the leakage of benefits	N*	The census restricts commercial fishing to local artisanal vessels so this should restrict the leakage of benefits but incoming illegal spear fishers (SCUBA and snorkelling, particularly at night, including for commercial gain), illegal commercial anglers and illegal commercial fishing vessels are impacting fish populations, leading to reduced catches by local artisanal fishers.
4. Promoting profitable and sustainable fishing and tourism	Y*	Restrictions are in place that are designed to promote profitable and sustainable fisheries, with only traditional methods of fishing allowed, as well as seasonal and size restrictions to promote sustainability, but the enforcement of these needs strengthening as fish stocks appear to be in decline, though stock assessments are lacking.
5. Promoting green marketing	Y	A short-term government funded programme called PescaSos aims to increase the revenue for fishers and the promotion of the value of artisanal fishing practices, and a programme has begun to develop eco-labels to highlight sustainably caught produce.
6. Promoting diversified and supplementary livelihoods	Y	Tourism has provided some alternative livelihoods and businesses in the area, , though there are related challenges of waste management, environmental degradation, changes to local traditions and the costs of upgrading artisanal vessels to a standard safe for tourists.
8. Investing MPA income/funding in facilities for local communities	N*	If the MPA can generate a surplus, it would be very beneficial to invest this back into facilities for local communities given their very limited economic opportunities.
9. Provision of state funding	Y*	Recent budget cuts have resulted in the decrease in surveillance and absence of a local manager. In the last few years illegal fishing has increased substantially and the effects on fish stocks appear to be significant. The protection that has been viewed as beneficial is being undone very quickly due to the government's lack of resources to continue protecting the area.
10. Provision of NGO, private sector and user fee funding	N*	There is scope to charge a user fee to incoming users, particularly divers (such fees charged at other MPAs in Spain, including Cabo de Palos-Islas Hormigas MPA) to raise funds to support the MPA and invest in local facilities, though this is dependent on at least some of the fees being channeled back to support the MPA, rather than just for wider regional expenditure.

Communication

11. Raising awareness	N*	Needed - There are materials and signs around the natural park. However, they are old, damaged and out of date. They are also related to the natural park not the MPA. The awareness of the natural park is quite high- but whether this knowledge extends to the marine environment is unclear and there would seem to be much lower awareness of the MPA.
12. Promoting recognition of benefits	Y	Local fishers have reported that they have seen benefits to protection and agree with the need and practice of regulations for sustainable fisheries management
Promoting recognition of regulations and restrictions	N*	There is a need to promote recognition of the fisheries restrictions in the MPA amongst both fishers and the Civil Guard that enforce the restrictions on them, as well as amongst incoming divers, snorkelers, anglers and other recreational users.

Knowledge

14. Promoting collective learning	N*	Few studies are available in CGN-MPA. Fishers lack confidence in the decisions taken and are requesting more research be conducted. However, the use of their knowledge would be very beneficial to promote collective learning and increase the confidence in the data.
15. Agreeing approaches for addressing uncertainty	N*	There is a need for an agreed approach on how to address uncertainty in decisions related to the MPA to support collective learning.
16. Independent advice and arbitration	N*	The lack of a local manager means there is not a person on-site that can act as a bridge between the different actors involved and seek independent experts to provide advice and arbitration roles.

Legal

17. Hierarchical obligations	Y	This MPA is part of the Natura 2000, SPAMI and MedPan Networks and is subject to related obligations. It has also been declared a UNESCO Biosphere Reserve and as such has to deliver to certain standards.
18. Capacity for enforcement	Y*	The Civil Guard and the TRAGSA surveillance service provider are responsible for the daily management and enforcement of the area. This is in need of improvement, including through patrols from the CGN management body patrol vessel and the provision of related enforcement powers to the CGN wardens.
19. Penalties for deterrence	Y*	Penalties are in place but they are not severe enough to be a credible deterrent. There is also confusion over the legislation so they are not used enough.
20. Protection from incoming users	Y	There is some protection but it is not sufficient to deter incoming illegal fishers. The local census only allows local boats to fish and not regional ones, however, there is little to deter them as penalties are insufficient and not used.
22. Cross-jurisdictional coordination	N*	The decentralised nature of Spain means the regional and national government operate independently from each other. There is also very poor coordination within the level of government across sectors, but many issues exist due to the lack of coordination between the regional and national government, particularly with regards to a lack of coordination between the Civil Guard/TRAGSA and the CGN NP/MPA authorities
23. Clear and consistent legal definitions	N*	Decentralisation has led to some inconsistencies between national and regional legislation that need to be addressed
24. Clarity concerning jurisdictional limitations	N*	As above
25. Legal adjudication platforms	Y	There are appeal platforms but adjudication is also needed to address concerns about inequitable enforcement
26. Transparency, accountability and fairness	N*	Issues exist between user groups related to legislation and restrictions- leading users to feel that rules are not applied fairly. There were also very few reports of transgressors being fined and caught, leading many to believe that corruption is becoming more prevalent.

Participation

27. Rules for Participation	N*	At present there are very few meetings taking place (joint NP/MPA management committee has not met for six years). Establishing a clear plan for participation and defining clearly what participation will mean in terms of power sharing and the role of all sectoral actors would be very beneficial. The government recognise the benefits of participation, but there are many barriers that are preventing it being introduced. In particular, the regional rules for who participates in the NP governing board need to be revised to require the participation of fisheries sectors.
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28. Establishing collaborative platforms	N*	As above. Fisheries actors are demanding greater participation yet no opportunities currently exist that facilitate their participation
29. Neutral facilitation	N*	In general Spain is not familiar with participatory processes. The amount of distrust that exists between the different actors requires neutral facilitators with increased capacity to begin initiating these processes.
30. Independent arbitration panels	N*	As above- to deal with distrust
31. Decentralising responsibilities	Y*	Some responsibilities have theoretically been decentralised to the joint management committee but this is not functioning: there is a need to improve the decentralisation arrangements to make them effective
33. Building trust and the capacity for cooperation	N*	As above. The level of distrust is very high between the actors, and a lot of effort is required to overcome this.
34. Building linkages between relevant authorities and user representatives	N*	There is a need to develop strategic linkages between national, regional and user representation actors, particularly from the fisheries sectors, and between the NP and the MPA authorities, to improve integrated and effective governance.
35. Building on local customs	Y*	The area is a big NP and MPA and is very underdeveloped, so maintaining a lot of traditional fishing practices and traditions is relatively easy and also allows a lot of cultural activities to continue. However, traditional low impact fisheries should be permitted to ease cultural and related economic impacts and help build trust with the traditional fishing sector
36. Potential to influence higher institutional levels	N*	The non-administrative actors have very little influence, if any, but they want to have more say and to be empowered. Furthermore, there were also complaints that EU regulations were not contextually specific for the areas, yet were being applied with a blanket approach. There were calls for these regulations to be made more adaptable/flexible.

