How to Respond to Fundamental Change in a Fisheries Reserve
- a Dilemma for Management in the Cabo de Palos - Islas Hormigas Marine Protected Area

Cómo Responder a un Cambio Profundo en una Reserva Pesquera- un Dilema para la Gestión del Área Marina Protegida de Cabo de Palos-Islas Hormigas

Dña. Katie Hogg

2017
How to respond to fundamental change in a fisheries reserve - a dilemma for management in the Cabo de Palos - Islas Hormigas marine protected area

Katie Hogg

Supervised by: María Semitiel-García and Pedro Noguera-Méndez

This thesis was supported by the project Training Network for Monitoring Mediterranean Marine Protected Areas (MMMPA), a Marie Curie Initial Training Network (Call FP7-PEOPLE-2011-ITN), funded by the European Commission within the 7th Framework Programme, started on January 1st, 2012. (ITN-MMMPA project, FP7-PEOPLE-Marie Curie Actions-ITN – Contract no. 290056).
A good friend recited this quote to me at an auspicious moment in this process: “Success is not final, failure is not fatal: it is the courage to continue that counts”

Winston Churchill

This thesis is dedicated to him.
ACKNOWLEDGEMENTS

A PhD is not achieved alone - the list of people to thank extends from random people, neighbours and landlords (Pilar and Sebas) who showed kindness welcoming me upon my arrival and helping me feel at home here in Murcia, to organisations, colleagues, my supervisors and to friends and family who have each played a much more significant role. This would have been impossible without you all. I would like to take this opportunity to extend my sincere gratitude to the following:

First and foremost I would like to thank my supervisors- María Semitiel-García and Pedro Noguera-Méndez, for giving me the opportunity to complete this PhD. I am immensely grateful for their time and expertise, for their doors always being open, for the many kindnesses they have shown me- especially for having had the chance to have one or two tea parties and arts and crafts sessions with the glorious Beatriz whilst sampling Pedro’s phenomenal cakes. It certainly hasn’t been a journey without its bumps, but they have been incredibly patient and understanding. It is also appropriate here to thank José Antonio García-Charton, who was also part of the selection committee giving me the chance to complete this PhD. Especial thanks go to him for his endless kindness, for his patience and understanding, his expertise, willingness to help and most importantly for adopting me into the Ecology lab. I felt at home! The dive trips with you were always such fun and such a nice break from the norm. Here thanks also go to Elian and Lea- my mini-me’s and Elena for always putting a smile on my face! Enormous gratitude goes to Tim Gray, who I had the pleasure to work with again during my three-month visit to Newcastle University and during the final stages of the thesis. A fountain of knowledge, inspirational wisdom and encouragement, it was an absolute pleasure to have the opportunity to reconnect at exactly the most timely moment in this process. His enthusiasm, patience and understanding know no limits. Thanks must also go to Sarah Young, who joined the team for 6 months. Her arrival to Spain was also superbly timed and the help and advice she gave was extremely useful keeping me on the right track for success.

Extra special thanks go to ‘team Cabo de Palos’: Irene Rojo Moreno, Samantha Cámara Blas, Sergio Parra San Llorente, Miguel Lorenzi, Nadia El Fal and Angel; ‘team Cabo de Gata’: Charlotte Vincent; ‘Italian team’: Elena Desiderá, Giulia Valvassori, Chiara Adamuccio; ‘French team’: Jessica Garcia and Sophie Baychelie- for their assistance with interviews, translation and transcription, and to Carlos Cegarra for his translation of all Spanish
interviews. Without these amazing volunteers and translators no data would have been collected for the thesis and MMMPA project deliverables. They were my voice, my negotiators, my cultural experts (i.e. do not drink cappuccino in Italy after 11!) and above all such fun company. I am indebted to them. Many of these lovely people are now such good friends, this formal thanks does not do justice to how grateful I am to them. Thanks here also goes to Columbares and their team- Silvia Guadix, Carmen Molina, Antonio Frías and Mateo Pedreño. It was such a pleasure working with you all.

I thank the Spanish Ministry of Agriculture, Food and the Environment; Ministry of Agriculture and Water of the Autonomous Community of the Region of Murcia and related experts. Huge thanks goes to the people of Cabo de Palos- Islas Hormigas, to the fishers for accepting me and making me feel so welcome, to the divers for their time and to community members who took the time to share with me their knowledge, time and experience – these people are what made this whole project possible. As part of MMMPA thanks also extends to Carlo Cerrano and the following MPAs, their directors, staff, related experts marine resource users and community members for their collaboration in the MMMPA project and for hosting me for weeks at a time: Cabo de Gata-Nijar, Parc National de Port-Cros; Area Marina Protetta Tavolara Punta Coda Cavallo and Area Marina Protetta Isola di Ustica.

Of course there are some very special colleagues I have to thank - the ‘MMMPA dream team’: Eli Arévalo, Giulia Prato, Paula Zapata, Paty Puig, Vessa Markantonatou, Antonio Calò, Dani Mateos, David Cabana and Fabri Gianni. These nine comrades provided so much fun, laughter and support throughout the last few years. I can think of no better people to work with in the middle of the night, wearing pyjamas, when you need to make up marine biology themed rap songs to ‘impress’ NOAA’s finest. Together we shared the ups and downs and survived! Following from this, I would like to thank all the inspirational people I met through the numerous training courses with MMMPA- the “YAMAS dream team” and the kind and generous trainers from WWF and NOAA. You guys are pretty neat role models: Sarah Fangman, Anne Walton, Ruth Howell, Becky Shortland, Jason Philibotte, Ann Weaver, Katherine Cheney, Mauro Randone, Marina Gomei, Giovanna Agostinelli, Giuseppe Di Carlo.

There are not enough words to express my gratitude to the Ecology lab who very kindly adopted me and welcomed me with open arms, gave me a fun and entertaining place to work and such wonderful friendship: ‘Jefe’, Iripiri (my dearest compadre- who has suffered many a bowl of my spaghetti with tuna and my deconstructed salads), Antonio and Dani (who were the best travel companions I could have had these last few years), Ivonne (for
being a wise sage), Jose Manuel (for always making me laugh), Ramon (for his endless patience attempting to interpret what I was trying to say), Gabi (for his kindness), Marta (for being the most stylish biologist I know) and Chiara (also an adoptee, for always seeing the positive side of every situation). Thanks must also go to all the transients that came and went during the last few years, bringing with them new energy and an endless list of places and friendly faces to visit in the future: Jessica (mon petit coquelicot- j’adore) and Johan (monsieur le requin), Miguel (obrigada limonada)... Carlos, Fabi, Alejo, Leo, Javi, Sil, Gaston, Magda, Noela, Hedyane, Mariana, Felipe, Walter, Delphine, Manuel...! Here I must also thank all the kids in Ecogroup: Paqui, Obdulia, Victor, Vincente, Antonio, Jose Manuel, Felix, Lury, Ana, Maria, Felix, Tano, Pablo, Carlos, Fatima, Dani, Fran...the list goes on! Thank you for welcoming me into your group, the inspirational seminars, for the company over coffee, lunch and fun trips!

I acknowledge with gratitude that this study received funding from the FP7 – People - Marie Curie Actions – Initial Training Network for Monitoring Mediterranean Marine Protected Areas (ITN-MMMPA) project, Contract nº 290056. I would like to acknowledge my gratitude for this funding and the investment in me as it not only made this research possible, but also permitted me to further my academic and professional training.

On a personal note a big shout out goes to the wonderful people who came to visit over the last few years, helping me re-charge and giving me an excuse to discover Murcia and different parts of Spain: Aims, Rachel, Gav & Jen, Jo, Vicki, Tom, Em & Will, Jess, Sarah & Georgie and Sue & Hannah.

Last but very much not least- there are some that have suffered more than others, and perhaps more than myself, during these last few years. No thanks is enough for these rock stars- I am so grateful to- Mhairi Alexander & team Alexander, Aimee Roberts & co., Ro & Sue Cash, Chris Scarffe, the best PhD buddies from afar Jess Williams & Clare Prebble (aka the honey badgers), the best running buddy, travel companion and laughter maker Lindsey Good, and Jill Sylvester- for so much! I have the most sincere gratitude for my family- especially, my parents, James, Sarah, Georgie, Harry and Liz - without your never ending belief in me, your love and support, this would not have been possible and I would not have crossed the finish line.

¡Gracias- Thank you-Merci-Grazie- Ευχαριστίες-Obrigada!
## CONTRIBUTION OF OTHERS BY CHAPTER

<table>
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<td>1. Introduction</td>
<td>n/a</td>
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<td>3. Stakeholder participation</td>
<td>Hogg K, Noguera-Méndez P, Semitiel-García M, Gray T, Young S. Controversies over stakeholder participation in marine protected area (MPA) management: a case study of the Cabo de Palos- Islas Hormigas MPA. Under review Coastal and Ocean Management</td>
<td>I designed the study and conducted the fieldwork with the help of research assistants and professional translator. I analysed the data with advice and guidance from Gray, Semitiel-García, and Noguera-Méndez. I wrote the manuscript with editorial support and guidance from all co-authors.</td>
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<tr>
<td>4. Ecological threats</td>
<td>Hogg K, Semitiel-García M, Gray T Noguera-Méndez P, Young S. Perceptions of threats facing Cabo de Palos- Islas Hormigas MPA and potential solutions. Submitted to: Coastal Management</td>
<td>I designed the study and conducted the fieldwork with the help of research assistants and professional translator. I analysed the data with advice and guidance from Gray, Semitiel-García, and Noguera-Méndez. I wrote the paper and all authors provided editorial assistance.</td>
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<td>5. Winners and losers</td>
<td>Hogg K, Gray T, Semitiel-García M, Noguera-Méndez P, Young S. Interpretations of MPA winners and losers: a case study of the Cabo de Palos- Islas Hormigas fisheries reserve. Submitted to: Human Ecology</td>
<td>I designed the study and conducted the fieldwork with the help of research assistants and professional translator. I analysed the data with advice and guidance Gray, Semitiel-García, and Noguera-Méndez. I wrote the paper and all authors provided editorial assistance.</td>
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<td>6. General discussion</td>
<td>n/a</td>
<td>n/a</td>
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</tbody>
</table>
OUTPUTS DURING CANDIDATURE

PAPERS PUBLISHED OR INTENDED FOR PUBLICATION


Hogg K, Noguera-Méndez P, Semitiel-García M, Gray T, Young S. Controversies over stakeholder participation in marine protected area (MPA) management: a case study of the Cabo de Palos-Islas Hormigas MPA. Under review Coastal and Ocean Management (Chapter 3)

Hogg K, Semitiel-García M, Gray T Noguera-Méndez P, Young S. Perceptions of threats facing Cabo de Palos- Islas Hormigas MPA and potential solutions. Submitted to Coastal Management (Chapter 4)


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LIST OF ACRONYMS

AMP: Área Marina Protegida
ARS: Análisis de Redes Sociales
BD: Biological Diversity
CBD: Convention on Biological Diversity
CFP: Common Fisheries Policy
CPH-MPA: Cabo de Palos-Islas Hormigas Marine Protected Area
ER: Experienced Researcher
ESR: Early Stage Researcher
EU: European Union
FAO: Food and Agriculture Organisation of the United Nations
GDP: Gross Domestic Product
GVA: Gross Value Added
IC: Informantes Clave
ICZM: Integrated Coastal Zone Management
IEO: Spanish Oceanographic Institute
IUCN: International Union for the Conservation of Nature
KI: Key Informant
LEK: Local Ecological Knowledge
MMMPA: Training Network for Monitoring Mediterranean Marine Protected Areas
MPA: Marine Protected Area
MSC: Marine Stewardship Council
MST: Minimum Spanning Tree
MR: Marine Reserves

MRFI: Marine Reserve of Fisheries Interest

NIE: Natural Inevitable and Evolutionary

NGO: Non-Governmental Organisation

NRM: Natural Resource Management

NTZ: No Take Zone

ONG: Organizaciones No-Gubernamentales

PA: Protected areas

PG: Participación de los Grupos de interés

PE: Perceptions Expert

SA: Stakeholder Analysis

SE: South East

SES: Social-Ecological Systems

SC: Social Capital

SCUBA: Self-Contained Underwater Breathing Apparatus

SNA: Social Network Analysis

SP: Stakeholder Participation

SPA: Special Protected Area

SPG: Socially and Politically Generated

SSE: Sistemas Socio-Ecológicos
RESUMEN

El término área marina protegida (AMP) se usa genéricamente para describir una amplia variedad de áreas marinas que aplican distintas estrategias de conservación. En este sentido se puede destacar que las AMPs han sido diseñadas para conservar la biodiversidad, gestionar pesquerías, proteger especies amenazadas, proporcionar parques marinos a los turistas y proteger recursos culturales. Definidas en líneas generales como –‘cualquier área geográfica a la que se le concede una protección mayor que a sus aguas circundantes, para los propósitos de conservación de la biodiversidad o de gestión de pesquerías’ (FAO, 2011)- las AMPs son muy diversas, variando sensiblemente en su forma, tamaño, niveles de restricción y objetivos. Las AMPs son construcciones sociales e institucionales que gobiernan las interacciones humanas en una determinada área, asignando a los grupos de interés el uso y acceso a los recursos naturales. En otras palabras, los objetivos de las AMPs surgen de las necesidades, actitudes y deseos humanos, que pueden estar dirigidos a incrementar el número de peces, apoyar medios de vida tradicionales o a proteger hábitats sensibles, e implican a una variedad de grupos de actores con diferentes intereses y agendas, a menudo, en conflicto.

En las últimas dos décadas las AMPs han pasado a ser, para muchos científicos marinos, una herramienta de gestión fundamental para afrontar las amenazas a las que se enfrenta el medioambiente marino, el colapso de las pesquerías y la pérdida continuada de biodiversidad marina. Como respuesta a esas amenazas, se están haciendo intensos esfuerzos a nivel mundial para establecer los objetivos globales de las AMPs y para construir una red de AMPs. Sin embargo, a pesar de los esfuerzos realizados, los gobiernos están todavía muy lejos de cumplir el objetivo Aichi, según el cual el 10% de los mares del mundo serán áreas protegido en 2020, ya que en la actualidad las AMPs sólo representan el 3,2% de los océanos. Probablemente, este déficit obedece, en parte, a la hostilidad a las AMPs por parte de las comunidades locales y de los grupos de usuarios. Las presiones sobre los gobiernos, en todo el mundo, por parte de las comunidades locales y de grupos de interés clave, resistentes a la declaración de AMPs en su área, parecen haber desempeñado un papel significativo en el fracaso de alcanzar el objetivo Aichi.

No resulta sorprendente, por tanto, que una vez que un AMP ha sido planeada y establecida, surjan críticas por parte de comunidades y usuarios de recursos expectantes, al suponer que tendrán un trabajo intenso. La diversidad de AMPs implica la existencia de impactos que pueden ser muy heterogéneos en las comunidades y usuarios, lo que puede dar lugar a controversias
sobre la legitimidad de los acuerdos. Estos debates y polémicas en el seno de las comunidades no constituyen un aspecto trivial de la gestión de las AMPs, si no una cuestión crucial para su éxito, ya que, como está siendo crecientemente reconocido, a menos que las AMPs reciban el apoyo de las comunidades locales y de los usuarios de los recursos, es improbable que consigan alcanzar sus objetivos ecológicos. Este reconocimiento es una aceptación tardía de que las AMPs no son solamente entidades ecológicas, si no sistemas socio-ecológicos complejos (SSEs), y ha sido un error grave de la gestión ignorar su dimensión humana. Sin embargo, aunque la mayor parte de la investigación sobre AMPs todavía se centra, en la última década, en sus aspectos ecológicos y de conservación, la literatura especializada ha comenzado a abordar su dimensión humana. La complejidad de las relaciones entre las personas, incluyendo enfrentamientos entre diferentes grupos de actores y conflictos entre las personas y su entorno, hace absolutamente necesario examinar los problemas de la conservación junto con las creencias sociales, las costumbres, las actitudes y las prácticas. La necesidad de aplicar una perspectiva multidimensional deriva asimismo del hecho, de que un AMP puede suponer, al mismo tiempo, un éxito biológico y un fracaso social.

Ahora resulta común decir que las AMPs tienen impactos sociales complejos. Por ejemplo, las AMPs tienen el potencial de afectar al bienestar de los usuarios del recurso y de causar problemas de equidad dentro de las comunidades locales si algunos grupos de interés son marginados, favoreciendo a otros. Es la capacidad y disposición de las personas para absorber esos impactos lo que determina el éxito o el fracaso de las AMPs. Muchas de las críticas dirigidas a los gestores de AMPs señalan, como causas principales de una gestión inadecuada, la planificación centralizada y la falta de participación de los grupos de interés. Los estudios sobre las actitudes, percepciones, creencias y preferencias de los grupos de interés revelan un fuerte deseo de participar para mejorar el encaje entre las políticas de gestión y sus necesidades. Una investigación sistemática de las percepciones de los grupos de interés sobre el impacto de las reservas marinas en su bienestar es, por tanto, vital para que la gestión del AMP sea adecuada. Una mejor comprensión de los valores y sentimientos de los distintos actores involucrados en, o afectados por, las AMPs, proporciona un conocimiento significativo de las áreas controvertidas, y puede ayudar a predecir su comportamiento futuro en relación a esta herramienta de gestión y, por tanto, también puede contribuir a su éxito general.

Dada la importancia potencial de la investigación social de las AMPs, esta tesis se diseñó para explorar en profundidad la dimensión humana del AMP de Cabo de Palos-Islas Hormigas (CPH-AMP), en el Sudeste de España. El AMP, establecida en 1995, es considerada como un éxito.
biológico, pero está experimentando un cambio fundamental en la forma en que se usa, lo que tiene implicaciones cruciales para su futuro. La cuestión principal es que el AMP fue diseñada como una reserva pesquera artesanal, pero con el tiempo se ha convertido en el destino de miles de buceadores, y está en peligro de ser transformada en una reserva de buceo en beneficio de los turistas y a costa de los pescadores locales y del medioambiente marino. El objetivo de esta tesis es examinar, a través del análisis de las percepciones, la forma en que el funcionamiento del CPH-AMP es entendido por los grupos de interés, para saber (a) si está realmente fracasando; (b) si es así, por qué; y (c) qué se puede hacer para pasar del fracaso al éxito. Para alcanzar este objetivo esta tesis se ha centrado en las percepciones de los grupos de interés porque suponen la mejor fuente de datos para responder a estas cuestiones. Los estudios basados en percepciones están considerados, por un número creciente de investigadores, una forma eficiente de obtener un conocimiento profundo de primera mano de las dimensiones sociales de las AMPs.

Las percepciones, definidas como una ‘expresión de la forma en que una persona piensa, experimenta, comprende, interpreta o evalúa una situación o norma’ (Bennett, 2016) son subjetivas, son construidas socialmente, y reflejan asimismo el historial y las circunstancias del individuo. Son fundamentales en la vida social y se expresan en nuestras acciones y relaciones. Nuestras percepciones influyen en nuestro comportamiento más de lo que lo hace la realidad objetiva, y las medidas subjetivas pueden ser guías más fiables para nuestro bienestar que los indicadores objetivos. Por ejemplo, las percepciones de la gente sobre los recursos naturales pueden ser más significativas que las condiciones actuales de esos recursos, porque las percepciones de los grupos de interés sobre su entorno (sociedad, gobernanza, medioambiente natural) pueden ser más relevantes para las políticas de gestión que las observaciones objetivas sobre la abundancia de los recursos. El estudio de las percepciones es relevante para comprender por qué las personas se comportan como lo hacen, y por tanto qué pasos son necesarios en la gestión para influir en su conducta. Los datos sobre percepciones, por tanto, complementan otras informaciones en la evaluación de la efectividad de las medidas de gestión de los recursos. Nuestra confianza en los métodos científicos objetivos nos ha dejado con una visión incompleta de la complejidad de las AMPs y de los contextos social y político en los que tiene lugar la conservación. La investigación previa sobre el CPH-AMP, hasta ahora, se encuentra en el ámbito de las ciencias naturales, estando menos explorada la dimensión humana. El trabajo llevado a cabo en esta tesis contribuye, por tanto, a reducir el mencionado déficit y a que la perspectiva social gane peso en la comprensión de CPH-AMP.

El trabajo de campo se llevó a cabo en el periodo 2013-2014 usando métodos mixtos, incluyendo
la obtención y análisis de información cuantitativa y cualitativa a partir de encuestas centradas en redes sociales, entrevistas a informantes clave, encuentros comunitarios, encuestas individuales y la observación. Los métodos cualitativos usados se basaron en entrevistas semi-estructuradas, encuestas individuales estructuradas, encuentros comunitarios y la observación. Los métodos cuantitativos usados se basaron en el análisis de redes sociales (ARS), que es el estudio de los sistemas relacional de redes sociales, comprendiendo datos de un conjunto de actores, sus atributos y las relaciones que mantienen entre ellos, para esclarecer la dimensión social de su sistema de gobernanza. Los dos conjuntos de métodos son complementarios y se refuerzan mutuamente. Por ejemplo, el ARS revela los esquemas estructurales, mientras que las entrevistas semi-estructuradas ayudan a comprender mejor los procesos sociales, las interacciones pasadas y las experiencias y percepciones que han dado lugar a las relaciones existentes en la actualidad. La lógica de combinar los datos relacionales con valiosas narrativas permite triangular los datos y alcanzar una perspectiva más completa del efecto de la estructura de la gobernanza que respalda el CPH-AMP.

Las entrevistas semi-estructuradas individuales se hicieron a usuarios de los recursos: 17 pescadores (tanto activos como recientemente jubilados), 38 empleados del sector del buceo (denominados como buceadores en esta tesis), y 44 miembros de la comunidad. Las entrevistas a informantes clave (IC) se realizaron a individuos integrados en organizaciones e instituciones involucradas en la estructura de gobernanza del AMP, comprendiendo a tres representantes del gobierno, cuatro investigadores, dos representantes del sector pesquero, dos representantes del sector del buceo y dos representantes de ONGs. Las encuestas sobre redes sociales se hicieron a los IC y a actores adicionales que podrían estar involucrados en la gestión, surgidos de una revisión de la literatura, fuentes secundarias de datos y entrevistas exploratorias e incluyen: instituciones gubernamentales, instituciones de investigación, organizaciones de pescadores y organizaciones privadas. Se entrevistó a uno o varios individuos de cada una de las partes involucradas en la gestión (n=28 individuos). Las grabaciones de audio y las notas de campo fueron transcritas textualmente y traducidas del español al inglés por un profesional.

La información cualitativa se organizó usando el programa NVivo10 y se analizó siguiendo una aproximación temática. Las entrevistas se codificaron a mano y, posteriormente, con NVivo. La codificación por temas se hizo siguiendo la literatura y teorías previas, aunque la mayoría de los temas fueron seleccionados a partir de un proceso inductivo de lectura y re-lectura de las transcripciones, identificando palabras repetidas y temas concretos en las entrevistas y aunando los códigos generados en grupos de contenido similar. Los datos relacionales cuantitativos se
organizaron en matrices de adyacencia, se analizaron y visualizaron usando los programas informáticos Ucinet y Gephi. Se aplicaron varias medidas de redes en Ucinet para analizar la estructura de la red y la cohesión y para revelar patrones potenciales en las redes. La rigurosidad en el diseño y en la realización de la investigación y el haber considerado las cuestiones éticas que surgen en la investigación social, garantizan la robustez de la información recogida y de las conclusiones expuestas.

Los cuatro capítulos principales que conforman esta tesis presentan cuatro perspectivas diferentes del análisis del CPH-AMP, y cada una de ellas arroja luz a los temas planteados en las tres cuestiones expuestas al principio. Los capítulos son los siguientes: el capítulo 2 ofrece una revisión de la literatura; el capítulo 3 un análisis sobre participación de los grupos de interés; el capítulo 4 está centrado en las amenazas ecológicas; el capítulo 5 se dedica al análisis de ganadores y perdedores. El capítulo 2 se basa en información secundaria, consistente en una revisión exhaustiva de la literatura. Este capítulo ofrece el contexto científico necesario para el estudio y muestra cómo la investigación llevada a cabo en esta tesis encaja en la literatura existente. Concretamente, este capítulo se centra en los trabajos publicados sobre el origen y el desarrollo de las AMPs, sus características, finalidad, éxito, debilidades y desafíos, e incluye una discusión crítica de dos cuestiones surgidas en los últimos años y a las que se les ha prestado una notabilísima atención – co-gestión y capital social- ambas sustentando gran parte del subsecuente análisis del CPH-AMP.

El capítulo 3 (participación de grupos de interés), que es el primero de los tres capítulos que analizan la información, identifica una cuestión central para las AMPs en general y el CPH-AMP en particular: cuánto participan los grupos de interés (PG) en su gestión, si es que lo hacen, y cuánto deberían hacerlo. El marco teórico de la teoría de la participación fundamenta el capítulo, que hace uso de datos relativacionales y narrativos y examina el punto de vista de los informantes sobre la situación actual de la participación de los grupos de interés, y sus razones para querer ampliarla. Los datos muestran cómo, aunque la mayoría de los informantes aprueban la PG, están divididos sobre el tipo de PG que les favorece. La información cualitativa revela la existencia de diversas barreras entre la administración y los grupos de interés. Por ejemplo, algunos representantes del gobierno mantienen estereotipos negativos sobre los pescadores al verlos como explotadores de los hábitats marinos, mientras que algunos grupos de interés perciben a la administración muy lejana de la realidad del mar. La información cuantitativa del ARS confirmó y verificó ésta y otras barreras desde una perspectiva socio-estructural. El capítulo concluye que hay varias restricciones a la participación en la gestión del CPH-AMP, y ofrece
recomendaciones que superarían estas restricciones y fortalecerían el papel de los actores involucrados. En esta tesis se recomienda aclarar el ámbito deseado de participación; gestionar las expectativas sobre los tipos factibles de participación; y considerar cuidadosamente el espacio en el que tiene lugar el diálogo para lograr reducir el diferencial entre participantes en las relaciones de poder.

El capítulo 4 (amenazas ecológicas) es el segundo capítulo en el que se analizan los datos, y se centra en las percepciones de los informantes sobre las amenazas a las que se enfrenta el AMP, las causas percibidas de esas amenazas y las posibles formas de superarlas. El capítulo está estructurado en torno a la teoría de la resiliencia, que incorpora tanto la resiliencia ecológica como la social. Es éste un marco adecuado, ya que la cuestión central del estudio es cómo de robusto y resiliente es el CPH-AMP respecto a las amenazas relativas a su existencia como reserva pesquera. Los informantes identificaron cuatro amenazas principales: sobrepesca, buceo excesivo, contaminación y especies invasivas; atribuyendo las amenazas a tres causas principales: gestión inefectiva, pobre administración medioambiental, y cambio climático; y sugiriendo tres tipos de soluciones: inacción, adaptación, y transformación ante las circunstancias externas. Resulta de interés que se pusiera un mayor énfasis en la transformación que en la inacción o en la adaptación, sugiriendo la imposibilidad de que el statu quo pueda llegar a satisfacer a muchos grupos de interés por mucho tiempo. Los resultados de este capítulo enfatizan que quienes toman las decisiones en las AMPs deben hacer un mejor uso de las percepciones de los grupos de interés, especialmente cuando se sugieren soluciones transformativas, ya que a menos que se lleven a cabo reformas importantes, el CPH-AMP está en peligro de transformarse y pasar de ser una reserva pesquera a una reserva de buceo y es improbable que alcance los requerimientos tanto de la resiliencia ecológica como de la social.

El capítulo 5 (ganadores y perdedores), tercer capítulo de análisis de la información, interpreta los cambios que tienen lugar en el CPH-AMP a través del prisma de ganadores y perdedores. El capítulo hace uso de la teoría de ‘ganadores y perdedores’, que generalmente se usa para argumentar quién gana y quién pierde, en qué aspectos, por qué, con qué consecuencias, y si se alcanza un resultado variable o de suma cero entre ellos. Es de remarcar que las percepciones de los informantes revelan, aunque superficialmente, que los buceadores son los ganadores y los pescadores los perdedores, aunque es preciso tener en cuenta que los conceptos ganador y perdedor son muy complejos. Los informantes perciben el resultado como un juego de suma variable, a través del cual, y con las intervenciones correctas y siguiendo una aproximación de gestión adaptativa, los intereses tanto de pescadores como de buceadores podrían protegerse.

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Los resultados de este capítulo desafían de alguna manera el discurso de conservación ganar-ganar que hay respecto a las AMPs, concluyendo que los conceptos ganar y perder en el CPH-AMP se deben a intervenciones humanas deliberadas en lugar de a un proceso natural inevitable y que el resultado ganar-ganar es improbable. Las compensaciones entre algunas ganancias y algunas pérdidas son la norma, lo que hace reclamar que los dirigentes sean más explícitos sobre compensaciones particulares en las que se incurre en la implementación del AMP.

Los resultados de esta tesis ofrecen una historia interior de los impactos y resultados sociales y ecológicos del CPH-AMP y de la legitimidad y aceptación de las acciones de gestión. Estos resultados sugieren que el CPH-AMP adopta una perspectiva más amplia y un conjunto mayor de métodos que las evaluaciones que emergen de las ciencias naturales al evaluar sus políticas y acciones de conservación. Esta tesis recomienda que el CPH-AMP introduzca una estrategia para considerar las percepciones de los grupos de interés para detectar problemas potenciales, y así poder diseñar mejores intervenciones con suficiente tiempo como para permitir reacciones con más rapidez y flexibilidad. La coherencia general de esta tesis se puede expresar diciendo que el CPH-AMP parecía ser inicialmente una panacea para los pescadores, pero gradualmente se volvió problemática conforme los buceadores aumentaron en número y ahora hay cuestiones importantes que deben ser abordadas, incluyendo: (1) ¿quién debe gobernar? (capítulo 3) – respuesta: los grupos de interés; (2) ¿cómo deben abordarse las amenazas ecológicas y sociales? (capítulo 4) – respuesta: a través de avances transformativos; y (3) ¿es posible reconciliar a ganadores y perdedores? (capítulo 5) – respuesta: sí, a través de la cogestión adaptativa.
SUMMARY

The term marine protected area (MPA) is used generically to describe a wide array of marine areas that afford different conservation strategies. For example, MPAs have been designated to conserve biodiversity; manage fisheries; protect endangered species; provide marine parks for tourists; and protect cultural resources. Defined loosely as - ‘any marine geographical area that is afforded greater protection than the surrounding waters for biodiversity conservation or fisheries management purposes’ (FAO, 2011) - MPAs vary greatly in their shape, size, levels of restriction, and objectives. Despite the vast variation in MPAs, what is fundamentally clear is that they are social and institutional constructs that govern human interactions within a specified area and allocate stakeholders’ use of, and access to, natural resources. In other words, MPA objectives ultimately stem from human needs, attitudes and desires, whether this be, to increase the number of fish, support traditional livelihoods or protect sensitive habitats, and they involve a variety of stakeholders with particular and often conflicting interests and agendas.

In the last two decades, MPAs have become regarded by many marine scientists as a principal management tool needed to address the cumulative threats facing the marine environment, fisheries collapse and the continued loss of marine biodiversity. In response, intensive worldwide efforts have been made to establish global MPA targets and build a network of MPAs. However, despite the efforts made, governments are still falling far short of the Aichi target of 10% of the world’s seas designated as protected areas by 2020, since MPAs currently cover only 3.2% of the oceans. To some extent, this shortfall reflects the fact that while MPAs are very popular among marine scientists, local communities and user groups often view them with hostility. Pressure on governments around the world from local communities and key stakeholders resistant to the declaration of MPAs in their area is likely to have played a significant role in the failure to reach the Aichi target.

Unsurprisingly, therefore, when an MPA has been designated and established, criticism from anxious communities and resource users to its working may be intense. Since MPAs have a variety of forms, their impacts on different communities and users may vary hugely, providing endless scope for controversy over the fairness of their arrangements. Such controversy is not a trivial feature of MPAs, but a crucial matter for their successful management, since, as is being increasingly recognized, unless MPAs can attract the support of local communities and resource users, they are unlikely to succeed in meeting their ecological objectives. This recognition is a belated acknowledgment that MPAs are not just ecological entities but complex social-ecological
systems (SESs), and it has been a major failing of management in the past to ignore the human dimension when managing marine resources. In the last decade, however, although most MPA research is still focused upon the ecological and conservation aspects of MPAs, the literature has begun to address the human dimensions of MPAs. The complexities of the relationships between people, including struggles between different actor groups and conflicts between people and their environment, make it absolutely necessary to examine conservation problems hand-in-hand with societal beliefs, customs, attitudes and practices - especially since an MPA can be both a biological success and a social failure.

It is now commonplace to say that MPAs create diverse and complex social impacts. For example, MPAs have the potential to affect resource users’ well-being and to cause equity issues within local communities if some stakeholders are marginalized in favour of other groups. It is people’s ability and willingness to absorb these impacts that determines the success or failure of MPAs. Many critics of MPA managers attribute their failure to properly address these issues to centralized planning, and a lack of participation by different stakeholders in decision-making processes. Studies in attitudes, perceptions, beliefs and preferences exhibited by stakeholders reveal a strong desire for such participation in order to improve the match between management policies and stakeholders’ needs. Systematic research into stakeholders’ perceptions of the impact of marine reserves on their well-being is, therefore, vital if MPA management is to be fit for purpose. A better understanding of the values and feelings of the various actors involved in, or affected by, MPAs will provide significant insight into areas of contestation, and could help predict their future behavior towards this management tool and thus contribute to its overall success.

Given the potential importance of MPA social research, this thesis was designed to explore in depth the human dimension of Cabo de Palos- Islas Hormigas MPA (CPH-MPA), SE Spain. The MPA, established in 1995 is considered a biological success, but it is undergoing major change in the way that it is being used, the implications of which are fundamental to its future. The central issue is that the MPA was initially designated as an artisanal fishery reserve, but over time, it has become a venue for thousands of divers, and is in danger of being transformed into a diving reserve for the benefit of tourists at the expense of local fishers and the marine environment. The aim of this thesis is to examine through perceptions research the way the working of the CPH-MPA is understood by stakeholders in order to find out (a) whether it is, in fact failing; (b) if so, why; and (c) what can be done to turn failure into success. In order to carry out this aim, I focused on stakeholders’ perceptions because they provide the best source of data to answer
these questions. Perceptions-based studies are considered by a growing number of researchers to be an efficient way of obtaining first-hand insights into the social dimensions of MPAs.

Perceptions which are defined as an ‘expression of the way a person thinks about, experiences, understands, interprets, or assesses a situation or policy’ (Bennett, 2016) are subjective; socially constructed; and strongly reflect the individual’s background and circumstances. They are fundamental to all social life and are reflected through our actions and relationships. Our perceptions influence our behaviour more than objective reality does and subjective measures may be more reliable guides to our well-being than objective indicators. For example, people’s perceptions about natural resources may be more significant than the actual conditions of those resources, because stakeholders’ perceptions of their surroundings (society, governance, natural environment) may be more relevant to management policy than objective observations of resource abundance. Studying perceptions is an important means of understanding why people behave in the way they do, and therefore what management steps are needed to influence their conduct. Perceptions data therefore complements scientific data in evaluating the effectiveness of resource management measures. Our reliance on objective scientific methods has left us with an incomplete picture of the complexity of MPAs and the social and political contexts within which conservation takes place. Previous research in CPH-MPA, thus far, has followed the natural sciences, leaving the human dimensions less explored. The work carried out within this thesis is, therefore, an attempt to redress the balance.

Fieldwork was carried out during 2013-2014 using a mixed method approach involving the collection and analysis of both qualitative and quantitative data from social network surveys, key informant interviews, community meetings, individual surveys, and observation. The qualitative methods used were semi-structured interviews, community meetings and observation. The quantitative method used was social network analysis (SNA), which is the study of social-relational systems, comprising data on a set of actors, their attributes and the relationships among them, to illuminate the social dimension of MPA governance systems. The two methods are complementary and mutually reinforcing. For example, SNA reveals structural patterns that are illuminating, while the semi-structured interviews help to better understand the social processes, past interactions, experiences and perceptions that have led to such relational ties being present. The rationale for combining relational data with rich narratives offered a way to triangulate the data and gain a more complete perspective of the effect of the governance structure underpinning CPH-MPA.

Individual semi-structured interviews were conducted with resource users- 17 fishers (both active
and recently retired), 38 employees of the SCUBA diving industry (referred to as divers throughout the thesis), and with 44 community members. Key informant (KI) interviews, were conducted with individuals from organisations and institutions involved in the MPA governance structure, comprising three government officers, four researchers, two fisheries sector representatives, two SCUBA diving sector representatives and two NGO representatives. Social network surveys were conducted with the KIs and additional actors that had the potential to participate in decision-making processes generated from a review of the literature, secondary data sources and exploratory interviews and included: government institutions, research institutions, fisher organisations and private organisations. Single or several individuals from each of the institutions or actor groups (n=28 individuals) were interviewed. Audio recordings and field notes were transcribed verbatim, and professionally translated from Spanish to English.

Qualitative data were organized using Nvivo10 analysis software and analysed using a thematic approach. The interviews were coded by hand and then in NVivo. Initial coding for themes was guided by the literature and previous theories, but most themes were chosen through an inductive process of reading and re-reading the transcripts, identifying repeated words and themes within and between interviews, and grouping the codes generated into collections of similar content. The quantitative relational data were organised into adjacency matrices and analysed using Ucinet and visualised using Gephi. Various network metrics were applied within Ucinet to identify network structure and cohesion and to reveal potential patterns within the networks. Having followed the rigors of good research practice and given consideration to ethical questions surrounding social research, I believe that the data collected is robust and I have full confidence in the conclusions drawn.

The four substantive chapters that make up this thesis present four different perspectives, each of which casts light on the issues raised in the previously stated questions. The four chapters are as follows: chapter 2 literature review; chapter 3 stakeholder participation; chapter 4 ecological threats and; chapter 5 winners and losers. Chapter 2 (Literature Review) presents a review of the secondary data, which consisted of an extensive literature review. This chapter provides the academic context for the study and shows how the research conducted for this thesis fits into the existing literature. In particular this chapter focused on the published work on the origin and development of MPAs, their features, purposes, successes, weaknesses, and challenges, as well as critical discussions of two issues raised by their astonishing rate of proliferation in recent years - co-management and social capital – both of which underlie much of the subsequent analysis of the CPH-MPA.
Chapter 3 (Stakeholder Participation), which is the first of three data chapters, identifies a central question for MPAs in general and the CPH-MPA in particular – that of how much stakeholder participation (SP), if any, there already is in their management, and how much should there be. A theoretical framework in participation theory informs the chapter, which makes use of both relational and narrative data, and examines the respondents’ views on the current extent of SP, and their reasons for wanting to widen it. The data show how, although most respondents approved of SP, they were divided in their views about what kind of SP they favoured. The qualitative data revealed several barriers between administrators and stakeholders. For example, some administrators held negative stereotypes of fishers as despoilers of marine habitats, while some stakeholders regarded administrators as out of touch with the reality at sea. Quantitative data from the SNA confirmed and verified this and other barriers from a social-structural perspective. The chapter concludes that there are various constraints on participation in the management of the CPH-MPA, and provides recommendations that will overcome these constraints and strengthen the role of the actors involved. For example, I recommend clarifying the desired scope of participation; managing expectations of what kinds of participation are feasible; and carefully considering the space in which dialogue takes place to reduce differential power relations between participants.

Chapter 4 (Ecological Threats) is the second data chapter, and focuses on the respondents’ perceptions of the threats faced by the MPA, the perceived causes of these threats, and possible ways of overcoming them. The chapter is structured around the theory of resilience, which incorporates both ecological and social resilience. This is an appropriate framework, since the central question of the study is how resilient or robust is the CPH-MPA in the face of existential threats to its existence as a fisheries reserve. Respondents identified four main threats – overfishing, excessive diving, pollution, and invasive species; attributed the threats to three main causes – ineffective management, poor environmental stewardship, and climate change; and suggested three kinds of solutions – do nothing, adapt to, or transform, external circumstances. Interestingly, there was more emphasis on transforming than either doing nothing or adapting, suggesting that the status quo was unlikely to satisfy many stakeholders for long. The results of this chapter emphasise that MPA policy makers must make much better use of stakeholder perceptions, especially where they suggest transformative solutions, because unless some major reforms take place, the CPH-MPA is in danger of transitioning from a fishing reserve to a diving reserve, which is unlikely to fulfil the requirements of either ecological or social resilience.

Chapter 5 (Winners and Losers), which is the third data chapter, interprets the changes taking
place in the CPH-MPA through the lens of winners and losers. The chapter makes use of ‘winners and losers’ theory, which is generally used to plot who wins and loses; in what respects; why; with what consequences; and whether it is a zero or variable sum outcome between them. Remarkably, the perceptions of respondents revealed that although superficially it appeared that divers were the winners and fishers were the losers, in fact, the concepts of winners and losers were very complex. Respondents perceived the outcome as a variable sum game, whereby with the right interventions through the adaptive management approach, the interests of both fishers and divers could be protected. The findings from this chapter go some way to challenge the win-win conservation discourse that surrounds MPAs, concluding that the concept of winning and losing is more complicated than this simplistic view assumes. The situation of winners and losers in CPH-MPA is due to deliberate human intervention rather than a natural and inevitable process, and win-win outcomes are unlikely. Trade-offs between some wins and some losses are the norm, which calls for policy makers to be more explicit about the particular trade-offs occurring in their MPA implementation.

The findings from this thesis provide an inside story of the social and ecological impacts and outcomes of CPH-MPA and the legitimacy and acceptability of management actions. They suggest that CPH-MPA adopt a broader perspective and a wider array of methods than evaluations that emerge from the natural sciences when evaluating its conservation policies and actions. I recommend that CPH-MPA introduce a strategy to take more account of stakeholder perceptions to detect potential problems early enough to allow them to respond more rapidly and more flexibly. The overall coherence of the thesis may be expressed by saying that the CPH-MPA appeared initially to be a panacea for fishers, but gradually became problematic as divers increased in number, and now quite serious issues have to be addressed, including: (1) who should govern? (Chapter 3) – answer: stakeholders; (2) how should ecological and social threats be dealt with? (Chapter 4) – answer: by transformative moves; and (3) is it possible to reconcile winners and losers? (Chapter 5) – answer: yes, with adaptive co-management.
CHAPTER 1

GENERAL INTRODUCTION

1.1 INTRODUCTION

In this introductory chapter of the thesis I introduce the concept of the human dimension in MPAs, which is the overall focus of the thesis, providing a brief introduction to the topic and relevant literature. I then provide details of the overall research aims and thesis structure. This is followed by a detailed justification of the methodologies used. Finally, I explain my personal reflections on the research process.

