



PROCEEDINGS OF THE FIFTH INTERNATIONAL CONFERENCE ON MARINE MAMMAL PROTECTED AREAS

ICMMPA 5: April 8-12th 2019

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**CELEBRATING
A DECADE
OF ICMMPA**



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The International Committee on Marine Mammal Protected Areas (ICMMPA), World Wide Fund for Nature (WWF) Greece and the Conference Planning Committee organized the Fifth ICMMPA



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THE 5TH INTERNATIONAL CONFERENCE ON MARINE MAMMAL PROTECTED AREAS

The 5th International Conference on Marine Mammal Protected Areas evaluated the progress made over the last decade to meet ICMMPA's long-standing goal of bringing the MMPA community closer together.

A primary goal of this conference, held for the first time in the Mediterranean, was to focus on the challenges ahead to examine concrete and practical steps towards achieving effective place-based protection and management for marine mammals and to identify a path forward that will lead ICMMPA into its second decade.

Hosting the Conference in Greece allowed representatives from the wider region to participate, helping to build local and regional capacity in marine mammal area-based conservation. The Conference sessions highlighted the ecological uniqueness of the Mediterranean Sea and promoted the need to safeguard it with respect to key emerging impacts, while identifying concrete steps towards advancing effective marine mammal conservation in key areas.

We hope that all ICMMPA5 participants, without which this key endeavor would not have been possible, had a productive week and felt enriched and recharged by the conference.

Amalia Alberini
Project Manager of ICMMPA5
WWF Greece



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List of Abbreviations

ABNJ	Areas Beyond National Jurisdiction
ACCOBAMS	Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean, and Contiguous Atlantic Area
AoI	Areas of Interest (for IMMAs)
CBD	Convention on Biological Diversity
CCAMLR	Convention for the Conservation of Antarctic Marine Living Resources
CCH	Cetacean Critical Habitat
cIMMA	Candidate Important Marine Mammal Area
CMS	Convention on Migratory Species
COP	Conference of Parties
EBM	Ecosystem-Based Management
EBSA	Ecologically or Biologically Significant Area
EIA	Environmental Impact Assessment
HSMPA	High Seas Marine Protected Area
IBA	Important Bird Area
ICoMMPA	International Committee on Marine Mammal Protected Areas
ICMMPA	International Conference on Marine Mammal Protected Areas
IMMA	Important Marine Mammal Area
IMO	International Maritime Organization
INECC	National Ecology Institute (Mexico)
IUCN	International Union for the Conservation of Nature
IWC	International Whaling Commission
KBA	Key Biodiversity Area
MMA	Marine Managed Area
MMPA	Marine Mammal Protected Area
MMPATF	Marine Mammal Protected Area Task Force of IUCN
MPA	Marine Protected Area
MSP	Marine Spatial Planning
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
PAMPAN	Pan -Arctic Marine Protected Areas Network
PSSA	Particularly Sensitive Sea Area
SDG	Sustainable Development Goal
SPAMI	Specially Protected Areas of Mediterranean Importance
SPREP	South Pacific Regional Environment Program
SSC	Species Survival Commission
TSS	Traffic Separation Scheme
UNGA	United Nations General Assembly
UNEP	United Nations Environment Programme
WDC	Whale and Dolphin Conservation
WWF	World Wildlife Fund / Worldwide Fund for Nature



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Executive Summary

Building on the previous ICMMPA conferences held over the last 10 years, the 5th International Conference on Marine Mammal Protected Areas (ICMMPA5) provided a unique forum to bring together MPA managers, decisionmakers, scientists and other stakeholders to exchange information, strengthen partnerships and co-design a way forward to improve marine mammal conservation and MPA management. The conference was held for the first time in the Mediterranean and was co-hosted by WWF Greece and the International Committee on Marine Mammal Protected Areas with the support of over a dozen sponsors and contributors.

ICMMPA5 gathered more than 200 participants from 40 countries around the world to “Celebrate a Decade of MMPA Collaboration”. Special effort was made to enhance participation not only from the Mediterranean region and Europe but also from underrepresented regions, to build stronger capacity within developing countries. In addition, ICMMPA5 very deliberately focused on supporting the participation of young practitioners. Their involvement in the conference reinforced the importance of providing opportunities to actively engage the next generation of conservationists and scientists.