Cross-cutting themes:

Leadership

Weak leadership was evident from both national and regional governments.

Equity issues

Issues exist regarding equity due to the lack of a census in internal waters, which means that local fishers in the regionally controlled national park cannot be distinguished from incoming fishers, where a census for the nationally controlled MPA waters means that incoming fishers can be excluded (subject to sufficient enforcement capacity). This is creating issues with equity, enforcement and compliance, particularly in terms of inconsistency between regional (NP) and national (MPA) waters.

32. Cabo de Palos-Islas Hormigas MPA, Spain – Katie Hogg, María Semitiel-García and Pedro Noguera-Méndez, PhD research (2013)

Name	Cabo de Palos-Islas Hormigas (CPH), Spain	Year of designation	1995
Area	19.3 km ²	State Capacity	0.86 (rank 76.3%, 2016)
GDP per capita	US\$30,100 (2013)	Human Development Index (HDI)	0.869
GDP Growth Rate	-1.3% (2013)	Population below the poverty line	21.1% (2013)

MPA Objectives:

Conservation	Operational
Protection, regeneration and development of fishing resources for the maintenance of sustainable fisheries	Enabling artisanal fishermen in the area to preserve their traditional way of life
	Support other low-impact activities (scuba-diving, environmental education, etc.) that contribute to economic development in the surrounding community

Drivers and Conflicts:

- The main conflict exists between the dive and fishing industries and is fuelled by the lack of control enforced by the regional government to better control recreational activities, particularly diving. The regional government does not enforce the regulations for the dive industry and it has grown exponentially. There are now social impacts on the community in terms of overcrowding and on the fishing industry due to displacement from fishing grounds.
- The fishers activities are heavily regulated whereas the divers are perceived to not be - which is generating feelings of animosity towards the group. Fishers feel they are losing the rights to a resource that was created for them.
- The economic crisis is also contributing to issues within the reserve. It has caused budget cuts, which has resulted in a reduction in surveillance and is also driving individuals to fish illegally, i.e. the problem is becoming circular.

Governance Framework/Approach:

Spain is a decentralised country with much governance devolved to autonomous regions. CPH includes regional waters (inside internal waters baseline) under the control of the regional government and national waters (beyond baseline in territorial waters) under the control of the national government (Ministry of Agriculture, Food and the Environment). The MPA is divided into a core zone (~14% of MPA area) surrounded by a buffer zone. The core zone is a highly protected no-entry area where only authorised research is permitted. Extractive and non-extractive use of marine resources, including artisanal fishing and low impact 'eco'-tourism, is permitted within the buffer zone, but recreational fishing is banned. Recreational diving has grown rapidly in an uncontrolled manner: since the establishment of the MPA in 1995, the dive industry has increased from zero to nine dive operators (2015 est.), with additional external operators and dive clubs regularly using the MPA. Theoretically, diving is restricted through a quota of allowed daily dives (25 a day in national waters, 75 a day in regional waters), but this is weakly enforced and the dive operators collectively agreed not to comply. Dive numbers have doubled in the last six years, surpassing 26000 with more than 500 immersions on peak days in 2013, leading to overcrowding, conflicts with artisanal fishers through displacement from their traditional grounds, anchor damage, diver impact, etc. As a result, the number of allowed dives has been legally restricted to 180 per day with 300 permitted on peak weekends since 2015, boats per buoy are limited to two, and dive operators must also follow good dive practice and respect fishing activity. Compliance rates and economic and social effects of these rule changes are yet to be seen. However, after the first summer there was consensus from dive operators that the regulations are satisfactory and they acknowledge the need to promote sustainable tourism.

Small-scale artisanal fishing is limited within the buffer zone to authorised boats from Cabo de Palos village: the 2014 census included 10 vessels, although only 5 regularly fish in the MPA. Trawling, purse seining and surface long-lining are effectively banned, with gill nets, trammel nets and bottom long lines being the main artisanal methods. Alternative traditional methods such as ‘moruna’ (fixed fishing nets for big demersal fishes) and pots for octopus are also used in regionally controlled internal waters outside the MPA’s boundaries. Fishermen dispute the restriction of these methods in the MPA given they are traditional techniques and considered to be more selective than the permitted gill nets and trammel nets, many opting to fish outside the MPA with such alternative gears. The number of fishing vessels has dwindled in recent years, as a result of a lack of generational renewal, lack of institutional support and feelings of marginalisation within the fisheries sector. The younger generation are being attracted by jobs in the tourism sector, and despite the long cultural tradition within fishing families, the older generation see no future or support for the artisanal fishing sector and prefer their children to seek alternative livelihoods. Such trends raise concerns for the traditional fleets, especially when this MPA was created specifically to support this sector.

Effectiveness: 3 *Some impacts completely addressed, some partly addressed.* Recreational fishing is banned but still occurs, including illegal spear fishing by divers/snorkelers (particularly at night), as a result of weak enforcement capacity. The artisanal fishing sector is in decline so the impacts are reducing, but there are still instances of illegal commercial fishing, including by commercial anglers. Impacts from tourism activities, including diving and snorkelling, anchoring, sedimentation, waste management and tourism-related infrastructure development, are contributing to significant environmental degradation. During the peak season, amenities are over-run, infrastructure is stretched and traditional life for residents is disrupted.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
3. Reducing the leakage of benefits	Y*	There are strict controls on who can fish and where fish can be sold which maintains the benefits of the MPA within the local community. However, this drives incomers to set up hotels and restaurants which does cause concern over the local community losing out on some benefits from tourism developments to incomers. Incoming illegal spear fishers (SCUBA and snorkelling, particularly at night, including for commercial gain), illegal commercial anglers and illegal commercial fishing vessels are impacting fish populations, leading to reduced catches by local artisanal fishers.
4. Promoting profitable and sustainable fishing and tourism	Y*	Restrictions are in place that are designed to promote profitable and sustainable fisheries, with only traditional methods of fishing allowed, as well as seasonal and size restrictions to promote sustainability, but the enforcement of these needs strengthening and illegal fishing occurs: fish stocks appear to be in decline, though stock assessments are lacking.
5. Promoting green marketing	Y	A short-term government funded programme called PescaSos aims to increase the revenue for fishers and the promotion of the value of artisanal fishing practices, and a programme is planned to develop eco-labels to highlight sustainably caught produce.
6. Promoting diversified and supplementary livelihoods	Y	Tourism has provided some alternative livelihoods and businesses in the area, though there are related challenges of waste management, environmental degradation, changes to local traditions and the costs of upgrading artisanal vessels to a standard safe for tourists.
8. Investing MPA income/funding in facilities for local communities	N*	If the MPA can generate a surplus, it would be very beneficial to invest this back into facilities for local communities given their very limited economic opportunities.