1.2 MARINE PROTECTED AREAS AND THEIR HUMAN DIMENSION

A marine protected area (MPA) is a generic term used to describe a wide array of marine areas, which afford different conservation and protection strategies. For example, MPAs have been established for conservation of biodiversity, management of fisheries, protection of endangered species, establishment of marine parks for tourists and local residents and protection of cultural resources (Agardy et al., 2003; Guarderas et al., 2008; Guidetti et al., 2014; Jones, 1994; Sumaila and Charles, 2002). MPAs also vary widely in the type and level of protection they apply. For example they can range from areas that allow multiple-use to areas that restrict all human access (Kelleher, 1999). Sites, which fit the definition of MPAs, have been given a variety of names, including marine reserves (MRs), marine reserves of fisheries interest (MRFIs), sanctuaries, parks, no-take zones or areas (NTZs), fishery exclusion zones, fishery reserves, and closed areas. These variations are reflected in the definitions of MPAs provided by different organizations (Christie and White, 2007). For example, the International Union for the Conservation of Nature (IUCN) define MPAs as areas set aside for the primary purpose of conservation, with conservation taking precedence over all other objectives (Day et al., 2012; Dudley et al., 2013). The Food and Agriculture Organization of the United Nations (FAO), however, define MPAs as “any marine geographical area that is afforded greater protection than the surrounding waters for biodiversity conservation or fisheries management purposes” (FAO, 2011). This divergence in the definitions of MPAs is significant because they reveal different objectives of a MPA which are crucial in determining the management approach or approaches used within it (Voyer et al., 2015a). MPAs come in many shapes and sizes, with differing levels of restriction and objectives (Jentoft et al., 2012; Kelleher, 1999; Pomeroy et al., 2004b). This reflects the fact that they are social and institutional constructs that govern human interactions within a specified area and allocate stakeholders’ use of, and access to, natural resources (Jentoft et al., 2012;
Mascia, 2004; Mascia and Claus, 2009; Suman et al., 1999). In other words, MPA objectives ultimately stem from human needs, attitudes and desires, whether this be to increase the number of fish, support traditional livelihoods or protect sensitive habitats, and involve a variety of stakeholders with particular and often conflicting interests and agendas (Jentoft et al., 2012).

Although MPAs have existed for hundreds of years, most statutory MPAs are quite recent and their number has increased greatly in recent years (Ostrom, 1990; Pita et al., 2011). MPAs are considered as the cornerstone of marine conservation and a key tool in the response to the recent decline in marine biodiversity by the IUCN, many marine ecologists and the wider conservation community (Voyer et al., 2015a). Over the past two decades, to arrest the alarming losses of global biodiversity and safeguard marine ecological processes, intensive worldwide efforts have been made to establish global MPA targets and build a network of MPAs (Boonzaier and Pauly, 2016; Lubchenco and Grorud-Colvert, 2015). The most commonly cited agreement on such efforts is the Convention on Biological Diversity (CBD) Aichi target, which had a target for MPAs to cover 10% of each of the world’s ecological regions by 2012 (CBD, 2006). However, although the number of MPAs has increased sharply around the world in recent decades (Thorpe et al., 2011), Jentoft et al. (2012) point out that they have proven more cumbersome and time consuming to implement than anticipated when the commitment was made at the CBD meeting in 2006. As it became apparent that these targets would not be reached, it was agreed to extend the timeframes to 2020 (CBD, 2016; Spalding et al., 2010). How much of the world’s marine area under national jurisdiction is currently protected is somewhat uncertain, and in their recent article, Lubchenco and Grorud-Colvert (2015) emphasize that we must consider what definition of ‘protection’ is being employed. M. E. Silva et al. (1986) listed 430 MPAs created by 1985; 10 years later Kelleher et al. (1995) estimated that this number had increased to more than 1,300; and in 2008, Wood et al. (2008) reported that approximately 5,000 MPAs (about 1.6% of the world’s ocean space) had been designated worldwide. More recent estimates in 2013 put the figure to >6000 MPAs covering ~3.27% of the oceans (Boonzaier and Pauly, 2016), however only 1.6% is ‘strongly’ or ‘fully’ protected (Lubchenco and Grorud-Colvert, 2015). This figure is now (in 2017) likely an under-estimate given the rapid progress in the implementation of this management approach. Nevertheless, Spalding et al., (2010:36) conclude that: “MPA coverage remains remarkably low and far below the current CDB targets.” Jentoft et al. (2012:185) said: “Given the poor health of marine ecosystems globally and the general appeal of the MPAs among scientists and policy makers, the
discrepancies between anticipated goals and actual outcomes are quite astonishing.” So the obvious question is why? Many discrepancies are likely to be context specific and related to the ecological, social, and cultural characteristics of the area (Christie, 2004; Ferse et al., 2010; Fiske, 1992; Pomeroy et al., 2007a). In other cases, it may be that MPAs are designed in ways unsuited for the context (Acheson, 2006; Jentoft et al., 2012). Another reason for the shortfall from the CBD target is opposition to MPAs. There are numerous examples of MPAs that have been met with scepticism or indeed outright rejection from affected stakeholders (Chaigneau and Daw, 2015; Christie, 2004; Halpern, 2003; Jentoft et al., 2012; Suman et al., 1999). Pressure on governments around the world from local communities and key stakeholders resistant to the declaration of MPAs in their area is likely to have played a significant role in the failure to reach the 2012 Aichi target (Agardy et al., 2011; Edgar et al., 2014; Voyer et al., 2015b).

Increasing recognition is being given to the fact that MPAs are socially and ecologically linked, and are in fact complex social-ecological systems (SESSs) (Agardy, 2000; Basurto et al., 2013; Ostrom, 2009; Pomeroy et al., 2007a). MPAs primarily regulate human behaviour, so it is inevitable that MPAs will have some effect on local communities (Blaustein, 2007; Blount and Pitchon, 2007; McShane et al., 2011; Nielsen et al., 2004). In the last decade or so the literature has begun to address the human dimensions of MPAs; covering topics on socio-economic and cultural aspects of MPAs, MPA governance, and a broad exploration of the social impacts of MPAs (e.g. see Bunce et al. (1999); Jentoft et al. (2007); Mascia (2003); Mascia and Claus (2009); Pollnac et al. (2001); and Pomeroy et al. (2007a)).

However, in practice, research into the human dimension and the social impacts of MPAs has been limited (Pita et al., 2011), and most published MPA research still tends to focus upon the ecological and conservation aspects of MPAs such as the so-called “spillover effect” (C. M. Roberts et al., 2001) and not their social, economic, cultural, political and institutional implications (Christie, 2004; Pita et al., 2011). For example, the literature is generally lacking detailed accounts of the social implications of MPAs and the activities associated with them such as fishing, recreational diving, tourism, and research; and social MPA research has often been criticized for lagging behind the bio-physical sciences or being fragmented, disjointed or completely absent (Blount and Pitchon, 2007; Christie et al., 2003; Mascia, 2003; Thomassin et al., 2010; Urquhart et al., 2014). This despite evidence that it is social factors that determine the overall success or failure of a MPA (Blount and Pitchon, 2007; Jentoft et al., 2012; Kelleher and Recchia, 1998; Lubchenco and Grorud-Colvert, 2015;
Mascia, 2004; Mascia et al., 2010; West et al., 2006). Particularly the human conflict between groups of stakeholders that lies behind the tension between the principles of biodiversity conservation and sustainable social development is an area that has received less attention (Cinner et al., 2014; Flannery et al., 2016; Gustavsson et al., 2014; Mascia and Claus, 2009; Stepanova and Bruckmeier, 2013; Wilkie et al., 2006; Wynberg and Hauck, 2014), and is a key topic in this thesis. The complexities of the relationships between people, associated power struggles between different actor groups and between people and their environment make it crucial to examine conservation problems hand-in-hand with societal beliefs, customs, attitudes and practices (Fabinyi et al., 2014; Voyer et al., 2012) - especially since an MPA can be both a biological success and a social failure (Christie, 2004).

As we will see in Chapter 3 MPAs create diverse and complex social impacts and are most likely to be felt by individuals, families or groups at a local level (Chaigneau and K. Brown, 2016; Chaigneau and Daw, 2015; Cinner et al., 2014; Mascia et al., 2010). MPAs have the potential to affect resource users well-being who value their use of the marine environment as an integral part of their ‘way of life’ and social identity (Chaigneau and K. Brown, 2016; Cinner et al., 2014; Jones, 2009; West et al., 2006; Wilkie et al., 2006). MPAs also have the potential to cause equity issues within local communities if some stakeholders are marginalized in favour of other groups (Blount and Pitchon, 2007; Chaigneau and K. Brown, 2016; Fabinyi, 2008; Jentoft et al., 2012). People’s ability and/or willingness to absorb these impacts directly impacts the success or failure of MPAs (Agardy et al., 2003; Blount and Pitchon, 2007; Fiske, 1992; Kelleher and Recchia, 1998; Mascia, 2003; West et al., 2006). As we will see in Chapters 4 and 5 one of the most recognized shortfalls of MPAs and areas of contestation appears to be centralized planning and failure to understand the human dimension and to incorporate the different actors and local communities into decision-making processes and management (Coffey, 2005; Pomeroy and Douvere, 2008).

Studies in attitudes, perceptions, beliefs and preferences related to MPA issues are increasingly identified as priority social science topics in need of research by governmental agencies and NGOs highly involved in the implementation of MPAs (Bennett, 2016; Beyerl et al., 2016; Christie et al., 2003; Pomeroy et al., 2004b; Wahle and Lyons, 2003). Understanding the values, images and principles of the various actors involved or affected by MPAs has the capacity to provide significant insight into areas of contestation and could help predict the behavior of different actors towards this management tool and thus contribute to their overall success. Given the potential importance of MPA social research,
this thesis attempts to explore in depth the human dimension of Cabo de Palos- Islas Hormigas MPA (CPH-MPA) by being guided by, building on and making use of various frameworks and theories put forward by other researchers (e.g. Arnstein (1969); Chandler (2014); Cinner et al. (2014); Jentoft et al. (2012); O’Brien and Leichenko (2003); Ostrom (2009); Pretty (1995); and Walker et al. (2002)). Perceptions-based studies such as the research conducted for this thesis are considered an efficient way to obtain first-hand insights into these social dimensions of MPAs (Bennett, 2016; Beyerl et al., 2016).

1.3 OBJECTIVES AND THESIS STRUCTURE

This thesis is a study of an MPA in SE Spain (CPH-MPA), which is undergoing major change in the way that it is being used, the implications of which are fundamental to its future. The central issue is that the MPA was initially designated as an artisanal fishery reserve, but it has become a venue for thousands of divers, and is in danger of being transformed into a diving reserve for the benefit of tourists at the expense of local fishers. The CPH-MPA thus appears to be failing to meet the needs of either of the principal users – fishers or divers. The aim of my thesis is to examine the working of the CPH-MPA in order to find out (a) whether it is, in fact failing; (b) if so, why; and (c) what can be done to turn failure into success? In order to carry out this aim, I have chosen to focus on stakeholders’ perceptions because they provide the best source of data to answer these questions. My four substantive chapters present four different perspectives, each of which casts light on the issues raised in the above three questions. The structure of the thesis is as follows (Fig 1.1).

First, I present the result of my analysis of the secondary data, which consists of an extensive literature review (Chapter 2: Literature Review [published in Advances in Oceanography and Limnology]). This chapter is designed to provide an academic context for the study, showing how the research fits into the existing literature. Second, I concentrate on a major issue for most respondents – the question of participation in management decision-making (Chapter 3: Stakeholder Participation [under review by Ocean and Coastal Management]). This chapter, which draws extensively on theories of participation, examines the respondents’ views on the current extent of stakeholder participation, and their reasons for wanting to widen it, and concludes that there are various constraints to participation, acting in CPH-MPA and provides recommendations that will overcome these constraints and strengthen the role of the actors involved. Third, I investigate the threats that stakeholders see as facing the reserve (Chapter 4: Ecological threats [submitted to Coastal Management]). This chapter, which makes use of resilience theory, explores not only the threats, but also the
causes of those threats and possible solutions to them, as viewed by respondents, concluding that MPA policy makers must take better account of stakeholders perceptions regarding threat, cause and solution identification, especially transformative solutions to avoid situations that may not achieve either ecological or social resilience. Fourth, I interpret the situation of the reserve in terms of a ‘winners and losers’ analysis (Chapter 5: Winners and Losers [submitted to Human Ecology]). This chapter, which is informed by theories of winning and losing, focuses on a familiar theme about MPAs – that they favour some stakeholders at the expense of others, and it rehearses respondents’ perceptions about who are the winners and who are the losers, concluding that the concept of winning and losing is more complex than it seems and calls for policy makers to be more explicit about the inherent trade-offs incurred by MPA implementation.

How to respond to fundamental change in a fisheries reserve - a dilemma for management in the Cabo de Palos - Islas Hormigas marine protected area

Figure 1.1 Thesis structure outline

All of these four data chapters are ‘stand-alone’ pieces, with their own (brief) theoretical frameworks, and (brief) methodologies and case study details. To avoid too much repetition only the most relevant details are provided in each chapter. As such, it is helpful to explain in this introductory chapter some of the common assumptions that lie behind the three primary data chapters. In particular, it is important to justify three methodological features of the chapters – (1) their use of some quantitative methods – in particular, social network analysis (SNA); (2) their concentration on qualitative methods; and (3) their heavy reliance
on quotations of respondents’ perceptions. In addition, I use the opportunity of this introductory chapter to explain in more detail than is possible within the data chapters, the circumstances of the case study of the CPH-MPA, as well as the research techniques and the data analysis procedures I employed, issues of validity and reliability, ethical considerations that I respected, methodological problems I encountered, and my personal reflections on my research journey. Readers are encouraged to return to this chapter if they require more detail.

1.4 QUANTITATIVE METHODS

The main quantitative method used in this research was SNA. Howison et al. (2001) indicate that the use of SNA offers a data reduction method that has parallels to using other quantitative techniques. SNA is the study of social-relational systems, which comprises of data on a set of actors, their attributes and the relationships among them (Turner et al., 2014b; Wasserman and Faust, 1994). As such, it offers a key tool for examining the social dimension of MPA governance systems. The increasing sophistication in the quantitative methods and models available have contributed to the growth of social network research (Carrington et al., 2005). SNA has long been applied in social science research (Borgatti et al., 2009), in more recent years it has been increasingly recognised to have significant potential for natural resource management (NRM) (Bodin, 2006; Bodin and Prell, 2011; Hartley, 2010; Hartley and Glass, 2010; Marin and Berkes, 2010; Ramirez-Sanchez and Pinkerton, 2009; Turner et al., 2014b). Social networks are valuable because they enable the mobilization of diverse resources. Exchange of information, ideas, knowledge and resources can be effectively transferred through social networks and this is one of the fundamental attributes of collaborative processes (Bodin and Crona, 2008; Isaac et al., 2007; Smythe et al., 2014). Networks, however, vary widely in structure and not all networks are suited to effective collaboration and transfer and exchange of resources (Bodin et al., 2006; Newman and Dale, 2005; Putnam, 2002; 1995). SNA reveals structural characteristics of a network that can be considered as either barriers or opportunities: for example, the position organisations or individuals maintain and how that position contributes to their influence, attitudes, behaviours, and the development of trust and information exchange, may be opportunities to them but barriers to others (Burt, 2004; Hartley and Glass, 2010). Density, i.e. the ties reported as a proportion of the possible ties within the network, is a key factor in creating opportunities for communication, trust, and collective action (Bodin et al., 2006) for some, but at high values it can be a barrier for others – indeed; the utility of density at high levels is
said to diminish as it can lead to homogeneity of information and ideas (Bodin et al., 2006; Bodin and Prell, 2011). In collaborative management of complex, boundary-spanning systems like MPAs, linking, and particularly, bridging ties (i.e. actors who connect diverse subgroups), are particularly important opportunities for improved governance (Smythe et al., 2014). ‘Bridges’ by bringing together actors, resources, and creating opportunities (Granovetter, 1973) - can facilitate the exchange of information and knowledge and can develop trust and collective action (Bodin et al., 2006; Grafton, 2005; Newman and Dale, 2005; Ramirez-Sanchez and Pinkerton, 2009). These actors by connecting multiple levels of society can enhance the adaptive capacity of natural resource governance systems by creating diversity within a network- a key element when developing collaborative solutions to complex resource management problems (Newman and Dale, 2005; Smythe et al., 2014; Walker and Salt, 2006). It must also be noted that social networks can also be explored using a qualitative approach, by using participatory mapping, concentric circles and walking interviews for example (Jack, 2010). Although in this thesis SNA predominantly took a quantitative structural approach, an exercise using concentric circles, which allowed for qualitative SNA was used in this project during community feedback meetings (APPENDIX V).

The mix of qualitative and quantitative network analysis methods was highly complementary, the results from the qualitative exercise helping to inform the findings from the quantitative analysis and allowing for further exploration of the findings within the qualitative interviews (Domínguez and Hollstein, 2014; Jack, 2010).

As with all types of research quality, strict criteria must be followed to ensure that the data collected are both valid and reliable. In quantitative research, we are focused on validity and reliability. In quantitative research, validity is concerned with the integrity of the conclusions that are generated from a piece of research, while reliability is concerned with the question of whether the results of a study are repeatable. Fig. 1.2, adapted from Frambach et al. (2013) provides an excellent outline of the quality criteria applied in both quantitative and qualitative social research, with particular attention given to SNA research. The figure was adapted to fit this thesis making use of additional guidance from several prominent authors (e.g. Bryman et al. (2008); Creswell (2013); Howison et al. (2011); Scott (2013); Tashakkori and Teddlie (2003); and Wasserman and Faust (1994)). As a unique social research method, SNA comes with its own set of good practice and factors to ensure robust data. To assess validity and reliability in SNA it is necessary to examine the fit of this methodology to the theoretical constructs and the particular kinds of data available (Howison et al., 2011). A matter of continual concern in network studies is the ability to harvest or construct
complete, authoritative network structures while dealing with the internal validity issues that arise for each of the primary methods for collecting network data, for example: surveys, interviews and observation (Wasserman & Faust, 1994). Thus the use of SNA raises questions of validity and reliability parallel to those for other quantitative analysis techniques.

1.5 QUALITATIVE METHODS

Although my research uses a mixed methods approach, more emphasis is devoted to qualitative methods than to quantitative methods. As we have seen, quantitative methods were used to conduct SNA – i.e. to find out how people and groups related to each other (a behavioural analysis) - whereas qualitative methods were used to discover what people thought about their situations (a cognitive or perceptual analysis) (Tashakkori and Teddlie, 2003; Teddlie and Tashakkori, 2009). During the course of my research, I found that the question of how people related to each other was the starting point, not the ending point, for an understanding of the most important issues facing the MPA. How people related to each other was itself both a cause and effect of what they perceived their situations to be. Accordingly, I began to focus on what respondents’ perceptions were, by employing qualitative methods such as semi-structured key informant (KI) interviews, participant observation and community meetings. As a result, I obtained a considerable amount of rich interview data, which enabled me to grasp very vividly the respondents’ perceptions of their situations. These are unique data, and I do not apologise for making full use of them in the three data chapters, because they reveal so many insights into difficult circumstances. However, I do feel the need to defend my reliance on them, and this chapter is the place to do so. My defence takes two forms: first, I defend my focus on the qualitative method; second, I defend my use of perceptions research and my extensive quotations of respondents’ perceptions.

1.5.1 THE QUALITATIVE APPROACH

My use of qualitative methods is not a replacement for quantitative methods but an addition to it. The two methods are complementary, not in opposition to each other. The rationale for combining relational data with rich narratives offered a way to triangulate the data and gain a more complete and diverse perspective of the governance structure underpinning CPH-MPA. The two data types are thus mutually reinforcing. For example, SNA may reveal structural patterns that are illuminating, while the narrative can help us to better understand the social processes, past interactions/experiences and perceptions that have
led to such relational ties being present or not. In short, the narratives help to provide an understanding of why particular relational patterns occurred and their importance and relevance, while, conversely, the network data offer an enhanced understanding of how certain perceptions are reinforced by relational patterns or lack of them (Carrington et al., 2005; Domínguez and Hollstein, 2014; Jack, 2010). So the two approaches together provide triangulation of analysis and interpretation (Blackstock et al., 2007; Teddlie and Tashakkori, 2009). In practice however, qualitative data predominate in this thesis. This is not to say that qualitative research is a ‘better’ approach than quantitative research, but it is a reflection of the evolution of this work and what became apparent as the key topics of interest for stakeholders in the CPH-MPA and the data I had available to illustrate those topics. I used quantitative methods in the form of SNA to explore how people related to each other in the MPA, and this led me to ask the question, what effect did such relationships have on respondents? This in turn led to my asking respondents for their perceptions of their situations, and most of my results came from qualitative analysis of these perceptions. In defending this emphasis on qualitative analysis, I draw on arguments rehearsed by authors such as Guba and Lincoln (1989); Bryman (2012); Creswell (2013); Shenton (2004); and Onwuegbuzie and Leech (2006). Qualitative research is criticised by neo-positivists for: lacking scientific rigour; the lack of transparency in the analytical procedures and; that the findings being simply a collection of personal opinions are subject to researcher bias (Noble and J. Smith, 2015). Demonstrating rigour in qualitative research is a challenge as there is no accepted consensus about the standards by which such research should be judged (Bryman, 2012; Bryman et al., 2008; Creswell, 2013; Noble and J. Smith, 2015). The positivist viewpoint of validity and reliability as the canons of rigor that are applied to quantitative research are not entirely applicable to qualitative research, and there remains on-going debate as to whether the twin criteria of validity and reliability are appropriate to evaluate qualitative research (Bryman, 2012; Guba and Lincoln, 1989). Noble and J. Smith (2015) indicate that in their broadest context these terms are applicable: with validity referring to the veracity and application of the methods undertaken and the accuracy in which the findings correctly reflect the data, while reliability describes consistency within the employed analytical procedures. But for more specific justification, several authors have introduced alternative criteria for qualitative research (see Altheide and Johnson (1994); Guba and Lincoln (1989); Lincoln and Guba (1985); Maxwell (1992; 2013)). Unlike quantitative researchers, who apply statistical methods for establishing validity and reliability of research findings, qualitative researchers aim to design and incorporate
methodological strategies to ensure the ‘rigour’ and ‘trustworthiness’ of the findings. Lincoln and Guba (1985), for example propose four well-cited criteria for demonstrating rigour and trustworthiness within qualitative research namely: credibility; transferability; dependability; and confirmability (see Fig. 1.2 adapted from Frambach et al. (2013)). In addressing credibility, investigators must attempt to demonstrate that a true picture of the phenomenon under scrutiny is being presented. To allow transferability, researchers must provide sufficient detail of the context of the fieldwork for a reader to be able to decide whether the prevailing environment is similar to another situation with which he or she is familiar and whether the findings can justifiably be applied to the other setting. The meeting of the dependability criterion is difficult in qualitative work, but researchers, as have I, should at least strive to enable a future investigator to repeat the study. Finally, to achieve confirmability, researchers must take steps to demonstrate that findings emerge from the data and not their own predispositions.

In the following sections, I highlight where appropriate how this research has made use of the techniques outlined in Fig. 1.2 (Bryman et al., 2008; Creswell, 2013; Frambach et al., 2013; Howison et al., 2011.; Scott, 2013; Teddlie and Tashakkori, 2009; Wasserman and Faust, 1994) to meet the canons of good research that ensures that both quantitative SNA and qualitative research are sound methodologies for providing illumination and understanding of CPH-MPA.
1.5.2 PERCEPTIONS RESEARCH

My defence of my use of perceptions research is in two parts. First, I justify the use of perceptions research in marine management in general. Second, I justify my extensive reliance on quotations from respondents’ perceptions. On the first part, perceptions research into marine management is convincingly championed by several writers, the most prominent being Beyerl et al. (2016); Bennett (2016); Diedrich et al. (2017); Jentoft et al. (2012); and Voyer et al. (2015b), and I draw heavily on their arguments in my defence of it. A perception may be defined as an expression of the way a person thinks about, experiences, understands, interprets, or assesses a situation or policy (Beyerl et al., 2016). Perceptions are subjective and socially constructed, reflecting the individual’s background and circumstances (Bennett, 2016). They are fundamental to all social life: we cannot avoid having perceptions, and our actions and relationships reflect our perceptions. Indeed, Diedrich et al. (2017) claim that our perceptions influence our behaviour more than objective reality does. They also claim that subjective indicators are more reliable guides to...
our well-being than are objective indicators. Accordingly, studying perceptions is an important means of understanding why people behave in the way they do. Bennett (2016:13) holds that “Although perceptions are not necessarily objective, they always represent a facet of the truth”: indeed, “individuals’ subjective perceptions can become their truths.” Perceptions data complement traditional scientific data in evaluating the effectiveness of resource management measures. Reliance on objective scientific methods alone: “can lead to an incomplete picture of the complex and messy social, political, and economic contexts within which conservation occurs” (Bennett, 2016:4). Without perceptions, “important contextual factors may be obscured and inadequate contextual understandings may lead to culturally inappropriate, socially unjust, or untenable conservation actions” (Bennett, 2016:4).

However, Hall-Arber et al. (2009) claim there are inherent problems with using perceptions data to assess and monitor the performance of resource management and governance, by contrast to conventional scientific indicators which are seen to provide statistical robustness. For example, perceptions of respondents may be distorted by self-interest and different levels of understanding and education on a subject. Bennett (2016:1:14) addresses the point that: “perceptions are often dismissed as ‘anecdotal evidence’ that may be based on inaccurate ‘experiential knowledge’ or ‘myths’”, by acknowledging there are some shortcomings in perceptions research: since perceptions are subjective, they “may not accurately represent outcome variables, such as the state of the environment (abundance of species or quality of habitats) [...] because perceptions are not produced in a vacuum of objectivity; they are highly mediated by past experiences and by personal motivations (e.g., for wealth, power, security of tenure, or the ability to feed one’s family) [...] the result of “wishful thinking, external influences, [or] a desire to please” among other things.” However, Bennett (2016:6) argues that we need to make use of all types of insight: “Rather than being dismissive of some forms of evidence, a pragmatic approach to conservation science requires considering all disciplines and methods when seeking to understand conservation issues and all available information in the search for effective solutions [...] Evidence comes in many forms. Perceptions are an indispensable form of evidence that is useful at all stages of conservation from planning and implementation to on-going management.”

In relation to MPAs, Beyerl et al. (2016:1) argue that perceptions research offers a far more nuanced picture of the complex way in which stakeholders react to management measures;
explain why such measures often go wrong - “stakeholder perceptions [...] affect the management process from earliest conception to the actual implementation and monitoring [...] stakeholder perceptions of the actual measures can decide the ultimate success of the entire enterprise” – and help managers to put them right – “these perceptions [...] can be key to resolving issues of stakeholder discontent” – by enabling them to “anticipate potential problems and their causes long before they occur [...] and respond more adequately to misunderstandings between stakeholders.” Bennett (2016:2) argues that perceptions provide valuable insights for marine management, especially in: “observations, understandings and interpretations of the social impacts and ecological outcomes of conservation; the legitimacy of conservation governance; and the social acceptability of environmental management.” Bennett (2016:2) asserts that perceptions data complement scientific data in assessing the effectiveness of marine management measures: “It is positive perceptions, not just objective scientific evidence of effectiveness, that ultimately ensure the support of local constituents thus enabling the long-term success of conservation.”

Beyerl et al. (2016) note that there has not been much research conducted into stakeholders’ perceptions of marine management, but they aim to change this by the creation of ‘perception experts’ (PEs) recruited locally to monitor stakeholder perceptions in marine areas and ensure that stakeholders’ concerns are heard and taken seriously in decision-making processes. In fact, the importance of perceptions research has led these authors to suggest that PEs should be introduced into marine resource management teams as standard management practice (Beyerl et al., 2016).

These authors provide a powerful case for including perceptions research in my analysis of the management issues raised by the CPH-MPA. On the second part of this section, my justification for quoting extensively from respondent’s perceptions follows on from this defence of perceptions research. Given the value of stakeholders’ perceptions in providing insights into the way MPAs are managed, those insights are most clearly revealed by the verbatim expressions used by respondents. Attempts to paraphrase stakeholder responses would risk misinterpreting or skewing them to suit the researcher’s agenda. The most faithful way to explain the views of stakeholders is to quote them (Blauner, 1987; Bruner, 1984; Bryman et al., 2008; Creswell, 2013; Killenberg and Anderson, 1993; Onwuegbuzie and Leech, 2006; Sandelowski, 1994). Accordingly, in my results sections of the three primary data chapters, I quote at length respondents’ perceptions in their original forms. Explicit presentation of the rich data in this way provides evidence and support for inference and
conclusions I have drawn (Blauner, 1987; Bryman et al., 2008; Killenberg and Anderson, 1993; Sandelowski, 1994; Whittemore et al., 2001). In addition to the authenticity and explicitness that these quotations bring to my thesis, they also provide interesting, sometimes moving, and always varying voices, which enrich the texture of my analysis and provide readers with a vivid understanding of CPH-MPA in all its facets.

1.5.3 THE CASE STUDY

1.5.3.1 The case study approach
Case study research is concerned with the complexity and particular nature of the case in question (here a specific MPA) enabling a thorough and comprehensive analysis to be conducted (Bryman, 2012). The CPH-MPA was selected as a case study as little was known about the human dimension of this MPA. CPH-MPA could be considered as an exemplifying case study for Mediterranean MPAs, with a relatively top-down governance structure typical within the region. Its explicit socio-economic objectives, the mixed user groups, and the fact that it is a well-established MPA, considered a biological ‘success’, makes it suitable for intensive examination of the human dimension. Although the main fieldwork and data collection was conducted during one eight week period in 2013, the project also has a longitudinal aspect as my presence in the community has continued over the last three years, and I have been present at several meetings (both formal and informal) where aspects of the MPAs management were discussed. During the main fieldwork phase the research team, including myself, lived within the community, and I subsequently stayed in the village for several months on different occasions over the last few years. This has allowed me to build trust with community members and develop with a deep understanding, the community and the relationships between the different actors involved. Although I do not attempt to draw generalisations from the work, as this is not the aim of case study research (Bryman, 2012), the study does claim some external significance in that it demonstrates the need for management to give greater attention to the human dimension in MPAs in the Mediterranean in order to improve the effectiveness of their governance.

1.5.3.2 Field site selection
Research for this thesis was conducted within the Training Network for Monitoring Mediterranean Marine Protected Areas (MMMPA) framework (http://www.mmmpa.eu), the aim of which was to provide early-stage researchers (ESRs) with an opportunity to experience first-hand the day-to-day management of Mediterranean MPAs. At the initiation stage of the project, five MPAs were involved: Cabo de Palos Islas-Hormigas MPA- Spain,
Port Cros National Park - France, Messolonghi Lagoon - Greece, Tavolara Punta Coda Cavallo MPA and Portafino MPA - both Italy. Later in the project, several other MPAs were added, including Ustica MPA and Tremiti Island MPA - both Italy. The MMMPA was designed to train the next generation of MPA scientists and managers, equipping my fellows and myself with a flexible set of skills essential within a wide range of professional environments, including public administration, local authorities, industry and academia. My specific role within WP4 of MMMPA was to investigate the human dimensions of MPAs, but given the complexity of particular marine governance settings, a decision was taken that I would only examine one case study for my thesis. A single case study allows a more in-depth study to be conducted, and this decision enabled me to obtain a much greater understanding of the situation in CPH-MPA. The choice of this particular MPA was made for reasons of accessibility: to ensure that I would gain a sense of the community, it was necessary for me to spend as much time as possible in the community, and as I was based in the University of Murcia (UMU) and the project coordinators within UMU were familiar with CPH-MPA, it was sensible to focus my energies on this MPA. However, I did work in three other MPAs for periods of up to two months each — Port Cros National Park MPA, Tavolara Punta Coda Cavallo MPA, and Ustica MPA - conducting interviews with staff and various experts, which gave me an opportunity to compare MPA governance structures and incentives used and needed within these MPAs (the results of this work have been submitted for review in a Special Issue of Marine Policy). As a result, I gained a greater understanding of how MPAs in the Mediterranean are managed; how their governance systems differed; and how some incentives worked and others failed. All this experience helped me to put into perspective my critical analysis of CPH-MPA. Additionally, in order to fulfil the requirements for International PhD I also spent 3 months working with Tim Gray, an expert in governance theory, at the University of Newcastle, allowing be to build upon my theoretical knowledge of marine governance theory and critically develop my research, analysis and writing skills.

1.5.3.3 Case study description

Here I provide a detailed description of Cabo de Palos, the MPA, and the main actors involved in, or affected by, the MPA. (A comparative analysis of CPH-MPA and Cabo de Gata MPA has also been produced and is currently under review for a Marine Policy Special Issue).

1.5.3.3.1 Cabo de Palos

Cabo de Palos is a small-scale fishing village in the Region of Murcia, SE Spain, founded in the 1800s (Fig. 1.3). The origin of the village is historically linked to the fishing industry. Until the
1960s, the village had no electricity or running water. However, from 1960s onwards, economic growth changed this with the development of tourism. Today the village has an all-year round population of ~1200, though seasonal fluctuations change this figure significantly, and development and the construction of new ‘holiday’ accommodation is increasing. The village is surrounded by a heavily developed tourist area to the north (La Manga and Mar Menor) and an industrial area to the south (Escombreras). The per capita income in 2013 (the time of study) for the region of Murcia was 20% lower than the national average (INE, 2015). The region has suffered from the effects of the economic crisis, with a negative regional annual GDP average growth rate (-1.95%) between 2008-2013 (INE, 2015). Its economy is dominated by the services sector. Agriculture and fisheries contribute only a small proportion of GDP, a pattern that is reflected in all Spanish regions (INE, 2015). However, Murcia stands out in the national context due to its specialisation in the primary sector: in terms of Gross Value Added (GVA), the weight of the primary sector is higher than the national average (4% vs. 2.6% respectively) (INE, 2015). Its coastline still supports a number of fishing communities, one of which is Cabo de Palos.

Considered a biogeographic frontier, the coast of Cabo de Palos is influenced by the Atlantic
Sea as well as the Mediterranean Sea (Rossi et al., 2014). This influence, along with the unique geomorphology of it being a narrow continental shelf formed by a series of sea hills and islets, has created a biodiversity hotspot (Calvín-Calvo et al., 1998). Key habitat types include rocky reefs and extensive Posidonia oceanica seagrass beds, macroalgae in photophilic shallower areas and coralligenous assemblages in sciaphilic deeper areas. Furthermore, the MPA provides protection to several commercially important species, including groupers (Epinephelus spp.), common dentex (Dentex dentex), zebra seabream (Diplodus cervinus), scorpionfish (Scorpaena spp.), brown meagre (Sciaena umbra), and barracuda (Sphyraena sp.). As a biogeographical limit, the area is of great interest for observing shifts in species' distributional ranges and other indicators of climate change in the marine realm.

1.5.3.3.2 Cabo de Palos MPA

The CPH-MPA (Fig. 1.4), which is located at 37°39N, 0°26W, covering 19km², was established in 1995 by the Spanish government. It is managed jointly at national level by the National Ministry of Agriculture, Food and Environment and at regional level by the Council of Agriculture and Water of the Region of Murcia. These two institutions are collectively referred to as ‘the administration’ or ‘management’ throughout this thesis. A formal framework agreement outlined the collaboration and shared management responsibility of each body with regard to CPH-MPA, with the aim of fostering cooperation to achieve maximum management effectiveness. For example, the two administrations are jointly responsible for protecting the marine environment and regenerating commercially valuable fish stocks, providing and maintaining a reserve office, and ensuring monitoring, research, information and outreach. The national administration has a duty to provide beaconing, signalling, and a surveillance vessel, while the regional ministry has to contribute an additional surveillance vessel. This collaboration is overseen by a formal monitoring committee, which includes representatives from both the national and regional ministries, which (in theory) meets annually to review progress. An ad hoc advisory board, which supports the management of the MPA, is composed of representatives from the administration, research institutions, municipalities, environmental organisations, the fisheries sector (i.e. cofradía representatives, trade union representatives, and recreational fishing), relevant marine business organisations, and a representative of the federation of underwater activities in the region of Murcia. The objectives of the MPA are formally described in its official terms of reference as the 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, and supporting other low-impact activities (for example SCUBA-diving and environmental education) that contribute to economic development in the area (BOE, 2010).

Figure 1.4 CPH-MPA: location, zoning and management responsibility

1.5.3.3 Resource users
The main resource users are artisanal fishers and SCUBA divers. The artisanal fishing fleet is small and like other small-scale fishing fleets in the Mediterranean, has been undergoing gradual decline (Fabio et al., 2016; Gómez et al., 2006). In 1993, there were 14 active vessels; 10 in 2010 when the reserve census was last modified (Esparza, 2010); and six at the time of study. To be included in the reserve census, artisanal vessels must have been operating in the area of the reserve for four years before the enactment of the marine reserve order (BOE, 2010). Essentially the system is a closed census: the licencing system does not permit the transfer of licences between fishers or between vessels. If a boat is deemed unfit for purpose or retires the licence is lost. As the licence belongs to the boat, a fisher can sell his boat with the licence allowing the new owner to fish within the reserve. These six vessels provided employment to 13 full-time fishers, and several part-time employees at the time of study. On one of my most recent trips to Cabo de Palos, the
number of fishers was even lower; the crew of two boats were having to fish together on one boat in order to be economically viable. The boat captains explained to me that no one wants to fish anymore and the younger generation have neither the knowledge nor inclination. The artisanal fishers from CPH-MPA belong to the second largest *cofradía* in the region - Cartagena (54 boats). As in other regions, there is a strong tradition of ‘family fishing’ (Herrera-Racionero et al., 2015); almost 80% of the fleet in the CPH-MPA have familial links, and strong familial links also exist with the patron mayor (who is director of the *cofradía*). Within the reserve, the only fishing gears that are permitted are trammel nets and long line.

Spain is a highly decentralised country, and coastal fisheries management in the country balances the top-down authority of the national and regional governments with the bottom-up organisation of fishermen within *cofradías* (Alegret, 1999; Herrera-Racionero et al., 2015). *Cofradías* are local non-profit corporations with public rights, which represent the interests of the whole fishing sector by acting “as consultative and cooperative bodies for the administration, undertaking economic, administrative and commercial management tasks and with the ability to cooperate in matters of regulating access to the resources and informing over infractions occurring in their territory” (Pascual-Fernández, 1999:71). *Cofradías* as consultative bodies may propose specific regulations to the administration (such as regulations for gears), develop activities of management (such as paperwork for fishers), and also manage the first sale of catches (Pascual-Fernández and la Cruz Modino, 2011). Playing an important role in participatory management systems (Bavinck et al., 2015), *cofradías* have had a complicated history with the national and regional authorities, and the growing significance of other organisations in the fisheries sector, such as owners’ associations and fish merchants’ associations, has resulted in a decline in the bargaining power of *cofradías* to defend fishers’ interests (Alegret, 2000; 1999; Gorostiza and Cerdà, 2016; Pascual-Fernández, 1999).

With regard to SCUBA divers, ever since the creation of CPH-MPA, the SCUBA diving industry has grown steadily, with nine dive centres operating in the village at the time of study. These dive centres provided full-time employment to 38-40 ‘permanent’ employees at the time of study, a number increasing during the peak season. Since the SCUBA diving industry is relatively new, unlike the fishing industry, it does not have a well-recognised representative organisation. Regulations apply to the dive industry, including quotas, divers per boat, boats per buoy, distance from fishing nets, distance from coast, and good dive practice. The quota
differs between internal and external waters and between seasons: in peak seasons, the maximum daily quota at the time of study was 100 dives (75 in internal waters and 25 in external). In the years before this study, the quota was exceeded frequently, with records showing counts of 300-400 dives per day in peak seasons. None of the owners of the dive operations or employees are originally from the community: 55% of owners and 53% of employees interviewed were from other regions in Spain, and 11% and 8% (respectively) were from other countries. Being ‘outsiders’ has several potentially important consequences on: perceptions of/and experience with biodiversity conservation; for cultural and social relations with others in the community (social capital (SC)) and also with the local environment; and levels of concern for the local environment (Dimech et al., 2009; M. Silva and Lopes, 2015). In 2014, following my field research the dive quota was negotiated and modified. During the negotiations, the regional ministry proposed 250 divers, while fishers proposed 180, and dive centres proposed 420. The final quota for internal waters was set at 300 immersions per day in peak season, reducing the actual immersion rate by 15% (BORM, 2014; García-Charton, 2016). An additional dive buoy has been installed, a dive fee of €3 per person has been introduced, and other regulations such as the number of divers per boat and boats per buoy are in place to reduce excessive diving (BORM, 2014; García-Charton, 2016).

1.6 RESEARCH TECHNIQUES

1.6.1 RESEARCH ASSISTANCE

Volunteer research assistants played a critical role in the data collection for my thesis. The research assistants who assisted me during the main period of fieldwork were recently graduated Masters students who had specialized in marine sciences. Volunteers who later assisted me in carrying out interviews with the wider community and conducting the validation meeting in 2014, were Masters students from the School of Applied Economics, for one of whom I had the role of second supervisor during her research project. All assistants were trained in interview techniques prior to fieldwork. I personally had experience with social research techniques following my Masters course and dissertation (Hogg et al., 2012), and later having been trained by, and working for, Newcastle University as part of their research team for the FORCE project (http://force-project.eu) in the Caribbean. I was also second supervisor to an undergraduate student, who collected data in Cabo de Gata MPA. Although I had a basic level of Spanish language skills in 2013 when I began data collection, that level was not high enough to conduct interviews on my own, so I
was reliant upon research assistants throughout the data collection process. To reduce interviewer fatigue, the decision was made to conduct all interviews without ‘on the spot’ translation which would have been for my benefit, and so I missed some of the details of the interviews, and therefore some opportunities to ask probing questions. During the main fieldwork phase, four assistants and myself lived and worked in Cabo de Palos completing interviews in pairs to minimize any interviewer bias. One interviewer would read the questions, while the second one recorded the answers. The second interviewer would also intercept to ask additional questions when appropriate. My role during interviews was to read out the questions, and ask additional questions when possible. All interviews were recorded on a Dictaphone where permission was granted. Interviews were transcribed verbatim, whilst we were in the field. This allowed me to cross check queries that arose with the respondents, and ask additional questions where I felt there was a gap. At the end of each day we debriefed and discussed issues of interest that had arisen in the interviews. These same volunteers continued to accompany me when required to conduct KI and SNA interviews throughout the country and region. At a later stage in early 2014, two additional research assistants assisted me to conduct interviews with community members, following the same standards, protocols and interview practice as before.

All three, community meetings that were conducted also required a team of volunteer assistants. Given the proficiency in language required to hold and manage a community meeting, I was not able to lead them myself. My supervisors facilitated all these meetings, the final one in association with a team from Columbares (www.columbares.org). The original team of volunteers helped in these meetings, with additional help with note taking by additional Masters students. My role was to organize the event, prepare materials and during the meeting to ensure that facilitators had the materials required, that the meetings ran smoothly and on time, and that all attendees were being heard and taking part.

The transcribed interviews and focus group notes were sent to a professional translator. I recognize that translating typical language of resource users, particularly fishers, and local colloquialisms into English has its limitations, however, using the same translator throughout the project minimised bias and efforts were made to maintain literal expressions to ensure speech could be analysed thoroughly.

1.6.2 SELECTION OF INTERVIEWEES

Interviewees were selected using purposive and snowball sampling (Bryman, 2012; Bunce et al., 2000; Creswell, 2013; Teddlie and Tashakkori, 2009). Given the small number of fishers,
all active and recently retired fishers identified were targeted, and interviews with them took place in locations convenient and at times suited to them (Cinner and McClanahan, 2006). We found morning, once the fishers had returned from sea and were repairing nets for the next day, was the most appropriate time. For individuals working within the SCUBA dive industry, we targeted full-time employees, to ensure that these individuals had sufficient knowledge of the MPA in order to provide informed answers. The number of employees within the dive centres increases seasonally to accommodate the high influx of divers in the peak season, and since data collection took place during the peak season, dive centre employees had limited time available for interviews. In order to interview full-time employees, we found it most convenient for respondents to complete interviews either very early in the morning or late in the evening as they finished work for the day. On several occasions we accompanied different employees on trips to sea in order to conduct interviews whilst clients were diving.