In addition to exchanging knowledge and building capacity, ICMMPA5 evaluated the progress made over the past ten years to meet ICMMPA’s long-standing goal of bringing the marine mammal and MPA communities closer together and to explore actions necessary to address the significant challenges of our time. The conference featured four keynote talks, six panels, ten workshop sessions, two knowledge cafés, two round-table discussions and several side events that examined the challenges and pressures facing marine mammals around the globe.

We acknowledged the significant progress made to achieve better conservation for marine mammals. One such accomplishment is that this MMPA community of practice, which did not exist a decade ago, is strong and ever-expanding. We are grateful for the work that has been accomplished to date in creating bilateral, multilateral, and regional agreements, as well as all the local efforts to enhance effective *in situ* conservation of marine mammals and their habitats.

However, despite all the hard work conducted at the international, regional and local levels, we recognize there are still many challenges we need to overcome to achieve effective place-based protection of marine mammals. Most pressures on marine mammals have increased, and some – ecosystem change, shipping, noise, plastic pollution – are formidable. Too many MPAs are simply paper-parks where management efforts are being thwarted by the ineffectiveness of politically-influenced officials. Ignorance about the need for conserving marine mammals is still



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rampant and the greater public does not realize the full dimension of existing, yet alone future problems.

ICMMPA is a community of practitioners and not an advocacy group, yet we have learned that when there are certain challenges impacting a significantly important marine mammal area, it is imperative to have our voices heard. Such is the case for the Hellenic Trench area, just offshore from the ICMMPA5 venue, which has sites currently granted for huge oil and gas leases and therefore deserves global attention. Similarly, ICMMPA's role as a supportive network was clearly emphasized during the panel where the recovery efforts to save the Vaquita was presented and shared. This recovery team of international experts displayed tremendous courage and bravery in the face of extreme adversity, and is deserving of our utmost respect and admiration.

These conference proceedings reflect the way this growing community of practice channels energy and enthusiasm into practical measures to achieve conservation of marine mammals. Intense discussions resulted in recommendations, declarations, and practical guidance on topics ranging from managing fisheries interactions with marine mammals and sustainable whale-watching, to threats-based prioritization of management, to harnessing marine spatial planning in such a way as to achieve sustainable development while providing a foundation for strong conservation. We heard stories, exchanged ideas, furthered knowledge, and made commitments to carry the MMPA collaboration and good work forward, for the next decade and beyond.



Background on ICMMPA

In 2006, the International Committee on Marine Mammal Protected Areas (ICMMPA) (pronounced eye-COM-pa) was established as an informal group of international experts dedicated to the conservation of marine mammals and their habitats. Members of ICMMPA represent various geographic regions, as well as a wide range of expertise within the fields of marine mammal biology, ecology and the design and management of marine protected areas and other marine planning initiatives. Members include scientists, representatives of governmental agencies and NGOs.

Since its founding in 2006, ICMMPA has worked to promote marine mammal conservation through marine protected areas and other area-based management measures, informed by the best available science and to provide a mechanism by which the “community of practice” — comprised of managers, natural and social scientists, decision makers, and other stakeholders — could collaborate, share information and experiences, and disseminate knowledge and tools for establishing, monitoring, and managing MPAs. The primary activity of the Committee has been organizing periodic MMPA conferences. The five conferences to date have been held in Maui, Hawaii (2009), Fort de France, Martinique in the Caribbean (2011), Adelaide, Australia (2014), Puerto Vallarta, México (2016), as well as this most recent in Costa Navarino, Messinia Greece (2019), summarized in these proceedings.

Critical habitats for marine mammals range from the tropics to the poles, extending from shallow estuarine areas to the high seas. Despite this wide range of habitats, the threats to the vital activities of marine mammals are often remarkably similar including commercial fishing, resource extraction activities such as oil and gas, commercial shipping, and water and noise pollution. The application of marine protected areas (MPAs) as an effective conservation tool for marine mammals has been demonstrated in a number of areas. Worldwide, at least 700 marine and land-based protected areas (MPAs and PAs for marine mammals which we call MMPAs) have been specifically designated for, or contain populations of, marine mammals. Yet MMPAs often fall short of their mandate and considering the breadth of the ocean, they are poorly represented in the waters of most countries and on the high seas.

ICMMPA meetings have done much to catalyze additional protections and to create a community of practice that brings together marine mammal scientists, conservationists, marine and coastal planners, and MPA managers, as well as advocacy groups to advance understanding of how spatial management can be used in marine mammal conservation, and to engage the marine mammal scientific community in creating the most effective marine management possible.