9. Provision of state funding	Y*	Recent budget cuts have resulted in the decrease in surveillance and in the last few years illegal fishing has increased substantially, the effects on fish stocks appearing to be significant. The protection that has been viewed as beneficial is being undone very quickly due to the governments lack of resources to continue protecting the area
10. Provision of NGO, private sector and user fee funding	Y*	A dive tax (€3 per diver) was introduced in 2014 but this income is channelled back into wider regional expenditure, so it is not serving as extra funding to support the MPA: a proportion of the dive tax income should be specifically invested back to support the MPA

Communication

11. Raising awareness	N*	There is very little, if any, information regarding the MPA. As a highly touristic area more effort needs to be made to ensure visitors are aware that they are in an MPA, what the rules are, etc., in order to encourage more responsible behaviour.
12. Promoting recognition of benefits	Y	A university plays a key role in monitoring and writing studies on fish surveys conducted. There is increasing involvement with the community in these activities to promote the benefits of sustainable artisanal fishing
Promoting recognition of regulations and restrictions	N*	The local committee at the regional level coordinates activities and meet to inform actors of regional regulation changes, involving government departments, fisheries, the dive sector and scientific bodies.

Knowledge

14. Promoting collective learning	Y	Long term monitoring conducted by the university of Murcia have helped to change dive regulations and help to justify the economic benefits from the MPA.
15. Agreeing approaches for addressing uncertainty	N*	The University of Murcia collects a lot of data about the MPA, however there is still a lack of information. The government is driven by evidence based decisions. Both the government and other actors do not understand or appreciate uncertainty and how to manage for it when making decisions. The use of alternative sources of knowledge would be very beneficial to address uncertainty, increase the knowledge base and increase the confidence in the data.
16. Independent advice and arbitration	N*	As above. The lack of a local manager means there is no one on site that can act as a bridge between the different actors involved. And due to the lack of confidence between different actors, it would be beneficial to introduce and develop platforms for independent advice.

Legal

17. Hierarchical obligations	Y	This MPA is part of the Natura 2000 Network, designated as a SPAMI and also part of the MedPan Network which requires certain obligations and standards to be met.
18. Capacity for enforcement	Y*	There is capacity for enforcement through the Civil Guard and the TRAGSA surveillance service provider, but it needs improvement after a reduction in budget and there are challenges that remain for enforcing dive regulations and addressing illegal fishing. There is a lack of skill sets within the regional government to fulfil the required enforcement capacity.
19. Penalties for deterrence	Y*	There are penalties for deterrence however they are insufficient and are not a credible deterrent to illegal fishers. There are some fines issued but few are recorded and these tend to be mainly illegal spear fishers.
20. Protection from incoming users	Y	There is some protection but it is not sufficient to deter incoming illegal fishers.
22. Cross-jurisdictional coordination	Y*	The National Ministry of Agriculture, Food and Environment and the Council of Agriculture for the Region of Murcia are each responsible for their own regulations, and whilst there are some agreements and committees established to facilitate the

		sharing of activities and promote coordination, these meet infrequently and there is a need to better promote the integration of regional and national regulations.
24. Clarity concerning jurisdictional limitations	Y	There is awareness that there are challenges in areas outside of the MPA that cannot be addressed within the legislation of the MPA. There is different legislation for waters outside of the MPA that aims to address these challenges.
25. Legal adjudication platforms	Y	There are appeal platforms but adjudication is also needed to address concerns about inequitable enforcement
26. Transparency, accountability and fairness	N*	Issues exist between user groups related to legislation and restrictions- leading users to feel that rules are not applied fairly. There were also very few reports of transgressors being fined and caught, leading many to believe that corruption is becoming more prevalent.

Participation

27. Rules for Participation	N*	At present there are very few, if any, meetings taking place. Establishing a clear plan for participation and defining clearly what participation will mean in terms of collaborative management and the role of all actors would be very beneficial. The government recognise the benefits of participation, but there are many barriers that are preventing it being introduced.
28. Establishing collaborative platforms	Y*	Although the regional government has a committee – there are no regular meetings and if there are they are restricted to the times when decisions have been made that will directly affect the other actors. The user level actors are demanding greater participation yet no opportunities currently exist that facilitate communication. There need to be more meetings especially to focus on promoting collaboration with users.
29. Neutral facilitation	N*	In general Spain is not familiar with participatory processes. The amount of distrust that exists between the different actors requires neutral facilitators with increased capacity to begin initiating these processes.
30. Independent arbitration panels	N*	This is needed to help with collaboration and to improve participation.
31. Decentralising responsibilities	Y	Most responsibilities for regulating uses in internal waters have been devolved to the regional government.
33. Building trust and the capacity for cooperation	N*	As above. The level of distrust is very high between the actors, and a lot of effort is required to overcome this.
34. Building linkages between relevant authorities and user representatives	N*	There is a need to develop strategic linkages between national, regional and user representation actors, particularly from the fisheries sectors, to improve integrated and effective governance.
35. Building on local customs	Y	This area continues to use traditional fishing practices and local customs, especially artisanal fishing.
36. Potential to influence higher institutional levels	N*	The non-administrative actors have very little influence, if any, but they want to have more say and to be empowered. Furthermore, there were also complaints that EU regulations were not contextually specific for the areas, yet were being applied with a blanket approach. There were calls for these regulations to be made more adaptable/flexible.

Cross-cutting themes:

Leadership

There is no clear leadership. Both national and regional government demonstrate weak leadership. The University has acted as a leader for research and monitoring. Lack of NGOs operating locally to assume this role.

Equity issues

Issue of inequitable use of the MPA by the tourist industry despite its creation to support artisanal fishing.