The population of Cabo de Palos fluctuates significantly throughout the year following the patterns of both national tourism, which increases the population during summer months, and foreign tourism, which is more popular in winter months. Satellite images and census material were used to map the village, and houses that were declared as full-time residency were targeted as opposed to holiday accommodation or second homes. Community respondents were selected randomly from the community map selecting every nth house (Bunce et al., 2000; Turner et al., 2014a). Although resource and logistical constraints limited the number of interviews conducted with community members to 4% of the total adult population, the survey design ensured that rich and detailed data were collected, allowing meaningful themes and useful interpretations to be developed with a comparatively low number of qualitative interviews (Mason, 2010).

1.6.3 MANAGING RESPONDENTS’ EXPECTATIONS

All respondents were willing to participate in the survey for no reward other than being allowed to voice their opinions. Some respondents however, were familiar with previous students sharing a beer socially with them. In other projects that I have worked on I have encountered situations where previous researchers had paid respondents a fee per interview, or offered them a chance of winning a prize or being rewarded with other material goods in return for participation. Paying or rewarding respondents for participating raises some ethical questions and is likely to impact the results obtained. In order to avoid such issues we did not offer payment of any kind and tried to avoid situations of conducting
interviews in bars or restaurants where we might be expected to pay for the respondent’s drinks in exchange for the interview.

To manage respondents’ expectations about the potential outcomes of my research, they were provided with a flyer that outlined the project and project feedback mechanisms at different stages of the project (APPENDIX II). Before the interviews, and again during feedback meetings, respondents were told that my findings would be incorporated in reports for the MMMPA project, in my thesis, and in publications and reports that could be used to inform management decisions. However, I also stated that I personally did not have any authority over the subsequent use of that information and could not guarantee that it would bring about any changes in management of CPH-MPA or within the community.

1.7 DATA COLLECTION TECHNIQUES

I used five main data collection techniques: social network surveys; individual interviews; KI interviews; observation; community meetings and literature review (see Appendices V, VI, VII, VIII). On social network surveys, SNA was used to map relationships between individuals and organizations, focusing on relations, or ties, between individual actors, and the overall network structure (Wasserman and Faust, 1994). A list of actors that had the potential to participate in CPH-MPA management was generated from a review of the literature, secondary data sources and exploratory interviews and included: government institutions, research institutions, fisher organisations and private organisations (see Appendix IX). Following the methods applied in previous research I adopted a roster technique (Marín and Berkes, 2010; Marín et al., 2012). In the survey, institutions/actor groups were expressed in generic terms e.g. universities, municipality, rather than individualised entities e.g. Universidad de Murcia, Municipality de Cartagena, to ensure that the list was manageable, combating non-response induced by interviewer fatigue. Single or several individuals from each of the institutions/actor groups (n=28 individuals including the KIs) were interviewed using face-face semi-structured interviews. Respondents were asked to respond on behalf of their institution. Where possible, several individuals were interviewed for each actor group, though in most cases, a single individual was put forward as a representative to comment on behalf of an organisation. Despite the EU’s clear importance in the overall governance system, it was decided not to include representatives of the EU, but to concentrate only on institutions that were accessible, where a representative spokesperson could be identified, and had a direct involvement in, or specific knowledge of, CPH-MPA. The survey asked SNA questions designed to determine presence or absence, transfer and flow type ties...
(communication and information exchange), and perceptions of other actors’ levels of cooperation and influence. The relational questions and SNA research techniques were guided by those applied in other studies to answer similar questions customised to suit the research needs of this particular project (Bodin and Prell, 2011; Crona and Bodin, 2006; Marín et al., 2012; Marín and Berkes, 2010; Peterson et al., 2012; Turner et al., 2014b; 2014a). Additional questions were asked to build attribute data such as: government level or type of organisation, organisation purpose and priorities, job responsibilities, and numbers of years the respondent had been in the organisation, and several additional questions from the KI interview were asked to obtain perceptions of, and gauge familiarity with, CPH-MPA. All interviews were recorded where permission was granted, and conducted in pairs. All targeted actors responded, giving a response rate of 100%.

On individual interviews, they were conducted with resource users- 17 fishers (both active and recently retired), 38 employees of the SCUBA diving industry (referred to as divers throughout the thesis), and with 44 community members. The demographics of the local residents (wider community and resource users) yielded a wide range in terms of age, and education level. The majority of participants were within the 45-64 (57%) and 25-44 (34%) age categories. Efforts were made to interview an equal number of males and females within the wider community category: 56% male, 44% female. Within the marine resource use sector there was a clear gender bias associated: 91% male, 9% female. In Cabo de Palos, the fishing sector is characteristically dominated by males, this is a common trend, however in other regions in Spain women play a significant part in fisheries such as in Lira (Perez de Oliveira, 2013). Time and logistical constraints prevented the interviewing of marine resource users partners, however interviewing this minority group could have helped counteract this gender bias and garnered additional insight and alternative perspectives. The 9% females were employees within the dive industry suggesting that in Cabo de Palos the SCUBA industry is also male dominated. The semi-structured interview was divided into subsections covering basic demographics, environmental health and resource use, socio-economic data, MPA management and governance and SC. The aim of the individual interviews was to explore resource users and community members’ perceptions of the MPA, including overall health of the area, their experience with the MPA management process, their perceptions about the effectiveness of the management approaches, historical and current resource use and dependency, and social impacts of the MPA’s implementation. The interviews included a combination of closed and open-ended questions within each section, including some Likert scale rapid response questions used to ascertain attitudes towards
certain topics. The questions used were devised using indicators developed and applied in other case studies to answer similar questions customised to suit the research needs of this particular project and local context (Bunce et al., 2000; Crona and Bodin, 2006; Krishna, 2002; Turner et al., 2014a). The interview was designed to understand personal perceptions of the main resource user groups affected by the MPA regulations, and was later modified slightly, with irrelevant questions omitted when interviews were conducted with community members. Out of the 59 resource users eligible to participate in the survey, 5 refused, giving a response rate of 92%. Prior to completing the fieldwork I conducted a pilot survey in nearby San Pedro-del Pinatar with a representative sub-sample. The results from which were extremely useful in fine-tuning and validating the layout and questions included in the survey. All feedback was considered and necessary changes made in order to improve the overall response rate, and obtain more useful information in order to achieve the projects aims and objectives. The interviews were designed to be fairly brief, taking under 30 minutes to complete. All interviews were recorded where permission was granted, and conducted in pairs. In some cases interviews were much longer, depending on the level of detail provided by the individual respondents.

On KI interviews, they were conducted with individuals from organisations and institutions involved in the MPA governance structure, comprising three government officers, four researchers, two fisheries sector representatives, two SCUBA diving sector representatives and two NGO representatives. Where possible, I interviewed two or three individuals from each organisation/stakeholder group to increase the reliability of the data. The KI interviews followed a semi-structured format asking the same questions in the same order to all respondents, but with additional questions to gather further detail if an answer illuminated an interesting point to be explored, therefore mixing standardised interview techniques with informal conversation techniques. The aim of the KI interviews was to explore their overall perceptions of the MPA, including its environmental health, the extent of participation of particular individuals/organisations in the MPA management process, their perceptions about the effectiveness of the management approaches used, and the relational ties that exist between individuals/organisations. Information regarding power relations between stakeholders was sought by looking at trust between stakeholder groups, collective action, dissemination of information and knowledge, and the additional SNA data yielded from the surveys described above. These interviews took between 1-2 hours depending on the respondent’s availability, and the length of response given to open-ended questions. KIs were asked to indicate whether their answers were personal or institutional. All interviews
were recorded where permission was granted, and conducted by a pair of researchers. All targeted KIs responded, giving a response rate of 100%.

On observation, I used it in two main ways during the research period: as a non-participant observer of interactions between different stakeholders; and as a participant in CPH-MPA management meetings. In the field, my assistants and I kept field diaries of daily encounters with people to contextualise life for the people of Cabo de Palos. During and also following the field work period, when I or one of my assistants visited Cabo de Palos we shared the experiences of that day and I would keep rough notes of conversations and interactions held in informal settings. I have also been a non-participant observer of different meetings held over the research period. As a participant observer, I attended several meetings during which regulations were being revised, along with José Antonio García-Charton and Pedro Noguera- Méndez as an ‘expert’ social scientist, placing me in the category of dominant educated elites. Participants at these meetings included sector representatives, NGO representatives, the administration, government agencies and authorities, and the press. My participation in these meetings was very limited because the Spanish conversation was too rapid for me to follow, and little opportunity was provided to participants to share views. However, it enabled me to observe the other participants, and these observations contribute to my understanding and analysis of the governance system and the role of participation discussed in detail in Chapter 3. I do, however, feel that my attendance at these meetings changed the dynamic between myself and the KIs I had interviewed; the majority being present at the meetings. Some individuals appeared to be more suspicious of my presence; while others declared that I was ‘needed’ as an instrument to bring about change. It is difficult to say whether it was my attendance at these meetings or other factors such as resentment against the University, other associations, or other projects (as discussed below) that led to the mistrust or changed relationships that I detected.

On secondary data, before beginning fieldwork, I conducted a thorough assessment of all relevant secondary data. This literature review indicated how similar studies had been carried out and what potential gaps lay in existing knowledge, which helped me plan the fieldwork phase and aided my identification of the actors involved in CPH-MPA. In addition, I benefitted from close collaboration with the ecology department throughout my research project, particularly with José Antonio García-Charton and his students, who are conducting various research projects in the reserve and hold a wealth of knowledge. The various legislative documents pertaining to Cabo de Palos, have also been important to my research
by outlining the objectives of the MPA, the management structure and committee, and the history of legislative changes since its implementation. I translated these documents for use throughout this research process, and I also accessed online information of governmental conservation, fisheries and tourism policies. In addition, I followed media releases related to the MPA at the time of my study, getting an idea of how the media portrays the MPA or issues related to the MPA: I included the media as a key actor in my SNA actor list. Later in the research process, I visited several important and relevant journalist institutions, in order to collect archival material pertaining to the MPA or issues in the surrounding areas. At this stage my Spanish level was adequate enough to read these with relative ease, and doing so gave me a greater understanding of how the MPA has been portrayed over time, and what problems have been focused on.

Feedback validation meetings (see Appendix V) were used as a complementary qualitative research tool. Three such meetings were held: in 2013, one meeting was held with fishers and one with divers; and in 2014, a meeting was held to which all actors were invited—fishers, divers, researchers, the administration and community members. The first two meetings were held with the two main resource users separately to avoid conflict or respondent dominance (Krueger, 1997), however, following these meetings the attendees expressed interest in what the other groups had to say and were interested in attending a meeting with a wider array of stakeholders including the administration. Feedback validation meetings are a useful research tool to triangulate data collection, as they allow the researcher to collect information from several people in a short space of time, confirm previously collected data, and offer an opportunity to observe and better understand the interactions between individuals. They therefore serve as both an in-depth group interviewing technique and an observational technique (Teddlie and Tashakkori, 2009).

Before carrying out the meetings, I prepared guidelines for moderators and note takers, which outlined the agenda for each meeting, and the roles and responsibilities of each person in the team. Given my limited level of Spanish at the time of holding these meetings, my PhD supervisors, María Semitiel-García, Pedro Noguera-Méndez, were the facilitators responsible for the first two meetings, and we were joined by Carmen Molina, Antonio Frías and Silvia Guadix for the third meeting which was run in association with a local NGO - Columbares. The role of the facilitator is crucial in such meetings, because the information gained is a direct reflection of the facilitator’s ability to manage the discussion and the participants (Krueger, 1997). All facilitators had previous experience of such processes and were familiar with the subject topic. In addition to the facilitators, 4-5 note takers were
present at each meeting. In all meetings, permission to use Dictaphones was obtained, as was permission to take photographs.

1.8 DATA ANALYSIS PROCEDURES

Adopting a mixed methods approach incorporating both quantitative and qualitative social science techniques has meant that different approaches and different types of analysis were required. The stages of analysis of these different approaches are described below, including an explanation of where the analysis has been used in this thesis.

1.8.1 STAGES OF ANALYSIS

Throughout the research period of this thesis, I have undertaken systematic processes to analyse the data. These processes included creating an Access database to manage and organise data from the individual and KI interviews; creating an NVivo database for the qualitative data (including field notes, interview data, feedback meeting data, secondary data); creating Excel adjacency matrices for the SNA data; familiarisation with the data collected; initial coding of qualitative data; preliminary analysis of the SNA data using Ucinet; preliminary analysis for deductive and emergent themes in the qualitative data that could be systematically organised; creation of data summaries; recording of recurring themes within interviews and comparison across interviews and interview type; validation of the data and analysis; revisiting the analyses including cross-checking; and exploration of new themes. These analytical processes are a reflection of how my understanding of the local situation and research needs for the MPA increased over time along with improvement in my data analysis techniques and experience. I have kept an audit trail, documenting my records and data stemming from this study, including all raw data (assigned ID codes to maintain anonymity); write-ups of field notes; summaries of initial findings; unitized information; theoretical notes; methodological notes including an analysis diary to record the steps and decisions taken at each stage of the analysis process; and memos (Bryman, 2012; Creswell, 2013; Onwuegbuzie and Leech, 2006). As this thesis is made up of specific chapters written in the style of papers for publication, not all data collected and analysed is presented in the thesis, although it must be noted that the collection and analysis of this data was necessary for my understanding of the ‘bigger picture’ and allowed me to present my findings with greater accuracy and conviction.

1.8.2 QUANTITATIVE ANALYSIS

Quantitative analysis has been primarily applied to the social network survey data, but also
relevant interview data was subjected to categorising and coding as a way to organise and visualise the data. Categorising these interview data enabled me to create initial summaries of the findings that I could use to reveal potential areas that required more data collection or highlighted areas of interest etc. SNA methods were used to quantitatively assess structural aspects of social cognition (Freeman, 1984; Scott, 2013; Wasserman and Faust, 1994). All the relational data were initially organised into adjacency matrices and analysed using Ucinet (Borgatti et al., 2002) and visualised using Gephi (Bastian et al., 2009). I initially ran basic network metrics within Ucinet to identify network structure and to reveal potential patterns and gather insight from the networks. For example, density and network centralization were calculated to assess overall network cohesion. The preliminary findings of the social network results were discussed and validated through the community meetings and with artisanal fishers in July 2015. As the project developed and my understanding of CPH-MPA grew, I focused greater attention on the networks that had greatest importance/relevance to the research needs of the MPA. I therefore applied additional network measures as described in Chapter 3 to a small subsection of the relational data. Although the relational data does not make-up a large proportion of the thesis, the preliminary analysis of all the network data has contributed substantially to my understanding of the CPH-MPA governance structure.

1.8.3 QUALITATIVE ANALYSIS

The qualitative analysis in this thesis has evolved over the course of the project, and incorporates aspects of thematic and grounded theory. Guided by the research questions and the literature base, thematic analysis provided the key framework for all other analyses and explanations of this study (Ryan and Bernard, 2003). For example, initial themes were chosen for the contribution they made to the conceptual understanding of CPH-MPA. I initially coded the qualitative interview data, feedback meeting material, and field notes to generate themes that reflected my research perspectives. I reviewed the frequency of particular codes i.e. repetition of topics that recurred again and again and were most revealing to my initial research questions. I paid particular attention to the use of metaphors, and similarities and differences in how respondents discussed topics in different ways, and also reflected on ‘missing data’ i.e. responses I would have expected respondents to reveal, but were omitted from their answers (Ryan and Bernard, 2003). I also combined memos with the thematic analysis, which allowed me to discuss the development of themes within the analysis with my supervisors and Sarah Young (Bryman, 2012). Sarah Young joined WP4 of MMMPA as an experienced researcher (ER) for 6 months in 2015. Sarah Young was
fundamental in the data analysis process as she played the role of an external evaluator ensuring that I best managed my own researcher bias, making sure that my analysis process was sound, and that the meanings, interpretations and conclusions were honest and reflective of the truth (Guba and Lincoln, 1989; Onwuegbuzie and Leech, 2006; Shenton, 2004). I then combined initial codes to create new codes and re-evaluated the data under the new codes/themes. This process allowed me to compare the connections between data, concepts and theories and laid the ground for inductive analysis. During this process of thematic analysis I kept in mind questions such as how do you evaluate an emerging theme? Does it make sense? Is the analysis sufficiently interpretative? The actual process of thematic analysis was two-fold: by hand, using paper print outs of all transcripts, and later using the computer programme NVivo. The initial analysis of the data by hand involved identifying key themes that related to theory and my research questions. Using NVivo I coded the data line by line following a grounded theory approach (Bryman, 2012; Glaser and Strauss, 1967). I then compared and contrasted the two approaches, which generated the emergence of new themes/categories, which were revealed to be of particular relevance to CPH-MPA. Transcripts were analysed for both similarities and differences between respondents and across data types. At this stage the coding was cross-checked by Sarah Young and following discussions with her and my supervisors I decided to re-analyse the data to focus on the following concepts and categories: environmental health (attitudes to environment, changes, threats, causes, solutions, attitudes to MPA), participation (attitudes to management, SC, power and influence, governance structure, communication), and trade-offs (winners and losers, conflicts, impacts of MPA on livelihood and well-being, attitudes towards the MPA and other actors). These concepts evolved with the research and analysis process, and reflected the development of my understanding of the specific research needs of the case study site.

1.9 ROBUSTNESS CRITERIA

In this section, I demonstrate how I have fulfilled the criteria of robustness in my use of quantitative and qualitative methods. As I indicated in section 1.4, the criteria for assessing the robustness of quantitative research are twofold – validity and reliability. On validity, I have ensured my use of quantitative methods has met the test of validity by the following procedures: sampling methods in social network research vary widely, but are often purposive, for example snowball sampling is a frequent choice and was adopted in this study. One issue that arises when conducting social network research is boundary
specification (Wasserman and Faust, 1994). In attempt to overcome many of the issues associated with social network research and sampling, prior to data collection I conducted exploratory interviews and used a snowballing technique to create a roster of groups/institutions/organisations that were involved in the management of the MPA. I only included actors who had knowledge of the local setting, therefore excluding potential key actors such as relevant representatives from the EU. By using a closed roster, the absence of a reported link i.e. missing ties, implies the absence of a relationship due to the exhaustive nature of the elicitation method compared to free-call techniques and thus increases our confidence in the findings. The conceptualization of missing ties was of particular importance to this study as it allowed me to focus on structural holes and the constraining nature of a network that was particularly relevant when examining information flows and communication (Burt, 2004). Another means of ensuring validity and reliability is response rate. Great efforts were made to ensure that interviews were conducted with at least one representative from each organisation on the list, which ensured that the network was complete and where possible, to increase reliability, more than one individual was interviewed per group/institution (response rate was 100%). The survey technique applied provides a snapshot of the network structure at a single point in time, as all SNA surveys were conducted within a short time frame. This approach is appropriate to measure the relatively stable links that exist for example in a governance system, however, it must be acknowledged that relationships are ‘fluid’ and can change over time, or following particular events, so different results may be yielded from the same survey repeated at a later date. It is clear for social network research that careful consideration must be given to the validity of both our data as measures of the networks of interest and also to the research and analysis techniques applied. On reliability, I have ensured that my use of quantitative methods has met the test of reliability by the following procedures: by examining similar topics to previous researchers (see Marín et al. (2012); Marín and Berkes (2010); Peterson et al. (2012); and Turner et al. (2014a)), the survey that I applied was specifically designed to provide measurements of the theoretical constructs of interest. It must, however, be noted that although SNA is a quantitative technique, the reporting of ties by respondents is still a subjective matter. Although the questions used were well designed and supported by previous research, it is always going to be impossible to record all interactions and relationships between individuals. Moreover, respondents were asked in the questions to report on behalf of their institutions, but informal ties between individuals are just as, if not more, important. Having used questions that explored the strength of relationships
(Granovetter, 1973), I was also able to gauge the reliability in respondents answers which adds to my confidence in the data collected. The social network data and my interpretation of it was checked with respondents on several occasions, ensuring the conclusions drawn from the data were accurate.

As I indicated in section 1.5, the criteria for assessing the robustness of qualitative research are fourfold - credibility; transferability; dependability; and confirmability. I have met the test of credibility by the following means: in this study efforts have been made to triangulate data and methods; validate findings; and my presence in the community over the last four years has allowed for prolonged engagement. By submitting the research findings on several occasions during the analysis process to respondents to ensure that I had understood their social world and the context of the management system under investigation (Bryman, 2012; Onwuegbuzie and Leech, 2006). Moreover, measures of marine resource management and governance, community support and SC followed the well-regarded techniques applied by Turner et al. (2014a); Krishna (2002); Bunce et al. (2000); Chaigneau and Daw, (2015); and Cinner and McClanahan (2006). Also, during the acquisition of data, I followed good research practice, and tried to maximise credibility by using the same assistants and translator to avoid bias and irregularities (Bryman, 2012). I trained all research assistants who helped me acquire the data and provided them with a detailed guide for conducting interviews and focus groups, in order to reduce variance in interview style and ability of the assistants. I have met the test of transferability by the following means: I provide readers with detailed information of CPH-MPA and its context, the sampling strategy and methods applied, and verbatim descriptions of participants accounts which then allows readers to decide whether the findings of this thesis can justifiably be applied to another setting (Lincoln and Guba, 1985). By making use of previous research and existing theories I have been able to discuss the findings of this thesis with resonance, ensuring that the context and findings can be relevant to others. I have met the test of dependability by the following means: I provide sufficient information to allow another researcher to complete the same study. Having analysed the data, re-visited the analysis and re-analysed the data on several occasions throughout the projects life, I have confidence in the reliability of both the data and my interpretation of the data because I have consistently generated the same results upon re-examination. Furthermore, through the development of my own understanding of the context of CPH-MPA as a result of intensive and long-term familiarity with the reserve, I developed a sense of the veracity of the information and dependability of the source of that information. Finally, I have met the test of confirmability by the following means: my use of
many rich quotes throughout this thesis ensures that the data and findings from this thesis are presented transparently and provides overwhelming evidence for the findings and conclusions that I reach. I have also maintained an audit trail throughout the whole research process, which has allowed me to reflect on the process and my own role and potential influence. I also have confidence in the thematic conclusions that have been drawn from the data, not least because the data were validated in feedback meetings and my coding and interpretation underwent peer-review as it cross-checked by Sarah Young, Tim Gray, and my supervisors. I do not however seek to make generalised claims beyond this case study- I am content to accept the purpose of case study research and restrict myself to the in-depth understanding of the human dimensions of CPH-MPA

1.10 ETHICAL CONSIDERATIONS

This research adhered to the ethical policy of Murcia University, and was approved by the University of Murcia’s ethical commission (see Appendix I). The principles of ethical research include integrity and quality of research, informed and written consent of participants, confidentiality of information, anonymity of respondents, voluntary participation of respondents, and declared impartiality or partiality of the researcher. All participants were provided with a verbal description of the project prior to interview and a flyer that outlined: the aims of the project; how data would be used; how they could access the study results; and contact the research team (see Appendix II). Participants were also provided with project feedback (see Appendices III, IV) at different stages of the research process and were given the opportunity to attend validation focus groups (see Appendix V). In the research, paramount importance was given to information confidentiality and respondent anonymity, and all results have been presented at all times using generic terms such as fisher, diver, etc., not respondents’ names (Bryman, 2012; Creswell, 2013). I paid particular attention to the problem of ensuring anonymity of KI respondents, because otherwise it could have been possible to identify some KIs based on their positions of power within the MPA: KIs are inevitably more easily identifiable than randomly selected households and resource users. I have therefore been very cautious when including positions of key informants in reporting of the data.

1.11 METHODOLOGICAL PROBLEMS

During the course of this research, I encountered several methodological issues that have inevitably impacted on the data collection and analysis. First and foremost, the community,
particularly the fishing sector have suffered a degree of interview fatigue. The University of Murcia among other institutions regularly sends students to engage with fishers to collect catch data, and perform historical catch data interviews. I received several complaints from respondents that they were being asked for the same information each year, without receiving information as to why the data was being collected, being given feedback on the findings, or seeing any direct development as a result of their participation. Several respondents complained that each year researchers would change, or researchers would ‘come take what they want and would never be seen again’. Second, resource users often held negative perceptions towards the University of Murcia because of the University’s role within the MPA. The University has had the responsibility for monitoring the reserve since its implementation, and resource users often voiced negative views of the reports provided by the University. I was concerned, therefore, that, given my association with the University, I too would be viewed with some hostility. However, I feel that the efforts I made to follow ethical research procedures, provide feedback and validation on several occasions, and build trust within the community has ensured that my research has not been jeopardised, and in fact has gone some way to bridge relations between resource users and the University. Since the start of my project the University has tried to have greater interaction with the local community, presenting and providing information on current and future research, reporting more regularly within the community on findings, and exploring opportunities for participatory research. As a way to further manage expectations, I have said repeatedly to respondents, that my role in the University is temporary. However, I am conscious of the negative impact that the turnover of students has when building up trust between the University and the community. 

The year following my data collection, two projects with differing objectives were carried out in Cabo de Palos. First, PescaSos was an initiative of the Association Columbares financed by the European Fisheries Fund and the Biodiversity Foundation of the Ministry of Agriculture, Food and Environment. The aim of the project was to increase the awareness of the value of artisanal fishing, promote the development of fishing tourism, educate the local population and tourists and contribute to scientific knowledge- http://www.columbares.org/pescasos/. Second, Pescares was a project developed by Alfa Ocean also funded by the European Fisheries Fund. The aim of this project was to develop training and awareness of different actors involved in the reserve, with particular focus on the development of good practice guidelines for divers and dive operators. The University worked closely with PescaSos in an attempt to reduce interview fatigue, since much of the
data required by the project had already been collected by me. However, for reasons still unclear, the University were not permitted to participate in Pescares. During the time that these projects were running in Cabo de Palos, relations between the University, myself included, and a sector representative became strained. Although it was never clear why the relationship changed, it gave me an insight into how easily trust can be broken, and how the role of research and/or intervention initiatives may not always receive positive support from prospective participants or have a positive effect (Ostrom and Ahn, 2010).

1.12 PERSONAL REFLECTIONS ON MY RESEARCH JOURNEY

Throughout the course of this research and involvement in the MMMPA project, I have not only gained skills as a researcher, but also skills as a supervisor and an appreciation for alternative ways of approaching a problem to find a solution. I have learned a great deal as to how to manage relationships, particularly with a diverse range of people who have participated or been involved in my research and within the MMMPA project. For this, I have to thank supervisors, respondents, peers, assistants and course trainers, who have all had a substantial influence on my abilities as a researcher. Throughout my time in Newcastle University; with MMMPA and during the course of this research in Spain I have also learned how to manage multiple projects, how to delegate responsibilities and how to offer support to the students I co-supervised. The data collection techniques and analytical methods used were mostly problem-focused, designed and used to look at where the problems lie in CPH-MPA and how they have developed from different perspectives. However, the validation meetings and participatory activities, plus my involvement in several management meetings as an ‘expert’ have added a more research-in-action based approach to the overall project. Although it was first necessary to identify the complex issues facing CPH-MPA, I have also been able to report upon solutions proposed by the different actors, and have used this knowledge to help inform management decisions related to regulation changes. The next stage of the process would be to conduct a more in-depth solution-based enquiry to assess the prospects for different management models that could be used to improve the situation of CPH-MPA.
CHAPTER 2  LITERATURE REVIEW

MARINE PROTECTED AREA GOVERNANCE: PROSPECTS FOR CO-MANAGEMENT IN THE EUROPEAN MEDITERRANEAN

MARINE PROTECTED AREA GOVERNANCE: PROSPECTS FOR CO-MANAGEMENT IN THE EUROPEAN MEDITERRANEAN

ABSTRACT

Marine Protected Areas (MPAs) are much criticised for their top-down mode of governance. Co-management can help overcome many of the deficiencies of top-down management processes, yet, despite the well-known benefits of co-management, it is still the exception rather than the rule in the Mediterranean. This paper provides a review of co-management in MPAs and its future prospects in the European Mediterranean. The role of social capital (SC) in co-management is discussed and ways to strengthen SC and participation to attain effective co-management are proposed.

Keywords: marine protected areas; co-management; stakeholder participation, social capital

2.1 INTRODUCTION

Marine protected areas (MPAs) are today the most widely promoted tool and policy solution to address the well-documented problems of marine habitat degradation and overfishing (Caveen et al., 2013). However, marine environments are highly complex and MPAs are found to vary significantly in their effectiveness, generating considerable controversy over how they should be governed (Bown et al., 2013b; Chuenpagdee et al., 2013; Jentoft et al., 2007; Jones et al., 2011a).

Conventional forms of governance take a mostly ‘top-down’ approach i.e. management decisions are made by national or regional authorities or other local institutions. Such approaches are limited in their effectiveness since they are characterised by centralisation, bureaucracy, scientific elitism and an ecological sense of public responsibility (Gray, 2005). The failure of top-down modes of governance to sustainably manage marine resources has called for alternative approaches to be sought. Co-management, which refers to the sharing of management responsibility and authority between the state and stakeholders, has become one of the most advocated alternatives (Berkes et al., 1991; Caveen et al., 2013). Co-management is seen as a way to overcome many of the failings of conventional modes of governance as it increases the legitimacy, transparency and accountability of resource management through increased stakeholder participation (SP) (Jentoft, 2003; WDPA, 2012). However, co-management is also a complex and dynamic process requiring a significant level
of monitoring.

One way of considering the nature and effectiveness of participatory approaches is through the concept of ‘social capital’ (SC). Definitions of SC vary but most describe connections between actors and the shared values and other resources that arise from those networks. SC offers a framework to increase participation and encourage co-management.

This review of co-management in Mediterranean MPAs is structured as follows: section 2.2 explains the concept of co-management, and section 2.3 explores the possibility to move from a top-down mode of governance to co-management in the European Mediterranean. The paper uses examples from fisheries management to illustrate the potential for co-management in MPAs, which strongly reflects the existing literature. However, much of the discussion is also applicable to the management of other natural resources. In section 2.4 the role of SC in co-management is discussed and ways to strengthen and/or harness SC are proposed. In the final discussion section 2.5, several recommendations are made to encourage the shift to co-management in the Mediterranean.

2.2 MARINE PROTECTED AREA GOVERNANCE: CO-MANAGEMENT

Co-management practices applied to natural resources have existed for centuries (Bown et al., 2013b; Chuenpagdee et al., 2013; Jentoft et al., 2007; Jones et al., 2011a), yet the concept only originated and started gaining popularity in the literature in the 1970s (Gray, 2005; Pinkerton, 2003). The emergence of co-management can be deemed as a response to three conceptual shifts in ecology and applied ecology thinking: a switch from reductionism to a systems view of the world, a shift to include humans in the ecosystem, and acknowledgment of the need to move from an expert-based approach to participatory modes of conservation and management (Berkes, 2004; Bradshaw and Bekoff, 2001; Ludwig, 2001). As a consequence, SP has become ubiquitous, the literature on co-management is rich, and there is abundant evidence on the introduction of co-management worldwide (Pomeroy et al., 2004a; Wilson, 2003a).

Jentoft (2003:3) defines co-management as a: “collaborative and participatory process of regulatory decision-making between representatives of user-groups, government agencies, research institutions, and other stakeholders.” Co-management as a term is widely used and encompasses several possible arrangements that vary in terms of the degree of responsibility and consequent balance of power between top-down and bottom-up elements (Bown et al., 2013b; FAO, 2012; Pomeroy et al., 2004a). The complexity of these
arrangements reveals the lack of a single clear blueprint for co-management (Pomeroy, 2003).

Co-management advocates refer to both ethical and practical reasons for increased participation in resource management (Wilson, 2003a). Those focusing on the ethical arguments point to the need for people to have the right to a say in decisions that may deeply affect their lives and livelihoods (Wilson, 2003a); and that participation is a tool for empowerment (Jentoft, 2005; McConney et al., 2003) and a method to reinforce self-esteem (Phillipson, 2002). Practical reasons put forward for participation in both decision-making and investments are that it strengthens resource users’ commitments to outcomes (Wilson, 2003a); enhances the legitimacy of management (Beem, 2007; Jentoft et al., 1998); promotes transparency and accountability in decision-making (Kooiman, 2003); increases SC (Jentoft, 2000a; Ostrom and Ahn, 2001); encourages greater compliance with rules (Jentoft et al., 1998); provides a forum for conflict management (Ostrom, 1990); elicits a more extensive knowledge base for decisions (Kendrick and Manseau, 2008; Perez de Oliveira, 2013); and fosters a greater awareness of environmental issues (McConney et al., 2003; Perez de Oliveira, 2013).

However, some authors point out that co-management cannot solve all marine resource management problems, rather it should be seen as a process within which solutions are likely to emerge (Carlsson and Berkes, 2005; Jentoft, 1989; Pomeroy and Rivera-Guieb, 2006). Furthermore, given the difficulty in defining co-management there is an inherent risk that the term can be used to label processes and management strategies which do not include the fundamental aspects of co-management, which are partnership and power sharing (Jentoft, 2003). Pinkerton (2003:61) argues that over the years the term co-management has become so broad that: “it risks losing important aspects of its original thrust.” The use of broad categorisations raises questions as to whether all forms of user participation entail co-management. For participation to be authentic it requires the state (and other outside agents) to allow stakeholders the dignity of true partnership (Jentoft, 2003). Hara and Nielsen (2003:89) state: “unless users are genuinely allowed and empowered to participate in the setting of management objectives on equal terms with government, co-management cannot really be considered as a serious institutional innovation.” For co-management to be real, power sharing is essential. Jentoft (1989) therefore suggests that co-management requires an element of legal recognition to ensure power sharing through respect for the boundaries of responsibility within co-management.
arrangements. However, this view contrasts with that of other authors who posit that co-management represents a less legalistic approach to resource governance (Dubbink and Van Vliet, 1996).

Perhaps the most challenging and contentious design principle for co-management, relates to the issue of representation: who should be eligible to participate, and the degree to which those who claim to have a stake in the resource should have a say in how it is managed (Jentoft, 2000a; Mikalsen and Jentoft, 2008; Phillipson, 2002). A stakeholder is defined as: “any individual, group, organization or sector in society that has a clearly identifiable interest in the outcome of a policy or decision-making process” (FAO, 1999). On this definition, the list of stakeholders could be substantial, but given the need for efficient decision-making, participation must be limited (Mikalsen and Jentoft, 2008). Yet not all stakeholders have an equal stake and consequently, some may have more to lose than others when MPAs are implemented (Chuenpagdee et al., 2013). In fisheries management it is generally accepted that user groups (fishers, fish processors, traders) should be involved in management. The controversial issue put forward by several authors is who else should participate (Jentoft, 2005; 2000a; Mikalsen and Jentoft, 2008; Phillipson, 2002). In reality, who participates is often a matter of power. Those whose lives are most dependent on the resources are often the stakeholders with the least power and therefore marginalised (Jentoft, 2003). This inequity must be addressed with the design of truly democratic co-management systems. The framework proposed by Luyet et al. (2012) for SP, goes some way to address this issue by including a step for defining a different degree of involvement for each stakeholder identified. However, the process is not standardised and is extremely subjective, and more democratic and systematic methods must be designed (Luyet et al., 2012). Furthermore, participation has been criticised for failing to recognise the complexities found in interactions between communities and the state (Jentoft, 2003). States and communities are not homogenous units and often multiple local interests and multiple governance agencies are at play (Carlsson and Berkes, 2005). Communities are often characterized by social fissures, conflicts, inequities, and power-differentials which can be reinforced by co-management (Jentoft, 2000a). There is also a suggestion that authentic participation is rarely achieved, but rather participatory mechanisms are manipulated to ensure support for projects, policies and management plans (Henkel and Stirrat, 2001). However, despite these problems, participatory processes and co-management in particular still holds much promise when compared to other governance systems (Jentoft, 2003).
Evidence for co-management success is seen by Bown et al. (2013b) to be a matter of controversy due to the ambiguity and sparseness of relevant information (Bown et al., 2013b; Evans et al., 2011; Sen and Raakjaer Nielsen, 1996). This could be blamed on the broad definition and ad-hoc use of the term co-management. For example, Pretty and D. Smith (2004:636) indicate the term has: “been used to justify the extension of control of the state as well as to build local capacity and self-reliance; it has been used to justify external decisions as well as to devolve power and decision making away from external agencies.” Yet there are several authors who claim that co-management has had positive socio-economic and ecological effects (Levin, 2005; Perez de Oliveira, 2013; Pomeroy et al., 2004a).

According to the literature, the coincidence of several factors helps stimulate a shift towards co-management and determines its success. For example, a resource crisis often acts as a catalyst for communities to engage in co-management (Ostrom, 1990; Perez de Oliveira, 2013; Pomeroy, 2003). An external agent or policy entrepreneur is reported by many to help expedite the co-management process, as well as the need for local leaders to set an example and provide the energy and direction needed (Beem, 2007; Evans et al., 2015; McConney et al., 2003; Perez de Oliveira, 2013; Pomeroy et al., 2001). A willingness to try new approaches is also likely to be a key determinant of success since a shift to co-management often requires a change in the mind-set of stakeholders and government officials (Phillipson, 2002; Pomeroy et al., 2004a). Although this may take some time, such changes are necessary to generate the political will and stakeholder commitment needed to support the co-management process (Pomeroy and Rivera-Guieb, 2006), both initially and in the long-term (Plummer and Fennell, 2007). One of the major lessons learned from the early community-based projects is that the role of the government is crucial to address external disturbances, e.g. market failures, that might otherwise hinder a successful co-management approach. This leads many to claim that co-management should have a legislative basis (Christie et al., 2002; Jentoft, 1989; Jones et al., 2011b; Pomeroy et al., 2004a; Walker et al., 2002; Wilson et al., 2006). Others emphasise the need for long term financial support for planning, implementation, coordination, monitoring and enforcement (Perez de Oliveira, 2013; Pomeroy et al., 2004b; 2001). Consequently, co-management can take a decade or longer to become established (Beem, 2007; Kooiman, 2003; McConney et al., 2003; Pomeroy and Berkes, 1997; Pomeroy and Rivera-Guieb, 2006). Furthermore, it cannot be considered suitable for every situation (Jentoft, 2003; McConney et al., 2003), and where many of the above factors are not present, co-management may not be feasible (Beem, 2007). In the
following section I explore the possibility for a move away from top-down management to co-management in Mediterranean MPAs.

2.3 THE POSSIBILITY FOR DECENTRALISED GOVERNANCE OF MPAS IN THE EUROPEAN MEDITERRANEAN

2.3.1 MARINE RESOURCE MANAGEMENT AND PROTECTION IN THE EUROPEAN MEDITERRANEAN

In general, the protection of natural resources in the European Mediterranean is implemented within the highly centralized and state-controlled EU legal framework (Arceo et al., 2013). The legal tools under EU law, namely directives and regulations, that are of particular interest to resource management in this region, include: the Convention of Biological Diversity (CBD – Barcelona Convention), the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol, 1995); the Marine Strategy Framework Directive (MSFD, 2008/56/EC); the Natura 2000 network, issued from the Habitats (92/43/EEC) and Bird (79/409/EEC) Directives; the Common Fisheries Policy (CFP); and the Integrated Coastal Zone Management Directive (ICZM Memo/13/210) (Arceo et al., 2013; Gray and Hatchard, 2003; Qiu and Jones, 2013).

The CFP was created in 1983, and is often criticized for being too top-down, unilateral and remote, with fishers expressing particular dissatisfaction (Arceo et al., 2013; Gray and Hatchard, 2003). Despite a major reform to the CFP in 2002 (Council Regulation (EC) No 2371/2002), no significant changes were made to its structure, and the promise for increased participation (art.2.c) has been rhetorical rather than real (Gray and Hatchard, 2003). Proposed changes to the CFP in 2013, promised greater decentralisation through regionalization. However, regionalization does not equal co-management, because although decisions are made at a lower bureaucratic level this does not ensure that stakeholders are or will be included (Symes, 2009). The results of the 2013 CFP reform are yet to be seen.

The implementation of the ‘Birds’ and ‘Habitats’ Directives have made some progress in biodiversity conservation and spurred the development of an extensive network of terrestrial, coastal and marine-protected areas (PAs), commonly known as the Natura 2000 network (including “Natura 2000 at sea” developed since 2010). The MSFD represents an ecosystem-based approach to marine management and governance, aiming at achieving ‘good environmental status’. The MSFD furthers the commitment to designate a network of MPAs across Europe, as Member States are required to implement spatial protection
measures that contribute to ‘coherent and representative networks of marine protected areas (MPAs)’ (Article 13 Programme of Measures) (Qiu and Jones, 2013). The most recent proposal (ICZM) takes the form of a draft directive that aims to establish a framework for maritime spatial planning and integrated coastal management in EU member states. Its objective is to promote sustainable marine and coastal development and sustainable use of marine resources. It is suggested that the ICZM directive will further aid the implementation of the already existing marine directives (EU, 2013). However, as directives, their implementation and success is reliant upon the legal instruments (e.g. laws, decrees, orders) of the Member States. The current management of the Natura 2000 network is questionable (Gabrié et al., 2012) and the continued failure to adequately address resource management, sustainability issues, and fishers’ dissatisfaction, with current management strategies in Europe (Gray and Hatchard, 2003), suggests that other modes of governance might be more appropriate for successful fisheries and biodiversity management in the region (Arceo et al., 2013; Christie et al., 2002).

2.3.2 MARINE PROTECTED AREA CO-MANAGEMENT: A VIABLE OPTION IN THE EUROPEAN MEDITERRANEAN

MPAs are promoted as a key ecosystem and fisheries management tool, yet their history in the Mediterranean is fairly recent (Badalamenti et al., 2000). In the Mediterranean, the term MPA covers a wide variety of arrangements that can differ as much in their oceanographic and ecological contexts as they do in practical use (Francour et al., 2001). In 2012, 668 MPAs were recorded in the Mediterranean, of which 23 have been established since 2008. However, in a study of 80 existing MPAs, only half had a management plan and 75% of the Natura 2000 sites had no identified full time manager (Gabrié et al., 2012). These findings question the legitimacy of assigning areas as protected with no management plan, because so called ‘paper parks’, present a high risk of failure and redundancy and stakeholders can quickly lose faith in the MPA and may stop supporting this management strategy (Chuenpagdee et al., 2013). Whether or not they had management plans, Mediterranean reserves are in the main implemented by top-governance systems, which have had mixed success. Where the MPA strategy fails to deliver what is promised, communities’ trust in management authorities, scientists and NGOs, may be seriously damaged. Developing co-management strategies in the Mediterranean could be a good approach to address the deficit in management plans; increase the legitimacy of management (Beem, 2007; Jentoft, 2003); increase transparency and accountability (Kooiman, 2003); and crucially, empower resource users through participation (Jentoft, 2005).
At present the management of MPAs in the European Mediterranean is generally conducted in a top-down manner (Mikalsen and Jentoft, 2008). For example, in France and Spain, decisions regarding the establishment of MPAs (and fisheries regulations, in general) are made by the national and regional government and comply with EU-level directives (Badalamenti et al., 2000; Mikalsen and Jentoft, 2008). Management can also include devolved arrangements with regional authorities or other local institutions (i.e. councils and provinces), as is the case with some MPAs in Italy and Spain (Arceo et al., 2013; Badalamenti et al., 2000). There are also a few examples of Mediterranean MPAs that are managed by NGOs e.g. Ses Negres and some Spanish MPAs are managed by a combination of national and regional authorities e.g. Tabarca (Badalamenti et al., 2000). User consultation appears to be the norm in many Mediterranean countries (Gomei and Di Carlo, 2012). In France, for example, management decisions are based on extensive consultations between the state and organisations that represent the majority of French fishermen (Arceo et al., 2013; Francour et al., 2001; Mikalsen and Jentoft, 2008). However, despite consultation being widespread, evidence for real delegation of decision-making power to user groups is virtually non-existent (Arceo et al., 2013; Mikalsen and Jentoft, 2008). Co-management therefore seems to be the exception rather than the rule in this region (Arceo et al., 2013; Mikalsen and Jentoft, 2008).