33. Shark Bay Marine Park, Australia – Peter Jones (2015, updated through to 2018)

Name	Shark Bay Marine Park	Year of designation	1990 (World Heritage Site 1991)
Area	7,487 km ²	State Capacity	1.54 (rank 92.4%, 2016)
GDP Per Capita	US\$49,600 (2016, 29/229)	Human Development Index (HDI)	0.935 (2/188)
GDP Growth Rate	2.5% (2016)	Population below the poverty line	NA

Western Australia’s economy is particularly dependent on mining (23% gross state product 2015-16, below its 26% share in 2014-15 and 35% share in 2010-11), which employs three times as many people as agriculture, forestry and fishing. The mining sector is in decline due to the slowdown of Asian economies and falling ore prices. Gross state product (GSP) per capita was 33% higher than national GDP per capita and was growing faster at 3.5% (2014-15), but the decline of the mining sector is affecting the economy of WA particularly badly, with GSP growth of only 0.25% 2016-17, compared to Australian GDP growth of 2.75% 2016-17 (DSD 2017).

Economic development and avoidance of this being restricted is therefore seen as a particularly important strategic priority in this state.

MPA Objectives (Shark Bay Marine Reserves Management Plan 1996-2006):

Conservation	Operational
Conserve ecological, cultural and scenic values	Facilitate recreation and tourism in a manner compatible with conservation and other goals.
	Involve the community in management of SBMP and promote appreciation of their values and management through education and information
	Maintain commercial fishing on an ecologically sustainable basis in the marine park and ensure that other commercial uses are managed in a manner that minimises impacts on the marine park’s values
	Seek a better understanding of the natural and cultural environments, and the effects of users and management activities
	Promote cooperation, and minimise conflicts, in matters associated with the use of nearby lands and waters

See map at end of this summary (Figure 1)

Drivers and Conflicts:

- Popularity of Shark Bay with incoming recreational fishers and their growing numbers is the main driver of the conflict between conservation and fishing, the main impact being the depletion of particular stocks, e.g. pink snapper declined in late 1990’s but target levels (40% virgin biomass) restored by 2016.
- Economic and cultural drivers of riparian land use, particularly sheep grazing, lead to conflicts between conservation and agriculture, the main impact being suspended sediment run-off during high rainfall events (particularly during typhoons), which can be exacerbated by over-grazing and inappropriate drainage ditch management, and can smother sea grass beds, e.g. after 2010-11 ‘Ningaloo Niña’ event, total seagrass cover declined by 8%: of the approximately 2115 km² of seagrass mapped in the Western Gulf and along the Wooramel coast in 2002, about 166 km² was lost by 2014, and area of dense canopy (>40% cover) had declined

41% : 1700 km² to only 1000 km². Most of these losses were caused directly by Ningaloo Niña, the frequency and intensity of such events arguably being increased by climate change, but some consider losses exacerbated by riparian land use on sheep stations.

- There are some concerns about other recreation and tourism impacts, particularly related to dolphin watching and feeding on the beach at Monkey Mia, with around 100,000 visitors a year, but this is now carefully regulated to minimise the impacts of feeding on dolphins, particularly calf survival.

Governance Framework/Approach:

Government-led – managed mainly by the Parks and Wildlife Service (PaWS, now part of the [Department of Biodiversity, Conservation and Attractions](#)) in partnership with the [Fisheries Division](#) (now part of the Department of Primary Industries and Regional Development) and other relevant state and commonwealth authorities, mainly under the Conservation and Land Management Act ([CALM Act 1984](#)) through the [Conservation and Parks Commission](#). This has the vested responsibility for all lands and waters designated under the CALM Act, and it advises the state government on the development of policies to conserve and sustainably use designated areas, including the preparation of management plans for marine parks and evaluation of the effectiveness of their implementation by relevant departments. Specific legislative orders are made for the regulation of activities in the SBMP under the CALM Act, particularly for recreational activities related to the protection of specific habitats and species, and the Fish Resources Management Act (1994), particularly for recreational and commercial fishing, e.g. specific SBMP Order for commercial ([No. 7 of 2004](#)) and recreational ([No. 5 of 2004](#)) fishing restrictions under Fish Resources Management Act ([s.43](#), 1994). The SBMP forms a key part of the Shark Bay World Heritage Site (SBWHS), along with the Hamelin Pool Marine Nature Reserve (1,320 km²: stromatolites, together with SBMP constitutes 70% marine proportion of NCWHS), Francois Peron National Park, Dirk Hartog National Park and Bernier and Dorre Islands Nature Reserve (terrestrial), the NCWHS being managed principally under the Environment Protection and Biodiversity Conservation Act ([EPBCA 1999](#)).

Effectiveness: 3 Some impacts completely addressed, some are partly addressed. Status of some recreationally fished stocks remains a concern due to increasing effort, as do recent die-backs of sea grass (2010-11) due to intense typhoon rainfall events, which may be globally exacerbated by climate change and locally exacerbated by increased sediment run-off as a result of riparian land use and management, particularly on sheep stations

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
2. Assigning Property Rights	N	NGOs have acquired property rights for Hamelin Station (Bush Heritage Australia) and Bernier & Dorre Islands (Australian Wildlife Conservancy) to eradicate non-native species, manage run-off, etc. but these are for coastal land areas, so not marine property rights.
3. Reducing the leakage of benefits	N	Restricted number of licences to operate marine wildlife tour boats and recreational fishing boats but allocation is not confined to locals; considerable expenditure by recreational fishers (30-50% of total number) and other tourists when ashore
4. Promoting profitable and sustainable fishing and tourism	Y*	Regulatory framework to manage a few (6 active licences) commercial fishers in General Use or Special Purpose Areas, including TACs (e.g. pink snapper bycatch TAC 2 te, rec fishing TAC 35 te) , and sustainably manage recreational fishing, including very detailed restrictions (guides), such as sanctuary zones (17.6% SBMP), bag limits, size limits, technical measures, fillet export limits, etc. Recreational fishing TAC uptake not actually monitored or restricted and concerns remain

		that some stocks are over-exploited by recreational fishing. Managing tourism activities, particularly marine wildlife watching and diving, to minimise impacts on species and habitats.
5. Promoting green marketing	Y	SBMP is marketed as a premium ecotourism destination for sustainable marine wildlife tourism, including through its WHS listing. All the fisheries in the WA state are pursuing MSC accreditation , and the Shark Bay prawn fishery , is one of the first to have been successfully certified in the present program
6. Promoting diversified and supplementary livelihoods	Y*	Scope to expand marine wildlife tourism and thereby diversify tourism economy could be better promoted, providing an alternative to economic reliance on extractive recreational fishing and thereby reducing pressures on stocks
7. Providing compensation	N	WA Fisheries Compensation Act provides for compensation for losses related to MP restrictions but no payments known to have been claimed
9. Provision of state funding	Y*	The Fisheries Division and PaWs are reasonably well funded, including budget allocations for the MPA, but these could be less short-term to enable strategic long-term programmes and there is a need for MPA dedicated enforcement, research and monitoring funding for the Fisheries Division. State and commonwealth funding for research to inform and evaluate management.
10. Provision of NGO, Private Sector and user fee funding	Y	Recreational fishing licence fees and Monkey Mia entrance fees (AUS\$12 adults) contribute to warden costs and funding for research to support MPA management, alongside corporate and NGO funded research. Short-term funding for MPA related projects is provided through the Royalties for Regions scheme, whereby royalties to state from mining and offshore petroleum are re-invested in rural development projects