A principal problem for MPA management reported in the European Mediterranean arises from conflicts over regulations and restrictions. It is reported that any changes made to regulations are: “almost always opposed by small-scale fishermen” (Francour et al., 2001:163). In response, Francour et al. (2001) propose that conflict management within any future MPA should involve preliminary consultations with all users of the area to be protected. In many instances, conflicts triggered by management are cultural rather than interest driven (Jentoft, 2003), and a pre-implementation phase of MPA development is crucial to ensuring its acceptance. However stakeholder consultation is generally deemed insufficient and increased efforts are required to encourage authentic participation at every stage of MPA designation to help understand communities’ cultural and social values (Chuenpagdee et al., 2013; Chuenpagdee and Jentoft, 2007; Jentoft, 2003). Given the extensive list of benefits associated with co-management, such arrangements could go some way to resolving many of the challenges reported for MPA management in the Mediterranean (Francour et al., 2001), for instance through enabling a smoother dispute settlement process (Nursey-Bray and Rist, 2009), ensuring greater compliance with the rules, and reducing the need for extensive surveillance (Arthur, 2005).
Examples from outside of the region (Christie et al., 2002; Pomeroy et al., 2004a) indicate that the involvement of user groups, stakeholders and communities in MPA planning and implementation can help improve and sustain good management practices. Torre Guaceto (Italy, Adriatic Sea) provides an example of successful co-management that demonstrates a strong collaboration between fishermen, MPA staff and scientists, the results of which have been improved resource use and higher catches recorded within the MPA (Guidetti and Claudet, 2010). For such partnerships to develop, the existence of relevant institutions and organisations have been found to be highly beneficial (Ostrom, 1990). The French and Spanish Mediterranean are interesting in terms of SP because of the existence of specific institutions representing fishing communities e.g. prud’homies and cofradías.

The prud’homies in the French Mediterranean have existed since the 14th century, and enforce EU and national laws as well as specific regulations set out by the institutions themselves. As representative bodies covering clearly defined areas, they have the right to issue sanctions to their own members, but not to members of other prud’homies. However, the ability to apply local regulations is often undermined by the hierarchical framework and complex legal system within which the prud’homies exist (Arceo et al., 2013), weakening their potential role as institutions within a co-management arrangement.

The Spanish fishing guilds – cofradías- are recognized by law (Arceo et al., 2013; Perez de Oliveira, 2013) and therefore offer a more assured form of decentralisation in fisheries and MPA management. Cofradías are local non-profit corporations with public rights, which represent the interests of the whole fishing sector by acting as consultative and cooperative bodies for the administration, undertaking economic, administrative and commercial management tasks and with the ability to cooperate in matters of regulating access to the resources and informing over infractions occurring in their territory (Jentoft et al., 2012; Pascual-Fernández, 1999). Cofradías as consultative bodies may propose specific regulations to the administration (e.g. regulations for gears), develop activities of management (such as paperwork for fishers) and also manage the first sale of catches (Pascual-Fernández, 1999). In the case of cofradías, certain tasks are delegated to a lower level and users have the potential to participate actively in decision-making, including decisions on MPA design and implementation (Jentoft et al., 2012; Mikalsen and Jentoft, 2008; Perez de Oliveira, 2013).

The existence of institutions such as prud’homies and cofradías in the European Mediterranean should be viewed as a good opportunity to help encourage the shift towards a more decentralised form of governance in this region. Cofradías have already played an
important role in the implementation of MPAs in Spain (Jentoft et al., 2012), for example, La Restinga - Canary Islands (Revenga, 2003), Lira - Galicia (Perez de Oliveira, 2013), and L’Estartit, and Medes Islands - Catalonia (Ballester-Nolla, 2008). Furthermore, the successful move towards co-management in the sand eel fishery in Catalonia, initiated by fishermen and representatives of cofradías and fishermen’s federations, highlights the important role of these institutions and demonstrates that co-management in the Mediterranean is possible (GENCAT, 2013). In France, collaborative working arrangements between the regional authorities and prud’homies, such as Corsica and Port Cros National Park (Guyader et al., 2007), can also be used as case studies to highlight that more bottom-up forms of management are, and can be viable within the European Mediterranean (Arceo et al., 2013).

Notwithstanding the highly centralized structure of the present system, there are several opportunities for moving towards more participative and convergent approaches in the European Mediterranean. Ostrom et al. (1999:278) highlight that institutional diversity is imperative: “and may be as important as biological diversity for our long-term survival.” This emphasises the need to strengthen and modify existing organisations making them more appropriate to co-management, and encourage the creation of other suitable institutions (Arceo et al., 2013; Gomei and Di Carlo, 2012). National policy and institutional reforms will also be required to provide the necessary legislation to make the decentralisation process possible and operational, and to establish functional co-management arrangements between government and stakeholders (Arceo et al., 2013). However, engaging communities in MPA management takes time and requires extensive social preparation and community organization even prior to establishment. It is here where the concept of SC can be useful in identifying interventions that may encourage a shift to co-management.

2.4 THE ROLE OF SC IN MPA CO-MANAGEMENT

2.4.1 THE CONCEPT OF SC

Previous sections have illustrated that authentic participation in natural resource management (NRM) is rare despite the benefits of increased equity, empowerment, commitment and involvement that result from such processes (Cocklin et al., 1998; Gutiérrez et al., 2011; Jentoft et al., 1998; Jones et al., 2011b; NRC, 2001; Perez de Oliveira, 2013). It is therefore essential to understand why authentic participation is so hard to achieve, and what factors hinder the use of participatory processes and therefore restrict co-management. From the literature it is clear that two main factors are highly influential: power and resources. Participation entails sharing information, decision-making and
responsibilities (including capabilities and financial resources), and ultimately leads to the sharing of power. Co-management is therefore not necessarily an easy sell. For example, governments may not want to devolve authority, and resource users may not want to take on more responsibility (Chuenpagdee and Jentoft, 2007). The implementation of participatory processes requires overcoming a strong resistance to change and is therefore not only a technical matter but has important social and psychological dimensions. The concept of SC provides an interdisciplinary framework to assess the causes, consequences and policy complications of SP.

Several different definitions of SC can be found in the literature. Putnam (2002) describes SC as social networks and reciprocal norms based on trust that vary systematically in time and space. For Woolcock (1998), SC refers to norms and networks that facilitate collective action. This means that individuals and institutions can, through their relationships, share information, knowledge, values and material resources, which positively affect results, profits and well-being. Ahn and Ostrom (2008:73) define SC as: “a set of prescriptions, values, and relationships created by individuals in the past that can be drawn on in the present and future to facilitate overcoming social dilemmas.” All these authors agree that SC is a resource emerging from the social network, and actors can use it wisely to achieve individual or collective objectives.

SC can help explain how people with rich social relationships feel more satisfied and achieve better results than those who are more isolated (Cacioppo et al., 2009; Christakis and Fowler, 2008; 2007; Fowler and Christakis, 2008; Krebs, 2000). Research has found that individuals and households with higher SC and thus greater connectedness have improved social and economic well-being (Becker, 1996; Helliwell and Putnam, 1995; Knack, 2001; Knack and Keefer, 1996; La Porta et al., 1996; OECD, 2001; Pretty, 2003; Semitiel-García, 2006; Swain, 1999). At both the community and institutional level the existence of internal and external good quality relationships can enhance efficiency. In economic terms, SC is a resource that along with human capital, physical capital and natural capital, drives development and boosts the efficiency of organizations. Literature on NRM has emphasized the positive role of SC for sustainability, since high SC makes it less likely that community members engage in activities that cause resource and environmental degradation, with positive consequences for sustainability (Dietz et al., 2003; Ostrom, 2009; Pretty, 2003). SC is recognised to be central to participatory forms of resource management as it increases the likelihood of resource users becoming self-organised and having confidence to invest in
collective activities, knowing that others will do so too (Pretty, 2003).

Fig. 2.1 illustrates the three features of SC that are particularly important to sustainable development and co-management: connectedness in networks; common rules, norms and sanctions; and relations of trust (Pretty, 2003). Three types of connectedness have been defined: bonding, bridging and linking (Woolcock, 2001). Bonding capital exists *within* subgroups, whereas bridging exists *between* subgroups (Woolcock, 2001) Linking is an extension of bridging, involving vertical ties between groups at different hierarchical levels (Woolcock, 2001). For example, the actors who are involved in MPAs and their management are socially related through complex cross-scale interactions (Nenadovic and Epstein, 2016). Common rules, norms and sanctions are recognised drivers of human behaviour and ensure that group interests are complementary with those of individuals (Ostrom and Ahn, 2010). Sanctions ensure those who break rules will be appropriately punished and provide the internal morality of a social system (Coleman, 1988; Ostrom and Ahn, 2010). Relations of trust determine the quality of interactions and encourage cooperation as well as reducing transaction costs (Pretty, 2003). These three fundamental features of SC benefit individuals, social groups, institutions and organizations by providing access to resources (e.g. local knowledge, financial resources, information); increasing confidence within the community; facilitating participation; increasing the engagement and involvement of stakeholders in common management; and generating positive psychosocial effects. Evidence suggests that such psychosocial effects can also directly enhance sustainability through reducing conflicts, increasing equity and engendering shared understanding (Fowler and Christakis, 2008; Helliwell, 2008; 2001; Helliwell and Putnam, 2005).

![Figure 2.1 Social capital and its role in co-management and sustainable development](image-url)

Where SC is lacking, it can be developed and modified from both a structural and a cognitive
perspective. Improvements to structural SC relate to changes to a network’s structure or features, including the rules that govern it (Krishna, 2002). Cognitive SC refers to the shared norms, values, attitudes and beliefs that predispose people towards collective action (Krishna, 2002). Cognitive SC can be improved by building trust and developing norms that help change values and behaviours that reduce conflicts. These modifications can lead to significant institutional and social changes, increasing a society’s capability to self-organize and set collective objectives.

Despite the positive benefits it can bring, some aspects of SC can present challenges for co-management. Wilson (2003b) suggests that co-management arrangements may not be able to rely on shared norms, as communities and states are complex and stakeholders often have different backgrounds, interests, world-views, and agendas, which are too different for them to feel committed to the same norms. Wilson (2003b) therefore suggests that working towards a goal of shared understanding is of much greater importance than establishing co-management arrangements. Social cohesion can facilitate shared understanding but, for this to happen, rich and varied communication among all stakeholders is essential (Wilson, 2003b). Furthermore, sustainable development requires that all involved stakeholders adopt a long-term perspective and better understand the complex and dynamic relationships between society and nature (Gutiérrez et al., 2011; Ostrom, 2009; 1990; Ostrom and Ahn, 2010; Pretty, 2003). In addition, to invest their time in collective activities, people must be convinced that the benefits derived from collective approaches outweigh those derived solely from individual ones (Pretty and D. Smith, 2004). External management agencies must also be convinced that investments to develop SC will produce sufficient benefits to exceed the considerable costs required to establish SC (P. Dasgupta and Serageldin, 2000).

It is also worth noting that SC can be used in a way that is harmful to some individuals, groups or even the whole community (Putnam, 2002). Several authors have highlighted the possible negative effects of bonding SC, as it can perpetuate counterproductive habits or relationships that are harmful to third parties (Sabatini, 2008; Stafford et al., 2008). A community may be well-organized and may have strong institutions and reciprocal mechanisms suggesting high levels of SC, but rather than being based on trust, it could be based on fear and power (Pretty and Ward, 2001). Furthermore, associations may encourage conformity, perpetuate adversity and inequity, enabling certain individuals to get others to act in a way that is only suited to themselves (Olson, 1992). Awareness of the potential negative aspects of SC is essential and provides an even greater reason to assess
SC in order to better understand which forms of social organization are structurally suited for NRM (Pretty and D. Smith, 2004).

2.4.2 UNDERSTANDING, STRENGTHENING AND HARNESSING SC

Consideration of SC is imperative for building understanding of the social context since network structures and features can both act to determine the performance and outcome of co-management arrangements (Bodin, 2006; Bodin and Prell, 2011; Carlsson and Sandström, 2007; Newman and Dale, 2005; Tompkins and Adger, 2004). An increased understanding of SC and the underlying structural characteristics that determine networks can therefore also improve our awareness of the barriers that potentially prevent collective action and mitigate these risks. It can also facilitate the design and use of appropriate interventions to improve SC. As MPAs are not just technical management measures, but socio-political enterprises, they require in-depth institutional and social analysis prior to implementation (Chuenpagdee et al., 2013). Understanding existing institutions (both formal and informal) avoids contradictions between laws, policies and norms (Easter and McCann, 2010), and allows identification of strengths and weaknesses, which must be addressed. It can also identify gaps in the institutional framework that can be filled. Social analysis is needed to understand social bonds, relations of trust, and the incentives, needs and demands of communities.

Who initiates an MPA and how the pre-implementation phase is managed, are critical as they can have a direct impact on participation and the degree of stakeholder involvement. They can also influence stakeholders’ perceptions of the MPA, and consequently their support (Jentoft et al., 2012). Co-management arrangements for MPAs can be initiated and promoted by external agents (e.g. the State, NGOs, scientific institutions) or by the community (e.g. local community groups, local leaders). In general, external agents rather than communities drive MPA implementation, and the introduction of laws (such as Natura2000), that require increased protection of marine resources. However, both external agents and community leaders play a key role in subsequent co-management arrangements, and their actions have direct consequences on the level of stakeholder commitment to the MPA (Chuenpagdee et al., 2013; Evans et al., 2015; Jentoft et al., 2012). For example external agents often act as intermediaries between resource users and government and provide logistical support, financial aid, training, knowledge and impartiality (Armitage, 2005).

A key technique for identifying the people relevant for analysis of SC is Stakeholder Analysis
(SA). Since its inception (Freeman, 1984), SA has evolved to become one of the principal participatory techniques used in a wide variety of disciplines (Ackermann and Eden, 2011; Bryson, 2004; Reed et al., 2009). In the context of MPA management, the purpose of SA is to identify groups that affect or are affected by the MPA (e.g. fishing sector, tourism sector, public sector, researchers, NGOs, companies, etc.) and: “prioritise these individuals and groups for involvement in the decision-making process” (Reed et al., 2009:1933). There are a variety of methods for identifying relevant stakeholders to include in a comprehensive SA (Luyet et al., 2012; Reed et al., 2009). This stage is critical as participation relies on the integration of all stakeholders, and the failure to identify some of them may create a bias in subsequent stages. The omission of some stakeholders in an initial SA also opens up the possibility of them appearing at a later stage and possibly having negative impacts on the project (Luyet et al., 2012). Sound and thorough SA is therefore a central process in authentic participation and co-management.

SC can be assessed through a variety of participatory tools and methods with varying degrees of involvement (Table 2.1), the use of which can positively feedback and reinforce SC. Social Network Analysis (SNA) is one such methodology, which encompasses a range of methods and models that can be used to measure and study actors in a social network and their relational ties (Borgatti et al., 2009; Wasserman and Faust, 1994). Actors (centrality) and network characteristics (e.g. size, density, modularity, cohesion, structure) can be analysed quantitatively by applying SNA techniques. The information obtained is also useful for SA, as it provides not only the identification of actors and/or groups but also interactions, relational ties and network position. These patterns, referred to as the structural characteristics of a network, affect social processes such as transmission of knowledge and information, consensus-building and power relations (Bodin and Crona, 2009).
Table 2.1 Participation techniques with their degree of involvement

<table>
<thead>
<tr>
<th>Participation technique</th>
<th>Information</th>
<th>Consultation</th>
<th>Collaboration</th>
<th>Co-decision</th>
<th>Empowerment</th>
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<td>Reports</td>
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<td>Stakeholder Analysis</td>
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<td>Interview, questionnaire, survey</td>
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<td>Field visit and interaction</td>
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<td>Participatory mapping</td>
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<td>Focus group</td>
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<td>Venn diagram</td>
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<td>Bridge model</td>
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<td>Geospatial/decision support system</td>
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<td>Cognitive map</td>
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<td>Role playing</td>
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<td>Multi-criteria analysis</td>
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<td>Scenario analysis</td>
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<td>Consensus conference</td>
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</table>

Adapted from Luyet et al. (2012)

SC can be harnessed in a variety of ways in order to support successful co-management. For instance, SC interventions can be performed using different participatory techniques. Those techniques with a higher degree of involvement, and which foster more authentic participation, will have greater influence on SC (Table 2.1) and be more successful in supporting effective co-management. For example, focus groups are a useful tool to evaluate the results of SC surveys and also help build shared understanding and consensus with regards to challenges faced by a particular area (e.g. threats from climate change and overfishing). Similarly, participatory mapping improves the planning and design of an MPA through community mapping of resources and resource users, and can help to build common understanding amongst stakeholders. Being social phenomena, SC and social networks are adaptive. This can be advantageous as it allows the stock of SC to be improved and networks to be strengthened and modified to increase their worth. Modifications to SC that encourage effective co-management require the use of techniques that can alter both structural and cognitive aspects of SC. Network intervention: “describes the process of using social network data to accelerate behaviour change or improve organizational performance” (Valente, 2012:49). To modify cognitive SC it is necessary to influence perceptions of support, trust, reciprocity and cooperation, which require a significant degree of time and commitment. Natural capital can be improved in the short term with no real consideration
being paid to the community, through the introduction of regulations and economic incentives. These can play an important role in encouraging changes in behaviour. However the failure to modify cognitive SC means people will often revert back to old ways when incentives end or regulations are no longer enforced (Pretty and D. Smith, 2004). In an MPA setting, this failure would have significant consequences for the long-term protection of marine resources (Pretty and D. Smith, 2004). The role of facilitators and leaders is paramount to modify cognitive SC. Facilitators and leaders can increase contacts between stakeholders by stimulating informal participation within and between organizations and associations (R. Dasgupta, 2003). These individuals need to encourage a fair, equal, and transparent process that promotes equity, learning, trust and respect among stakeholders and the administration (Reed, 2008).

Education is one of the most direct methods for generating cognitive SC, because educational institutions at all levels transfer SC through social rules and norms (Fukuyama, 2001). Learning groups increase capacities and accelerate the diffusion of innovations. Evidence has shown that people are particularly receptive to equals and peers (Morgan, 1997) hence interactions and relational ties are very important to the learning process (Evans et al., 2015; Lundvall, 1992). SNA can aid the design of learning groups through the identification of leaders and learning-communities. These leaders play a key role by instilling trust in the knowledge and information shared as they are regarded by learning group participants as trustworthy individuals. To facilitate the learning process, leaders should be provided with the appropriate training (e.g. on sustainability, on opportunities to improve well-being, and on development) and direct experience and knowledge of successful MPA management, the problems faced, and the solutions available.

The changes to cognitive SC can impact structural SC by increasing or changing relational ties (bonding SC), thus altering community cohesion. According to Burt (2002) networks rich in SC have more linkages between members (cohesion) and more strategic links with the members of other networks (bridging SC). Participation in learning groups and community exchange experiences (for example fisher-fisher visits to, or from, MPAs with successful co-management) encourage horizontal relationships (bridging SC) and are an important participatory and network intervention strategy. Network interventions can also improve relational ties with institutions at a higher level in the socio-political hierarchy of power, mainly with scientists and the state (linking SC). This can provide direct benefits through increased knowledge and resources as well as encouraging more effective co-management.
through promoting increased cooperation, cohesion, participation and inclusion (Noguera-Méndez and Semitiel-García, 2008).

2.5 DISCUSSION AND CONCLUSIONS

It is necessary to take a pragmatic attitude towards co-management. It is not a simple solution and may not work in all situations. Introducing co-management is a complex and fragile process, demanding a large commitment from all involved. Co-management requires an in-depth understanding of SC and a sizeable investment of resources in the initial stages.

Often the lack of finance and appropriate external agents, policy entrepreneurs and local leaders inhibit its implementation. Furthermore, co-management requires specific attitudes and capacities and a significant level of political will, which can take a considerable amount of time to develop. There are also risks to participation, such as the entrenchment of social fissures and divisions that may jeopardize well-intentioned co-management (Jentoft, 2003).

Notwithstanding its problems, co-management is increasingly seen as an alternative approach to resource management challenges that is worth exploring, and plans to encourage further decentralisation in the European Mediterranean should be devised. For co-management to work it must assume different organizational forms to suit the diverse social, cultural and ecological settings found in this region. Three main elements are required to promote the shift to co-management. Firstly, there is a need to develop increased environmental awareness and encourage greater societal support that demands the development of sustainable management programs. Secondly, political will at the national level is required and major institutional and legal reforms are recommended to provide the necessary legal support for decentralization in fisheries management, as has occurred in other parts of the world (Arceo et al., 2013; Christie et al., 2002). Thirdly, to achieve effective co-management, it is vital that SC is understood and harnessed, since communities rich in SC learn in a more efficient way because they can take advantage of the links they share with other communities and institutions that have more resources and power. As a result these communities are more likely to participate in cooperative projects, such as the co-management of MPAs. In conclusion, co-management offers the best opportunity to achieve effective MPA management but it is a learning process for all and “ludism: the playful, experimental attitude should guide our efforts” (Jentoft, 2003:10).
CHAPTER 3       STAKEHOLDER PARTICIPATION

THE PROBLEMS OF STAKEHOLDER PARTICIPATION IN MARINE PROTECTED AREA (MPA) MANAGEMENT: A CASE STUDY OF THE CABO DE PALOS- ISLAS HORMIGAS MPA

A modified version of this chapter has been submitted to Ocean and Coastal Management on 20th November 2016, for publication and is under review as follows: Hogg K, Noguera-Méndez P, Semitiel- García M, Gray T, Young S. Controversies over stakeholder participation in marine protected area (MPA) management: a case study of the Cabo de Palos- Islas Hormigas MPA.
CHAPTER 3

THE PROBLEMS OF STAKEHOLDER PARTICIPATION IN MARINE PROTECTED AREA (MPA) MANAGEMENT: A CASE STUDY OF THE CABO DE PALOS- ISLAS HORMIGAS MPA

ABSTRACT

There is considerable support in both the literature and the policy-making community for strengthening the role of stakeholder participation (SP) in the management of marine protected areas (MPAs). But in practice, it has proved very difficult to achieve this objective for a variety of reasons. On the one hand, advocates of SP claim that the success of MPAs depends on SP in the design and management of MPAs. On the other hand, critics of SP argue that it is very difficult to reach consensus between stakeholders on the need for MPAs, let alone the best way to manage them. This study was initiated to investigate the nature and extent of SP in the Cabo de Palos-Islas Hormigas MPA (CPH-MPA) in the Murcia province of SE Spain, with a view to identifying the challenges to it, and making recommendations for overcoming those challenges. Fieldwork was carried out during 2013-2014 using a mixed method approach involving the collection and analysis of both qualitative and quantitative data from key informant interviews, community meetings, individual surveys, and social network surveys. The qualitative data revealed several barriers between administrators and stakeholders. For example, some administrators held negative stereotypes of fishers as despoilers of marine habitats, while some stakeholders regarded administrators as out of touch with the reality at sea. Quantitative data from the social network analysis (SNA) confirmed and verified this and other barriers from a social-structural perspective. Recommendations to address the barriers included clarifying the desired scope of participation; managing expectations of what kinds of participation are feasible; and carefully considering the space in which dialogue takes place to reduce differential power relations between participants.

Keywords: stakeholder participation; cofradia; resource users; social network analysis; governance; marine protected areas.

3.1 INTRODUCTION

There is growing support in the literature and policy communities for stakeholder engagement in coastal fisheries management (Delaney et al., 2007; Mikalsen and Jentoft, 2001; Nenadovic and Epstein, 2016). Supporters claim that stakeholder participation (SP) in
marine coastal management enables representation of diverse views and values; provides local knowledge and solutions tailored to specific contexts; prepares the ground for more effective implementation of policies for long-term management (Berghöfer et al., 2008; Pita et al., 2010); and legitimises marine resource governance (EU, 2013; Hogg et al., 2013; Nenadovic and Epstein, 2016). However, opponents of SP urge caution in giving weight to community views in conservation management decisions, on grounds that high levels of bottom-up SP are unsuitable given the ecological issues that MPAs entail (Jones et al., 2013; West et al., 2006; Wilkie et al., 2006). These opponents of SP argue for a science-based, top-down approach, involving ‘preservationist’ or no-take solutions, which could be put at risk by excessive SP (Jones et al., 2013).

This theoretical controversy is reflected in practice, in that despite the efforts of its advocates, the extent of SP in the management of marine protected areas (MPAs) is diminishing rather than growing, in that currently there seems to be a trend away from the more active, towards the more passive, modes of SP in decision-making (Bavinck et al., 2015; Berkes, 2009; Herrera-Racionero et al., 2015; Nutters and Pinto da Silva, 2012). This is despite the findings from many studies that stakeholders are very dissatisfied with their current level of participation in MPA decision-making processes, criticising their lack of involvement in management decisions and in scientific assessments upon which those decisions are made, and deploiring the negligible recognition and respect that is given to their knowledge (Delaney et al., 2007; Nielsen et al., 2004; Pita et al., 2010; Yates, 2014). An illustration of this dissatisfaction comes from a fisher who was interviewed in the present study: “I don’t know why three or four men from the European Commission have to decide over my future or the future of my children, but that’s the reality.” This bitter statement conveys the fatalistic view that some fishers hold towards decision-making in the well-established MPA of Cabo de Palos-Islas Hormigas (CPH-MPA), Spain, that it is out of their hands, undemocratic, threatens their way of life, and will continue to be beyond the reach of the next generation of fishers (Herrera-Racionero et al., 2015).

The aim of this chapter is to test how widespread are such criticisms by examining the perceptions expressed by respondents about, first, the extent of SP in decision-making in CPH-MPA; and second, the obstacles to such participation. Most of the focus of the chapter is on the (often contrasting) perceptions expressed by fishers and administrators, but the perceptions expressed by other stakeholders (such as divers, NGOs, and the wider community) are quoted where appropriate. In section 3.2, the case study’s background is
described. In section 3.3, the research methods used in this study are explained. In section 3.4, the findings from the interviews are compared to the findings from the SNA, and both sets of data are discussed for their insight into the two main issues in this study: the extent of SP that exists in the management of the CPH-MPA; and the nature of the barriers to such participation. In section 3.5, there is a summary of the paper’s key findings and a list of recommendations.

3.2 CASE STUDY BACKGROUND

3.2.1 STUDY AREA

For more information on Cabo de Palos and CPH-MPA please refer back to section 1.5.3.3 in Chapter 1. Some key information relevant to this chapter is repeated here. For example, a formal framework agreement outlines the collaboration and shared management responsibility of each body with regard to CPH-MPA, with the aim of fostering and consolidating cooperation to achieve maximum management effectiveness. As described in section 1.5.3.3 Chapter 1, the two administrations are jointly responsible for protecting the marine environment and regenerating commercially valuable fish stocks. The collaboration is overseen by a formal monitoring committee (including representatives from the national and regional ministries), which (in theory) meet annually to review progress. The management of the MPA is supported by an ad hoc committee, composed of representatives from the administration, research institutions, municipalities, environmental organisations, fisheries sector (i.e. cofradia representatives, trade union representatives, and recreational fishing representatives), relevant marine business organisations, and a representative of the federation of underwater activities in the region of Murcia. I will also repeat here the objectives of the MPA as they are particularly important for the line of argument of this chapter- i.e. are fishers participating in an MPA that has their well-being as its main objective? The objectives of the MPA are formally described in its official terms of reference as the 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, and supporting other low-impact activities (for example SCUBA-diving and environmental education) that contribute to economic development in the area (BOE, 2010).

Also of particular interest to this chapter, is that the small artisanal fishing fleet, like other small-scale fishing fleets in the Mediterranean, has been undergoing gradual decline (Fabio et al., 2016; Gómez et al., 2006). A census limits access to the reserve to those who had
been fishing for 4 years previously to the MPAs implementation, with no licence renewal or exchange. The artisanal fishers from CPH-MPA belong to the second largest *cofradía* in the region - Cartagena (54 boats). As in other regions, there is a strong tradition of ‘family fishing’ (Herrera-Racionero et al., 2015); almost 80% of the fleet in the CPH-MPA have familial links, and strong familial links also exist with the patron mayor (who is director of the *cofradía*).

Likewise of particular interest to this chapter is the fact that the increasingly popular dive industry has no well-recognised and respected representative organisation, which would be formally/legally recognised like the *cofradía*.

### 3.2.2 ROLE OF THE COFRADÍA

In this chapter it is particularly necessary to reiterate the role of the *cofradía*. As a highly decentralised country, the top-down authority of the national and regional governments of coastal fisheries management is balanced with the bottom-up organisations of fishermen within *cofradias*, which act as local consultative and cooperative agencies (Alegret, 2000; Herrera-Racionero et al., 2015). *Cofradias* have been shown or at least have the potential to play an important role in participatory management systems (Bavinck et al., 2015) however, their complicated history with the national and regional authorities, and the growing significance of other organisations in the fisheries sector, such as owners’ associations and fish merchants’ associations, has caused a decline in the bargaining power of *cofradias* to defend fishers’ interests (Alegret, 2000; Gorostiza and Cerdà, 2016; Pascual-Fernández, 1999).

### 3.3 METHODS

#### 3.3.1 DATA COLLECTION

For details on data collection please refer to Chapter 1, section 1.7.

Data were collected by two main methods – semi-structured interviews and social network surveys. For the semi-structured interviews, the target population were resource users: resource users (17 fishers, both active and retired, 38 employees of SCUBA diving centers, referred to as divers) and key informants (KIs) comprising three government officers, four researchers, two fisheries sector representatives, two SCUBA diving sector representatives and two NGO representatives. Social network surveys were conducted between July 2013 and July 2014 with 18 social institutions/groups identified (including the afore mentioned
The groups included government departments, research organisations, fisher groups and non-governmental organisations (NGOs) (see Appendix IX). Single or several individuals from each organization were interviewed (n=28 individuals). The questions asked elicited opinions on the current management of the MPA and the marine environment, an explanation of how decisions are made, what opportunities for participation exist, and how information about decisions taken was communicated, network questions asked for presence absence responses on perceived communication and influence. Three community validation and feedback meetings were held between 2013 and 2014.

3.3.2 DATA ANALYSIS

3.3.2.1 Qualitative data from semi-structured interviews
For more details on data analysis please refer to Chapter 1 section 1.8.

Some themes were identified from perceptions of participation levels and of barriers to participation identified in the literature, but most themes were chosen through an inductive process of reading and re-reading the transcripts, identifying repeated words and themes within and between interviews, and grouping the codes generated into collections of similar content (Bryman, 2012). This technique, borrowed from grounded theory (Glaser and Strauss, 1967), allows issues to arise out of the data, rather than from pre-conceived assumptions.

3.3.2.2 Quantitative data from social network surveys
For more introductory information on SNA please see Chapter 1 section 1.8.2

Applied to directed data, I used in-degree centrality to assess the perceived distribution of influence in the ‘influence on decision-making’ network (Bodin et al., 2006). When measuring the perception held by actors within the network towards others, in-degree provides a useful centrality measure as it specifically describes the prominence of an actor within a network by measuring the degree to which an actor receives ties from other actors in the network (Hanneman and Riddle, 2005) The matrices for sending and receiving information were joined in Ucinet to create a directional information exchange network of reciprocal ties. I focused on reciprocal ties because they provide confidence that information is being exchanged and the relationship exists (Almaatouq et al., 2016).

For the information exchange network, betweenness centrality was calculated (representing the extent to which an actor lies on the paths between others) as this allowed me to assess
which actors contribute most to linking the network, thus with most potential to encourage the flow of ideas and to build trust (Bodin et al., 2006; Borgatti and Foster, 2003). The information exchange network was reduced using a minimum-spanning-tree (MST) procedure implemented with a Gephi plugin (Bastian et al., 2009). A MST is a sub network with only one component, that connects all nodes with n-1 edges throughout the closest nodes (Kruskal, 1956; Menezes et al., 2008). This permits an analysis of the fundamental structure of the network, helping to identify and isolate the structural salience in the network (Menezes et al., 2008). Consequently, I could identify the strongest communication pathways as well as ‘hubs’ i.e. actors who have the greatest potential to facilitate communication and information exchange. It must be noted however that these institutions in the most advantaged position can use this power to choose what information to share and can more easily influence and control social behaviour of the other actors (Bodin et al., 2006). Preliminary findings of social network results were discussed and validated through the community meetings and with artisanal fishers in July 2015.

3.4 RESULTS

There are five main themes in this section on results: (1) value of SP; (2) types of participation, based on qualitative data from interviews; (3) types of association between stakeholders, based on quantitative data from surveys; and (4) obstacles to participation based on both qualitative and quantitative data; and (5) ways of improving SP.

3.4.1 VALUE OF SP

There was strong support for SP expressed by most respondents. What follows is a sample of their comments.

Management said: “decisions must result from consensus”; “It can be improved as long as there is a greater participation”; “management programs must result from a wide consensus”; “With a greater involvement of the actors and a greater commitment everything would improve a lot because there would be more collaboration for the regulation of the marine environment.”

NGO representatives said: “I think there is a need of more bodies with real participation”; “the most important thing needed is social participation and information”; “creating measures that make public participation mandatory”; [Decisions] “should be made from the bottom up”; “I would like to establish processes of co-management so that users and the
community can take part in the decisions.”

Researchers said: “I think governance would probably improve if the decision and policy making bodies had not only scientists but people with knowledge of the sea.”

Divers said: [There should be] “participation of all diving clubs together with the fishermen”; “Users of marine resources [should] take part in the management processes”; “The administration [should manage] but in consensus with everyone, both, fishermen and diving centers.”

Fishers and the cofradía said: [What is needed is] “a good management from the bottom up”; “It’s not very effective because they should take more into consideration the opinion of fishermen who are working there every day but they put rules that do not suit our needs”; “They should take the opinion of the divers association of the Region of Murcia and that of the fishermen more into consideration.”

3.4.2 TYPES OF PARTICIPATION

SP in coastal fisheries management exists on a spectrum, ranging from a less active, where decisions are made almost exclusively by administrators, to a more active level, where the decisions are made almost exclusively by local communities (Gray, 2005; Nutters and Pinto da Silva, 2012). Table 3.1 contains a typology of SP, adapted from the typologies compiled by five influential writers (Arnstein, 1969; Bouamrane, 2006; Lawrence, 2006; Pimbert and Pretty, 1997; Pretty, 1995) in which there are seven types of participation: manipulative; informative; consultative; functional; collaborative; delegative; and stakeholder rule. I have used this typology of participation as a helpful guide to the six slightly different perceptions of SP that I found expressed by our respondents: passivity; communication; consultation; influence; collaboration; and legal/direct action. This is a descriptive, not a normative spectrum: it distinguishes between less active and more active SP, but it does not make the assumption that less active is bad and more active is good.
Table 3.1 Typology of stakeholder participation

<table>
<thead>
<tr>
<th>Typology</th>
<th>Approximate synonyms</th>
<th>Characteristics of each type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manipulative</td>
<td>Command and Control; Therapy; Completely top-down</td>
<td>Participation is undertaken in a manner contrived by those who hold power to convince the public that a pre-defined project or program is best. Representatives are unelected and have no power. Communication is unilateral.</td>
</tr>
<tr>
<td>Informative</td>
<td>One-way communication; Top-down decision-making</td>
<td>People participate by being told what has been decided or has already happened. People’s responses are not listened to. The information being shared belongs only to external professionals.</td>
</tr>
<tr>
<td>Consultative</td>
<td>Seeking out stakeholders’ views; Extractive; Largely top-down</td>
<td>People’s opinions and views are sought through various means, but final decisions are made by those doing the consulting, with no obligation to take on board people’s views.</td>
</tr>
<tr>
<td>Functional</td>
<td>Using SP to ease project implementation; Placation; Instrumental; partly bottom-up</td>
<td>Participation is seen as a means to achieve project goals, especially to reduce costs. People may form groups that meet predetermined project objectives. Participation may involve shared decision-making but tends to arise only after major decisions have already been made, rather than at an early stage of the project cycle.</td>
</tr>
<tr>
<td>Collaborative</td>
<td>Partnership; Consensus-building; Co-management; 50/50 top-down and bottom-up</td>
<td>People participate through direct involvement in the decision-making process and actioning the decisions. Each stakeholder has a clear role, set of responsibilities and powers- usually to achieve a shared common goal. There is generally mutual responsibility and risk-sharing, in the planning and decision-making process. Two-way communication is vital.</td>
</tr>
<tr>
<td>Delegative</td>
<td>Devolved; division of responsibility; top-down policy and bottom-up implementation</td>
<td>The goal is likely to have been set by the facilitators but the resources and responsibility for solving the problems are passed to the stakeholders. There are clear lines of accountability and two-way communication with those giving away power.</td>
</tr>
<tr>
<td>Stakeholder rule</td>
<td>Transformative; Citizen control; Empowerment; Completely bottom-up; Self-mobilisation</td>
<td>People participate by taking initiatives independently of external institutions to change systems, They develop contacts with external institutions for resources and technical advice they need, but retain control over how resources are used.</td>
</tr>
</tbody>
</table>

Adapted from: Arnstein (1969); Bouamrane (2006); Lawrence (2006); Pimbert and Pretty (1997); and Pretty (1995)

3.4.2.1 Passivity
The least active form of SP is passivity, which incorporates negligible SP. Many respondents held that the CPH-MPA was managed by a manipulative system. For example, fishers said: “They don’t let us take part”; “When taking decisions no consultations are made, no opinions respected, they rule, period”; “Madrid decides, gives orders and it’s done”; “There must be ways, but they won’t listen to you.” Cofradía representatives claimed: “It’s the administration that makes the decisions here [...] they apply the laws as they want”; “Right now decisions are made by a gentleman sitting in an office, even if they make no sense [...] it would seem that we went back to Franco times when you do what they tell you to do and
that’s all.” Divers said: “those in power don’t acknowledge what we divers can do [...] they don’t value our opinion.” A researcher said: “The competences belong to the Ministry and the Fisheries Administration of the Autonomous Community. It’s them who take decisions based on studies and experts’ opinions.” Another researcher said: “There are no chances of participation.”

3.4.2.2 Communication
The next level of SP mentioned by respondents was communication. Communication involves both information flows and meetings. There are two kinds of information flows: top-down, which means information is sent down to fishers from management; and bottom-up, which means information is sent up to management from fishers.

On top-down information flows, some fishers acknowledged that they received communication from management. For example, one cofradía representative said that: “The Fisheries Service informs us too whenever they offer some aids for fishermen, etc.” Divers said: “We, users of marine resources are being informed about the management and they begin to take our opinion into consideration.” Managers maintained that they regularly directed flows of information to fishers: “Information is provided within the Management Committee of the Marine Reserve and then personally to them.” However, some fishers claimed to be the last communication link: “There’s a chain - the university, the IEO [Spanish Oceanographic Institute] or the ministry decide something and then tell the federation, then they tell the cofradia and then, us.” Other fishers said they rarely received information from management: “The only information that is made available to the public is that of the creation of protected spaces [...] other than that the information we have received is nil, there is no annual meeting where we are informed, or even every two years, there is no mechanism that allows us to access this information quickly”; “We receive zero information from the bodies”; “once the decisions are made they don’t explain them.” On bottom-up information flows, management claimed that they welcomed receiving information from fishers: “The fishermen of Cabo de Palos can contact us directly whenever they want, almost daily, and the communication flows”; “People can write a letter any time and they are always answered”; “The administration is always open, there are letters, requests, faxes, emails.” However, fishers said management ignored their attempts to communicate, one fisher said of: “the autonomous community, we are requesting a meeting for years already. And they do not answer.” A cofradia representative said: “in the Region, they don’t even bother to reply with a yes or a no.” Another fisher said: “I have complained many times in Cartagena but
they don’t reply.” A diver asserted that the administration took months to respond to their communications: “They can reply tomorrow or years can pass without reply. Usually they won’t care. Problems can take years before they are solved.”

On meetings, some fishers acknowledged that: “There are meetings every now and then”; “there are meetings often”; “With the administration [...] there are meetings about monitoring in the reserve”; “I have had many meetings with them.” Management said: “Our meetings with the fisheries sector and diving users have always been a more than necessary part of the management”; “We have official meetings every quarter where we discuss issues that we and they have interest on”; “the Region of Murcia [...] keep having meetings with the fisheries sector.” Researchers and NGO representatives also said there were meetings: “Fishermen don’t get all together to discuss a problem, usually they appoint a representative and he goes to the meetings which we attend too [...] in those meetings the fisheries sector is represented but with just one representative”; “I know that in September they will have a meeting with the Autonomous Community regarding what I told you about the quota in the internal and external waters, and I’m sure they will come to an agreement to look for a common benefit.” On the other hand, many fishers complained about lack of meetings: “No meetings are held”; “we all know what happens but we cannot talk because there are no meetings”; “we have also requested meetings with the Fisheries Service but they don’t want to convene one”; “We requested a meeting to the Regional Department in order to talk to the diving centres and the surveillance staff but nothing has happened”; “Neither the Fisheries Service or Madrid have ever held a meeting with us, the fisheries sector”; “they don’t want to sit and talk and they will change the law when they think fit”; “Many of these laws pass from being informal to being formal, no meetings of any kind are held”; “Since the reserve was opened no meeting has taken place and we know nothing about the profit made or anything.”

3.4.2.3 Consultation

The next level of SP identified by respondents was consultation. Many respondents said there was consultation. For example, a cofradía representative said: “Every time the administration is going to make some new agreement or project they call us and they consult us.” A diver said that: “Usually we are consulted for the regulation, same with fishermen.” Management said: “They can express whether they agree or not and then all that is discussed in work sessions”; “When the time comes to update the regulation, the Ministry has the obligation of consulting all actors of the MPA. Periodical, almost informal, meetings
are held so that they can give us their opinion, and they are very practical to guide us because we want to do something more than just consulting them. Minutes were drawn up to record that we had received their information and then management measures would derive from the conclusions reached in those meetings”; “decisions are adopted after consultation, evaluation and almost negotiation with them [...] they are taken into consideration”; “We always try that the agreements result from a great consensus with the fisheries sector”; and “in general they [decisions] are the result of a consensual approach.” On the other hand, some respondents complained that such consultation was hollow. For example, one fisher said: “the beginning it was like that, the opinion of fishermen was respected but not any longer.” An NGO representative said: “There are meetings between the administration and fishermen but what the administration considers as participation is not real participation in my opinion. It might be called a consulting or a dialogue but it’s not a real decision making kind of participation.”

3.4.2.4 Influence
The next level of SP identified by respondents was influence. Several respondents perceived that they exerted some influence on management. For example, a cofradía representative said: “We don’t make decisions, we depend on the administration. But if they ask us for information we can have some influence.” An NGO representative said: “I would say that it’s high in some cases and that it is generally moderate. In the end it’s been concrete cases where we have helped to make decisions clearly and with some importance, and with less importance in others. I don’t think the government gives us much credit, they know that many projects have been stopped thanks to this and other organizations.” On the other hand, many respondents perceived their level of influence in CPH-MPA decision-making processes to be low. For example, a cofradía representative said: “[Fishers have] very little influence because they [the administration] don’t contact the cofradía.” Other fishers said: “I have neither a voice or vote”; “They don’t help artisanal fishermen in any way, decisions are taken without taking us into consideration.” Divers said: “You can’t challenge the administration. As an individual you’re nothing”; “we have no pressure and there is no way to channel the real interests to confront the wall imposed by the administration, and there is no point.”

3.4.2.5 Collaboration
A stronger kind of participation alluded to by respondents was collaboration. Some respondents claimed there was a healthy form of collaborative management in CPH-MPA.
An administrator claimed that: “Cabo de Palos is a very interesting example of collaboration [...] we are in a joint venture of mutual benefit in which both administrations go hand in hand [...] it existed without knowing that that’s how it’s called. We have always done the marine reserves upon request of the artisanal fisheries sector, which hand in hand with the administration has asked for self-regulation. It’s been done hand-in-hand with them [fishers]”; “a consensus was reached regarding use regulations, that is, co-management. The thing is that 25 years ago it wasn’t called co-management but it’s a model based 100% on the idea of co-management.” Another administrator said that: “There is a management committee for the reserve with several actors involved such as the fisheries sector, the State General Administration, the Regional Administration, the Town Hall of Cartagena, Tourism, Diving, etc.” On the other hand, some fishers said there was no desire among management for collaboration: “In Murcia or Cabo de Palos nobody wants to collaborate.” Other fishers described collaboration as a sham: “If you speak about administrations then they are all willing to collaborate. We have recently been for 3 days in Valencia with the Minister and the General Secretary [...] and they are willing but when the time comes to do what we request they say: there is a European regulation and we must respect it. So we run against a wall.” A diver said: “The Fisheries and Aquaculture Service is also willing to cooperate [...] well not to cooperate, to screw you! He [the representative] is willing to collaborate but he still works for the administration and once they spent the 500,000 Euros, that was the end of it.”

3.4.2.6 Legal action/direct action
The most active form of SP mentioned by respondents was legal/direct action – i.e. where fishers either use the power of the law (as in many US fisheries) (Cloutier, 1996; Mikalsen and Jentoft, 2001), or take the law into their own hands (as in some French fisheries) (Mesnil, 2008), to enforce their views upon the authorities. This is a controversial conception of SP, since some writers would describe both legal action and direct action as consequences of the failure of SP rather than as forms of SP. However, I take the view that legal and direct action are forms of SP in that they are methods used by stakeholders to exert pressure on management to change their decisions. One researcher noted that: “you have the legal path of filing an appeal against a law or a norm, that’s your right as a citizen.” An NGO representative explained how they succeeded in taking legal action on several issues, not least in forcing the authorities to increase SP: “In general, the Spanish administration and in particular the Region of Murcia are not very fond of public participation. Although in the past fifteen years there have been participatory processes, many of these processes were made mandatory [...] a large part of the proposals we have made all these years have been taken
only after legal proceedings were taken in the Spanish or European legal system [...] they were [...] forced to do it because we filed a complaint for not applying a European regulation [...] in this region we are used to things being done after pushing a lot.” On the other hand, some fishers’ claimed that such legal action has no effect in the CPH-MPA: “They take the draft bill and send it to the guilds, there is a 15 days period for appeals. We meet with our lawyer, we appeal and nothing happens because they don’t reply and it’s worthless, they do what they want. I don’t know where those appeals end up because we never get any reply for all the appeals we make from the guilds about the things we don’t agree with. I have them all filed with the stamp and the date in which they were sent and none of them was ever answered. Our lawyer has appealed many times and proceeded to trial but they answer that these are European laws, that they come from a higher authority and they can’t change them or do anything, only apply them and that’s all.” On direct action, one fisher explained how they could exert power by direct action: “you can threaten them. If you take measures against this then on Monday the fisheries sector stay in. Then they see the danger and they do something, otherwise we don’t achieve anything.” Another fisher claimed: “We can have high influence. The key thing to do is to come here on a Sunday when all the divers and the whole town is here, then you shut the port and nobody can come in or out. This way the president of the Autonomous Community becomes more receptive.”

3.4.3 TYPES OF ASSOCIATION BETWEEN STAKEHOLDERS

Turning to the types of association between stakeholders, I present the results from the analysis of the quantitative social network surveys. The purpose of this section is to provide a different take on SP from that presented by the qualitative data obtained by the interviews. Fig. 3.1 shows whom actors perceived to have influence when decisions were made for marine resource management. Density and centralisation were calculated (the results from which appear alongside each graph), to reveal the cohesion of the network. Low density and high network centralisation indicate that influence was perceived to focus around a few particular actors. The actors with the highest in-degree centrality scores were the Regional Ministry, National Ministry, the IEO, NGOs and Universities (Table 3.2). The position of these actors illustrates (Bodin and Prell, 2011; Borgatti et al., 2009; Hanneman and Riddle, 2005; Sandström and Rova, 2010) they were perceived to have the most influence over decisions taken. Fishers, the Regional Federation for Cofradías, divers and the dive association were below the average in-degree centrality score implying that other actors do not consider them to be influential. This finding, related particularly to fishers, agrees with researchers from other studies who suggest that small-scale fishing implies
small-scale power (McGoodwin, 1995; Wilson et al., 2003). The traditional artisanal sector has been shown to have less representation and less power to influence management policies, and an inability to safeguard their fisheries (McGoodwin, 1995). However, in my study, the position of the local cofradía was slightly above the average, implying they have, at least more perceived, potential to influence. This finding contrasts with the position of the diver’s association, which was found to be perceived as having less influence than the divers it supposedly represents. A potential explanation for this weak position is outlined in section 3.4.4.7.

Figure 3.1 Influence network. Circles (nodes) represent institutions interviewed. Size of circles indicates in-degree centrality
### Table 3.2 Centrality scores calculated for the influence (normalised in-degree) and information networks (normalised betweenness), mean values. Values above average highlighted in grey

<table>
<thead>
<tr>
<th>Actors</th>
<th>Influence Network</th>
<th>Information Exchange Network</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normalised In-degree (mean 0.24)</td>
<td>Normalised Betweenness (mean 3.86)</td>
</tr>
<tr>
<td>National Ministry</td>
<td>0.53</td>
<td>6.94</td>
</tr>
<tr>
<td>Regional Ministry</td>
<td>0.76</td>
<td>27.02</td>
</tr>
<tr>
<td>Tourism Ministry</td>
<td>0.18</td>
<td>0.00</td>
</tr>
<tr>
<td>Regional Cofradia</td>
<td>0.18</td>
<td>0.00</td>
</tr>
<tr>
<td>Local Cofradia</td>
<td>0.29</td>
<td>2.02</td>
</tr>
<tr>
<td>Port Authority</td>
<td>0.06</td>
<td>0.00</td>
</tr>
<tr>
<td>Civil Guard</td>
<td>0.06</td>
<td>9.56</td>
</tr>
<tr>
<td>ISM</td>
<td>0.06</td>
<td>0.00</td>
</tr>
<tr>
<td>IEO</td>
<td>0.47</td>
<td>7.11</td>
</tr>
<tr>
<td>Universities</td>
<td>0.41</td>
<td>1.53</td>
</tr>
<tr>
<td>Environmental Consultants</td>
<td>0.12</td>
<td>0.00</td>
</tr>
<tr>
<td>Fishers</td>
<td>0.24</td>
<td>0.12</td>
</tr>
<tr>
<td>Dive Operators</td>
<td>0.24</td>
<td>0.00</td>
</tr>
<tr>
<td>Dive Association</td>
<td>0.12</td>
<td>0.00</td>
</tr>
<tr>
<td>NGOs</td>
<td>0.41</td>
<td>2.64</td>
</tr>
<tr>
<td>Municipality</td>
<td>0.12</td>
<td>9.56</td>
</tr>
<tr>
<td>Hospitality Sector</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Media</td>
<td>0.12</td>
<td>2.64</td>
</tr>
</tbody>
</table>

### 3.4.4 TYPES OF OBSTACLES TO PARTICIPATION

Section 3.4.2 has revealed that there were very contrasting views among respondents about the types and extent of SP in the management decision-making of the CPH-MPA. Some respondents perceived significant amounts of communication, consultation, influence, and collaboration; while others perceived relatively little of any of these forms of SP, or, where they did exist, they were seen as tokenistic. Both sets of respondents expressed opinions about how the quality of SP could be improved. In this section, I consider seven types of
obstacle to the quality of SP that were mentioned by respondents. In the next section, I consider several ways of improving the quality of SP suggested by respondents.

3.4.4.1 Lack of administrative will

The most frequently expressed obstacle to SP was administrators’ lack of will. One researcher referred to: “an absolute lack of will to incorporate actors in management and to yield part of their decision power; an absolute lack of will on the part of the actors to coordinate actions with others. I think this is a problem of management attitude or culture, which is very old, and not in tune with the current times.” One reason for this indifference to fishers’ participation put forward by a cofradía representative was that the administration prioritised tourism over fishers: “They don’t really take the reserve seriously because it would harm the tourist industry more than the fisheries sector and they are interested in preserving tourism because it brings more money and it’s not convenient to harm it nowadays.” Another reason, according to a researcher, is that all decisions are taken in Madrid: “the authorities from Murcia tend to follow blindly the national policies; there is no will to do something that hasn’t been dictated from Madrid.” A further reason, according to fishers, is aversion to conflict: “The Secretariat of Maritime Fisheries can take decisions beyond the internal waters but they don’t want to have meetings with us because there would be a conflict”; “they don’t convene any meetings to avoid conflicts and they give us excuses until this explodes.” An NGO representative corroborated this claim: “the administrations […] fear social opposition, for example from the fisheries sector when it comes to implementing marine reserves.” Another reason, according to a diver, is corruption: “The Spanish administration doesn’t work, they’re corrupted, their only aim is to fill their pockets with money, they don’t give a shit about what’s going on in the place they manage.” Some respondents inferred that there was lack of commitment on both sides - the administration failed to provide a platform for participation, while fishers failed to collaborate. This joint failure is a finding supported by previous studies (Hollup, 2000; Jentoft and McCay, 1995).

3.4.4.2 Lack of funding

Another obstacle to SP is lack of money- a common complaint (see Berghöfer et al. (2008); Nutters and Pinto da Silva (2012); and Pomeroy et al. (2001)). Management said: “Meetings are held periodically to get to know their opinion and consider management alternatives but due to the budget situation this is halted at the moment.” Another administrator explained: “We were also holding meetings but in the last two years we are having problems to travel. Therefore it’s a bit frozen. The scheme is good, we haven’t discarded it but faced with a
limitation of the public expenditure we are somehow experiencing an involution.”

### 3.4.4.3 Fishers’ low status

Another obstacle to SP was the poor status that fishers had in the eyes of managers and researchers (Hollingshead, 2011; Hollup, 2000; McGoodwin, 1995), who regarded fishers as inferior, using terms like “uneducated”, “cheats”, “closed minds”, and “lazy” to describe them. A cofradía representative said: “They come and make claims against us, they say we are predators [...] at the European level Brussels speaks of the fisheries sector as criminals.”

Some fishers internalised these prejudices: “We don’t take part in any of that, we are insignificant”; “we are a nuisance.” An NGO representative said: “when fishermen sit to talk with managers they feel inferior.” The fishers’ poor level of education may be a contributory cause of their low status and low self-esteem: 65% had primary school level education, 18% secondary school, and 18% college level. Divers (who had a higher level of education- 9% primary; 9% secondary; 14% technical/professional; 30% college; and 38% university) said: “fishing is an activity for people who cannot study, who didn’t have that chance.” A researcher said: “because they have little education, and this is typical of Spain, they think talking to an administrator and telling them what’s happening is something beyond their ability.”

### 3.4.4.4 Lack of respect for managers

Another obstacle was the lack of respect that resource users felt for the authorities. There was little confidence in the capacity of fisheries managers: “The problem we have in Murcia is that the people in charge of the administration are people whose specialty is not this. They know the legislation very well but when it comes to making decisions they don’t make the right ones because they don’t know the sea or the fisheries sector, they have no clue.” Divers said: “Management is bad because decisions are taken in an office not knowing what’s going on here”; “The problem is that sometimes the fisheries management is given to people who have no idea. To be a politician you only need to have friends.”

### 3.4.4.5 Poor communication channels

Another obstacle was poor channels of communication (Cvitanovic et al., 2015; Pomeroy et al., 2001). Good communication channels and open, on-going dialogue are necessary to overcome distrust between actors to improve the overall efficiency and outcomes of management (Cvitanovic et al., 2015; Pomeroy et al., 2001). For example, exchange of information and effective systems of communication facilitate fishers and scientists feeding their valuable knowledge into management (Coll et al., 2014; Damalas et al., 2015;
Mackinson et al., 2011). They also enable managers to explain decisions taken allowing and demonstrating how information has been used (Cvitanovic et al., 2015; Yates, 2014). The interview responses revealed that although some fishers and other respondents affirmed that information flows and meetings between stakeholders and authorities were frequent, many fishers complained that the system of communication was completely inadequate (see section 3.2.2.2). Management said: “With the reserve users the communication is rare and it’s limited to those moments when actions can affect them.” Fishers’ claimed to be the last communication link: “There’s a chain - the university, the IEO or the ministry decide something and then tell the federation, then they tell the cofradia and then, us.”

The results obtained from the network analysis offer additional complimentary insights into communication deficiencies. Fig. 3.2 shows with whom actors reported exchanging information, and the low overall density and low network centralisation indicated little network cohesion (Bodin et al., 2006; Bodin and Prell, 2011; Sandström and Rova, 2010): there were only eight ties (representing 5% of the total potential ties) where actors reported mutual information exchange. However, fishers reported having strong information exchange relationships with the Regional Ministry, the IEO and Universities, though not with their own representative (the local cofradia). The divers association and dive operators were found not to share information, and had very few ties with other institutions. The actors with the highest betweenness centralities (Table 3.2) were the Regional Ministry, the Civil Guard, the Municipality of Cartagena and the National Ministry, while the IEO was also found to be a key hub in the MST (Fig. 3.3) when considering the strongest pathways for information exchange, along with the Regional and National Ministries. The central position of these actors enables them to act as information brokers and ‘hubs’- distributing information for the greater good - or conversely gives them the opportunity to hoard and control information, increasing their influence and power (Bodin and Prell, 2011).
Figure 3.2 Information exchange network. Size of circles indicates betweenness centrality. Thick lines indicate actors both send and both receive information, thin lines indicate one actor reported sending and the other actor receiving information.

Figure 3.3 Minimum spanning tree (MST) of the information exchange network illustrating the principle exchange pathways. Circles (nodes) represent institutions interviewed. Size of circles indicates in-degree centrality of influence (Table 3.2). Line thickness indicates the level of information exchange (0, 1, 2, 3, 4), where the thickest lines show both actors are sending and both receiving information, and thinnest lines indicate only one actor reported one tie e.g. sending information.
3.4.4.6 Dispute over science and knowledge

Another perceived obstacle to SP was a dispute over the evidence used to make decisions (Coll et al., 2014; Mackinson et al., 2011). Fishers claimed that data collected by fisheries scientists was flawed. One fisher described a conversation he had with a marine biologist: ‘I asked him: can you tell me the extent of precision in your words? And he said 70 or 75%. So what you’re saying is not real! It means that in marine biology and this whole report the research is not 100% exhaustive.’ Other respondents lamented the fact that fishers’ ecological knowledge – i.e. fishers’ contribution to fisheries science - was ignored by managers. For example, a researcher said: “they [fishers] have an incredible knowledge of the matter and this traditional knowledge is not taken into consideration when decisions are made.” Another researcher expressed concern at the lack of specialists’ involvement: “I think that research studies and data are the main tools to make a management decision [...] but we miss more intervention from experts, more participation from experts, public research institutions, universities, etc.” This conflict reflects the classic tension between positivist scientific knowledge and experiential fisher’s local ecological knowledge (LEK) (Nielsen et al., 2004; Pálsson, 1995), which reinforces the barrier between management and fishers.

3.4.4.7 Representation failure

Another obstacle to SP was the failure of representation, firstly, the failure of the cofradía to sufficiently represent fishers effectively in their relationship to fisheries authorities, and secondly of the dive sector to be legitimately represented in the management committee. When fishers were asked from whom they received information, only two out of 17 (12%) reported the cofradía as the source. Three reasons explain this disconnect between artisan fishers and the cofradía: first, although cofradías represent both artisanal and industrial fishing, the latter generate the majority of the institution’s income; second, there is evidence that some individuals have used cofradías as instruments to further their personal interests (Pascual-Fernández, 1999); and third, cofradías lack staff with sufficient technical and promotional skills (Alegret, 2000; Bavinck et al., 2015). These deficiencies chime with findings on other fishers’ organisations (Hollup, 2000; Jentoft et al., 2010; Nutters and Pinto da Silva, 2012; Suarez de Vivero et al., 2008; Yates, 2014). The fisheries sector is however, at an advantage due to the existence and historical importance of the cofradía with it being legally recognised as an organisation to represent the fisheries sector (Alegret, 1999; Arceo et al., 2013). In contrast, SCUBA diving is a relatively new industry. Within the current CPH-MPA management committee, the dive sector is represented by the federation of underwater activities in the region of Murcia. However, over the last ten years the local dive
centres have created a local divers association to represent the dive operators of Cabo de Palos. This association does not have a formal/legal position within the management committee despite its importance to represent the more ‘local’ needs and knowledge of the sector. Management said: “In the existing Advisory Council not all actors are represented, we should be engaging with them all. The diving quota was agreed with the fishermen, but not with the local divers association of Cabo de Palos, hoteliers, etc.”

3.4.4.8 Personal and sectoral conflicts
The final perceived obstacle to SP was the high level of personal and sectoral conflicts, both within and between stakeholder groups (Jones et al., 2013). Throughout the fieldwork, there was substantial evidence of underlying personal conflicts, which impeded communication and participation in decision-making processes. There was also evidence of sectoral conflicts, especially between fishers and divers. A diver said that: “Fishermen [...] are a special group because they think the sea is theirs and it’s difficult to communicate and collaborate with them.” There was also evidence of conflicts within the fisher group. A researcher said: “fishermen are unable of getting together to write a proposal because they have conflicts amongst themselves, they mistrust each other because of old issues related to fishing, they don’t know how to cooperate.” An NGO representative said that: “within the fisheries sector people are at odds with each other.”

3.4.5 WAYS OF IMPROVING SP IN CPH-MPA
Several ways of improving SP were proposed by respondents. First, self-governance by resource users was suggested. For example, a researcher said: “I befriend fishermen and have always told them that they should have had a more active participation in the reserve, even managing the entrance of divers.” An NGO representative said: “There is a kind of management whose goal is to achieve a healthy state of the sea but it lacks participation from the fishermen, they always go afterwards when in reality they should be the primary managers of the resource.” Second, an NGO representative proposed co-management: “I would like to establish processes of co-management so that users and the community can take part in the decisions.” Third, another NGO representative proposed: “creating measures that make public participation mandatory.” Fourth, a researcher proposed a round table: “All the groups can give their opinion but they don’t participate in the management, this is done by politicians. It’s true that they seek advice about social networks and the fisheries sector. But there is no forum or round table to work, that’s where the management policy should be created [...] if you don’t participate in the round table things are often decided
from behind.” Fifth, an administrator proposed that funding should be restored to management budgets to finance SP: “We used to hold two or three meetings per year for the advisory board and then a general one. We couldn’t do this for the past two years because they don’t let us, they cut our travel expenses”; “We always wanted them [fishers] to be listened to as much as possible. The problem is that this is not done so regularly due to budget cuts and lack of time to do it.” Sixth, a fisher proposed that routine meetings should be held before management measures were drawn up: “I think before creating a management plan they should meet with us, with the professionals of the fisheries sector, seek our advice about what and when to fish.”

3.5 DISCUSSION

From the above results, four main themes emerge for discussion.

3.5.1 VARIATION IN PERCEPTIONS OF SP

First, why was there such wide variation in stakeholders’ perceptions about the actual extent of SP in the management of the CPH-MPA? Even stakeholders within the same group (such as fishers) perceived different kinds of SP operating. One explanation might be that they interpreted the meaning of SP in different ways, so where one respondent saw SP, another would not (Nutters and Pinto da Silva, 2012). However, this explanation cannot account for the fact that respondents differed over whether or not an agreed kind of SP took place. For example, they differed over whether or not there were meetings held between fishers and administrators. Why do many respondents claim there were no meetings between fishers and administrators, whereas many other respondents claim there were such meetings? One reason may be that because resource users resented their exclusion from meetings, they exaggerated the extent of that exclusion, while administrators resented criticism for failing to arrange meetings, and so exaggerated the extent to which meetings took place. Another explanation for the divergence of views on the extent of SP may be the partial perspectives that most respondents have of the CPH-MPA. For example, many artisanal fishers are independent and lone workers who keep themselves to themselves and prefer to spend their time at sea rather than in meetings (McGoodwin, 1995). Accordingly, many of them may have limited knowledge of how fisheries management decisions are actually reached. Likewise, many managers spend most of their time in their offices and do not venture much out into the practical world of fishers. Accordingly, many of them may have limited first-hand knowledge of whether and how fishers perceive they are excluded from contributing to fisheries management decision-making (Herrera-Racionero et al., 2015). Moreover,
managers’ knowledge of the dive industry is very scant: an administrator admitted: “that’s beyond our competency.” The result is that each side has a sketchy perception of the activities of the other side, and so different assessments of the extent of SP are hardly surprising.

3.5.2 LITTLE SUPPORT FOR EXTREMES OF SP

It was noticeable from the results that while there was very little support for the most top-down ‘manipulation’ position on the typology of SP, there was also scant enthusiasm for the most bottom-up position of ‘community rule’ (Begossi and D. Brown, 2003).

The normative expressions used by respondents revealed a pronounced preference for the middle positions of ‘consultation’, ‘influence’ and ‘co-management’. Why? Mainly because both fishers and administrators are conservative and cautious by nature and experience. Most fishers in CPH-MPA are not radical ideologues demanding self-governance, but practical workers who want more SP instrumentally to secure their futures. Likewise, most administrators are not megalomaniacs demanding total control, but practical managers who are willing to accept more SP instrumentally in order to ward off conflict, but whose funds have been cut and so they cannot afford to promote participation. Although the results from Fig. 3.1 showing actors’ understanding of the different organisations involved in managing the CPH-MPA, exposed the governance system to be perceived as hierarchical and top-down with government departments taking a central role, it revealed there to be potential for influence from stakeholders including the local cofradía which had the most influence of all local user groups (divers, hospitality etc.).

3.5.3 OBSTACLES TO SP ARE ADVENTITIOUS

All eight obstacles to SP are adventitious, not immoveable or inevitable. Four of them – lack of will; lack of funding; poor communication; and dispute over science – can be overcome by more attuned and sensitive governance. Lack of will is myopic, turning a blind eye to future flashpoints. Lack of funding should stimulate innovative ways of bringing parties together inexpensively (Berghöfer et al., 2008). Poor communication is often remediable by politeness, such as answering letters (Nutters and Pinto da Silva, 2012). Dispute over science could be addressed by arranging more meetings between fishers and scientists (Mackinson et al., 2011). Furthermore, the results from the social network revealed which actors have most potential to act as information hubs (i.e. the Universities and IEO) (Bodin and Prell, 2011), offering pre-existing pathways that can be better utilised to connect stakeholders.
The remaining four obstacles: fishers’ status; lack of respect for managers; failure of *cofradias*; and personal conflicts – are largely cultural and can be overcome by increased empowerment and social capital, which takes more time (Hogg et al., 2013).

### 3.5.4 ASSUMPTION THAT THE MORE SP THERE IS, THE BETTER

Much of the above discussion is premised on the view held by most respondents that SP is valuable for decision-making in the CPH-MPA, and that up to a point, the more SP there is, the better for the running of the CPH-MPA. But this is a highly controversial assumption, and one that is increasingly questioned in the literature as case studies of SP in MPAs show disappointing results (Cooke and Kothari, 2001; Hickey and Mohan, 2004; Jones, 2014; Lane and Corbett, 2005; McClanahan, 2004; Saunders et al., 2007). One of the assumptions made by some respondents was that the greater the amount of SP, the greater the degree of consensus. But more SP may lead to more fractiousness being expressed rather than more consensuses being reached. Moreover, the question arises of whether there can be extensive SP in decision-making if it leads to attempts to undermine the obligations imposed on member states by the EU under the Habitat Directive and the Common Fisheries Policy (CFP) (Jones, 2014).

### 3.6 CONCLUSION

In conclusion, this study offers five recommendations to help deal with the controversies over SP in the CPH-MPA. The real question is not whether there should be any SP in the CPH-MPA management system, since there already are some SP elements in it, and most respondents seem to believe that they should be there. The real question is what kind of SP should there be, and to what extent. The first recommendation addresses this question by proposing that since an immediate consensus is unlikely on the proper role and extent of SP, an experimental approach of adaptive management could be adopted to determine what kind of SP might work best, and how to manage expectations about the level of participative decision-making that is feasible (Fox et al., 2013; Nutters and Pinto da Silva, 2012). The remaining four recommendations are made to facilitate this experimental process. For example, the second recommendation is to initiate better communication between resource users and the administration. Good communication channels and open, on-going dialogue are necessary to overcome distrust between actors; to help fishers feed their experiential knowledge into management decision-making (Coll et al., 2014; Damalas et al., 2015; Mackinson et al., 2011); and to enable managers to explain decisions taken and how fishers’ information has been used (Cvitanovic et al., 2015; Yates, 2014). To achieve this, there needs
to be a reversal in the cuts in the budgets of fisheries managers allocated for stakeholder consultation processes (Berghöfer et al., 2008; Pomeroy et al., 2001). The third recommendation is to identify knowledge brokers (such as the IEO and universities) and potential leaders that could encourage a two-way dialogue with fishers (Cvitanovic et al., 2015; Evans et al., 2015; Mackinson et al., 2011). For example, it is suggested that knowledge co-production and participatory research projects be developed to help garner increased support from fishers by including fishers’ knowledge and ensuring that research is more in line with local user needs. The fourth recommendation is capacity building for every group involved, administrators and resource users, increasing their training and experience with participatory processes, to ensure more equitable participation, empowerment of the different actors, and increased confidence in the decision-making process (Alegret, 2000; Bavinck et al., 2015; Nutters and Pinto da Silva, 2012). The fifth recommendation is to give greater attention to the selection of representatives, not only for the resource users but also for all other institutions involved. This would enable users to capitalize on the strength of their representatives, thereby focusing their pressure on the regional ministry, with whom travel and transportation costs associated with meetings would be lower than with the national ministry based in Madrid. These recommendations are practical proposals designed to improve the management system for the CPH-MPA by injecting modest amounts of SP into the decision-making process. They are not intended to transform the process, but only to smooth its operations.
CHAPTER 4  ECOLOGICAL THREATS

PERCEPTIONS OF THREATS FACING CABO DE PALOS- ISLAS HORMIGAS MPA AND POTENTIAL SOLUTIONS

A modified version of this chapter has been submitted to Coastal Management on 20th February 2017, for publication: Hogg K, Semitiel-García M, Gray T Noguera-Méndez P, Young S. Perceptions of threats facing Cabo de Palos- Islas Hormigas MPA and potential solutions.
PERCEPTIONS OF THREATS FACING CABO DE PALOS- ISLAS HORMIGAS MPA AND POTENTIAL SOLUTIONS

ABSTRACT

Faced with a multitude of marine threats the requirement for resilience thinking is becoming more urgent for marine protected areas (MPAs). This study based on 112 interviews conducted in 2013-2014 aimed to discover the perceptions of stakeholders as to what are the main threats, causes and solutions to the marine environment in a well-established MPA –Cabo de Palos (CPH-MPA). An MPA implemented to save guard fisheries and associated artisanal fishers has over time become a tourism ‘hotspot.’ I make use of resilience theory to inform my approach, since the central question of the study is how resilient or robust is the CPH-MPA in the face of existential threats to its existence as a fisheries reserve. Resilience theory, which incorporates ecological resilience, social resilience, and individual resilience, helps to analyse stakeholders’ reaction to threats by categorising them into passive, adaptive, and transformative, responses. Respondents were found to identify four main threats – over-fishing, excessive diving, pollution, and invasive species; attributed the threats to three main causes – ineffective management, poor environmental stewardship, and climate change; and suggested three kinds of solutions – do nothing, adapt, or transform – with a strong emphasis on transformation. The results of this chapter highlight the importance of adopting resilience thinking and adaptive and transformative management approaches. It is recommended that MPA policy makers consider these stakeholder perceptions, especially where they suggest transformative solutions, since without some major interventions, the CPH-MPA is in danger of transitioning from a fishing reserve to a diving reserve, and as a result may not fulfil the requirements of either ecological, social, or individual resilience.

Key words: marine protected areas; resilience; perceptions; threats; solutions; adaptation; transformation

4.1 INTRODUCTION

Coastal habitats are some of the world’s most valued and productive ecosystems and, unsurprisingly, some of the most heavily degraded, with human pressures continually increasing (Crain et al., 2009; Halpern et al., 2008). Located at the interface of land and sea,
coastal habitats are subject to threats from human activities that occur in both realms (Crain et al., 2009). Marine Protected Areas (MPAs) are a favoured policy solution to address the well-documented global problems of marine habitat degradation, overfishing, predatory extraction, illegal fishing and users conflicts over resource use (Caveen et al., 2013; Crain et al., 2009; Halpern et al., 2008; Micheli et al., 2013; M. Silva and Lopes, 2015). Given the multitude of marine threats facing coastal marine habitats and the limited conservation resources available, MPA managers and the authorities responsible are under increasing pressure to prioritize how and where time, money and other resources are used (Crain et al., 2009). This pressure is compounded by funding problems, EU priorities, and political interests (Young et al., 2014). Often a top-down process of problem prioritisation and resource allocation conflicts with what stakeholders, who interact daily with the marine environment, view as the most urgent issues or primary concerns that need to be addressed. Indeed one of the most recognized shortfalls of MPAs appears to be centralized planning and failure to incorporate the different actors and local communities into decision-making processes and management (Agardy et al., 2011; Ferse et al., 2010; Hogg et al., 2013; Lundquist and Granek, 2005). Curtin (2014:2) said that: “Often in resource management, decision makers assume they know the problem before they develop a solution, and seldom examine the underlying assumptions or seek alternative explanation or solutions.”

Public participation is now recognized as a key ingredient of good governance, and involving the relevant actors in meaningful MPA decision-making provides a number of benefits (Coffey, 2005). For example, it increases and facilitates a common understanding of a complex ecosystem and human influence on it and provides a forum to examine human uses of the ocean, to resolve conflicts and to address the threats faced (Nutters and Pinto da Silva, 2012; Pita et al., 2010; Pomeroy and Douvere, 2008). Informal local knowledge is often key to understanding complex systems, since, as Curtin (2014:3) said: “The devil is in the details, and the success or failure of programs often turn on subtle nuances missed by dispassionate, external academic assessment.” MPAs typically affect diverse communities and actors from different sectors and levels of society who often have varied types of knowledge and hold divergent and opposing positions. These complex views, values and images that people associate with the marine environment and its conservation, define the problems and solutions they face and how they interact with an MPA, and are what ultimately determine its social acceptability and potential success (Jentoft et al., 2012; Thomassin et al., 2010; Voyer et al., 2015b; 2015a). For example, stakeholders’ perceptions of marine conservation initiatives affect their compliance with reserve rules (Abecasis et al.,
Without broad and diverse input, decision-making too often frames problems and potential solutions that serve to maintain the existing power structure and further disenfranchise the powerless (Redman, 2014; Schoon et al., 2015). Recent work has emphasized the benefits of involving stakeholders and communities in understanding threats to, and values of, marine ecosystems, and in designing conservation and management strategies (e.g., implementing the California Marine Life Protection Act; (Weible et al., 2004)). Participatory processes can result in better environmental outcomes over the long run (NRC, 2008) because they lead to more complete understanding of ecological and socioeconomic dynamics and greater stakeholder buy-in.

However, despite the emphasized and recognised need for a better understanding of the human dimension underlying marine conservation and management, research in this field remains fairly limited, accounting for only a small proportion of contributions to MPA literature (Thomassin et al., 2010). This chapter contributes to this growing literature using a well-established MPA, Cabo de Palos-Islas Hormigas (CPH-MPA), Spain. Through 112 interviews I analyse the perceptions of different actor groups associated with CPH-MPA as to what are the main threats, causes and solutions to the marine environment in this area. Perceptions-based studies such as this one are considered an efficient and holistic way to provide critical insights into how to improve conservation effectiveness, the results from which can be more easily incorporated into policy (Bennett, 2016; Beyerl et al., 2016). The chapter makes use of resilience theory to inform its approach, since the central question of the study is how resilient or robust is the CPH-MPA in the face of existential threats to its existence as a fisheries reserve. Resilience theory, which incorporates ecological resilience, social resilience, and individual resilience, helps us to analyse stakeholders’ reaction to threats by categorising them into passive, adaptive, and transformative, responses. The results of this chapter emphasise the need to apply resilience thinking and adopt adaptive and transformative management approaches. This research has important implications for MPA managers as it offers a useful way to improve management, by prioritising interventions that will garner public support or at least increase MPA acceptance, smoothing the way for meaningful conservation outcomes (Voyer et al., 2015b).

In section 4.2, the resilience theoretical framework is described, while in section 4.3 the research methods used in this study are explained. In section 4.4, the results of the fieldwork are presented and discussed in section 4.5, and in the concluding section 4.6, there is a summary of the chapter’s findings and several recommendations.
4.2 THEORETICAL FRAMEWORK

This chapter is informed by resilience theory. The concept of resilience has long been recognised in many academic fields. For example, ecologists have described resilience in an ecosystem in two ways: one that focuses on the speed of its return to equilibrium following a disturbance; and the other that focuses on whether the system can or cannot recover its equilibrium (Walker and Salt, 2012). Sociologists have studied collective ways in which societies cope with extreme threats to their stability (Garmezy, 1971; Lucini, 2013; Luthar et al., 2000; Olsson et al., 2015). Psychologists have found marked differences in the resilience of individuals faced with traumatic and disastrous circumstances (Bonanno, 2004; Olsson et al., 2015). Drawing on this extensive literature, I can divide resilience theory into three forms: (1) ecological resilience theory; (2) social resilience theory; and (3) individual resilience theory. As we shall see, all three forms of resilience are exemplified in the perceptions expressed by various respondents about the threats facing the CPH-MPA, the causes of those threats, and (above all) in their proposed solutions to meet the threats.

4.2.1 ECOLOGICAL RESILIENCE THEORY

In the literature, there is a distinction between ecological resilience meaning the capacity of an ecosystem for adaptation, and meaning its capacity for transformation (Bown et al., 2013a). An ecosystem’s capacity for adaptation is its ability to adapt to threats by absorbing them, thereby retaining its own integrity or current configuration. As Walker and Salt (2006:133;140) say: “Resilience is the capacity of this system to absorb change and disturbances, and still retain its basic structure and function – its identity.” An ecosystem’s capacity for transformation is its ability to respond to threats which it cannot absorb, by changing its configuration and transforming itself into a different kind of ecosystem: “transformability is the capacity to create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable” (Folke et al. 2005:457). Interestingly, Pitcher (2005) sees transformability not in terms of ‘fundamentally new configurations’, but of the ecosystem being transformed ‘back to the future’ – i.e. restored to its pristine past. We will see that some respondents refer to the CPH-MPA’s capacity to absorb the threats facing it, while other respondents regret what they see as its transformation from a fishing reserve to a diving reserve, and wish they could turn the clock back to the past.

4.2.2 SOCIAL RESILIENCE THEORY

Social resilience is the capacity of a people collectively to respond to environmental, socio-
economic, political or other threats to their well-being, by adjustments of their own behaviour in order to maintain social equilibrium or welfare. Significantly, social resilience may not always coincide with ecological resilience: “Systems may be ecologically resilient but socially undesirable, or they may be socially resilient but degrade their environment” (Folke et al. 2003:354). For example, the collapse of the Newfoundland cod fishery (ecological non-resilience) in the late 1980s led to a more profitable shrimp fishery (social resilience) (Gibbs, 2009). This raises the question of whether the concept of resilience is a technical term or a normative term. Ascher (2001) claims that although many writers treat it as if it is a purely technical term, it has strong normative undertones in that it presupposes that features of the ecosystem are worth saving. Walker et al. (2002:3) state that: “The goal of resilience management is to prevent a social-ecological system (SES) from moving into undesirable configurations.” So resilience is not an end in itself but a means to other ends. Indeed, as Holling and Gunderson (2002) point out, resilience is not always good (a ‘bad’ society may be very successful in resisting reform), so the aim is not resilience per se, but the kind of resilience that satisfies human aspirations, which include ecological, socio-economic, and governmental values. As Gallopín (2006:300) points out, this means that adaptability has morphed from a biological concept into an ethical concept: “Adaptability [...] was originally defined in biology to mean the ability to become adapted (i.e. to be able to live and to reproduce) to a certain range of environmental contingencies [...] [But] in the human realm, and thus also in the SES, the criterion for adaptness goes far beyond ‘being able to live and reproduce’; it includes the viability of social and economic activities, and the quality of human life.” We will see respondents enunciating normative conceptions of social resilience in the form of perceptions of their collective responsibility for both causing and dealing with the threats facing the CPH-MPA.

4.2.3 INDIVIDUAL RESILIENCE THEORY

This ethical dimension of resilience is even more pronounced in the conception of individual resilience. Individual resilience theory is about the way individual humans respond to threats to their well-being. Faced by the insecurity of neo-liberal economic life, Chandler (2014) and Chandler and Reid (2016) draw a contrast between two modes of individual resilience: modernist and postmodernist. The modernist mode encapsulates the notion that resilience lies in adapting to the circumstances that face you. The postmodern mode encapsulates the notion that resilience lies in transforming the circumstances that face you. There is a third response to insecurity that Chandler and Reid (2016) mention which encapsulates the notion that resilience lies in accepting thecircumstances that face you.
4.2.3.1 Passivity
Passive people either complacently see nothing under threat, or resignedly see the disadvantaged circumstances as a given, beyond their control. The complacent people ignore the warning signs of an unsustainable future. The resigned people adopt a coping strategy of hanging on, characteristic of older fishers who have lost most of their fishing opportunities but are determined to continue fishing because it is a way of life or vocation rather than a job or a means of remuneration. Several administrators complacently held that the CPH-MPA was not under threat, while some fishers expressed the view that they were powerless to prevent the threats.

4.2.3.2 Adaptation
Adaptation is a mode of resilience in which individuals do not complacently or resignedly accept the circumstances in which they find themselves, but take positive steps to adapt to those circumstances. Chandler (2014:5) refers to this mode of resilience in terms of “responding (‘bouncing back’) from disaster or crisis”; “a process through which crises make us stronger, more flexible, and more open to new opportunities”; “about how we can act [...] to minimise the effects of crises.” As Chandler (2014: 6; 46) notes, this mode of resilience, which he calls the classical or modernist mode, focuses on “the subject’s internal capacity to withstand pressures or stresses which were understood to be externally generated.” Adaptors have come to the conclusion that it is not possible to resist external forces such as globalisation, and that our attempts to do so are not only futile but hubristic, in that we will end up worse off than if we adapt to them. “The human here is conceived as resilient insofar as it adapts to rather than resists the conditions of its suffering in the world” (Chandler and Reid, 2016:68). As Beck (2006) notes, we now live in a risk society, where it is not possible to eliminate risks but only to negotiate our way around them. This does not mean we are helpless in the face of risk: on the contrary, we can be creative in adapting to adverse circumstances, especially in changing our own selves. In what follows, there are many examples of adaptive behaviour reported by respondents.

4.2.3.3 Transformation
Transformation is a mode of individual resilience that rejects the classical or modernist mode of adaptation that focuses on the individual’s ability to adapt to circumstances, and instead embraces the strategy of changing those circumstances. Transformation is a post-classical or post-modernist mode of resilience, which seeks to reshape the world, not adapt to it. The modernist mode of resilience is characterised as an emasculation of human
autonomy, by contrast to the postmodernist mode, which frees the human subject. Chandler and Reid (2016:142) say that: “I will suggest ways in which we can begin to reinstate the human subject through bringing back the external world as an object of engagement and transformation.” Proactive transformation is essentially a bottom-up strategy (“local transformative agency”) (Chandler, 2014:110) to challenge the top-down policy-making strategy of neo-liberalism. Chandler and Reid (2016:169) says: “for me the problems are in the world, not in our heads [...] [we need] to remake the world rather than to remake the human”. We will see that many respondents sought to transform the situation in the CPH-MPA by transcending the threats that beset it.

It is important to note that there are links between ecological, social, and individual resilience theories. Running through all three theories is the distinction between adaptation and transformation, but with different connotations. In the case of ecological resilience, adaptation means maintaining the status quo - i.e. the integrity of the ecosystem, which is the optimal goal – while transformation means creating a new configuration, which may or may not be an improvement on the status quo. In the case of social resilience, adaptation means maintaining economic livelihoods, though if this threatens ecological health, it may be that the system has to be transformed. In the case of individual resilience, adaptation is inferior to transformation in that it means subordinating yourself to externality, whereas transformation means subordinating externality to your needs. In section 4, we shall see that the respondents exhibit all of these responses to threats facing the CPH-MPA, especially the responses characterised in individual resilience theory.

4.3 METHODS

4.3.1 STUDY AREA

For more detailed information on Cabo de Palos and the MPA please refer back to Chapter 1 section 1.5.5.3. Information of most interest to this chapter is repeated here.

For example, CPH-MPA is considered a biogeographic frontier- influenced by the Atlantic sea as well as the Mediterranean (Rossi et al., 2014), which, along with its unique geomorphology of being a narrow continental shelf formed by a series of sea hills and islets, has created a biodiversity hotspot (Calvín-Calvo et al., 1998). Ecological studies show the MPA to be an ecological success and that protection has resulted in an increase in the abundance and biomass of numerous commercially important species, and a recovery of the marine ecosystem (Felix-Hackradt et al., 2013; García-Charton et al., 2004; Hackradt et al.,
Cabo de Palos village is historically linked to the fishing industry and is surrounded by a developed tourist area to the north (La Manga and Mar Menor) and industrial area to the south (Escombreras). Up until the 1960s, the village was very underdeveloped and had no electricity or running water, but this changed with the development of tourism. The village maintains a small but declining artisanal fishing fleet (the fleet has more than halved in 10 years) (BOE, 2010). Since the creation of CPH-MPA, the SCUBA diving industry has grown substantially with nine dive centres operating at the time of study. Various regulations apply to the dive industry, including a quota (see BOE (2010)). In previous years, the quota was exceeded frequently, with records of 300-400 dives per day.

4.3.2 DATA COLLECTION
For more information on data collection please see Chapter 1 section 1.7.

Data used in this chapter were collected using semi-structured interviews (total = 112) conducted with direct marine resource users (fishers n=17, marine tourism operators n=38), community members (n=44 who were in many cases considered as being indirect resource users), key informants (KIs) (n=13). KI’s included representatives from the relevant administrations, authorities, research institutes, NGOs, sector union/association representatives and the media. Three community validation and feedback meetings were held between 2013 and 2014 allowing for triangulation and increasing the validity of the data (Bryman, 2012).

To identify perceived problems and opportunities, respondents were asked to provide their opinion on the health of the environment; changes seen over the last 10 years; to consider what pose the most significant threats to the marine environment surrounding the reserve, what are the causes, and to offer recommendations to management.

4.3.3 DATA ANALYSIS
For more information on data analysis please see Chapter 1 section 1.8. Dominant themes were considered through an inductive process of reading and re-reading the transcripts, identifying repeated words and themes within and between interviews, and grouping the codes generated into collections of similar content (Bryman, 2012), identifying themes such as ‘extractive use’, ‘global threats’, ‘coastal planning failures’, and ‘stewardship’. This technique, borrowed from grounded theory (Glaser and Strauss, 1967), allows hypotheses
about the values respondents use to evaluate marine health and management effectiveness to be formulated from the data, rather than beginning with hypotheses to be tested.