Communication

11. Raising awareness	Y	Extensive use of leaflets, signage, web sites, wardens, briefings, etc to raise awareness of the ecological values of the MPA but there could be a more strategic approach to this between the Fisheries Division and PaWS
12. Promoting recognition of benefits	Y	Focus in awareness raising of importance of restrictions to promote sustainability
13. Promoting recognition of regulations and restrictions	Y	Extensive use of leaflets, signage, web sites, wardens, briefings, etc. to promote recognition of regulations/restrictions, including smartphone app. being developed by the Fisheries Division for recreational fishers, which will give location specific details of zonal restrictions, etc.

Knowledge

14. Promoting collective learning	Y	Collaborations between scientists, regulators, recreational fishers and others to gather relevant information and data, e.g. fish frames project: rec fishers send filleted remains of fish to Fisheries Division to assist in data gathering for stock assessments; FishWatch program provides for the reporting of aquatic pests and diseases; some recreational fishers keep fish diaries and feedback information by phone surveys; drawing on customary knowledge, particularly in dugong tracking and capture for research, through collaborations between PaWS and indigenous aboriginal Australians
16. Independent advice and arbitration	Y	Commonwealth funded research programmes help inform management decisions but do not provide an arbitration role; WHC provides some scientific arbitration roles

Legal

17. Hierarchical obligations	Y	Legal obligations under World Heritage Convention, commonwealth and state legislation
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18. Capacity for enforcement	Y*	Wardens patrol by vehicle, boat, air and foot to promote compliance, but scope for improved enforcement of sanctuary restrictions, including dedicated MPA enforcement funding for the Fisheries Division
19. Penalties for deterrence	Y*	Large fines can be imposed for breaching MPA restrictions but tendency for the Fisheries Division to apply lower fixed penalties for recreational fishing offences in MPAs rather than going to expense and effort of pursuing court prosecutions undermines deterrence.
20. Protection from incoming users	N	Restricted number of licences to operate marine wildlife tour boats and recreational fishing boats, but allocation is not confined to local residents
21. Attaching conditions to use and property rights	Y	Strict requirements for marine wildlife tour boats and recreational fishing boats to comply with licence conditions related to MPA conservation measures
22. Cross-jurisdictional coordination	Y*	Other sectoral regulators, particularly for oil & gas, obliged to comply with MPA conditions; coordination between the Fisheries Division and PaWS promoted through Collaborative Operational Plans but need for improved coordination, particularly regarding penalties for deterrence. Scope for improved coordination between PaWS and the Division for Agriculture and Food (part of the Department of Primary Industries and Regional Development) to address riparian land management issues on sheep stations in order to reduce sediment-laden run-off
23. Clear and consistent legal definitions	Y	Clear and consistent definitions between commonwealth and state legislation and related sectoral legislation
25. Legal adjudication platforms	Y	Cases can be appealed to state and commonwealth courts and WHC provides a legal adjudication role
26. Transparency, accountability and fairness	Y	There are broad scale reports of condition of SBMP and further information was provided when requested

Participation

27. Rules for Participation	Y	Clear rules for user participation on WHS Committee
28. Establishing collaborative platforms	Y	WHS committee provides for participation of representatives of sectoral user groups
31. Decentralising responsibilities	Y	Some commonwealth responsibilities decentralised to state authorities, particularly for fisheries and parks & wildlife
32. Peer enforcement	Y	Some recreational fishers encourage peer compliance and can report infringements to Fishwatch hotline. Marine wildlife tourism operators provide mutual surveillance role, partly as a result of keen competition for licences.
33. Building trust and the capacity for cooperation	Y	WHS Committee promotes this, as do contacts and discussions between wardens/officers and various users
34. Building linkages between relevant authorities and user representatives	Y	Key user representatives are officially appointed to the WHS Committee
35. Building on local customs	Y	Indigenous aboriginal Australian (IAA) practices are provided for and their knowledge is drawn on, with approaches being developed for joint management between IAAs and relevant authorities, under Indigenous Ranger and Indigenous Protected Area (IPA) programs
36. Potential to influence higher institutional levels	Y	Deliberations and decisions by local WHS Committee and related advice can have significant influence on state, commonwealth and even international decisions by UNESCO under WHC

Cross-cutting themes:*Role of NGOs*

[RecFishWest](#) is an advocate for recreational fishers in Western Australia and they often challenge and question the need for MPAs, particularly no-take sanctuary zones where recreational fishing is prohibited that are imposed from above, as they, like some Fisheries Division officers, consider fisheries management to be best addressed through wider-scale regulatory approaches. Some interviewees were concerned that RecFishWest do not actually represent their constituents and members in this respect, as many recreational fishers are supportive of no-take MPAs. Several NGOs actively advocate for more effective conservation of Shark Bay Marine Park and [Bush Heritage Australia](#) have a more direct role through the acquisition of riparian lands, e.g. [Hamelin Station](#), including run-off management initiatives (ditch management, reduced grazing) to reduce smothering of sea grass during typhoons. Pew Charitable Trusts advocate for the involvement of indigenous aboriginal Australians in marine park management, in collaboration with Federal Government/PaWS under [Indigenous Ranger and Indigenous Protected Area \(IPA\) programs](#).

Equity issues

Commercial fishermen feel that they are unfairly treated, due to large numbers of recreational fishers and wider economic value of recreational fishing, as they feel discriminated against because they are excluded from the marine park but recreational fishers are allowed. Integrated Fisheries Management (IFM) process aims at equitable distribution between recreational, indigenous and commercial but only for particularly important stocks like rock lobster.