4.4 RESULTS

There are three parts to the Results section: respondents’ perceptions of threats; causes; and solutions.

4.4.1 THREATS

Although many diverse threats were mentioned, the majority by resource users, respondents perceived four main threats to the CPH-MPA: (1) over-fishing; (2) excessive diving; (3) pollution; and (4) invasive species.

4.4.1.1 Over-fishing

Respondents held there was too much fishing pressure on the reserve. Some said artisanal fishers took too many fish - a researcher said: “general fishing pressure, including artisanal fishing, is unacceptable given the existing resources.” But most respondents referred to industrial or trawl fishers and to illegal fishing by recreational fishers and divers. On trawl fishers, one artisanal fisher said: “The worst thing are trawlers that sweep everything away.” On illegal fishing, an administrator said: “The greatest threat right now is illegal fishing by non-professional fishermen who fish the larger-sized protected species of this area.” Divers said: “There is illegal fishing due to the crisis, they fish in the reserve because there's a lot of life. Years ago there weren't so many illegal fishermen.” On recreational fishers, a diver said: “recreational fishing, not by the sport fisher doing apnea but other people doing it irresponsibly. Anyone can easily buy a harpoon and they don't know what they are allowed to fish.” The cofradía said: “Nobody controls these people [...] this happens because those are wealthy people and the authorities turn a blind eye when they want because it’s in their interest to let them do what they please.”

4.4.1.2 Excessive diving

A cofradía representative said: “The non-controlled overcrowding of divers [...] divers touch everything, they take what they find in the bottoms, they break the coral and harm everything.” Fishers said: “Last year some 36,000 divers in the reserve”; “In a fishing reserve! What we actually have is a diving reserve instead of a fishing reserve.” An administrator said: “the level of diving is [...] industrial. Such is the opinion of the Ministry, and the Region of Murcia knows it [...] We don’t want to die out of success.” A researcher said: “I don’t think
fishing is as problematic as diving.” Another KI said: “It has international prestige, people come with little experience and due to the strong currents people grab anything from the bottoms not to be dragged along, they destroy everything, that’s the biggest problem of Cabo de Palos.” Divers themselves admitted that diving activity caused a damaging impact on the environment and was reaching unsustainable levels: “I think it’s too much, it’s getting out of control.” Community representatives said: “divers are stressing the fish in the reserve”; “Wherever overcrowding exists things get spoiled.”

4.4.1.3 Pollution
For divers, fishers and residents issues surrounding pollution were the most frequently cited, however as we shall see in section 4.4.3.1 both researchers and the administration do not consider this to be a serious threat. Divers reported pollution from boats: “Sometimes boats spill oil into the sea, they spill paint into the water, it colours the water, sludge accumulates in the port and if the sludge was analysed both the port and the reserve would be closed.” Community members said: “The sea and the people who live here are affected by boats’ waste thrown into the sea.” Other divers referred to sewage: “Non-treated [waste] water that gets spilled, the waste waters from the emissaries [...] which seem to be always broken.” Fishers said: “Underwater emissaries. They are broken and they spill less than 100 metres off shore.” Members of the wider community spoke of: “The waste dumped into the sea, plastics, agricultural fertilizers and human pollution in general.” Divers also complained about litter and garbage: “The great problem is garbage, the waste dumped into the sea.” Community members claimed that: “waste disposal and bottles and plastic can be found everywhere in the sea.” Pollution also caused problematic mucilage blooms, for example fishers said: “Garbage, plastics, currents and degradation of the seabed provoke the emergence of mucus that doesn’t allow fishing”; “The slime (micro-algae) appears every now and then and it resembles oil or gelatin.” Divers said the mucilage bloom was affecting the environment, their own activities and those of others: “Mucus or slime, sticky substances or gelatine that sticks to the nets and hinders fishing. In the last years there’s a lot more than before, I have seen nets with that thin film of gelatin”; “When you clean the equipment it comes out black.” A fisher also mentioned mine pollution: “The mines and the areas of waste dumping, although the mines were closed twenty years ago they still pollute.”

4.4.1.4 Invasive species
The administration reported the: “entry of invasive species, Caulerpa racemosa, which affects not only the Posidonia but also the coral, the maerl.” A researcher said: “We also
have an invasive coral, Oculina patagónica, which seems to be provoking the displacement of
the native communities and is related to an increase of the urchins’ population in the past 10
years.” Divers said: “this invasive algae that is covering the reserve, Caulerpa, it started in
the coves and we now see it in Piles1 too. It’s a natural threat, it suffocates sponges”; “There
is a lot of Caulerpa which is an invasive algae that arrives with boats. It has colonized and
killed other species.” Fishers said: “For the past 5 or 6 years we’ve been catching fish species
that had never been caught before, they are somehow more tropical, and I think this is due
to the waters getting warmer”; “We catch fish from the Canaries that weren’t here before.”

4.4.2 CAUSES

Respondents blamed these threats on three key causes: (1) ineffective management; (2)
poor environmental stewardship; and (3) climate change.

4.4.2.1 Ineffective management

Many respondents blamed lack of law enforcement. For instance, a researcher said: “I think
there is enough legislation; the problem is that this is not applied.” Divers said: “They
[regulations] are not enforced, sometimes you see things that shouldn’t be done, but the
authority comes by and does nothing, who am I to do anything?”; “Nobody controls the
restaurants that buy illegal fish.” A fisher said: “I called twice the reserve at night to warn of
the presence of illegal fishermen in the reserve, and nothing happened.” Cofradía
representatives blamed the government’s prioritisation of tourism: “They don’t really take
the reserve seriously because it would harm the tourist industry more than the fisheries
sector, and they are interested in preserving tourism because it brings more money.” A
researcher blamed lack of political will, claiming that the government was not committed to
environmentalism: “there is a difficulty with politics, an issue of political will. We are ruled by
people whose ideology is not in favor of preservation.” An NGO representative claimed that:
“the administration wants to give the appearance of being interested in these things but [...] they
are not interested at all. In [...] the Region of Murcia, the policies applied in the past
fifteen years have been clearly aimed to unprotect natural spaces.” Residents claimed: “The
administration doesn’t exert any control, it’s only interested in tax collection.” A diver said:
“They seek sustainability among fishermen, divers and recreational users but they only care
about the money that people spend and making sure that people don’t make complaints.”

1 ‘Piles’ 1 & 2 are the names of diving sites.
Other divers even accused the administration of corruption: “The Spanish administration doesn't work, they're corrupted, their only aim is to fill their pockets with money, they don't give a shit about what's going on in the place they manage.” Administrators blamed their poor performance on a reduced budget: “our budget [...] has decreased due to the economic juncture [...] there are things that can be done and are not being done because of the lack of resources.” Researchers blamed lack of administrative co-ordination: “It’s not efficient, it’s chaotic [...] there is a lack of coordination because Cabo de Palos is partly managed by the Autonomous Community and partly by the State and both parties are not coordinated”; “The problem of the marine management in Spain is that there are too many administrations with something to say but none of them is in contact with the others, therefore there is no real marine environmental policy.” Divers said: “The reserve is managed from two different administrations that don't talk to each other: the central and the autonomic administrations and within the latter, from the Fisheries Department that doesn't talk to Environment, and Environment which has technical staff that has no idea of biology, which means everything is regulated arbitrarily”; “In some cases the Fisheries regional department tells us to dive less but then the Tourism regional department spends lots of money in publicity to tell people to dive.” Researchers also blamed the administration for ignoring their expert reports: “We make huge research reports both basic and applied and for them that represent nothing more than a little booklet they don’t use.” A KI blamed the ignorance of the administration: “The problem we have in Murcia is that the people in charge of the administration are people whose specialty is not this. The chief of the Fisheries Service is a man who before this was in charge of horses’ vaccinations and the Director General is a woman who was in charge of sheep’s vaccinations [...] they don’t make the right ones [decisions] because they don’t know the sea or the fisheries sector, they have no clue.” Many other respondents blamed the lack of stakeholder consultation, as we saw at length in Chapter 3 on stakeholder participation (SP).

### 4.4.2.2 Poor environmental stewardship

Human selfishness was suggested as a cause of many of these threats. An administrator said people fish illegally: “Because then they sell those fish at a very good price in local restaurants and it’s profitable, that’s why they do it.” Another administrator said: “Large-sized fish species such as the grouper are highly valued; therefore [...] they sell well [...] There is a market for that and they sell it, obviously they don’t eat them at home.” A diver said: “diving has a very short season and diving centers [...] want to profit as much as they can in summer.” A member of the community said: “Money moves everything but if we destroy
what we have [...] then we won’t have anything (neither tourism nor reserve).” Many respondents put it down to lack of environmental awareness. For example, divers said: “People are not educated, they come in summer and they don’t care at all because they don’t know the sea”; “education is one of the problems because we don’t have yet an environmental awareness clearly defined and clearly rooted in our society.” Community residents referred to lack of care: “The lack of care of some fishermen and seafarers who use the sea as a toilet”; “People often don’t care beyond their home doorway”; “The irresponsibility and lack of public spirit.” Other respondents referred to a lack of sense of ownership of the sea: “people don’t take care of the sea because they don’t think it’s theirs, if each of us were given a piece of sea we would take care of it.”

4.4.2.3 Climate change

The third cause mentioned by respondents was climate change. A researcher said: “If you are talking about the problem of coastal erosion within the reserve there are problems in the beaches, but this is a problem of the greenhouse effect, the rise of the sea level.” Although most fishers said they did not know the cause of the mucilage blooms, fishers said changes in the climate had an influence: “Slime is a consequence of changes in water temperature from cold to warm.” Divers said climate change was the cause of increased invasive and new species now seen: “Climate change influences species such as canary horse mackerel or triggerfish [which] have appeared in the past five years due to the temperature rise.”

4.4.3 SOLUTIONS

Respondents suggested three kinds of solution to these threats, which match the three kinds of individual resilience outlined in section 4.2: (1) passively do nothing; (2) adapt; or (3) transform. These solutions are not specifically tied to particular threats.

4.4.3.1 Passively do nothing

‘Do nothing’ is a passive, either complacent or fatalistic, response to the problems facing the CPH-MPA. An example of complacency is when respondents say they do not need to do anything, as, when asked if they had any suggestions, an administrator said: “No, I think that it is more or less in line with other European marine reserves and I think at the moment it works fine.” The representative of the cofradia said that overall the impact of the peak season is short-lived and the environment can withstand these intermittent periods of pressure: “the health here is exceptional, it’s very good so you don’t need to do anything [...] It’s only the two months of summer that you have many recreational boats but [...] the summer period is not long enough to have an impact on the health of the sea.” A community
A representative said: “I think diving is wonderful and I don’t understand why there’re so many people complaining about it. They protect the bottoms better than anybody else.” Some divers claimed that diving was well controlled: “everything is pretty well controlled”; “I don’t regard it as over-exploited at all.” The administration said that pollution was not a real threat: “The closest emissary is in Cala Reona and has a low load and the level of pollution is very low and the renewal of the waters is very high due to the currents in the area.” A researcher said that the reserve was protected from much pollution, and it could recover quickly: “oceanographic and geographic conditions prevent it from being badly affected from a pollution point of view [...] Then, if there are general environmental issues such as eutrophication or slime they affect the reserve but it recovers quickly.” An example of fatalism is when respondents say they cannot change anything, as when divers said they were powerless: “You can’t challenge the administration. As an individual you’re nothing.” Another diver said it was up to scientists and government to solve the problems: “I don’t know how to do it, marine biologists should do it.” A fisher declared that his future lay in the hands of others: “this is up to the people who take care of the reserve.”

4.4.3.2 Adapt

‘Adapt’ is an active response to change one’s behaviour to suit the change in circumstances facing the CPH-MPA. For example, a fisher spoke of how fishers have already adapted their fishing activities to suit their current circumstances: “we catch what there is, if we see there's little of something we fish something else to let the later rest, it's an informal procedure of fishermen, we switch between gears.” Some divers said they must adapt their behaviour to be more environmentally responsible: “we must put more emphasis on diving differently, putting more attention to finning, buoyancy and respect of the marine environment”; “in the world of diving if we don’t take care of the marine environment we will end up diving in a marine desert”; “motivate divers to make a good use of it, and take care of it to sustain it”; “we must take care of it and leave it as we found it.” Other divers said they had already begun to adapt their activities: “Diving centres try to give guidelines and instil eco-diving to avoid kicking with the fins and touching the bottoms”; “We stress the importance of not touching anything in the reserve, you can’t take anything”; “There aren’t any written rules but in the diving centres we have informal ones such as to avoid dropping the anchor or dumping waste overboard”; “Clubs have their own internal policy to reduce the impact on the marine bottoms, to control the number of immersions within the reserve.” The administration said they had adapted to changed financial circumstances: “when there is no public money to invest in guards there are civil servants from the Region of Murcia doing
night shifts. Therefore the forced adaptation to harder conditions involves keeping the same line of work”; “We can’t lower our defences; to the extent possible we don’t do it.” Moreover, the administration said that although cuts had been made, political decisions had been taken to ensure no further cuts could occur: “In the specific case of the MPAs, given the social impact that budget cuts in the MPA management had, the administration decided not to make more cuts because that would jeopardize all that had been achieved with the establishment of the MPAs.” Community residents said we can adapt through a change in attitudes: “Everything can be improved if we all do our best”; “If people are responsible, tourism doesn’t need to be harmful.” An NGO representative agreed: “I think an improvement of the social awareness is needed, both in the local people and the people coming from outside, towards more measures to preserve the marine environment.” Administrators said: “Awareness must be raised in the population so that the sea is respected”; “the school curriculum of the present 21st century should include a lot more information about the environment in general and the marine environment in particular.” A community resident urged collaboration: “We all must work together so that it remains as it is now.” Divers agreed: “we have realised that each working alone we achieve nothing”; “There must be a sense of coexistence and symbiosis.”

4.4.3.3 Transform

‘Transform’ is a response to change the external circumstances facing the CPH-MPA. Eight kinds of transformation were recommended: (1) SP in management decisions; (2) stronger enforcement of existing regulations; (3) new regulations to control diving; (4) more flexible application of EU Directives; (5) transformation of the reserve; (6) more ecological research; (7) provision of environmental education; and (8) direct support for artisanal fishing.

(1) On SP, (as we saw at length in chapter 3) many actors suggested that the external circumstances facing them should be transformed by adopting more participative and bottom-up forms of governance. A cofradia representative said the governance system should incorporate resource users: “It’s not very effective because they should take more into consideration the opinion of fishermen who are working there every day but they put rules that do not suit our needs.” A diver wanted self-management: “If they would allow us, the diving clubs, to manage it, everything would be better than it is now with the civil servants.” A resident wanted self-management by fishers: “I think it should be managed by the fishermen who really know the area [...] It should be managed from within.” A researcher recommended co-management: “To have a true marine policy coordinated between the
different areas and to incorporate all actors to achieve a co-management.” An NGO representative agreed: “I would like to establish processes of co-management so that users and the community can take part in the decisions.” Another NGO representative suggested making SP compulsory: “creating measures that make public participation mandatory.” A resident urged the administration: “to listen more to local people, to people who are involved in local issues, the tourist sector and diving centres, to analyze the situation so that everyone can participate.” The administration recognised that it needed to work more closely with society: “I think that in marine reserves there is disquiet over the issue of governance, but we need to develop means to be closer to society, the NGOs.”

(2) On stronger enforcement of existing regulations, several divers said more surveillance is needed: “I would intensify surveillance to eradicate illegal fishing”; and called for “Very severe sanctions that would prevent people from violating the regulations.” One diver even suggested introducing an underwater surveillance system: “subaquatic surveillance, divers that can dive any time in some of the reefs, and make guides have some identification in their bottle so that if the guard comes and sees something wrong he can take the guide’s number and fine them.” Another diver wanted stronger action taken against restaurateurs who bought illegally caught fish: “the administration or the Guardia Civil should chase the establishments [restaurants] that sell these kinds of species and sizes I would love to go to the market and denounce ‘this cannot be sold’, if fish doesn’t get sold, then they don’t bring it and they don’t catch it in turn.” Researchers said the MPA’s funding system must be reformed to ensure adequate enforcement: “there should be a [...] financing system that is not subject to the fluctuations of the economy. There must be a system in the reserve to produce some income that is then used to enhance the mechanisms of control and surveillance.”

(3) On new regulations to control diving, divers themselves suggested that the regulations controlling diving should be enhanced, and they proposed a raft of new restrictions, including minimum qualifications for divers to allow them to dive; to establish reserve guides to control all immersions; to require all dives to take place within diving centres; and to limit the boats in diving centres to three, with a maximum of 10 divers per boat.

(4) On applying EU Directives more flexibly, a researcher said the system of conservation must first be transformed by adhering to the EU Directives: “We are accumulating Directives that are not being applied. First thing we must do is to apply them. If the existing regulations are respected many problems would already be solved.” Second, a cofradía representative
said there should be more flexibility and efforts made to adapt EU legislation to meet local needs: “we think that you must adapt the law to the different situation of the area, and every place has a different fishing specialty. For example the fishing in Murcia and in Vigo is different. Depending on the area where you apply it you need to modify the law, adapt it to the needs of the fishermen of the different areas. But they don’t do that here.”

(5) On transforming the reserve itself, divers said the working of the reserve should be transformed to better accommodate their needs: “We’re making a mistake if we concentrate all divers in four spots when there are many more available spots in other reefs”; “If 80 people dive in the same spot that area suffers a lot and is in a very different state to the one next to it, which has not been affected [...] it’s difficult for them to recuperate because there is no switching between the two.” A diver suggested a transformation through expanding the reserve: “If the whole of Cabo de Palos was a reserve we would get rid of illegal fishermen. We would earn in diversity, everything would get full of species.” A community resident agreed: “expand the protected areas to include coves for example.” The administration agreed: “The idea of expanding the area has been suggested on occasions and that would be ideal.” A researcher held that more MPAs should be created to form a connected network: “It would not be exclusively Cabo de Palos [...] it would also include Isla Grosa, el Farallón and Islas Hormigas which right now are protected only because they are SPAs [special protection areas]. Also to protect Cabo Tiñoso and Cabo Cope.” Zoning was also suggested as a way to transform the MPA. A diver said: “you could specify certain actions that will improve the use of the same space [...] for fishermen to avoid fishing where there is diving and not dive where there is fishing.”

(6) On more ecological research, researchers said that much more ecological research should be carried out: “There are many things we don’t know yet, you may have an a priori idea of how an ecosystem works but then you realize that there are things we don’t know”; “there are very few continuous monitoring studies in Cabo de Palos considering that it’s a marine reserve, considering its importance and the attraction produced by all the studies that we’re doing in the reserve [...] This needs to be solved for information is basic for management”; “The diving centres themselves demand information, for example they would like to commit to eco-diving standard practices which are needed within a marine reserve but they say they lack information [...] they try to teach good practices so that people dive well but they need the biological part: which species are more fragile, which should be taken care of. They lack this kind of information”; “we miss more intervention from experts, more participation from
experts, more participation from public research institutions, universities.”

(7) On provision of environmental education, an NGO representative called for more ecological information for fishers to be provided: “There is also lack of information [...] training for fishermen (regarding fishing gear) [...] is also important for neither the guilds or the fisheries service have explained to them well how they can improve their fishing without prohibitions but rather with dialogue and a more participatory process.” On environmental education for the general public, community residents said: “the government - they should encourage caring for the environment”; “there should be more information brochures”; “there should be [...] campaigns in high season, for example.” A diver said: “We should be educated from being children in a healthy and balanced environmental awareness.” Another diver suggested a compulsory environmental awareness course for divers: “I would create an environment course which is obligatory for divers, to raise awareness.”

(8) On direct support for artisanal fishing, the administration itself suggested: “we’d like to talk to the society and give an added value to artisanal fishing. Artisanal fishing has a value, in much the same way that ecological vegetables have. This is some kind of ecological fishing. It’s not just that the fish is different from the aquaculture fish; it’s also that the fishing method is much more environmentally friendly. We have already done some theoretical study on branding, not of the fish but [its] extraction quality. We are also talking to MSC but it’s very difficult, it’s an ecologic label that is not well adapted to artisanal fishing.” Another suggestion was to encourage fishers to diversify into touristic roles. For example, a researcher said: “the fishing pressure should be reduced by proposing alternative activities for the fishermen such as fishing-tourism or any other kind of activities by means of which fishermen can exploit the cultural part of their work.” A diver said: “Offer fishers ways for being diving centre skippers so that they stop fishing, it's happened everywhere. I would invite fishermen to sell their boats and make them skipper for life in diving centers.”

4.5 DISCUSSION

In this Discussion section, I show how the above results can be interpreted through the lens of the resilience theoretical framework. First, there are elements of ecological resilience in the statements made by some respondents that the CPH-MPA had the adaptive capacity to absorb the threats posed by over-fishing, excessive diving, pollution and climate change. There are also contrasting elements of ecological resilience in the statements made by other respondents that the CPH-MPA was in danger of transformation into a degraded ecosystem
because it was incapable of absorbing those threats and retaining its current identity. Interestingly, administrators tended to focus on threats that they had the jurisdiction to manage, such as the activities of fishers and divers, whereas resource users and the local residents identified all the threats that were affecting their everyday lives, including pollution, mucilage blooms and invasive species.

Second, there are elements of social resilience in that the increasing dominance by divers may be socially (and economically) resilient, but at the expense of ecological resilience because it could inflict lethal damage on the fragile coralligenous substrata. Conversely, there are also elements of social resilience in the hostile reaction of fishers to the possibility of a shift from a fishers’ reserve to a divers’ reserve. Such a shift was seen by fishers as an undesirable configuration, thus illustrating a normative concept of social resilience. More broadly, there is a failure of social resilience to be found in the incapacity of the actors in the CPH-MPA to collectively deal with the problems facing the reserve. For example, many respondents attributed the causes of illegal fishing to the onset of the Spanish economic crisis and associated cuts to public sector finance, along with environmentally unsound consumption choices and business practices from restaurants willing to purchase illegally caught produce. Similarly, many respondents blamed the explosive growth of the dive industry and consequent threats posed to fishing and the ecosystem from dive activity on the administration’s failure to enforce existing rules and regulations, and the lack of legislative consistency between the two administrations regarding dive quotas, as seen in other cases (Fabinyi, 2008; Jentoft et al., 2012). As found in other areas (Abecasis et al., 2013; Ressurreição et al., 2012) poor social resilience was also evident in the reasons given by respondents for pollution, with visitors, tourists and individuals external to the community blamed for causing pollution and litter because of lack of awareness of the vulnerability of the marine environment.

Third, there are obvious elements of individual resilience in the solutions proposed by respondents – passive, adaptive, and transformative forms of resilience. Although respondents offered more suggestions in the category of transformative resilience than in the two other categories, there were some striking examples of both passive and adaptive resilience. For example, on passive resilience, there was an extraordinary level of complacency among some administrators about the condition of the CPH-MPA, and a deep level of fatalism among some resource users about its future. On adaptive resilience, there was much emphasis by several respondents on how they could adapt to the changing
conditions facing them, and how some of them were already adapting to those conditions. Another illustration of adaptive resilience was that several respondents held that resource users should take some responsibility for becoming environmental stewards. On transformative resilience, all groups suggested expanding the MPA, implying that the current protection afforded for vulnerable species is insufficient and would be improved if other important habitats and areas subject to erosion and development (e.g. sea-grass beds, beaches and coves) were also protected. The four groups also agreed that existing regulations needed to be better enforced, and new regulations needed to be enacted (mostly related to the dive industry), to radically improve on the current enforcement system. Radical enforcement measures that are possible include drones (i.e. unmanned aerial vehicles) and automatic ship identification systems (AIS) (Di Franco et al., 2016) which would provide much better value than employing Tragsa the private security firm that is perceived by some respondents as ineffective. Regulation enforcement has been reported as a frequent priority of MPA users worldwide, with inadequate attention to compliance cited as another common failure of MPAs (Abecasis et al., 2013; Agardy et al., 2011; Dimech et al., 2009; Guidetti et al., 2008; Trenouth et al., 2012). Another transformative recommendation was about properly financing the management of the reserve. One such radical proposal was to ring-fence the funding, to prevent it from being cut during periods of austerity. Another proposal was the introduction of diver fees and/or taking profits from the dive industry, to fund surveillance and employ resource users as MPA wardens (a suggestion that has worked positively in other cases increasing community stewardship and social acceptance (Jentoft, 2000b; Pomeroy et al., 2001; T. Roberts and Jones, 2013). The fact that many divers supported such proposals shows (encouragingly) that they recognized the need for greater control over their own activities, and that they were prepared to forfeit immediate profit to ensure long-term sustainability. Many of the suggestions put forward have been used successfully in other regions- e.g. fees, and establishing carrying capacities (Badalamenti et al., 2000; Davis and Tisdell, 1995; Fabinyi, 2008; Milazzo et al., 2004; 2002). As has been found in several other studies, resource users frequently acknowledge that tighter controls are essential for the long-term viability of resources (both for extractive and non-extractive use) (Abecasis et al., 2013; Dimech et al., 2009; Trenouth et al., 2012; Yates, 2014).

Another transformative proposal was SP: all actor groups suggested that participative opportunities should be provided, though to different levels. Resource users, for instance, suggested their greater involvement as MPA wardens, and their greater decision-making power; researchers emphasised the need for greater expert involvement, claiming that
current management decisions are taken without sufficient research evidence; and administrators proposed more consultation with users. Previous research indicates that success will be reached if actors are more involved and see that some of their suggestions are introduced into the management strategy: although participation is demanding in terms of time and resources, the benefits yielded are often much greater and longer-lasting, implying that efforts by government to encourage legitimate participation will pay off (Hogg et al., 2013; Voyer et al., 2015b). Another proposal considered by all groups and prioritised by government officers and the wider community was to increase awareness and outreach by improving current levels of environmental education, communication, and availability of information. On this and other issues, however, administrators’ responses were often brief and guarded, which may have been because they lacked local site knowledge (the administrators are based in Madrid, 480km, and Cartagena, 35km, from CPH-MPA), or because they diplomatically adopted a non-committal stance.

4.6 CONCLUSION

This chapter is a study of stakeholders’ perceptions of threats to a MPA in SE Spain (the CPH-MPA); causes of those threats; and solutions to them. I have found that respondents identified four main threats – over-fishing, excessive diving, pollution, and invasive species; attributed the threats to three main causes – ineffective management, poor environmental stewardship, and climate change; and suggested three kinds of solutions – do nothing, adapt, or transform – with a strong emphasis on transformation. I recommend that MPA policy makers take some account of these stakeholder perceptions, especially where they suggest transformative solutions, because unless some major interventions/reforms take place, the CPH-MPA is in dire danger of transition from a fishing reserve to a diving reserve, which may not fulfil the requirements of either ecological, social, or individual resilience.
CHAPTER 5 WINNERS AND LOSERS

INTERPRETATIONS OF MPA WINNERS AND LOSERS: A CASE STUDY OF THE CABO DE PALOS- ISLAS HORMIGAS FISHERIES RESERVE

A modified version of this chapter has been submitted to Human Ecology on 20th February 2017, for publication as follows: Hogg K, Gray T, Semitiel-García M, Noguera-Méndez P, Young S. Interpretations of MPA winners and losers: a case study of the Cabo de Palos- Islas Hormigas fisheries reserve.
INTERPRETATIONS OF MPA WINNERS AND LOSERS: A CASE STUDY OF THE CABO DE PALOS- ISLAS HORMIGAS FISHERIES RESERVE

"The first lesson learned by any fisheries manager is that all conservation decisions are also allocation decisions, i.e., it is almost impossible to find a measure for conserving fish stocks that does not benefit some resource users more than others." (Nielsen et al., 2004:157)

ABSTRACT

There is a controversy in the literature on marine protected areas (MPAs) over the way their outcomes are portrayed in terms of winners and losers. On the one hand, many analysts have portrayed MPAs as win-win solutions, resulting in both increased biodiversity and improved livelihoods. On the other hand, some analysts have argued that win-win outcomes are mythical, and in practice, MPAs invariably result in trade-offs between ecological and economic objectives. This study seeks to test which of these two hypotheses fits the Cabo de Palos Islas-Hormigas marine protected area (CPH-MPA) in SE Spain. However, it does so not by analysing the tension between two objectives – ecological and economic - but by analysing the tensions between four groups of stakeholders – fishers, divers, community residents, and administrators. The study is based on 112 interviews conducted in 2013-2014 to discover the perceptions of stakeholders on the issue of who were the winners and who were the losers as a result of the MPA. The main findings of the study are that winning and losing are very complex and ambiguous categories; that there is no objective way of determining who are winners or losers; that the situation of winners and losers is due to deliberate human intervention rather than a natural and inevitable process; and that win-win outcomes are unlikely: trade-offs between some wins and some losses are the norm.

Key words: marine protected area; social impacts; win-win; winners; losers

5.1 INTRODUCTION

Marine protected areas (MPAs) are often advocated on grounds that they bring about win-win outcomes in that they increase biodiversity (ecological win) and at the same time improve livelihoods (economic win). Because of the well-documented positive ecological impacts of some MPAs they are portrayed by their advocates as win-win strategies for biodiversity conservation and poverty alleviation (Jones, 2014; Leisher et al., 2007; C. M.
Roberts et al., 2001). However, a growing body of researchers are questioning the win-win scenario claimed by advocates of MPAs, arguing that most MPAs do not produce win-win outcomes, but trade-offs between wins and losses (Chaigneau and K. Brown, 2016; Cheung and Sumaila, 2008; Christie, 2004; McShane et al., 2011; McShane and Wells, 2004). Flannery et al. (2016:31) asserted that: “There will always be winners and losers when the sea becomes more crowded.” These assertions imply a zero-sum interpretation of crowded sea areas such as MPAs or marine reserves wherein one person’s gain is at another person’s expense. For example, some critics suggest that many MPAs place the health of biodiversity above the welfare of the communities dependent on these natural resources (Bennett and Dearden, 2014; Fabinyi, 2008; Mascia, 2004; Mascia et al., 2010; Mascia and Claus, 2009; West et al., 2006), indicating a win-lose outcome. Chaigneau and K. Brown (2016:36) note: “A review of projects supported by the Global Environment Facility (GEF, 2005) found that expectations of win-win situations were unrealistic in most cases, with trade-offs occurring between biodiversity and livelihood or development components of projects for at least some individuals or groups.” Likewise, McShane et al. (2011:967) assert: “After more than 20 years of international conservation experience, initiatives that produce win–win outcomes appear to be the exception as opposed to the rule.”

The current study examines the Cabo de Palos Islas-Hormigas MPA (CPH-MPA) in SE Spain to find out which of these two interpretations fits it best. However, the winners and losers analysis used here is not a binary one between ecological and economic objectives, but a multi-faceted one between four groups of stakeholders – fishers, divers, community residents, and administrators. The reason for this approach is to examine the distributive dimension of winners’ and losers’ outcomes, which is invariably overlooked by researchers who, even when they examine socio-economic issues of establishing marine reserves, generally confine their attention to aggregate impacts on household livelihoods, rather than to distributive impacts on particular groups of marine users (Cinner and McClanahan, 2006; Cinner et al., 2010; McClanahan et al., 2009; Spangenberg and Settele, 2010; Wegner and Pascual, 2011). Nevertheless, there have been some attempts to analyse the distributive impact of MPAs through the conceptual lens of winners and losers, and there have also been some attempts to provide a theoretical framework for such analyses (Charles, 2010; Cinner et al., 2014; Mascia et al., 2010; Mascia and Claus, 2009). For example, Charles (2010) developed a spatially explicit bio-economic simulation model to look at the distributional implications of MPA creation, showing how people differentially experience the costs and benefits of fisheries reserves, and how these impacts are affected by a range of social and...
biological conditions that Charles says should be taken into account during protected area design. Cinner et al. (2014:995-996) analysed the perceptions of fishers in Kenya and Seychelles about their experiences of winning or losing as a result of the establishment of marine reserves in their fishing areas, and found that the perceived benefits and costs of such displacement were felt unevenly among fishers, and this was important, because: 
“Ultimately, how fishers perceive the trade-offs between long- and short-term, direct and indirect benefits and costs will be crucial for the legitimacy and acceptance of marine reserves, compliance, and subsequently ecological success.”

This study is based on an analysis of 112 stakeholders’ perceptions of the different fortunes they have experienced as a result of the way an MPA in Murcia province in SE Spain has evolved during the last 20 years. Originally established as a reserve to protect the future of artisanal fishing, the CPH-MPA has attracted a huge number of recreational SCUBA divers who have come to dominate the area, making artisanal fishing increasingly difficult – a pattern seen in other Spanish MPAs (Jentoft et al., 2012). The result has been tension not only between fishers and divers, but also between resource users, the local community, and management, with scientists and NGOs expressing concern about the environmental impact of over-exploitation of marine resources. This marine reserve is an ideal case for applying the concept of winners and losers because of the perceived injustices of the changes in fortune experienced by stakeholders. The findings challenge the win-win discourse and highlight the need for conservationists to be more explicit about the losses, costs and hard choices that occur at the time of MPA implementation and which change over time, so they can be openly discussed and honestly negotiated (Chaigneau and K. Brown, 2016; McShane et al., 2011). Doing so is essential to prevent dashed expectations and unresolved conflicts from developing (Chaigneau and K. Brown, 2016; McShane et al., 2011). I have followed Cinner et al. (2014) in measuring wins and losses by the subjective perceptions expressed by the stakeholders, though they also use objective metrics. However, I have widened the scope of winners and losers to include not only resource users (fishers and dive operators) but also community members and administrators. Also, I have used open-ended, rather than closed questions in asking respondents for their assessments of winning and losing, which enabled me to tap into a wider range of perceptions of winners and losers. Finally, I adopted O’Brien & Leichenko’s (2003) theoretical framework of winners and losers (see next section), which has given the study of winners and losers a richer and more complex texture.

In section 5.2, I outline the theoretical framework that underpins the paper. In section 5.3, I
describe the background to the case study of CPH-MPA. In section 5.4, I explain the qualitative methodology used in the study. In section 5.5, I present the results of the data obtained on winners and losers in the CPH-MPA. In section 5.6, I discuss these results, and in section 5.7 I conclude with a summary of my findings.

5.2 THEORETICAL FRAMEWORK

The most impressive attempt to provide a theoretical framework for winners and losers analyses is that of O’Brien and Leichenko (2003), who provide an eight-point model. First, they define winners and losers: “winners succeed or gain something, whereas losers experience disadvantages or deprivations.” In the case of marine reserves, the wins and losses are generally scored on access to marine spaces; catches of marine resources; livelihood outcomes; participation in management decision-making; efficiency of management; enforcement of regulations; environmental footprints; socio-economic contribution to the community; and group organisation and solidarity (Mascia, 2004; Mascia et al., 2010). Second, O’Brien and Leichenko (2003:90) differentiate between static and dynamic characterizations of winners and losers: “static characterizations […] reflect current social, economic, or political inequities”, whereas “dynamic characterizations […] follow […] an event or […] longer-term processes such as global change.” Third, O’Brien and Leichenko separate voluntary from structural reasons for winners and losers: voluntary winners and losers typically emerge from competitions such as lotteries, whereas structural winners and losers emerge from broad social changes. Fourth, O’Brien and Leichenko distinguish between absolute and relative forms of winning and losing: absolute wins and losses are based on comparisons between one’s own current and past situation; whereas relative wins and losses are based on comparisons between one person’s situation and another person’s situation. Fifth, O’Brien and Leichenko differentiate between external and internal judgements of winning and losing: external judgements come from other people, whereas internal judgements come from oneself.

Sixth, O’Brien & Leichenko distinguish between two economic theories of winners and losers: neo-classicism and Marxism. The neo-classical theory maintains that in the short term, some people win, while others lose, as a result of the operation of the free market, but that in the long-term, the losers adapt to the competition and increase their efficiency, or enter new markets, or find work in another sector. So in the end, everyone wins. The Marxist theory is that capitalism fosters economic inequality thereby creating a class of permanent winners (the bourgeoisie) and a class of permanent losers (the proletariat).
Seventh, O’Brien and Leichenko differentiate between two developmental theories of winners and losers: social Darwinism and environmental determinism. Social Darwinism holds that winners are the genetically fittest to survive, whereas on the environmental determinism explanation, winners are those who experience the most favourable circumstances. Eighth, O’Brien and Leichenko distinguish between a ‘natural’ and a ‘social’ theory of winners and losers. The natural theory holds that winners and losers are “natural, inevitable, and evolutionary” (NIE), whereas the “socially and politically generated” (SPG) theory holds that winners and losers are deliberately created through processes that benefit some at the expense of others (O’Brien and Leichenko, 2003:93). I add a ninth point about winners and losers – that they can be conceived in terms of either a zero sum game or a variable sum game. A zero sum game is where winners can only gain at the expense of losers: one person’s gain necessarily entails another person’s loss. A variable sum game is where all players can gain or lose simultaneously.

What follows is informed by this nine-point model of winners and losers. As we shall see, the most salient points for my analysis are the static/dynamic distinction; the absolute/relative distinction; the external/internal judgements distinction; the economic theories of winners and losers; the distinction between natural and social theories of winners and losers; and the zero sum/variable sum distinction.

5.3 CASE STUDY BACKGROUND

5.3.1 STUDY AREA

For more information please refer to Chapter 1 section 1.5.3.3. Here I reiterate a few key points - Cabo de Palos is a small-scale fishing village in the SE of Spain, founded in the 1800s. The origin of the village is historically linked to the fishing industry. Until the 1960s, the village had no electricity or running water, but today the village is surrounded by a developed tourist area to the north (La Manga and Mar Menor) and an industrial area to the south (Escombreras). Considered a biogeographic frontier, the coast of Cabo de Palos is influenced by the Atlantic sea as well as the Mediterranean (Rossi et al., 2014). This influence along with the unique geomorphology of it being a narrow continental shelf formed by a series of sea hills and islets, has created a biodiversity hotspot (Calvín-Calvo et al., 1998).

5.3.2 THE CPH-MPA

Much of this information is repeated from Chapter 1, however, given its particular
importance to this chapter it is included again here for the sake of coherence.

MPAs in Spain come in three different forms: protected areas (PA); marine reserves (MR); and marine reserves of fisheries interest (MRFI). CPH-MPA is an MRFI whose objective is to protect, regenerate and develop fishing resources to maintain sustainable fisheries, enabling artisanal fishermen in the area to preserve their traditional way of life and to support other low-impact activities (for example SCUBA diving and environmental education) that contribute to economic development (BOE, 2010). The management responsibility is divided along the territorial baseline between the National Ministry of Agriculture, Food and Environment and the Council of Agriculture and Water of the Region of Murcia.

The villages artisanal fishing fleet is small and is declining: since 1993 to the time of study the fleet has more than halved (BOE, 2010). A local property rights system exists excluding external fishers, and only fishers operating for four years prior to the marine reserve order of 1995 were granted access. The census is ‘closed’: MPA legislation does not permit the transfer of licences between vessels. New boats cannot replace existing boats if they are ‘retired’ from fishing thus there is no possibility for the addition of new vessels that were not included in the original census. During the last 10 years, the SCUBA diving industry has grown substantially with nine dive centres currently operating. Regulations apply to the dive industry, including quotas, divers per boat, boats per buoy, distance from fishing nets, distance from coast, and good dive practice (BOE, 2010). The dive quota differs between internal and external waters and between seasons. In peak seasons the maximum daily quota at the time of study was 100 dives (75 in internal waters and 25 in external). In the years before this investigation the quota was exceeded frequently, with records showing counts of 300-400 dives per day in peak seasons.

5.4 METHODOLOGY

5.4.1 DATA COLLECTION

For more information on data collection please refer to Chapter 1 section 1.7.

Data were collected using semi-structured interviews (total = 112) with direct marine resource users (fishers n=17, dive operators n=38 (referred to as divers throughout the chapter)), community members (n=44) who were in many cases considered as indirect resource users, key informants (n=13) including representatives from the relevant administrations, public bodies and authorities, research institutes, NGOs, resource use associations, and the media. Three community validation and feedback meetings were held
between 2013 and 2014 allowing for triangulation and increasing the validity of the data (Bryman, 2012).

To identify perceived winners and losers, questions were asked about: the management of CPH-MPA; rules and regulations; enforcement and compliance; perceived costs and benefits incurred by the MPA, and how livelihoods or different groups were affected by the MPA.

5.4.2 DATA ANALYSIS

For more information on data analysis please refer to Chapter 1 section 1.8.

Some themes were considered in the light of O’Brien and Leichenko's (2003) theory of winners and losers, but most codes were developed through an inductive process of reading and re-reading the transcripts, noting repeated words and themes within and between interviews, and grouping the codes generated into collections of similar content (Bryman, 2012). This technique, borrowed from grounded theory (Glaser and Strauss, 1967), allows hypotheses about questions such as “what values are respondents using to evaluate who is winning and who is losing as a result of the MPA?” to be formulated from the data.

5.5 RESULTS

In the Results section, I record the perceptions expressed by a wide range of respondents about four groups of winners and losers – fishers; divers; community members; and administrators. I selected these four groups because respondents’ perceived them as winners or losers. Respondents’ perceptions are divided into two categories – self-perceptions (i.e. internal assessments) and others’ perceptions (i.e. external assessments). I also record the perceptions of respondents about solutions to the problems raised by the existence of winners and losers in the reserve.

5.5.1 PERCEPTIONS ABOUT WINNERS

5.5.1.1 Fishers as winners

(a) Fishers’ perceptions of themselves as winners

A cofradía representative said that the marine reserve had been beneficial for the local fishing community: “At the beginning, when it was created we all thought that the reserve would mean our ruin, that it would destroy the fisheries sector because this area has always been an incredible source of fish due to the currents, the habitat it has. Before fishermen earned a lot of money there and as restrictions were being imposed they got afraid and angry but we were completely wrong and now we recognize it. Today we earn a lot of money.
thanks to that half mile where neither fishermen nor divers can go in. It’s been proved that fish spawn there and then comes out and we catch it. We’re very grateful for this and if there was no reserve we might not be able to fish nowadays.” Fishers said: “I think it is good for fishermen, without the reserve there’s no place for the fish to spawn and no fishing”; “without the reserve we could not fish there”; “For me yes, every year I have more fish”; “The reserve is something that improves the sea environment and enables a greater abundance of fish. If fish come into the reserve and it spawns, nobody disturbs them, they grow and then they leave, so that’s great”; “if there was no reserve fish would have no place to rest and there’d be no fishing, it’s better for fishers because it comes out and can be fished.”

These are statements of fishers’ own (i.e. internal) assessment of their improved economic situation as a result of the reserve, indicating them to be absolute winners. It reflects the SPG rather than the NIE view of winners and losers, because the fishers see the MPA is a socially/politically generated decision imposed on them, not an inevitable result of ecological or economic forces. These fishers appear to perceive the situation as a variable sum outcome where everyone can win simultaneously (or at least a Pareto-optimal situation), in that fishers are winners but no one else is seen as a loser. However, what they omit to mention is that their win has been secured by management at the expense of other users whose access to the reserve has been restricted. So the outcome is actually zero sum: fishers win but other users lose.

(b) Other stakeholders’ perceptions of fishers as winners

Divers said: “More fish, more fishermen, more fishing I guess”; “fishermen have a nest for life”; benefits went to “Fishermen, because this is a fishing reserve, made for them”; “I guess it has also been beneficial for fishing, only they can fish and they don’t have to share it with more people.” Administrators said: “In the year 1995 the fishing reserve was created based on a number of scientific studies [...] The main goal is to protect the fishing resources and environment [...] The goal has always been to protect and help the artisanal fisheries to survive”; “The fishing sector didn’t agree with the reserve at the beginning and now they’ve changed their opinion, which means it has been effective”; “fishermen have benefited from the regulation and control of boats in the area. They now benefit from on-going fishing and their activity is profitable.” A researcher said: “despite all the problems, the marine reserve of Cabo de Palos is a relative success and it has provoked an increase of fish, an increase of the fishing performance and therefore the economic performance as well as an increase of the recreational use of space.”
These comments from other groups (i.e. external assessment) largely replicate the view of fishers themselves that fishers have benefitted from the reserve – reflecting the SPG viewpoint that the MPA was deliberately established to favour a particular group. Favouring fishers meant not favouring other reserve users, so it is a zero sum outcome of a win for fishers and a loss for other users.

5.5.1.2 Divers as winners

(a) Divers’ perception of themselves as winners

Divers said they benefitted from the administration’s lack of enforcement of regulations: “There are rules but then they are not respected. There’s a lack of vigilance […] It’s good because it gives a certain freedom to fishermen and divers to enter the reserve but there should be more control, not only in summer but all year round”; [rules] “are not exercised as they should, they are soft and we take advantage.” Divers also claimed that their activities benefitted the reserve and therefore secured their own future: “It has been observed that in areas with larger amounts of divers species proliferate more than in areas with less divers. The biodiversity might be different but fish have learned that they are more protected in areas with more diving.”

These comments from divers indicate that on their own self-assessment they are absolute winners because they take full advantage of lax enforcement of regulations, and they place a light footprint on the reserve. They do not see their winning as inevitable (NIE) but as socially/politically generated (SPG) by the administration’s treatment of them. However, they admit that their win is at the expense of law enforcement, and this implies that notwithstanding their light footprint, their activity is harmful to other users. So the outcome is that divers win, but other users lose.

(b) Other stakeholders’ perceptions of divers as winners

Other stakeholders saw divers as winners in serving their own interests. For example, fishers said: “We agreed that only 30 people could go down daily and only until 5 in the afternoon. Now they go down when they want. There are zodiacs full of divers […] [The benefits go] to the diving centres - to us nothing!”; “There is nobody controlling and nobody sees them. I have told the councillor many times: ‘we got the fox to mind the geese’”; CPH-MPA “is a fishing reserve, it’s ours. And we share a slice with them [divers] […] but it is ours. And now they have three quarters. That cannot be, the law cannot allow it. Why allow it? What people forget is that this marine reserve is not like others in Spain, it’s a marine reserve of fisheries
interest. They [divers] are invited to our reserve, and would have eaten it all, because the fisheries department says tourism has to maintain it”; “It doesn’t make sense that a reserve that was initially created to preserve species becomes a leisure centre […] The only over-exploitation is by the divers and I cannot fish divers”; “Before the reserve 60 - 70 families lived on fishing and now only 8. We don’t benefit from the guy from Madrid who comes and starts a diving centre because the diving schools take people to dive and teach them where are the good places and then they come back to fish.” A cofradía representative said: “can you even imagine what it means to have 36,000 people going to the sea? In a fishing reserve! I have had many meetings with them and I have told them that what we actually have is a diving reserve instead of a fishing reserve.” Cofradía representatives said divers were favoured over fishers by the administration: “because the Public Administration is investing heavily in tourism but also because of the crisis. Let’s say they allow certain things so that money comes in, but without control this will end up being a problem”; “They don’t really take the reserve seriously because it would harm the tourist industry more than the fisheries sector and they are interested in preserving tourism because it brings more money.”

These perceptions expressed by other stakeholders (i.e. external assessments) indicate a strong feeling that divers were winners in that they achieved their own self-interest at the expense of fishers. Divers are perceived as relative winners in comparison to fishers. This is a conception of a zero-sum game where divers win at the fishers’ expense, reflecting fishers’ perception that it was not an inevitable result of ecological or economic forces (NIE) but a consequence of the administration’s apparent decision (SPG) to undermine the original rationale of the MPA as a fisheries reserve and instead favour tourism over fishing.

5.5.1.3 Community as winner

(a) Community’s perception of itself as a winner

Community members said the reserve: “brings activities and prestige to the town and it’s something we need to take care of”; “it creates jobs and it’s good for businesses. It’s been generally good even though many don’t agree, and even if the town hall has forgotten us in many respects”; “Diving tourism attracts people and that brings life here, it’s also better for fishing even if fishermen complain and say it’s not”; “in general the economy has improved. It brought activity to the town, before there was nothing here- it was just a few families living throughout the year. Since tourism improved and people come to dive there’s a lot more life even if some don’t want to admit it.”
These responses indicate that community members see themselves as hosting a success story in the CPH-MPA, which benefits all local stakeholders, even if not all of them acknowledge their good fortune. This is a self- or internal assessment, reflecting what is regarded as a natural process of touristic economic development (NIE). However, the admission that some community members are unhappy with the impact of the reserve indicates an acknowledgement of some losers.

(b) Other stakeholders’ perceptions of the community as a winner

Divers claimed the marine reserve has brought untold benefit to the local community: “all the economic activity of the town depends [...] on the environmental conditions of the reserve. Without the reserve, fishing and diving would break down and there would be no economic activity”; “If there was no reserve, both the local and the surrounding restaurants, accommodation and diving centres wouldn’t earn their living. If the reserve didn’t work this would be a ghost town”; “It’s a miracle both functional and economic”; “diving centres bring life to Cabo de Palos. In winter, bars and cafeterias are empty. There is more tourism [...] For the local community it has had a great impact because if it weren’t for the diving centres the cafeterias in town would do nothing”; “the nine existing [diving] centres bring several thousands of people every year. In terms of money and hotel businesses it’s very noticeable.”

The only other stakeholders who perceive the community as a winner are the divers, who pride themselves on bringing huge economic benefits to the locality. This is an external assessment of the community as a winner, benefitting from the government’s establishment of the CPH-MPA as a fisheries reserve (SPG), only to allow it to be virtually taken over by the divers who bring much more revenue than fishers. The result is a win for the community at the expense of the fishers.

5.5.1.4 Administration as winner

(a) Administration’s perception of itself as a winner

Administrators claimed their creation and management of the MPA has been a success for four reasons. First, the reserve benefitted artisanal fishers as it was intended to do: “We are reserves with fishing interest and we think we have benefited [fishers]. We have answered the request made by the professional fishing sector to keep fishing in a healthy state and with restrictions to all passing fishermen. Because the official line of work is to support local artisanal fishermen, that’s the DNA of the reserves, we have surely brought benefits”; “the environment has improved in terms of quantity of fish in the reserve”; “The population of
pelagic fish remains longer in the reserve because it uses it to be sheltered for a day or two and then they continue their migration; on the other hand groupers, pollocks, black lobster are always stable in the reserve and their population is increasing in number”; “Since the reserve has been managed the fisheries in the area have improved so it has been beneficial for fishermen”; “The special sensitivity of this area was acknowledged and with it also the need to protect it due to the great capability of producing ichthyoplankton as this attracted fish of great interest for the fisheries.” Second, administrators said they have curbed illegal fishing: “Well, I think we have damaged illegal fishermen. We have hampered the illegal actions.” Third, they held they have reduced excessive diving: “there were restrictions to diving but I don’t think damage is the right word, we have limited the uses. We can’t protect without limiting the uses, it would be like wasting money. I don’t think we are doing damage; we are doing a patrimonial management of the natural environment and the fisheries resources.” Fourth, administrators claimed they had helped preserve the local natural heritage: “The area is well preserved it has beautiful cliffs, the lighthouse [...] we benefit from the good state of preservation of the town, which is also very beautiful. What we try to do is to keep what’s natural and has a certain tradition.”

This is a self- or internal assessment by the administration of themselves as a winner because they have promoted the interests of not only local artisanal fishers, which is the official rationale of the CPH-MPA, but also the divers, who benefit from some limits, and the wider community. This is a SPG perspective with a blasé assumption that everyone was winning, exaggerating the administration’s success in dealing with illegal fishing and excessive diving.

(b) Other stakeholders’ perceptions of the administration as a winner

Other stakeholders see the administration as a winner in the narrow sense of promoting its own financial self-interest. A fisher said: “The people in the administration have benefited”; “The Autonomous Community receives many subsidies because of this sham and many people live on that.” Members of the community viewed the administration’s purpose as lining its own pockets: “I think it’s negative; it mainly has got the purpose of collecting money”; “I hope it’s not managed the way other things are managed in the region with politicians making decisions that concern only their pockets.”

This narrow characterisation of the administration as a winner is an external assessment that reflects a SPG perspective with a zero sum game outcome where the administration is
seen as winning at the expense of other groups.

5.5.2 PERCEPTIONS ABOUT LOSERS

5.5.2.1 Fishers as losers

(a) Fishers’ perception of themselves as losers

Many fishers claimed they were the losers in the MPA: “Divers tell us that there is plenty of life but we fish less everyday”; [the reserve] “doesn’t produce an increase of fish, it only imposes prohibitions on fishermen”; “with regards to fishing, the season when you’re allowed to fish in the reserve you can find the same within and without”; “We haven’t changed anything, we keep the same gear but when they open the season there’s no more fish”; “with the reserve we barely enter because there’s nothing. Last season I only entered twice.” Fishers felt discriminated against by having strict regulations enforced upon them while few regulations were imposed on recreational fishers and illegal fishers. A cofradía representative said: “Right now recreational and tourist boats are something very damaging. We are forced to rest from Saturday morning until Monday morning to reduce the fishing impact because they say we are depleting the fishing grounds [...] These 200 recreational boats go fishing during weekends and produce a bigger impact than we would do. They do what they want and that’s not controlled.” Other fishers said: “For illegal fishermen the reserve is good because they enter at night and there’s even people on the coast to alert them if there is vigilance”; “It’s unfair for us because they don’t let us work. Then illegal fishermen come with harpoons and they catch all the groupers [...] they would go with inflatable boats and spend the whole night in the Hormigas.” Fishers also said they were in conflict with divers over fish resources and sea space: “it’s getting overcrowded”; “If they’re diving I don’t set my net until they leave, and why can they anchor and dive if I have set the net? [...] we are incompatible”; “It’s a controversial issue, sometimes there are so many divers that you must wait before you can throw the nets. Too many diving licenses and that’s a problem”; “There are fishermen who have been here a lifetime, our parents and our grandparents. We share [the reserve] with divers, but they now require three quarters of the melon for them. That is unacceptable”; “Fishermen respect the law with regards to fishing gear but divers don’t. They dive a lot more than they should and this is not controlled.” Moreover, artisanal fishers were scheduled to be phased out of the MPA, as a cofradía representative pointed out: “Only those who have traditionally fished in the reserve, before it became a reserve, can fish in it. That’s why, in the meeting, I asked to Fisheries: what happens if a man disappears or retires? They say there won’t be any more licenses [...] If
licenses disappear then it won’t have a fishing interest and there won’t be any fishing boats and that should be the mission of the reserve!”

So the artisanal fishing groups’ self- (internal) assessment as losers rested on a perception of being increasingly squeezed out by divers, illegal and recreational fishers, as well as being phased out of the MPA by the administrators. This is a relative, SPG view of losing (i.e. it was not inevitable), resulting in a zero-sum game of other groups winning at the fishers’ expense.

(b) Other stakeholders’ perceptions of fishers as losers

The administration explained that despite the MPA’s official objective being to protect, regenerate and develop artisanal fishing, the current regulations do not support the long-term protection of fishers: “because not everyone can fish there. There is a closed list of boats that can fish and in 10 or 20 years there will be no boats in the area because the fishing fleet cannot grow”; “there is no generational renewal, the list of authorized fishermen has been decreasing.” An NGO representative said: “Clearly the most important use in Cabo de Palos, if you look at tradition, is fisheries, and now the one with greatest prospects is tourism and diving.” A researcher explained fishers’ feelings of loss/threat: “Diving centres and fishermen have always been at odds with each other. In Cabo de Palos fishermen tend to think they are the original inhabitants of the coast, they are the primal users, therefore they feel ownership over all the rights of the sea. They consider the people who came afterwards as a threat.”

These stakeholders’ (i.e. external) perceptions of fishers as losers reflects a relative, SPG perspective that fishers’ losses were due to administrative decisions, resulting in a zero sum game of fishers as losers and divers as winners.

5.5.2.2 Divers as losers

(a) Divers’ perception of themselves as losers

Many divers admitted that the relentless expansion of their number was having a damaging effect on their diving activity, because of both over-crowding: - “The quota of divers increases, it’s not controlled. It’s illogical to control the number of divers if more diving centres are opening every year. New licenses are granted and the areas are overexploited. They try to create a divers’ quota but new diving centres keep opening. If there was any logic no more centres would open and their number would be limited. The number of divers per centre should also be reduced because in the end nobody respects it, there are more of us
and it’s overcrowded” - and benthic damage: “Divers, contribute to the impact. Divers who say we don’t are lying. It sounds better to say we don’t but we surely contribute to the impact. If you see a massif where diving happens it is not the same as others where diving doesn’t happen”; “the more tourism there is the worse things get. The life of the reserve has gone down steadily.” Also, divers revealed that there was tension between diving centres (which are well-regulated) and diving clubs (which are not so well-regulated): “A diving centre is different from a diving club. A diving club has no obligation of including insurance, a skipper or a guide - they have more advantages. In theory they are non-profit. Sometimes they go diving with no boat and we have to go and get them, these are rules they don’t respect and it affects us [...] [The benefits go] to diving clubs because they make profit they don’t declare”; “Professional divers and fishermen respect [the rules] but some other people don’t. For example, recreational dive clubs don’t, they go to the reserve, they hook on and dive. I don’t know to what extent any person can dive legally in the reserve but it’s not fair that we are controlled and they are not.” Other divers said diving centres themselves were irresponsible: “There has been competition with the increase of divers and some tensions”; “you can see many new diving centres which are not respectful when diving. Those who ignore [the rules] make the best of the reserve because it’s too tempting a candy. Also because they are allowed, even if you call and report it, it’s useless”; “[other centres] can also cause unfair competition by lowering their prices. The one who respects the law pays more and is considered worse”; “due to the competition between them and also because in this town and in this area the only purpose people have is to screw each other and there is no thinking together”; “there’s little social awareness, people focus on themselves individually, first them and then them again”; “internally it is not united because it’s not controlled. They all think they are more entitled than the rest.” A dive representative said the diving industry was anarchical, incapable of collective action: “people here don’t have an open mind, everyone is after their own profit, nobody appreciates teamwork. The association of diving centres in Cabo de Palos is bad, there is no teamwork. Here everyone works for themselves.” Another dive representative said the administration had failed to regulate the diving industry, and the dive industry had failed to regulate itself: “The administration should have regulated more but in an attempt to help the development of recreational diving it did not regulate. We could have benefited from the fact that it didn’t, we could have regulated ourselves but the problem is that we have not regulated ourselves, now there are 10 diving centres in Cabo de Palos and that makes it complicated. It is difficult as an association because it doesn’t have the spirit of an association.”
These divers’ confessions provide an extraordinarily frank insight into the damage inflicted on the diving experience itself as well as the marine environment, by increasing numbers of divers. The increased competition between divers, combined with the lack of social capital (SC) in their ranks, was leading to a tragedy of the commons. The picture painted by this self- (i.e. internal) assessment is an NIE perspective (the inevitability of over-exploitation of resources because of unbridled economic expansion) leading to a variable sum game of everyone losing.

(b) Other stakeholders’ perceptions of divers as losers

Other stakeholders echoed the perceptions of divers themselves, that their expansion was undermining their own enjoyment of diving - “Two diving centres opened this summer; the existing ones complain but more and more centres are opening. The only thing I hear is from the centres, they talk amongst themselves, they don’t say it but the existing ones complain about the coming ones” – as well as damaging the ecosystem: “The divers’ exploitation doesn’t allow animals to get to their place, they lack a bit of tranquillity, it’s very overcrowded.” Administrators said: “We can also affirm that the level of diving is somehow industrial. Such is the opinion of the Ministry, and the Region of Murcia knows it. We understand that in a marine reserve, as a protected area, diving is more than welcome, it’s a very healthy activity, it brings business, tourism, awareness, it happens in nature, etc. but in this sense the Ministry and in collaboration with the Region of Murcia General Secretariat of Fisheries, we don’t fully agree with the level of diving that is taking place in the internal waters of the marine reserve”; “There are [...] [conflicts] within all the diving centres, some want to earn more money and exploit the sea more than others”; “we want a quality diving and to preserve the marine landscapes. We [...] want a good diving business and to make it sustainable. We don’t want to die out of success.” A researcher said: “It may harm them now because a restriction must be imposed to alleviate the diving pressure [...] so now it could harm diving.”

These (external) assessments from other stakeholders repeat the self-assessments by divers themselves – that their numbers are increasing too fast for their own good, for the good of the reserve, and, implicitly, for the good of other groups, illustrating both absolute and relative losses for divers. The perspective is NIE, in that the cause of the over-expansion is the free market, and a variable sum outcome of everyone losing.
5.5.2.3 Community as loser

(a) Community’s perception of itself as a loser

Many community members were critical of the impact of the MPA on their lives. For example, one said: “now the town is full of people in summer, short holidays, weekends—people who come only to dive. In summer there’re too many people compared with the rest of the year. The port resembles the underground in rush hour. There is an excess of people who come to dive and that can be a nuisance”; “I don’t like the town as it is now, there’s many people due to diving and they’re not always respectful with things. Quality of life is worse since there are so many people here in summer.”

These internal or self-assessments express the regret felt by residents for the loss of their tranquillity by the arrival of a vast influx of divers. It implies an NIE perspective in that the cause of the community’s loss is the impact of the free market, the outcome of which has been a zero-sum game of divers winning but the community losing.

(b) Other stakeholders’ perceptions of the community as a loser

Fishers said of diving: “It has sunk the town”; “The diving centres themselves have their own bars so they don’t contribute to the town’s economy”; “This resembles more and more the port of Ibiza.”

These external assessments by fishers echo the internal or self-assessments of community members, reinforcing the doom-laden NIE perspective and the zero sum outcome of the community losing because of the over-expansion of the diving industry.

5.5.2.4 Administration as loser

(a) Administration’s perception of itself as a loser

Some administrators were frank about their own failings. For example, one administrator acknowledged incoherence in regional government policies: “In the Region of Murcia – Fisheries is very keen but Tourism doesn’t allow us to do a coherent management. Fisheries and Tourism are at odds. At some point they even challenged the authority of the director of Fisheries.” Another administrator attributed their failure to loss of funding: “Now, within the Ministry […] there are things going badly and we are going down due to lack of investment, lack of visibility. They don’t understand it even though there is a European imperative […] They don’t know how to harness what’s been done already […] we need them to help us
organize something which should be better cared for in any country of similar economic and geographic characteristics. Politicians don’t understand it to its full extent [...] politicians allow the reserve to be run with a budget that doesn’t correspond to [...] the Directorate of Environment [...] we are missing a political push and allocation of administrative means. Therefore we miss a bit of self-governance within the Ministry.”

These internal or self-assessments reveal the dysfunctional organization that some administrators feel they are running. They reflect an SPG perspective in that they blame politicians for the loss of their effectiveness, and for the consequent variable sum outcome of everyone losing, since there is no winner mentioned.

(b) Other stakeholders’ perceptions of the administration as loser

Many other stakeholders were extremely critical of the administration’s loss of performance. One criticism was of its failure to enforce MPA regulations. For example, a fisher said: “I called twice the reserve at night to warn of the presence of illegal fishermen in the reserve, and nothing happened.” A diver complained: “If they find illegal fishermen they do nothing, we have even seen fishermen in the buoy of the outer reef, we took pictures and called the reserve but when they arrived they were not there anymore, or otherwise they told us that they were not doing anything and they can’t do anything about it”; “rules are fine but there is no control or sanctions.” A researcher asserted: “Right now the management has plenty of room for improvement, no money is invested in protection, and the progress made in 20 years is receding in just one year. I’m talking about surveillance; no surveillance protocols have been implemented. In bad times they should establish surveillance measures.”

A community member alleged that people who are: “fishing illegally in the reserve [...] come here [to the restaurant] and try to sell it to us.” An NGO representative claimed that the problem was that: “the administrations in general can’t yet see the benefits of preservation in short and medium term and they fear social opposition.” The port authority representative claimed the administration lacked interest in enforcement: “The current management is not good the first reason being that the administration itself has no interest in respect of the rules established for its management. There are legal rules that regulate the use of the reserve and these are not respected, I think the authorities are very passive.” A diver implied that corruption lay behind this failure: “For the money, governments and administration ignore regulations because there is much money and political interests behind, the main problem is money.” Another criticism was about the administration’s ‘chaotic’ management system. For example, researchers criticised its un-integrated structure of decision-making:
“It’s not efficient, it’s chaotic. The intentions are very good but there is a lack of coordination because Cabo de Palos is partly managed by the Autonomous Community and partly by the State and both parties are not coordinated which is bad and chaotic if you want to implement an initiative regarding diving [...] The Ministry imposes a very restrictive quota and the Autonomous Community doesn’t impose any restriction”; “There is a joint management body between the central administration and the Region of Murcia. It doesn’t make sense to manage an area together if both don’t have the same vision. There are conflicts every now and then [...] For example, in the case of diving, permits are more restricted in external waters whereas they are not so restricted in internal waters”; “Within the administration itself there’s a conflict between the ones who advocate for the preservation of the area and the ones that manage the fisheries use because they have different goals within the same organization.” Divers attributed this lack of integration to failures of communication: “The reserve is managed from two different administrations that don’t talk to each other: the central and the autonomic administrations and within the later, from the Fisheries department that doesn’t talk to Environment, and Environment which has technical staff that have no idea of biology, which means everything is regulated arbitrarily”; “They don’t come to agreements to harness the reserve. I think that no administration comes to any agreement to give the reserve of the Region of Murcia the real importance that it has.”

These damming (external) indictments by other stakeholder groups of the administration for failing to enforce its own regulations and for having a dislocated structure of decision-making, portray it as a loser in terms of its ineffectiveness and its loss of respect from users of the reserve. It is a SPG perspective, given that the blame lies in the hands of the political authorities, and it has a variable sum outcome of everyone losing.

5.5.3 PERCEPTIONS ABOUT SOLUTIONS

In this section, I present four different ways suggested by the respondents of handling the problems raised by the presence of winners and losers in the CPH-MPA.

5.5.3.1 More top-down authority

This solution is for more top-down governmental imposition of a resolution of the tension between winners and losers (Jones, 2014; Pretty, 1995). In effect, this means choosing which side(s) are to win, and on what issues. For example, a diver said that the administration should be much tougher with divers: “The rules are not very strict, they turn a blind eye frequently. They should be more strict, we [diving centres] should be given warnings.”
Community residents said: “Politicians and people in power, they should take responsibility, and tackle the current lack of control”; “The Autonomous Community should assume the responsibility, it should ensure putting some limitations in order to protect the environment.”

5.5.3.2 More stakeholder participation
By contrast to top-down solutions, many respondents recommended increasing stakeholder participation (SP) in MPA decision-making (also see Chapter 3) (Gray, 2005; Pomeroy and Andrew, 2011; Pomeroy et al., 2007b; Pretty, 1995; Voyer et al., 2015b). For some respondents, this meant letting the people share in ruling. For example, NGO representatives said: “I think there is a need of more bodies with real participation”; “Creating management and dialogue round tables where all groups can give their formal opinion and the groups can choose what decision to make”; “the most important thing needed is social participation and information”; “creating measures that make public participation mandatory”; [Decisions] “should be made from the bottom up”; “I would like to establish processes of co-management so that users and the community can take part in the decisions.” A researcher said: “All the groups should be more engaged in the management.”

Divers said there should be: “participation of all diving clubs together with the fishermen”; “Users of marine resources [should] take part in the management processes.” Researchers recommended: “establishing a mechanism of public participation and coordination between the actors so that there is a real marine policy.” For some divers, SP meant consensus and integration: “The administration [must manage] but in consensus with everyone, both fishermen and diving centres”; “More efficient solutions that integrate us in the system should be sought.” For other respondents, it meant management at least taking account of users’ opinions. For example, fishers and the cofradía said: “It’s not very effective because they should take more into consideration the opinion of fishermen who are working there every day but they put rules that do not suit our needs”; “They should take the opinion of the divers association of the Region of Murcia and that of the fishermen more into consideration”; “I think before creating a management plan they should meet with us, with the professionals of the fisheries sector, seek our advice about what and when to fish, reach an agreement and then explain why decisions are made.” A diver said: “They should take the opinion of the divers association of the Region of Murcia and that of the fishermen more into consideration.” Even some administrators were in favour of SP: “It can be improved as long as there is a greater participation. I am convinced of the fact that the laws must be credible to users; “With a greater involvement of the actors and a greater commitment, everything would improve much because there would be more collaboration for the regulation of the
The implication is that SP will enhance the prospect that consensual agreement is tolerable for most stakeholders – i.e. minimising anyone’s losses.

5.5.3.3 More marketization

Another suggested solution was to resolve the conflict between winners and losers by monetising it – i.e. structure that relationship into a competitive economic or market system, a method applied successfully in other regions (Fabinyi, 2008; Hodgson and Dixon, 2000; Jones, 2014; Mascia, 2004; Mascia and Claus, 2009). One method of doing this recommended by a diver was a property rights system for dive centres based on licences and fees: “limit the licenses to local diving centres, regulate the number of divers per spot and share the responsibility with the users”; “We have also proposed requiring a set of licenses to enter the reserve and diving fees that will be used to maintain the reserve and the research in it.” Another diver said that: “If we, as diving centres, make profit then we should pay and help protect it, that would be normal but that doesn’t happen here because it’s anarchic.” A cofradia representative suggested that both divers and fishers should pay fees: “I have had several meetings with the Administration because at times the marine reserve has been on the verge of disappearing because there was no money to manage it. There was a proposal to charge a small fee to diving clubs for every diver: 2 or 3 euros per diver so that after a year a lot of money is collected to help protect the reserve. If fishermen had to pay they would pay 100-200 euros per year, whatever is needed to protect it because we must all preserve it.” According to neo-liberal principles, such marketization should in the long run reach an economic equilibrium point in that everyone’s marginal cost would equal their marginal revenue, though poorer reserve users like fishers would be disadvantaged (Mascia et al., 2010). Note: since conducting the fieldwork interviews a fee was introduced in 2010 of €3 per diver. The impacts/effects/success of which are yet to be seen.

5.5.3.4 More autonomy for the groups

The final solution suggested by respondents for resolving the tension between winners and losers was to give the user groups more responsibility for the management of the MPA (Pretty, 1995). If the user groups are helped to develop their capacity to take over management roles, so the argument runs, they will gradually and spontaneously work out a way to resolve conflicts between them and reach a settlement (Ostrom et al., 1999). Respondents suggested various methods of distributing responsibilities to groups. One method was to give autonomy to groups to make certain management decisions. For example, one diver recommended: “the administration allowed local workers to manage it.
To present what we want to do, come to agreements that we are allowed to make our laws with diving centres and fishermen.” Another diver said user group management would be much more effective than the current system, which he described as: “Catastrophic, it is not well managed. If they would allow us, the diving clubs, to manage it everything would be better than it is now with the civil servants.” A cofradía representative proposed joint management during the day between fishers and divers: “We [...] made a suggestion to the Fisheries Service for fishermen and divers to control the reserve during the day because they are interested in controlling it, and then have Tragsa at night to keep watch [...] We proposed this to the Administration four or five months ago but they didn’t answer and they won’t do it, they don’t care.”

Fishers and divers have recognised that they have to work with other groups. For example, a cofradía representative said: “we must respect each other.” Likewise, some divers have accepted that they must work with fishers: “Divers are guests but I think it’s fair that fishermen have preference over divers”; “Cabo de Palos is a maritime-fishing reserve and we know they have preference. We teach divers that because it’s a fishing reserve they might find nets and if there are fish entangled they must not touch them, these are artisanal fishing gears, we are mere spectators, we can’t take anything”; “Here fishermen and divers work well together, before there were many fights. Fishermen would cut the buoys or divers would cut the nets. Now fishermen have realized that protecting the sea is a bit beneficial for them too”; “There must be a sense of coexistence and symbiosis [...] diving centres generally have a good relation with fishermen. What happens is that we both live on the sea from different angles but if their nets get stuck we help them and sometimes they give us fish.” A researcher said that fishers and divers were beginning to realise that they had a lot in common, not least in their united opposition to illegal fishing: “In the last years, with the crisis, the vigilance has been reduced. Fishermen feel that their small reserve is threatened, that other illicit fishermen can come and fish because there’s no vigilance. Then they naturally become allies with divers for whom the lack of vigilance is also a problem [...] So in Cabo de Palos fishermen and divers have already worked together: fishermen approach divers and the other way around which is the positive side of the crisis [...] they have realized that they have more things in common and they can fight together the illegal fishing. Their problem is the same: illegal fishermen, the wrong use of the reserve. Their interest is also the same: the good use of the reserve.”
5.6 DISCUSSION

Five major themes have emerged from these respondents’ perceptions of winners and losers in the CPH-MPA and their perceptions of solutions to the problems caused by winning and losing. First, the designation of winners and losers is extremely difficult, and there is no objective way of measuring it. As O’Brien and Leichenko (2003:94) note: “the concept of winners and losers is largely subjective.” The question of who is a winner and who is a loser depends on the subjective judgements of both internal self-assessments and external others’ assessments, and this is the reason why this paper has focused on respondents’ perceptions of winners and losers. A further complexity is that tension between winners and losers was evident not only between groups but also within groups, as found in previous research (Fabinyi, 2008; Mascia et al., 2010). For example, among divers, there is keen competition between diving centres and diving clubs, and between diving centres themselves, while within the fishers’ ranks there is bitter enmity between artisanal, illegal, and recreational fishers. So while a group may be designated a winner, many individual members of that group may be designated as losers, and vice-versa.

Second, a striking feature of the results is the perception that a group may be simultaneously both a winner and a loser – i.e., a winner in some respects but a loser in other respects. For example, some artisanal fishers saw their catches increasing in absolute terms, but their access to the reserve decreasing relative to divers’ access, a pattern reflected in other Spanish case studies (Jentoft et al., 2012) and beyond (Fabinyi, 2008). This perception is expressed in both self-assessments and other assessments: groups typically judge both themselves and other groups as simultaneously winners and losers. Of course, some of these assessments may have had a tactical element in them (McShane et al., 2011). For example, some fishers and divers may have designated themselves to be winners rather than losers or vice versa in order to put pressure on the administration. As O’Brien and Leichenko (2003:91) point out: “For individuals, there may be psychological motives to identify oneself as a ‘winner’, even in the face of evidence to the contrary. There may also be circumstances in which it is actually advantageous to identify oneself as a ‘loser’.” Nevertheless, perceiving oneself and others as simultaneously both winner and loser implies that there is no such thing as a ‘pure’ or ‘unadulterated’ winner or loser in MPAs, but a mixture of wins and losses in people’s situations. So MPAs are not arenas in which everyone wins, or everyone loses, or a winner takes all, but where there are endless trade-offs, resulting in partial victories and partial failures.
Third, many more stakeholder groups subscribed to the ‘socially and politically generated’ (SPG) perception than to the ‘natural, inevitable and evolutionary’ (NIE) perception of the creation of winners and losers. In other words, more stakeholders believed that the division between winners and losers was due to deliberate human intervention, than to a natural and inevitable process (Fabinyi et al., 2013; Herrera-Racionero et al., 2015; Jentoft et al., 2012; Wynberg and Hauck, 2014). However, stakeholders’ perception of the source of that deliberate human action varied considerably. For example, some respondents’ perception of other people winning was attributed to the others’ cheating behaviour, and some respondents even regarded their own winning as a form of cheating (Slater et al., 2014; Sumaila et al., 2006), echoing Ostrom et al.'s (1999) plea for evolved norms and strong SC.

Some divers said that they should not be allowed to win, and criticised the administration for failing to enforce the regulations against them, a finding endorsed by several other studies in which resource users frequently acknowledged that tighter controls over them are essential for the long-term viability of resources and increased equity (Abecasis et al., 2013; Di Franco et al., 2016; Dimech et al., 2009; Ostrom et al., 1999; Trenouth et al., 2012; Yates, 2014). For these divers, their winning benefitted from unfairness: it was not natural or justified as the outcome of an equitable process (NIE), but the result of an artificial system rigged by external forces in their favour (SPG) (Chaigneau and K. Brown, 2016; Gustavsson et al., 2014; McShane et al., 2011; Schoon et al., 2015). Respondents held that managers had a responsibility to change the current winners and losers configuration (SPG) rather than leave it to nature (NIE). This implies that MPAs are necessarily instruments for helping one group rather than another – i.e. political constructs. However, on the crucial question of whether, since the CPH-MPA was originally set up to protect the artisanal fishery, management should favour the fishers and restrict the divers, there was no consensus.

Fourth, some of the above points indicate encouraging signs of potential reconciliation between the winners and losers. Since respondents believed that the current tension was socially and politically generated (SPG) rather than natural, inevitable and evolutionary (NIE), it could be resolved by carefully crafted management, resulting in acceptable trade-offs between winners and losers. However, views differed sharply on what specific reforms would be necessary for that resolution to be achieved, and many critics would question the optimism of some groups (reported in section 5.5.3.4) that they could be trusted with the responsibility for running the MPA (Jones, 2014).
5.7 CONCLUSION

My answer to the question posed in the Introduction – whether the outcome of the CPH-MPA is win-win or a trade-off between winners and losers – is the latter. My findings challenge the win-win discourse, since not everyone is perceived to win when MPAs are implemented. The perceptions of respondents were that groups of stakeholders experienced simultaneously wins and losses, the configuration of which they attributed to the actions (or inactions) of the administration. The notion of win-win is a myth; the reality is zero sum outcomes of wins and losses resulting from trade-offs, which the government manufactured by design or default. On this view, MPAs are political constructs in which hard choices are made as to which groups win or lose in particular ways.

The concept of winners and losers is thus far more complex than it seems, especially when viewed through the subjective lens of stakeholder perceptions. Nevertheless, it is a fruitful concept for the analysis of relationships between different groups of stakeholders in the CPH-MPA, despite the difficulties of determining who are winners and who are losers, and in what respects. It enables us to pinpoint the sources of tension between these groups, and it reveals how deep-rooted (or not) those tensions are, thereby providing government with valuable data for weighing up how to intervene in the MPA to create the trade-offs which it deems socially and economically acceptable, morally legitimate, and ecologically sustainable. Moreover, the concept of winners and losers highlights the role of SP in encouraging policy-makers to be more explicit about the choices they make in relation to expected wins and losses at the time of MPA implementation and subsequent development so they can be openly discussed and honestly negotiated. Doing so is essential to prevent dashed expectations and unresolved conflicts from developing which can lead to a backlash against conservation interventions (Chaigneau and K. Brown, 2016; McShane et al., 2011). Moreover, even if there will always be winners and losers as the sea becomes increasingly crowded, there is an ethical obligation on managers to minimise the disparities by considering the interests of all reserve users, since this is the mark of a civilised polity.
CHAPTER 6  GENERAL DISCUSSION
GENERAL DISCUSSION

6.1 INTRODUCTION

This chapter has two purposes: (1) to tie together the threads of the previous five chapters in the thesis; and (2) to highlight five issues that arise out of those chapters, providing potential recommendations to deal with them.

6.2 TYING THE THREADS TOGETHER

This PhD thesis is made up of four self-contained chapters plus an Introduction, and this, a concluding General Discussion (Fig 6.1). There is, however, a continuous thread of analysis that runs through these chapters: all of them are focused on the workings of the CPH-MPA, and they all shed some light on the way the MPA is functioning – in particular, how it is potentially transitioning from a fisheries reserve to a diving reserve - and thus contribute to our understanding of how this marine reserve is changing.

How to respond to fundamental change in a fisheries reserve - a dilemma for management in the Cabo de Palos - Islas Hormigas marine protected area

![Thesis outline and structure](image)

**Figure 6.1 Thesis outline and structure**

Chapter 1 (Introduction) set the scene by explaining how the reserve was first conceived and established in 1995; what are its geographical and ecological characteristics, and how and why my research was designed to examine it. A key objective of this chapter was to justify
the use of qualitative research methods in seeking insights into the MPA. For example, it was argued that the perceptions expressed in key informant interviews can vividly illuminate aspects of living with the MPA regime that might be missed by a quantitative analysis (Bennett, 2016; Beyerl et al., 2016). Perception research may not yield data that accurately represent outcome variables (e.g. abundance of species), but it may reveal striking and invaluable reflections that provide a truth of their own (Bennett, 2016; Leleu et al., 2012; Mahajan and Daw, 2016). Some of the perceptions that were transcribed from recorded interviews and focus groups provided deep and moving testaments of life experiences, which is why I quoted them so often in the data chapters, since this thesis is primarily about the way the CPH-MPA is perceived by its stakeholders (Blauner, 1987; Bruner, 1984; Killenberg and Anderson, 1993). Chapter 2 (Literature Review) provided the academic context within which the research was cast, in particular the published work on the origin and development of MPAs, their features, purposes, successes, weaknesses, and challenges, as well as critical discussions of two issues raised by their astonishing rate of proliferation in recent years - co-management and social capital (Ahn and Ostrom, 2008; Chuenpagdee et al., 2013; Jentoft, 2003). Chapter 3 (Stakeholder Participation), which was the first of three data chapters, identified a central question for MPAs in general and the CPH-MPA in particular – that of how much stakeholder participation (SP), if any, there already is in their management, and how much should there be. A theoretical framework in participation theory informed this chapter (Arnstein, 1969; Bouamrane, 2006; Lawrence, 2006; Pimbert and Pretty, 1997; Pretty, 1995), and the data showed how, although most respondents approved of SP, they were divided in their views about what kind of SP they favoured. Chapter 4 (Threats and Solutions) was the second data chapter, and focused on the respondents’ perceptions of the threats faced by the MPA, the perceived causes of these threats, and possible ways of overcoming those threats. The chapter was structured around the theory of resilience, which incorporates both ecological and social resilience, and identifies two main coping strategies – adaptation to, or transformation of, external circumstances (Chandler, 2014; Chandler and Reid, 2016; Walker and Salt, 2012; 2006). Interestingly, there was more emphasis on transforming than adapting, suggesting that the status quo was unlikely to satisfy many stakeholders for long. Chapter 5 (Winners and Losers), which is the third data chapter, interpreted the changes taking place in the CPH-MPA through the lens of winners and losers theory (Cinner et al., 2014; Mascia et al., 2010; O’Brien and Leichenko, 2003), which is generally used to plot who are the winners and losers, in what respects, why, with what consequences, and is it a zero or variable sum
outcome between them? Surprisingly, the perceptions of respondents revealed that although superficially it appeared that divers were the winners and fishers were the losers, in fact, the concepts of winners and losers proved to be very complex, and respondents perceived the outcome as a variable sum game, whereby with the right interventions through the adaptive management approach, the interests of both fishers and divers could be protected.

In short, the overall coherence of the thesis may be expressed by saying that the CPH-MPA appeared initially to be a panacea for fishers, but gradually became problematic as divers increased in number, and now quite serious issues have to be addressed, including: (1) who should govern? (Chapter 3) – answer: stakeholders; (2) how should ecological and social threats be dealt with? (Chapter 4) – answer: by transformative moves; and (3) is it possible to reconcile winners and losers? (Chapter 5) – answer: yes, with adaptive management.

6.3 FIVE ISSUES

Five residual issues arise out of this study: (1) perceptions research; (2) stakeholder participation; (3) resilience; (4) management; and (5) winning and losing.

6.3.1 PERCEPTIONS RESEARCH

This study made some use of quantitative research methods in the SNA carried out to obtain relational data about respondents. However, most of the data were obtained by qualitative research methods, principally by semi-structured interviews designed to tease out deeply held perceptions. This emphasis on qualitative research is controversial. On the one hand, according to Bryman (2012), there is currently a backlash against qualitative research with a reassertion in government circles of the value of traditional science. Other writers seem to endorse Bryman’s view, suggesting there is a trend towards research that makes use of quantitative monitoring and longitudinal studies with predefined indicators to quantitatively measure success (Evely et al., 2008; Ferraro et al., 2013; Feuer et al., 2002; Moon and Blackman, 2014). On the other hand, Denzin and Lincoln (2005):ix argue there is a growing recognition of the value of qualitative research: “The social and policy sciences and humanities are drawing closer together in a mutual focus on interpretative, qualitative approach to research and theory.” More recently, researchers such as Bennett (2016); Beyerl et al. (2016); and Diedrich et al. (2017) have called for more perceptions-based research to be conducted in conservation settings (both qualitative and quantitative). My view is that while quantitative and longitudinal monitoring are extremely useful for
answering some questions, they can lead to an incomplete picture of the highly complex contexts within which conservation initiatives such as MPAs occur (Bennett, 2016). Quantitative and longitudinal monitoring studies also have methodological limitations. For example, the knowledge required and costs associated with collecting, analysing and applying the results may hinder the ability to effectively use the results (Bennett, 2016). Furthermore, the time associated with monitoring social and ecological outcomes may mean any action taken is ‘too little too late’ (Bennett, 2016). Perceptions, on the other hand, which can be collected through quantitative surveys and qualitative interviews are an indispensable, yet underused, form of evidence (Bennett, 2016). Quantitative surveys which are useful for understanding individual or collective perceptions of conservation allow generalisations and comparisons across a wide number of cases (see Cinner et al. (2014); Cinner and Pollnac (2004); Coll et al. (2014); Di Franco et al. (2016); Jones et al. (2013); Leleu et al. (2012); and Turner et al. (2014a)). However, the focus on predetermined indicators and measures of success in these studies risks elements of researcher bias, and also respondent bias in that they often rely on the opinions of ‘specific actors’ e.g. MPA managers or MPA scientists (Di Franco et al., 2016; Jones et al., 2013). These quantitative studies can potentially ignore the complex perceptions of individuals who are, for example, affected by the MPA and its regulations (Di Franco et al., 2016; Jones et al., 2013). Qualitative research remedies the last deficiency in that it allows ample opportunity for extensive investigation with a wide array of actors into the perceptions held by respondents. As a result, because qualitative case studies, such as the present thesis, are designed to extract an in-depth understanding of the human dimension within a particular context, they paint a vivid picture of the social constructs behind MPAs and their potential for success. Of course, qualitative research has its own weaknesses, including its time-consuming method of data collection and analysis and its various epistemological challenges (discussed at length in Chapter 1). But in my view, its strengths outweigh its weaknesses in providing illumination into stakeholders’ perceptions of the situations they face.

The findings from this thesis have provided what could be considered as a baseline of perceptions in CPH, and pave the way for future social research in the area. They have helped provide an informative local evaluation of the social impacts and ecological outcomes of the MPA and the legitimacy and acceptability of management actions. I have also attempted to go beyond simply understanding these perceptions, by communicating the results and exploring through interviews and meetings potential solutions and suggested recommendations. However, I am not in the position to bring about change or action.
Rather, having made the first attempt to produce an in-depth perceptions based study of CPH-MPA, I have shown that evidence-based conservation, in CPH and beyond, must adopt a broader perspective and a wider array of methods than evaluations that emerge solely from the natural sciences and econometric traditions of examining conservation policies and actions (Bennett, 2016). As such I recommend that the CPH-MPA administration take stock of the diverse perceptions presented in this thesis, to review the perceived shortcomings and give consideration to the potential strategies put forward by the different actors to address them. In the long term I recommend that CPH-MPA introduce a strategy to monitor and evaluate perceptions to detect potential inefficiencies and their causes allowing them to respond more flexibly. This could be achieved through associations with social researchers or through employment of a perceptions expert (PE) who would play a role in regularly gathering perceptions, reflecting upon potential misunderstandings and biases and then be responsible for facilitating a transparent and respectful communication of all these concerns, expectations and needs during MPA management meetings (Beyerl et al., 2016). The key here would be having an individual who would be committed long-term to build trust.