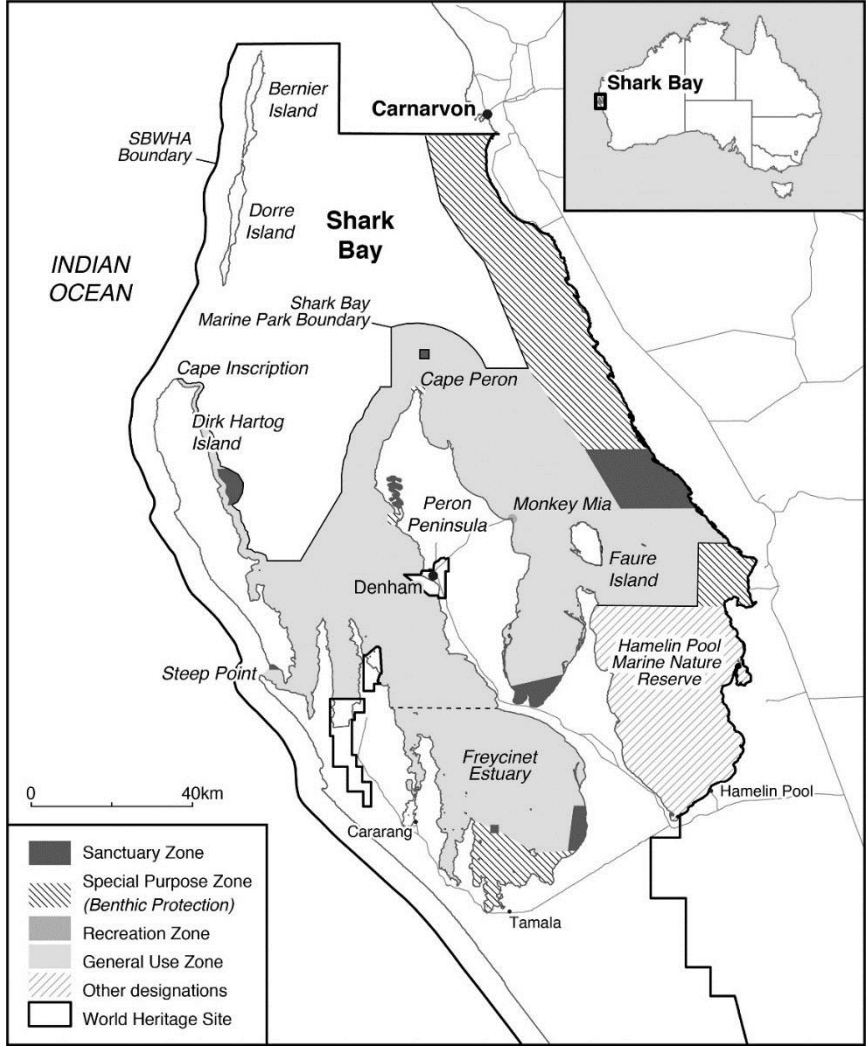


Figure 1 Map of Shark Bay Marine Park including zonation scheme and related designations

34. Ningaloo Marine Park, Australia – Peter Jones (2015, update through to 2018)

Name	Ningaloo Marine Park	Year of designation	1987 (World Heritage Site 2011)
Area	2,633 km ²	State Capacity	1.54 (rank 92.4%, 2016)
GDP Per Capita	US\$49,600 (2016, 29/229)	Human Development Index (HDI)	0.935 (2/188)
GDP Growth Rate	2.5% (2016)	Population below the poverty line	NA

Western Australia’s economy is particularly dependent on mining (23% gross state product 2015-16, below its 26% share in 2014-15 and 35% share in 2010-11), which employs three times as many people as agriculture, forestry and fishing. The mining sector is in decline due to the slowdown of Asian economies and falling ore prices. Gross state product (GSP) per capita was 33% higher than national GDP per capita and was growing faster at 3.5% (2014-15), but the decline of the mining sector is affecting the economy of WA particularly badly, with GSP growth of only 0.25% 2016-17, compared to Australian GDP growth of 2.75% 2016-17 (DSD 2017).

Economic development and avoidance of this being restricted is therefore seen as a particularly important strategic priority in this state.

MPA Objectives (Management Plan 2005-2015):

Conservation	Operational
Maintain the marine biodiversity of NMP	Promote education, nature appreciation (through recreation and tourism opportunities) and scientific research in NMP
Maintain ecological processes and life support systems (ie. key ecosystem structure and function)	Promote community involvement in the management of NMP
	Facilitate, manage, and where appropriate, assist in the management of recreational activities in NMP within an equitable and ecologically sustainable framework
	Facilitate manage, and where appropriate, assist in the management of commercial activities in NMP within an equitable and ecologically sustainable framework

See map at end of this summary (Figure 1)

Drivers and Conflicts:

- Popularity of Ningaloo MP with incoming recreational fishers and their growing numbers is the main driver of the conflict between conservation and fishing, the main impact being the depletion of particular stocks, e.g. spangled emperor.
- Marine wildlife tourism – iconic area to snorkel with whale sharks & manta rays, and snorkel/dive on coral reefs, with potential for disturbance and other impacts;
- Also potential for impacts from nearby marine oil/gas operations, sand mining, coastal development and sheep ranching, but the above are the main operational focus, as the economies of Exmouth and Coral Bay are almost entirely dependent on income generated by tourism and recreational fishing.

Governance Framework/Approach:

Government-led – managed mainly by the Parks and Wildlife Service (PaWS, now part of the [Department of Biodiversity, Conservation and Attractions](#)) in partnership with [Fisheries Division](#) (now part of the Department of Primary Industries and Regional Development) and other relevant state and commonwealth authorities, mainly under the Conservation and Land Management Act ([CALM Act 1984](#)), through the [Conservation and Parks Commission](#). This has the vested responsibility for all lands and waters designated under the CALM Act, and it advises the state government on the development of policies to conserve and sustainably use designated areas, including the preparation of management plans for marine parks and evaluation of the effectiveness of their implementation by relevant departments. Specific legislative orders are made for the regulation of activities in the NMP under the CALM Act, particularly for recreational activities related to the protection of specific habitats and species, and the Fish Resources Management Act (1994), particularly for recreational and commercial fishing, e.g. specific NMP Orders for recreational ([No. 12 of 2005](#)) and commercial ([No. 13 of 2005](#)) fishing restrictions under Fish Resources Management Act ([s.43](#), 1994). The NMP forms a key part of the Ningaloo Coast World Heritage Site (NCWHS), which is managed principally under the Environment Protection and Biodiversity Conservation Act ([EPBCA 1999](#)).