6.3.2 STAKEHOLDER PARTICIPATION

There is little doubt that most respondents want more SP in management decision-making in the CPH-MPA. But it is less clear what form of SP is wanted. Some respondents want more autonomy for their groups: for example, some divers proposed that they should be allowed to regulate the number of divers allowed into the reserve; impose quality control over the proficiency of divers; and monitor their impact on the fragile coralligenous ecosystem. Other respondents seem happy with better lines of communication between management and users, coupled with mandatory consultative mechanisms involving all stakeholders. In my view, some degree of ‘well-defined’ co-management will become necessary if the CPH-MPA is to be successfully guided through the next few years of increasing pressure from resource users, particularly divers.

Particular attention should be given to the issues of social diversity and power alluded to in the data i.e. perceptions of status, the representativity of representatives and ensuring that all actor groups are equally recognised and are in fact represented (Fabinyi et al., 2014; M. Silva and Lopes, 2015; Voyer et al., 2015b; 2015a). Perhaps, it will be necessary to adopt a strategy that makes SP legally mandatory (Jones et al., 2013), however, for certain it is necessary that a more consistent strategy is adopted and honest conversations must take
place that outline what SP will look like (Nutters and Pinto da Silva, 2012).

6.3.3 RESILIENCE

There are two issues in relation to resilience. First, do respondents believe that the CPH-MPA is resilient, ecologically and/or socially? Some respondents see it as ecologically resilient (i.e., as capable of maintaining its current ecosystem integrity) perceiving the environment to be robust given its good health, rich biodiversity, abundance of fish and its characteristic system of strong currents, but most appear to regard it as in danger of losing that integrity because of over-fishing and excessive diving, and deteriorating to a ‘lower’ form of ecological equilibrium. On social resilience, there is a complex situation in that fishers are clearly suffering, whereas divers are thriving, and the community is both suffering and thriving, but it seems unlikely that the social fabric is in imminent danger of unraveling. The second issue is how can the CPH-MPA become more resilient, ecologically and socially? The answer from respondents seems to be not by passivity, which would be burying one’s head in the sand, but by adaptation and/or transformation (Chandler, 2014; Chandler and Reid, 2016). Adopting an adaptive management approach is not a straightforward or easy approach (Walker and Salt, 2012; 2006), but one that is recommended for CPH-MPA. Adaptive management would entail not resisting the changes, but rolling with them (Redman, 2014; Walker and Salt, 2012; 2006). For example, it could mean using ameliorative means to limit over-fishing and excessive diving, but to accept that since the balance of advantages in the reserve has inexorably shifted from fishers to divers, all that can be done is to prevent that balance from shifting even more towards divers. A transformational strategy would entail a major shift either forwards, to a full-blown diving reserve, or backwards, to the restoration of the original full-blown fishing reserve. More moderate forms of transformation proposed by several respondents would entail minor shifts in the current balance between fishers and divers. In my view, the most likely outcome is some form of moderate transformation, adjusting the relationship between fishers and divers at the margins, in response to constantly changing circumstances. As indicated within interviewee responses – actors require more information related to the diving industry. Investigation into the ecological and social resilience of the dive industry would offer a unique opportunity to promote participatory research, offering a key area for further research.

6.3.4 MANAGEMENT

There are three question marks over management: (1) strategy; (2) coordination; (3)
enforcement. On (1) strategy, the question is, did the government believe that the CPH-MPA would exist in perpetuity as a fishing reserve? If so, why did it not secure that long-term vision by allowing fishing licences to be transferred from ‘retired’ vessels? Did it not foresee that otherwise, fishing licences would eventually disappear altogether, leaving the way for a de facto diving reserve? Or was this the intention of the administration all along – that the reserve would eventually become a recreational area serving a holiday resort, rather than a fishing reserve serving a coastal fishing community? A harsh critic might judge the government to be either incompetent – not realising that its ban on licence transfer between vessels would close down fishing in the reserve – or duplicitous – not divulging to fishers that it was the government’s intention to turn the reserve into a tourist amenity. A more generous verdict might be that such a development was inevitable, because tourism, not small-scale fishing, is the only profitable and sustainable future for CPH. However, even if small-scale fishing can no longer sustain CPH, it could still form an important part of a tourist strategy for the community, in that artisanal fishing is itself a tourist attraction in many coastal communities (see Brookfield et al. (2005); Cinner and Bodin (2010); and Lubchenco and Grorud-Colvert (2015)). Of course, such a role must be discussed with fishers, who should be given the opportunity to choose whether this is a route they would like to go down, often such rhetoric fails to consider fishers nuanced reasons for fishing.

On (2) coordination, all groups criticised the shared management system between regional and national level government for failing to apply a similar conservation strategy, and for the lack of communication between the two levels. The administration itself agreed that they were in disagreement regarding legislation of the dive industry, which is more strictly controlled in external waters. Failing to achieve jurisdictional coordination and agreements on strategy has the potential to transmit mixed messages to other actors undermining the MPAs effectiveness (Jones, 2014). Greater efforts are required by the government to coordinate efforts and demonstrate a united front. On (3) enforcement, all groups criticised the government for failing to enforce the regulations, and for lack of surveillance. Such criticisms are commonly found in nearly all studies of MPA management (e.g. Abecasis et al. (2013); Ascher (2001); Di Franco et al. (2016); Guidetti et al. (2008); Himes (2007); and Ressurreição et al. (2012)), and the administration of CPH-MPA itself recognised this as a failing caused by lack of funding due to the country’s financial crisis. One way to square this circle would be for the administration to devolve enforcement to the groups of divers and fishers, with strict monitoring to prevent abuse (T. Roberts and Jones, 2013).
6.3.5 WINNING AND LOSING

The issue here is whether there have to be winners and losers, or whether everyone can be winners, or at least not to lose badly (Chaigneau and K. Brown, 2016; McShane et al., 2011). This question raises a more general point about politics – is politics necessarily a zero sum game, or can it be a variable sum game? It is often said that EU governance is not about winner takes all but about consensus and/or compromise, which is designed to minimise the losses suffered by any party by requiring that decisions reflect a common denominator between parties or one in which each party meets the others half way. This suggests that the CPH-MPA might be run on the basis of consensus and/or compromise, rather than confrontation, between resource users. On this model, a means should be found for accommodating everyone’s interests so everyone gets something – fishers get security; divers get self-governance and the community gets protection from pollution and litter – and all feel a sense of ownership. In such a scenario, environmental stewardship is the glue which ensures that the ecological system is not undermined, while civic stewardship is the glue which ensures that the social system is not undermined and that people feel empowered in the confidence that their voices are listened to rather than ignored, and their interests are treated with respect and taken into account. Of course, both environmental stewardship and civic stewardship presuppose a commitment to the public good, and such a commitment depends on a high level of social capital (SC), which may take much time and effort to develop and maintain (Ostrom, 1990). Perhaps the best strategy for achieving this is to adopt the principle of adaptive co-management, thereby opening up the opportunity for a participatory learning process based on a continuous dialogue between the groups. In a small community like CPH, such a strategy has a better chance than in larger communities of creating the conditions for Habermas’ (Habermas, 1994) deliberative democracy through which the conflict between winners and losers is replaced by mutual accommodation.

6.4 CONCLUDING REMARKS

Successful management of MPAs the world over is hampered by a lack of understanding of the human dimension. My research tackled this issue in CPH-MPA, by providing through perceptions research, a thorough assessment of the MPAs management, how the MPA is undergoing continual change and what impact/s the MPA has/is having on those living nearby. I have been able to uncover a number of different pertinent issues that are currently limiting the MPA’s acceptability and potential, and crucially I have been able to highlight a number of recommendations that stem from the direct needs of those most affected. Future
focus on investigating the feasibility of different solutions and adaptive management strategies is required in CPH-MPA, along with the need to introduce alternative strategies for decision-making; for example providing stakeholders with a platform to deliberate and debate options prior to representatives attending decision-meetings. This kind of deliberative democracy (Dryzek, 2013; Habermas, 1994; Rawls, 2003) would help overcome many of the issues associated with competing needs and representation, ensuring that stakeholders choices are based on the public interest for CPH-MPA and not on the self-interest of the different groups, or even of the representative. A strategy to continually monitor perceptions in CPH-MPA, and in fact in all MPAs is strongly encouraged. As MPAs are fluid environments, their management must also continually evolve and adapt- this flexibility is critical for the future of CPH-MPA and MPAs worldwide.
APPENDICES

APPENDIX.I. ETHICAL APPROVAL UNIVERSIDAD DE MURCIA

INFORME DE LA COMISIÓN DE ÉTICA DE INVESTIGACIÓN DE LA UNIVERSIDAD DE MURCIA

Jaime Peris Riera, Catedrático de Universidad y Secretario de la Comisión de Ética de Investigación de la Universidad de Murcia

CERTIFICA:

Que D. Pedro Noguera Méndez ha presentado el proyecto titulado "Convenance of Mediterranean MPAs: The role of social capital and participation", a la Convocatoria Programa PEOPLE - "FP7-PEOPLE-2011-INT".

Que la Comisión de Ética de Investigación analizó toda la documentación presentada, y de conformidad con lo acordado el día 18 de enero de 2016¹, por unanimidad, se emite INFORME FAVORABLE.

Y para que conste y tenga los efectos que correspondan, firmo esta certificación, con el visto bueno del Presidente de la Comisión, en Murcia a 21 de enero de 2016.

Yª Pª
EL PRESIDENTE DE LA COMISIÓN DE ÉTICA DE INVESTIGACIÓN DE LA UNIVERSIDAD DE MURCIA

Fdo.: Antonio Juan García Fernández

ID: 1221/2015

¹ A los efectos de lo establecido en el art. 27.5 de la Ley 30/1992 de 26 de noviembre de Régimen Jurídico de las Administraciones Públicas y del P.A.C. (B.O.E. 27-11), se advierte que el acta de la sesión citada está pendiente de aprobación.
APPENDIX.II.  PROJECT FLYER PROVIDED TO RESPONDENTS

Red de Formación para la Monitorización de Áreas Marinas Protegidas (MMMPA)

MMMPA es un proyecto de investigación integrado que adopta la perspectiva ecosistémica, relacionando los aspectos sociales y ecológicos, para promover una gestión más efectiva de las áreas marinas protegidas del Mediterráneo.

MMMPA supone un esfuerzo de investigación conjunto al implicar a las ciencias sociales y naturales, que pretende ayudar a mantener los servicios que proporciona el entorno marino, de los que dependen tantas personas. Este proyecto incluye la investigación de los procesos sociales y ecológicos que afectan a la salud del medioambiente marino y la creación de herramientas que sirvan de ayuda a los grupos y personas más directamente implicados (gestores, pescadores y responsables de la administración, entre otros), para lograr una gestión del medio marino más efectiva.

Contacto

Katie Hogg

t: +34 673 062 804
e: katie.hogg@um.es

Economía Aplicada
Universidad de Murcia
Este proyecto representa la parte social del proyecto global (MMMPA) y se centra en la gobernanza de los recursos marinos. A partir del examen de diferentes áreas marinas protegidas (MPAs) del Mediterráneo, se identificarán las relaciones existentes entre las distintas estructuras de gobernanza y la implementación de medidas dirigidas a la gestión del medio marino. A partir de la información obtenida de cuestionarios y de grupos de discusión podremos comprender mejor las condiciones sociales y económicas de las personas y de las organizaciones. El objetivo último que se pretende alcanzar con este proyecto es desarrollar un marco de gobernanza adaptativo que sirva de ayuda a los actores implicados, tanto públicos como privados. De este modo se podrá hacer frente, de una mejor manera, a las cambiantes condiciones del entorno y lograr una participación más activa de la sociedad en la futura gestión del mar.

Gracias por su interés y cooperación en este trabajo

Coordinadores

María Semitiel García | Pedro Noguera Mendez | José García Charton

Universidad de Murcia

www.mmmpa.eu

MMMPA - Red de formación para la monitorización de áreas marinas protegidas está financiado por el séptimo programa marco de la Unión Europea (FP7/2007-2013) Ayuda nº 290056
APPENDIX.III.

RESUMEN DEL PROYECTO

El proyecto MMMPA, red de formación para la monitorización de áreas marinas protegidas, financiado por la Comisión Europea, comenzó en el año 2012 y participan investigadores pertenecientes a 13 organizaciones de 4 países del Mediterráneo.

La gente que vive en el Mediterráneo depende del medio ambiente marino, el cual genera millones de euros al año a través del turismo y la pesca. El medio ambiente marino está siendo dañado por actividades como el desarrollo turístico, la pesca insostenible o la contaminación, y se enfrenta a un futuro incierto debido al cambio climático.

El proyecto aborda distintas cuestiones sobre cómo afectan los cambios a las comunidades costeras. Se proporcionarán recomendaciones a las partes interesadas a lo largo del Mediterráneo, para mejorar la gestión de los recursos marinos.

¡GRACIAS!

Muchas gracias a todos los que emplearon su tiempo en contribuir a nuestra investigación y a los que han asistido a la reunión.

Después de Cabo de Palos se realizará un trabajo de campo en la Reserva Marina de Port Cros, Francia.

CABO DE PALOS, MURCIA, ESPAÑA
TRABAJO DE CAMPO EN LA COMUNIDAD
Agosto 2013

CONTACTO
www.mmmpa.eu
info@mmmpa.eu
Universidad de Murcia
Economía Aplicada,
T: 968887930
F: 968883745
Ms. Katie Hogg
E: katie.hogg@um.es
T: 673062804

TRABAJO DE CAMPO
El trabajo de campo del proyecto comenzó en Cabo de Palos en Julio de 2013. El equipo llevó a cabo numerosas entrevistas con los principales usuarios de los recursos en Cabo de Palos, y entrevistó a más extensas y detalladas con las instituciones que trabajan en estrecha relación con el medio marino.

Se pidió la opinión de los participantes en torno a:
- Uso de los recursos marinos
- Cambios en el medio ambiente marino
- Gestión del medio ambiente marino
- Medios de vida
- Vida en la comunidad

Este folleto muestra los primeros resultados del proyecto.

INDICE:
- Opiniones sobre la gestión del medio ambiente marino
- Aspectos importantes
- Opiniones sobre el nivel de participación
- Opiniones sobre la reserva
OPINIONES SOBRE LA GESTIÓN DEL MEDIOAMBIENTE MARINO

Esta sección pretende conocer la opinión de los ciudadanos sobre el cuidado del medio ambiente marino. Las personas entrevistadas mostraron su acuerdo o desacuerdo frente a una serie de afirmaciones. A continuación se muestran las impresiones de los usuarios de los recursos en relación a la gestión del medio marino.

OPINIONES SOBRE LA RESERVA

La mayoría de la gente es consciente de que el objetivo de la reserva es mejorar la forma de vida de los pescadores, aunque su uso sea compartido entre pescadores y la industria del buceo. Algunos usuarios piensan que debería haber más control del buceo y de la pesca recreativa. En general la gente opina que la creación de la reserva fue una buena idea, y consideran beneficiosos la zona integral. La salud del medioambiente y el número de peces grandes ha aumentado significativamente cada año dentro de la reserva, desde su implantación, aunque hay un preocupación en torno a la gestión de la misma. Se puntualizó que en los últimos 3 años el número de peces de gran tamaño ha disminuido. Mucha gente no es consciente de las formas de gestión de la reserva, y expresaron su preocupación sobre la falta de vigilancia.

IMPACTO EN LOS USUARIOS DE LOS RECURSOS

Los usuarios consideran que la reserva es beneficiosa. Inicialmente su creación fue negativa para los pescadores, ya que supuso un cambio en las áreas de pesca y nuevas regulaciones. Además nos explicaron que no hubo una consulta o explicación previa a su implantación. Ahora la comunidad considera la reserva beneficiosa para todos los usuarios de los recursos. Muchos de ellos opinan también que la reserva ha beneficiado más a los centros de buceo que a los pescadores, ya que las regulaciones aplicadas a los buceadores son mucho menos estrictas.

BENEFICIO PARA LA COMUNITUD

Muchos consideran que la reserva es beneficiosa para la comunidad de Cabo de Palos. Su creación supuso un cambio significativo en la comunidad y ha aumentado la popularidad de la región. Se considera el éxito de la reserva como una importante forma de atracción del turismo que ha mejorado la economía de la comunidad. La mayoría de los usuarios mostraron preocupación por la falta de vigilancia, que podría tener consecuencias muy negativas si la reserva no es gestionada de manera efectiva, no sólo para la pesca y el buceo, sino para toda la comunidad.

ASPECTOS IMPORTANTES

OPINIONES SOBRE EL NIVEL DE PARTICIPACIÓN

Esta sección pretende conocer la opinión de los ciudadanos sobre el nivel de participación en la gestión marina. Las personas entrevistadas mostraron su acuerdo o desacuerdo frente a una serie de afirmaciones. A continuación se muestran las impresiones de los usuarios de los recursos en relación a su nivel de participación en los procesos de gestión.

La reserva marina es considerada como el mejor destino de buceo de España, y los 9 centros de buceo operativos en la comunidad evidencian su popularidad. El desarrollo del turismo ha proporcionado numerosas oportunidades laborales a restaurantes y hoteles, pero esta industria es muy estacional y se ha visto afectada por la crisis económica.

GESTIÓN DE LA RESERVA

Muchos conocen las reglas en relación al uso del medio ambiente marino y de la reserva marina. Algunos piensan que la gestión marina no es una prioridad del gobierno, y que se debería hacer algo más para apoyar a los usuarios.

Algunas de las normas que afectan al ambiente marino son: regulaciones de la malla de las redes, restricciones estacionales, zonas de reserva integral, límite en el número de buceadores y otras reglas informales. Existe un acuerdo general de que algunas de estas reglas son buenas. Los principales problemas son la falta de aplicación de las normas y la poca vigilancia de la reserva. Algunas personas opusieron a la crisis económica de la reducción de la vigilancia y del aumento de turísticos y de la pesca ilegal.

FORMAS DE VIDA

La pesca artesanal es una tradición importante en Cabo de Palos, y el pescado y el marisco son alimentos importantes en la comunidad. La flota del puerto es pequeña. Consiste en 6 barcos que tienen derecho exclusivo del uso de la reserva. Los barcos utilizan técnicas de pesca artesanal, como el trasmallo y el palangre, ambas consideradas las más sostenibles. Algunos expresaron que las generaciones más jóvenes no quieren dedicarse a la pesca por considerarlo un trabajo muy duro con pocos incentivos.

La reserva marina es considerada como el mejor destino de buceo de España, y los 9 centros de buceo operativos en la comunidad evidencian su popularidad. El desarrollo del turismo ha proporcionado numerosas oportunidades laborales a restaurantes y hoteles, pero esta industria es muy estacional y se ha visto afectada por la crisis económica.
¿Qué son MMMPA y PescaSos?

MMMPA es un proyecto financiado por la Comisión Europea y una red de formación para la monitoreización de áreas marinas protegidas que comenzó en el año 2012.

PescaSos es una iniciativa de la Asociación Columbares cofinanciada por el Fondo Europeo de Pesca y la Fundación Biodiversidad, del Ministerio de Agricultura, Alimentación y Medio Ambiente.

Ambos proyectos tienen como objetivo trabajar, junto con los gestores y usuarios de la Reserva Marina de Cabo de Palos e Islas Hormigas y su área de influencia socioeconómica, para:

★ Identificar propuestas para mejorar la gestión y el aprovechamiento de los recursos pesqueros.
★ Promover el modo de vida tradicional, la cultura y el bienestar de la población.
★ Fomentar la cooperación entre la administración, los científicos y los profesionales del sector pesquero.

Cabo de Palos e Islas hormigas es un área protegida donde se colabora activamente en el intercambio de conocimientos y experiencias para el mantenimiento del sector pesquero tradicional y la protección de la biodiversidad marina.

¿Qué beneficios aportan las Reservas Marinas?

★ Mantienen la biodiversidad y suponen un refugio para las especies.
★ Protegen los hábitats del daño provocado por prácticas de pesca destructivas y de otras actividades humanas, permitiendo la recuperación de áreas dañadas.
★ Ofrecen áreas donde los peces pueden reproducirse y crecer hasta su tamaño adulto.
★ Aumentan las capturas de pesca (en tamaño y cantidad) en los alrededores de las áreas protegidas.
★ Permiten la puesta en valor de la pesca artesanal, que es una actividad tradicional y arraigada.
★ Generan resiliencia para protegerse frente a impactos externos, como el cambio climático.
★ Sirven como referencia de espacios marinos protegidos bien conservados, mejorando la gestión de los recursos pesqueros.
★ Ayudan a mantener la cultura y fomentan la economía y los medios de subsistencia locales, en relación con el medio marino.

Reserva Marina de Cabo de Palos e Islas Hormigas

Un espacio para la participación social

El equipo de Ciencias Sociales de MMMPA realizó un trabajo de campo en 2013, donde se entrevistaron pescadores, centros de buceo y miembros de la comunidad e informantes clave.

Aspectos importantes en la reserva

★ Contaminación por emisarios submarinos.
★ Pesca furtiva y pesca recreativa no regulada.
★ Desarrollo turístico descontrolado.
★ Pérdida de praderas de Posidonia oceánica.
★ Introducción de especies exóticas invasoras.
★ Aumento de la basura en el mar.
★ Efectos del cambio climático.

Contacto: Katie Hogg, katie.hogg@um.es, 673062804 ó Silvia Guadix, pescasos.murcia@columbares.org
Durante este último año se ha revisado la regulación sobre buceo y también han tenido lugar reuniones en las que se les ha dado participación a diversos actores.

Por ello, aunque este foro de participación no está centrado en la toma de decisiones, queremos presentar algunas de las conclusiones a las que hemos podido llegar gracias a la investigación participativa llevada a cabo.

Y, además, queremos aprovechar esta oportunidad para valorar estos avances y seguir trabajando juntos para construir soluciones colectivas de gestión.

¿Qué nos preocupa? ¿qué nos motiva?: Desafíos
★ Incrementar la participación y la colaboración entre todos los actores.
★ Aumentar la transparencia y mejorar la comunicación.
★ Mejorar la coordinación entre las dos administraciones.
★ Buscar soluciones a la pesca ilegal.
★ Plantar un cambio en la concesión de licencias para pescar en la reserva.
★ Plantar soluciones a los conflictos que surgen por el uso de la reserva.
★ Convenir un turismo sostenible.
★ Informar y aumentar la concienciación sobre los valores ambientales de la reserva.
★ Mejorar la coordinación entre los centros de buceo, los pescadores y la administración.
★ Mejorar el sistema de vigilancia.
★ Actuar para enfrentar el problema de la contaminación.

¿Qué planteamos? Propuestas sobre gestión y conservación
★ Consolidar un espacio para la participación…
★ Encontrar medios que permitan la implicación de todos…
★ Armonizar las normativas…
★ Crear grupos técnicos de trabajo…
★ Enseñar los valores de la reserva…
★ Considerar el papel de los usuarios en la vigilancia…
★ Repensar el servicio de vigilancia…
★ Alcanzar un consenso sobre la capacidad de carga de la reserva…
★ Informar, sensibilizar, educar…
★ Dotar de medios para conseguir espacios más limpios…
★ Poner en valor la reserva:
  o certificación de origen
  o comercialización
  o marketing sostenible
  o certificados de calidad

...
APPENDIX.V. FEEDBACK & VALIDATION MEETINGS DESCRIPTIONS

In what follows is a more descriptive breakdown of the three meetings held within the community.

APPENDIX.V.I. FISHERS FEEDBACK AND VALIDATION MEETING

The meeting with fishers was held on 21st September 2013 with 17 attendees and held in a local restaurant frequented by the fishers. Refreshments were provided during the meeting, which lasted approximately 5 hours. The public nature of the meeting meant that other individuals present would often join in the discussion at certain points, and some of the core respondents would leave for short periods to have conversations with passers-by.

The meeting consisted of three parts. Initially a short presentation/explanation of the preliminary findings was provided to the group. During this presentation, the moderators asked open-ended probing questions to generate narrative data. Attendees were encouraged at all stages to ask questions and give their opinions on the data and more crucially my interpretation of the findings.

The second part of the meeting involved two participatory exercises, which were used as a way to compliment the previously collected interview data. One exercise explored future management scenarios for CPH-MPA, involving the group being divided into smaller working groups. A facilitator and a note taker assisted each group. The groups were given four different future scenarios for the reserve: i) Healthy reserve and the community are involved directly with management, ii) Healthy reserve with external management, iii) Un-healthy reserve with the community involved in the management, iv) Un-healthy reserve with outside management, and asked to discuss how they thought the community and reserve would be in those different scenarios. The facilitators probed for as many ideas as possible.

The groups were then provided with stickers to vote for which scenario would have the biggest impact, which is most likely to happen and which scenario they would prefer for the future. A larger group discussion was then held where the results from each group was discussed as a whole. The second exercise was designed to explore the formal and informal governance structure of the MPA. The groups were asked to identify the institutions that are somehow involved in the MPA. Using a ring of concentric circles with “them” at the centre, they were then asked to place the institutions at a distance that represented how accessible
they thought each institution identified was to them. They were asked questions regarding how easy it was to get into contact with each of the institutions involved, how frequently they communicated and how they felt regarding their overall relationship with each. Respondents were then asked to vote, which institutions had the greatest influence regarding MPA decisions and which institution should be most important. Again the exercise was then discussed with the larger group.

The final part of the meeting offered a more open discussion that allowed us to explore their overall support for the MPA and their experience with the MPA over the past 20-25 years. During this final session, feelings of anger were much more prevalent, with fishers often standing up and gesticulating whilst making their point. This open discussion proved crucial to better understand the issues that were being talked about between these individuals, added further to my interpretation of the data and provided interesting focus points for the meeting carried out the following year.

APPENDIX.V.II. DIVERS FEEDBACK AND VALIDATION MEETING

The meeting with divers was held on 20th September 2013 with 13 attendees and held in a local ‘centro de interpretaciòn’ which is used regularly by the dive community for showing films and holding meetings. Refreshments were provided during the meeting, which lasted
approximately 3 hours. The location of this meeting meant it was more private and the attendees consisted of dive operation owners and dive employees only. The meeting followed the same plan as described above for the fishers.

Figure 7.2 One group of divers completing the ‘future scenarios’ exercise

APPENDIX.V.III. COMMUNITY FEEDBACK AND VALIDATION MEETING

On the 29th November 2014 a third community meeting was arranged in collaboration with Columbares. During 2014 Columbares had been working along the Murcian coastline promoting the value of Artisanal fishing through a government funded project called PescaSOS: http://www.columbares.org/pescasos/proyecto-pescasos. Following the requests of attendees to the previous meetings, rather than having meetings for the different actor groups (as previously requested by potential attendees), a meeting was designed for all actors, from all levels, and was made open to the wider public. The meeting was held in the same restaurant as used during the fishers meeting. Approximately 13 individuals, including representative from the administration, researchers, the dive community, fishers and the neighbourhood association attended.
At the same time as PescaSOS, another project (PESCARES) was being carried out in Cabo de Palos, which was designed to create good dive practice guidelines and help resolve the conflict that had been developing between the fishers and divers. For unknown reasons, the University of Murcia and PescaSOS were excluded from all meetings held by PESCARES. During this period the relations between the University, Columbaires and the local cofradía became unexplainably strained. For reasons still not understood, on the day of the meeting, the Patron Mayor of the cofradía called all fishers and divers and told them they could not attend the meeting. So as not to cause conflict many individuals who had confirmed attendance called to say that they could no longer attend. This meant that the overall attendance at the meeting was much lower than expected. Although relations with the cofradía have improved, it is still not understood, how or why relations became so frayed during this period and what role PESCARES may have had. Several fishers and dive representatives still attended the meeting, and the meeting took place as planned. However, this was an interesting lesson for me personally, as to the role or influence social research and social projects can have on community dynamics, and how fragile relationships between institutions can be. The role or involvement of researchers or external projects is not always positive for the community.

This third meeting followed a similar format to the previous two meetings. The meeting began with a presentation of my data, which was by this point more fully analysed. Again attendees were asked to offer their opinion and questions were asked to probe for open discussion.
The meeting involved two exercises making use of the data extracted from interviews and opinions provided in the previous meetings. Again the group was divided into two smaller working groups. Each group had a facilitator and note takers. In the first exercise – threat prioritisation attendees were provided with the ‘threats’ to the MPA identified through analysis of the interviews. The exercise started with an open discussion of each of these threats. They were then asked to vote which of these were the most important for the management of the MPA; the least important; which presented the most urgent action to improve the MPA; and which were the least urgent. Throughout the exercise the facilitators probed for explanations and more information.
In the second exercise, the groups were presented with a ladder of participation with simplified explanations of each level— from no participation, to full stakeholder rule. The respondents were then asked to use stickers to indicate where they believed they were in terms of participation in CPH-MPA decision-making and then where they would like to be. Interestingly, the group that had the representative of the administration was much more reserved in their responses and discussion. An issue of focus groups (especially ones that mix actor groups or societal levels) which must be considered is the fact that not all individuals in a focus group are necessarily expressing their own individual view and may have their responses influenced by each other so they may not reflect what people actually think or feel. Again, facilitators probed for explanations and allowed for open discussion during the exercise.
APPENDIX VI. SNA SURVEY

1. Thinking on both a local and national level, which organizations do you talk to (including government ministries and departments, NGOs, educational institutions, private sector, community groups, etc.)?

2. Who on this list do you talk to? Introduce the list, prompt for communication with groups on list

3. Which of these groups would you say that your group has a strong relationship with? E.g. you engage frequently and/or share information and/or resources. Why?

4. (a) Who from this list have you worked with in the past year or two? (b) Of those which were positive collaborative experiences?

5. Thinking about the list, in the past year, whom have you received information about marine resources and marine resource use from?

6. Thinking about the list, in the past year, who has received information from you about marine resources and their use?

7. Which groups/organizations do you find most cooperative?

8. Which level of government do you find most cooperative (local, national)?

9. Who on this list shares similar ideas about how to manage the marine environment and marine resources as your group?

10. In a hypothetical situation, if your group were unable to attend a meeting about the marine environment or marine resource management, which of these groups would you trust to represent you?

11. Which of these groups have influence over decisions regarding marine resources?

12. How much influence do you feel that your group has when decisions about marine management are made? (None, low, moderate, high) Why?

13. Are there any conflicts/ between any of these groups?

14. Can you tell me about the relationships within your organization / between members of your group?
APPENDIX.VII. INDIVIDUAL SEMI-STRUCTURED INTERVIEW

Date

Resource Use

1. Do you think the marine environment here is important? (on a scale of 1-5 where 1 is not at all important and 5 is very important)
2. What are the different ways that you use the sea?

Environmental Change

3. If you think of a healthy marine environment, what would it look like?
4. How healthy do you think the marine environment is here? On a scale of 1-5, where 1 is very unhealthy and 5 is very healthy,
5. (a) What affects the health of the marine environment here? (b) What are the causes of those things?
6. Over the past 10 years, have you noticed any changes in the marine environment? If so, when and why did this happen?
7. Have any of these changes affected you in any way?

Management of marine environment

8. Who do you think IS responsible for looking after the marine environment?
9. (a) Are there rules that affect how people use the marine environment here? What are they? Are these formal or informal rules? (b) How do you feel about each of these rules? (c) What are your opinions on the way they are enforced?
10. Do the people here comply with the laws? If No- Why do you believe people violate the laws?
11. Please indicate on a scale of 1-5 how strongly you agree with the following statements where 1 is strongly disagree and 5 is strongly agree.

<table>
<thead>
<tr>
<th>Comments</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>DK/NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>The government values and supports marine resource users</td>
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<tr>
<td>Local marine resource use interests are being adequately met with the current management regime</td>
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<tr>
<td>I am well informed about management measures</td>
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<tr>
<td>Marine resources users/ representatives of marine resource users are usually consulted regarding management issues</td>
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<tr>
<td>Marine resource users take part in the management process</td>
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</tbody>
</table>

12. We are interested to find out your opinion on how the marine environment is looked after so we are going ask you a series questions.

<table>
<thead>
<tr>
<th>Comments</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there ways you can challenge the rules made about the marine environment?</td>
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<tr>
<td>Question</td>
<td>Rating Options</td>
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<td>-------------------------------------------------------------------------</td>
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<tr>
<td>When people enforce the rules, is everybody treated the same? (i.e. do you think it is fair)</td>
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<tr>
<td>Do different groups (e.g. fishers, government) that have an interest in the marine environment work well together?</td>
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<tr>
<td>Do the people in charge of the marine environment have enough resources, training and knowledge?</td>
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<tr>
<td>Do the people in charge of the marine environment make the best use of the resources they have?</td>
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<tr>
<td>Do you think people in charge of the marine environment have successfully responded to changes in the marine environment?</td>
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<tr>
<td>Have the people in charge of the marine environment responded to the needs of the resource users?</td>
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</tbody>
</table>

13. Do you receive information about the marine environment? How/From whom?
14. If you wanted to challenge a decision that was made about the marine environment, whom or where would you go to?
15. We are going to read you another series of short statements. Please indicate on a scale of 1-5 how strongly you agree with these where 1 is strongly disagree and 5 is strongly agree.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Rating Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploitation of marine resources causes exhaustion of scarce resources</td>
<td>1 □ 2 □ 3 □ 4 □ 5 □ DK/NA □</td>
</tr>
<tr>
<td>I feel personally obliged to use marine resources in an environmentally sound way such as by using environmentally sound technology and sustainable practices</td>
<td>1 □ 2 □ 3 □ 4 □ 5 □ DK/NA □</td>
</tr>
<tr>
<td>By reducing marine resource use the health of the marine environment will increase</td>
<td>1 □ 2 □ 3 □ 4 □ 5 □ DK/NA □</td>
</tr>
<tr>
<td>Over exploitation of marine resources has negative consequences for future generations</td>
<td>1 □ 2 □ 3 □ 4 □ 5 □ DK/NA □</td>
</tr>
<tr>
<td>Marine resource use is an important cause of environmental degradation</td>
<td>1 □ 2 □ 3 □ 4 □ 5 □ DK/NA □</td>
</tr>
<tr>
<td>I don’t feel guilty when I use marine resources even though I know there are future generations to consider</td>
<td>1 □ 2 □ 3 □ 4 □ 5 □ DK/NA □</td>
</tr>
<tr>
<td>I want marine protected areas to be implemented</td>
<td>1 □ 2 □ 3 □ 4 □ 5 □ DK/NA □</td>
</tr>
<tr>
<td>Marine protected areas will improve marine resource use in the area</td>
<td>1 □ 2 □ 3 □ 4 □ 5 □ DK/NA □</td>
</tr>
<tr>
<td>Marine protected areas will take more into account the opinions of</td>
<td>1 □ 2 □ 3 □ 4 □ 5 □ DK/NA □</td>
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</tbody>
</table>
16. What is your opinion about Cabo de Palos Marine Reserve?
17. What is your opinion on how the reserve is managed?
18. Do you see the reserve as being beneficial to the community? Why or Why not?
19. (a) What impact has the implementation of the MPA had on resource users? (b) and the community in general
20. Do you think the MPA benefits some users over others? Which groups, why?
21. Do you have a license to use the MPA?
22. Do you have any suggestions on how the MPA could be managed better?
23. If you had the opportunity would you like to participate in the management of the MPA? Why?

Demographic Information

24. Gender
25. Age
26. Sector
27. Educational Attainment: Primary, Secondary, College, University, Professional/Vocational
28. Are you a resident of the community?
29. Average annual household income? € <15000, 15-30000, 30-50000, 50-75000, 75000+
30. In relation to the total household costs at the end of the month how easily do meet these costs? Where 1 is very difficult and 5 is very easily.

Household Information

31. Were you born in the community? If no, where?
32. How many years have you lived here?
33. How many people live in your house? Of these, how many are male and female?
34. Of these, how many people contribute to the household’s income?

Occupations

35. What jobs or activities do you and other people in your house do for income?

IF INVOLVED IN FISHING:

36. Do you fish for income, food, or recreation?
37. What type of fishing do you do?
38. How long have you been involved in work related to the marine environment?
39. What jobs would you do if you couldn’t do what you are doing now?
40. Would you like your children to fish for a living? Why?
41. Would you like your children to work in tourism related to the marine environment? Why?

Community / social capital

42. (a) Are you involved in any social, community groups, or stakeholder organisations, including both formal and informal groups? (b) If so, which groups and who is involved? (c) How long have you/they been a member?
43. Are there any groups or organisations you would like to be part of? Why are you not part of them now?
44. (a) Are you a member of any marine-related associations (e.g. fisher cooperative, marine tourism associations)? If NO: Why are you not a member of an organisation? If YES: (b) How long have you been a member? (c) What is your role? (d) To what extent do you feel the organization represents your views? (e) Do you think this organisation is effective in achieving its aims? (f) What would you do to make this organization more effective?
45. We are interested in finding out a little more about the community. By ‘community’ we mean all the people that live in [name site]. Please tell us if you agree or disagree.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>NA/DK</th>
<th>Comment</th>
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</table>

169
46. If you suddenly needed to borrow a small amount of money (enough to pay for expenses for your household for one week) are there people beyond your immediate household and close relatives to whom you could turn and who would be willing and able to provide this money?

47. In general would you say that you are: Very unhappy, Not very happy, Neither unhappy or happy, Happy, Completely happy

48. Overall, are you satisfied with your life now? Rate your satisfaction from 1 (completely dissatisfied) to 10 (completely satisfied):

49. How satisfied are you with the financial situation of your household? Please use this card again to help with your answer (code one number): 1 (completely dissatisfied) to 10 (completely satisfied):

50. All in all, how would you describe your state of health these days? Would you say it is (read out): Very bad, Bad, Acceptable, Good, Very good
APPENDIX.VIII. KI SEMI-STRUCTURED INTERVIEW

Date
Background
Current position, Organisation/department, Length of time in this institution
Your organisation or group

1. What are the main purposes and priorities of your organisation or department?
2. What are your main responsibilities?
3. When was your organization created?

Perceptions of status of marine environment and impacts to marine environment

4. What are the most important types of marine resource use in Cabo de Palos? (b) What attributes of the marine environment do these resource users depend on?
5. How healthy do you think the marine environment is in Cabo de Palos? (on a scale of 1-5 where 1 is very unhealthy and 5 is very healthy)
6. What do you think are the most important impacts to the marine environment in this area? (b) What are the main causes of these impacts?
7. (a) Have you noticed or heard of any other changes in the marine environment in Cabo de Palos over the past 10 years? (b) What about changes to marine resources?

Marine management

8. Which of the following marine management measures (tools) are in place in this area? Is your organization/group/department/institution involved with any of these?

<table>
<thead>
<tr>
<th>Management measure</th>
<th>Efficacy: 1 = negative, 2 = no effect, 3 = uncertain, 4 = likely positive, 5 = proven positive</th>
<th>Explanation</th>
<th>Involvement</th>
</tr>
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<tbody>
<tr>
<td>Technical measures e.g. mooring buoys and fisheries regulations</td>
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<td>Temporal measures e.g. seasonal closures</td>
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<td>Spatial measures e.g. MPAs</td>
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<td>Ecological monitoring and research</td>
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<td>Social surveys and research</td>
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<td>Alternative livelihoods and economic incentives</td>
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<tr>
<td>Management approaches e.g. ecosystem-based and co-management</td>
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<tr>
<td>Environmental education</td>
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<tr>
<td>Communication and participatory processes e.g. workshops and forums, and stakeholder involvement</td>
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<tr>
<td>Manuals and guidelines for marine resource/environment managers</td>
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</table>
9. What do you think about current management of the marine environment in Cabo de Palos?
10. Are there mechanisms in place to enforce these management measures? What are they?
11. What do you think about the enforcement mechanisms? Do you think enforcement is fair?
12. Are there any informal rules or community arrangements about how people use marine resources? If so, what are they and how do you think they affect marine health?
13. What could be done in the area to improve the health of the marine environment?

Decision-making

14. Could you describe how decisions about marine management are taken in the area? How, and by whom?
15. Do you think local management priorities for the marine environment are the same as at the national level?
16. Do you think decisions about marine management are made at the right organizational level?
17. (a) In terms of marine resource management, is there one thing you would like to do but can’t? Prompt: Are there any other measures (tools) that you think would be useful, but have not been implemented? (b) What are the challenges?
18. Thinking more generally, do you perceive any challenges to managing the marine environment in this region effectively?

Stakeholder Involvement

19. Is there an opportunity for stakeholders to be involved in marine management? If so, who and how?
20. Have any decisions about management of the marine environment benefitted any marine environment users? If so who and how?
21. Have any decisions about management of the marine environment disadvantaged any marine environment users? If so who and how?
22. If decisions are made about the management of the marine environment, is information provided to stakeholders to explain why a particular decision was taken?
23. Are there ways people can challenge the rules, laws or decisions made regarding marine management?
24. How important are marine management issues in comparison to other government priorities, on a scale of 1-5 where 1 is not important and 5 is very important?
25. The previous questions about management, cooperation, decision-making etc, are all about marine governance. Do you have any suggestions for how governance could be improved?
### APPENDIX.IX.  SNA ACTOR LIST

Table 7.1 Roster of actors involved in CPH-MPA governance system used in the SNA survey

<table>
<thead>
<tr>
<th>Institution/group</th>
<th>Node abbreviation</th>
<th>Number of interviewees</th>
<th>Functional Group</th>
<th>Examples or resources provided to CPH-MPA governance network</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Ministry of Agriculture, Food and Environment</td>
<td>National Ministry</td>
<td>2</td>
<td>Government power sharing and enforcement</td>
<td>Policy-making, User rights, Surveillance, Information, Conflict resolution, Information, Technical support, Enforcement, Marine and Social Security</td>
</tr>
<tr>
<td>Council of Agriculture and Water of the Region of Murcia</td>
<td>Regional Ministry</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Council of Tourism and Culture of the Region of Murcia</td>
<td>Tourism Ministry</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port Authority</td>
<td>Port Authority</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil Guard</td>
<td>Civil Guard</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Marine Institute</td>
<td>ISM</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Municipality</td>
<td>Municipality</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish Oceanographic Institute</td>
<td>IEO</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universities</td>
<td>Universities</td>
<td>2</td>
<td>Monitoring research and development</td>
<td>Monitoring studies, Education, Outreach, Information, Conservation programs, Dissemination, Project funds, Capacity building, Revenue</td>
</tr>
<tr>
<td>Environmental Consultants</td>
<td>Environmental Consultants</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGOs</td>
<td>NGOs</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Federation Cofradías</td>
<td>Regional Cofradía</td>
<td>1</td>
<td>Fishers associations and Fishers</td>
<td>Political representation, Information, Learning, Financial support</td>
</tr>
<tr>
<td>Cofradía de Cartagena</td>
<td>Local Cofradía</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artisanal Fishers</td>
<td>Fishers</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dive Operators</td>
<td>Dive Operators</td>
<td>2</td>
<td>Other direct/indirect resource users</td>
<td>Political representation, Information, Learning, Financial support, Dissemination</td>
</tr>
<tr>
<td>Regional Dive Association</td>
<td>Dive Association</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospitality Sector</td>
<td>Hospitality Sector</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The media</td>
<td>Media</td>
<td>1</td>
<td></td>
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</table>
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