Effectiveness: 3 Some impacts completely addressed, some are partly addressed. Overall declines of some recreationally fished stocks throughout the park remain a concern. There are also still indications that no-take restrictions in sanctuaries are not being complied with, though some recreationally fished stocks are denser and larger in sanctuary zones than fished zones, indicating the effectiveness of sanctuary zones for some species (WAMSI 2008). The growing frequency and intensity of coral bleaching events as a result of climatic/oceanic systems perturbed by climate change is also a concern, though there is nothing that can be done to address this at a local scale, other than conserving the health of coral reefs by minimising local impacts in order to promote local resilience.

Incentives (Y= used; Y*= Used but particularly in need of strengthening; N= Not used; N*= Not used but particularly in need of introducing; only used, needed and not used/needed but notable incentives for a given case study are listed in these tables)

Economic

Incentive type	Used	How/Why
4. Promoting profitable and sustainable fishing and tourism	Y*	Regulatory framework to exclude commercial fishing from majority of park and sustainably manage recreational fishing, including very detailed restrictions (guides), such as sanctuary zones (34% of NMP), bag limits, size limits, technical measures, fillet export limits, etc. Recreational fishing TAC uptake not actually monitored or restricted and concerns remain that some stocks are over-exploited by recreational fishing. Whale shark watching operators cooperate on keeping prices at set level and minimising/managing whale shark encounters to avoid impacts and have a detailed Code of Conduct to minimise disturbance: world leading example of good practice but concerns remain about impacts of unlicensed casual whale shark encounters (PaWS 2013)
5. Promoting green marketing	Y	NMP is marketed as a premium ecotourism destination for sustainable marine wildlife tourism, including through its WHS listing. All the fisheries in the WA state are pursuing MSC accreditation , and the Exmouth Gulf prawn fishery is one of the first to have been successfully certified in the present program
6. Promoting diversified and supplementary livelihoods	Y	Marine wildlife tourism, particularly whale shark and manta ray watching, provides an important alternative to economic reliance on extractive recreational fishing, thereby reducing pressures on stocks. Recruitment of trainee indigenous rangers has created employment opportunities for otherwise marginalised indigenous aboriginal Australians.
9. Provision of state funding	Y*	The Fisheries Division and PaWS are reasonably well funded, including budget allocations for the MPA, but these could be less short-term to enable strategic long-term programmes. State and commonwealth funding for research to inform and evaluate management.

10. Provision of NGO, Private Sector and user fee funding	Y	Whale shark watching fees (AUS\$18 adult) are charged by operators on behalf of PaWS, as part of the total cost of day tours, to support the management and conservation of whale sharks, including administrative support, education, training, compliance, enforcement, research and monitoring. Recreational fishing licence fees partly allocated to research to support MPA management, alongside corporate and NGO funded research and funding for other projects, including short-term funding for MPA related projects through the <i>Royalties for Regions</i> scheme, whereby royalties to state from mining and offshore petroleum are re-invested in rural development projects; Ningaloo Outlook Programme part-funded by mining/oil company.
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Communication

11. Raising awareness	Y	Extensive use of leaflets, signage, web sites, wardens, briefings, PaWS interpretation facilities, etc. to raise awareness of the ecological values of the MPA but there could be a more strategic approach to this between the Fisheries Division and PaWS. The Ningaloo Centre in Exmouth has extensive awareness-raising displays, including on the marine life of NMP, e.g. aquarium, visitor galleries, etc.
12. Promoting recognition of benefits	Y	Focus in awareness raising of importance of restrictions to promote sustainability
13. Promoting recognition of regulations and restrictions	Y	Extensive use of leaflets, signage, web sites, wardens, briefings, etc. to promote recognition of regulations and restrictions, including a smartphone app developed by PaWS for recreational fishers that will give location specific details of zonal restrictions, etc.

Knowledge

14. Promoting collective learning	Y*	Collaborations between scientists, regulators and recreational fishers to gather relevant information and data, e.g. Ningaloo Outlook Programme funded by mining/oil company and commonwealth (CSIRO); whale shark watching tourists and operators provide photos for population assessments; fishers send filleted remains of fish to the Fisheries Division to assist in data gathering for stock assessments; FishWatch program provides for the reporting of aquatic pests and diseases; some rec fishers keep fish diaries and feedback information by phone surveys. Many residents would value the opportunity to participate in research to inform the management of NMP, including “the establishment of community-based programmes in which they can actively participate” to draw on their knowledge and help build trust (Cvitanovich et al 2018)
15. Agreeing approaches for addressing uncertainty	Y	Particularly with regards to the regulation of whale shark watching, “evidence of any impacts is difficult to obtain and interpret and for this reason a precautionary approach to management will continue to be adopted” (PaWS 2013). The expanded sanctuary zones (34% of NMP area) and studies of them could also be considered to represent a precautionary approach.
16. Independent advice and arbitration	Y	Commonwealth and industry funded research programmes help inform management decisions but do not provide an arbitration role; WHC provides some scientific arbitration roles

Legal

17. Hierarchical obligations	Y	Legal obligations under World Heritage Convention, commonwealth and state legislation
18. Capacity for enforcement	Y*	Wardens patrol by vehicle, boat, air and foot to promote compliance, but need for improved enforcement of sanctuary restrictions. Electronic monitoring system (EMS) with GPS automatically records and reports whale shark watching locations & activities to monitor compliance (PaWS 2013)

19. Penalties for deterrence	Y*	Large fines can be imposed for breaching MPA restrictions but deterrence is undermined by the tendency for the Fisheries Division to apply lower fixed penalties for recreational fishing offences in MPAs rather than going to expense and effort of pursuing court prosecutions undermines deterrence, sometimes to the frustration of PaW officers. Particular need for Fisheries Division to pursue prosecutions to provide stronger deterrence.
21. Attaching conditions to use and property rights, decentralisation, etc	Y	Strict requirements for marine wildlife tour boats and recreational fishing boats to comply with licence conditions related to MPA conservation measures, including conditions for whale shark watching detailed in the Code of Conduct, under the Wildlife Conservation (Close Season for Whale Sharks) Notice (1996)
22. Cross-jurisdictional coordination	Y*	Other sectoral regulators, particularly oil & gas, obliged under CALM & EPBA Acts to comply with MPA restrictions; coordination between PaWS and the Fisheries Division promoted through Collaborative Operational Plans and cross authorisation to enforce each other's regulations but need for improved coordination, particularly regarding penalties for deterrence.
23. Clear and consistent legal definitions	Y	Clear and consistent definitions between commonwealth and state legislation and related sectoral legislation
25. Legal adjudication platforms	Y	Cases can be appealed to state and commonwealth courts and international WHC can provide a legal adjudication role
26. Transparency, accountability and fairness	Y*	There are broad scale reports of condition of NMP but the detailed data underlying them is not publicly available. Data sets can be applied for but challenging to eventually gain access to the data. Need for monitoring and research findings to be made more openly available as lack of transparency is a hurdle to adaptive collaborative management: restricts capacity to discuss impacts, pressures and proposals to address with local people. Local people "would like to know more about the scientific research undertaken in the marine park, and would like local marine park managers to communicate the results of scientific research undertaken in the NMP more effectively" (Cvitanovich et al 2018)

Participation

27. Rules for Participation	Y	Clear rules for user participation on Ningaloo Coast World Heritage Advisory Committee
28. Establishing collaborative platforms	Y*	Ningaloo Coast World Heritage Advisory Committee provides for participation of representatives of sectoral user groups, though the recreational fishing sector is not specifically represented and there is a particular need for this sector to be specifically represented
31. Decentralising responsibilities	Y	Some commonwealth responsibilities decentralised to state authorities, particularly for fisheries and parks & wildlife
32. Peer enforcement	Y	Some recreational fishers encourage peer compliance and can report infringements to Fishwatch hotline. Marine wildlife tourism operators provide mutual surveillance role, partly as a result of competition for licences.
33. Building trust and the capacity for cooperation	Y*	Ningaloo Coast World Heritage Advisory Committee promotes this, as do contacts and discussions between wardens/officers and various users, but there are some tensions with the recreational fishing sector. Participative research that include community-based programmes could help build trust amongst the wider community (Cvitanovich et al 2018)
34. Building linkages between relevant authorities and user representatives	Y*	Key user representatives are officially appointed to the Ningaloo Coast World Heritage Advisory Committee but development of links with specific recreational fishing representatives could help address tensions
35. Building on local customs	Y	Indigenous aboriginal Australian practices are provided for and their knowledge is drawn on, with approaches being developed for joint management between Indigenous aboriginal Australians and relevant authorities under the Indigenous Ranger and Indigenous Protected Area (IPA) programs (Pew Charitable Trusts in collaboration with PaWS) and Indigenous Land Use Agreements (ILUAs), including the recruitment of several indigenous trainee rangers.

36. Potential to influence higher institutional levels	Y	Deliberations and decisions by Ningaloo Coast World Heritage Advisory Committee and related advice can have significant influence on state, commonwealth and even international decisions by UNESCO under WHC
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Cross-cutting themes:

Role of NGOs

[RecFishWest](#) is an advocate for recreational fishers in Western Australia and they often challenge and question the need for MPAs, particularly no-take sanctuary zones where recreational fishing is prohibited that are imposed from above, as they, like some Fisheries Division officers, consider fisheries management to be best addressed through wider-scale regulatory approaches, rather than MPAs. Some interviewees were concerned that RecFishWest do not actually represent their constituents and members in this respect, as many recreational fishers are supportive of no-take MPAs. Several NGOs actively advocate for more effective conservation of Ningaloo Marine Park, and some have a more direct role, eg [Ningaloo Turtle Program](#) run by [Cape Conservation Group](#) (local NGO) in collaboration with PaWS. Pew Charitable Trusts advocate for the involvement of indigenous aboriginal Australians in marine park management, in collaboration with the federal government/PaWS under the [Indigenous Ranger and Indigenous Protected Area \(IPA\) programs](#).

Equity issues

Commercial fishermen feel that they are unfairly treated, due to large numbers of recreational fishers and wider economic value of recreational fishing, as they feel discriminated against because they are excluded from most of the marine park but recreational fishers are allowed. Fisheries Division Integrated Fisheries Management (IFM) process aims at equitable distribution between recreational, indigenous and commercial but only for pressured and important stocks like rock lobster.

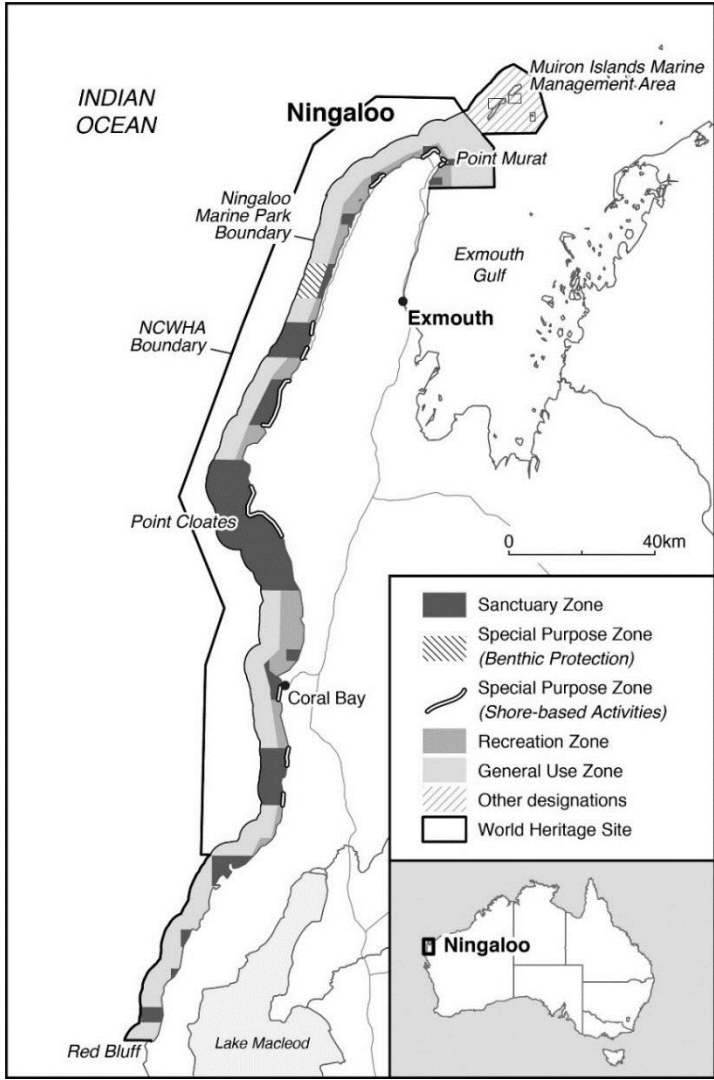


Figure 1 Map of Ningaloo Marine Park including zonation scheme and related designations