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Welcoming Speeches

Giorgos Dimaras, Deputy Minister, Greek Ministry of Environment and Energy

Maria Lentoudi, Cabinet member of Minister Georgios Katrougalos, Greek Ministry of Foreign Affairs

Fani Tseliou, Secretary General of Dionysis Temponeras, Cabinet, Greek Ministry of Maritime Affairs and Insular Policy

Karmenu Vella (video message), Commissioner for the Environment, Maritime Affairs and Fisheries, European Commission

Marco Lambertini (live-stream), Director-General, WWF International



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CONFERENCE OPENING

HSH Prince Albert II of Monaco



Your excellences, ladies and gentlemen, dear friends,

I would like to tell you my pleasure to be among you today here in this beautiful place, the Westin Costa Navarino.

And I cannot resist the pleasure of recounting this legend which some of you are undoubtedly familiar.

Dionysus, the famous god of wine and pleasure, boarded a boat one day bound for the island of Naxos. He took on the appearance of a young mortal that day so as not to draw the sailors' attention. However, during the voyage, he overheard their conversation: they were planning to sell him as a slave in Asia.

Enraged, Dionysus exacted his revenge: he changed the oars of the boat into snakes, had grapevines grow on the deck which then took over the whole boat, and the sound of flutes appeared from nowhere. Panic-stricken by these prodigious tricks, the sailors leapt into the sea.



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They would have drowned had Poseidon, the god of the sea, not decided to welcome them to his kingdom, by turning them into dolphins. However, this was on one condition: from then on, they would help anyone in danger at sea.

This story, of which various versions exist of course, recounts two essential aspects. It recounts the closeness – even familiarity, which unites human beings and dolphins – and through them all marine mammals. And it also foretells that our salvation, one day or another, will depend on these species.

I would like to talk about these two references and that is why I am delighted to have the opportunity of taking the floor.

Let me thank the organizers - the international conference on marine mammal protected areas and the world-wide fund for nature Greece, as well as the Greek authorities of course who are acting as our hosts.

The fact that this conference is being held for the first time in Greece and in the Mediterranean is not only an opportunity to evoke the wealth and beauty of the myths of ancient Greece. It is also a unique opportunity to place greater focus on the specific situation of the marine mammals of this highly important and fragile sea. It will provide an opportunity, I hope, to improve their situation, both in the Mediterranean and elsewhere.

We are aware of the figures concerning species which are becoming increasingly endangered, the status of stocks which are diminishing, especially for some species – such as the monk seal in the Mediterranean. Above all, we are aware of the many dangers faced by these vulnerable species. They are essentially the result of human activities which are increasing, as our society inevitably appropriates the seas, coastlines and ocean floor. Urbanization disrupts the ecosystems, destroys habitats and increases pollution. Sea traffic increases the risk of collision with boats and also generates pollution, both material – through degassing and the release of waste – and noise. Noise pollution to which marine mammals are particularly sensitive. Fishing sometimes creates an imbalance in the food chains and too often results in incidental catches, sadly an ever-increasing occurrence. And climate change increases the pressure on these species – as it does on the whole of biodiversity.

All these factors often have dramatic consequences on these animal populations and contribute to their deterioration. However, irrespective of the responsibility of any one factor, we cannot ignore the fact that it is always human activity which weighs on marine mammals, and which is largely responsible for their current situation – such as the dolphins and cetaceans we are seeing more and more frequently being washed up on our shores.

Yet these animals are close to us. They share many characteristics with us. They are intelligent and altruistic, and sometimes even more altruistic than us, as they come and save humans, whilst we leave whales, dolphins and seals to die.

There is an irony to this story: such intelligence is the cause of some of their misfortune, as it justifies several particularly harmful human activities.



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I am thinking of dolphinariums and shows featuring these animals. We now know how incompatible these shows are with the needs of the species on display. We are also aware of the ill-treatment which too often accompanies them and of the illegal trade they generate. I am of course referring to the recently reported scandals, where whales, killer whales and beluga whales were found in captivity. Sometimes they are unweaned babies separated from their mothers, and kept in cruel conditions.

From fishing nets to dolphinariums, from land pollution to the noise of boats, the threats hanging over marine mammals are on the increase. These species which are so close to us, these species that mythology presented as sisters of the human species, are today in jeopardy.

We have an obligation to protect them, something which is only achievable through firm, determined and ambitious action. This action first and foremost requires targeted initiatives.

initiatives at the level of states and political authorities, of course. In this context, it is important to continue to heighten the awareness of the states currently responsible for some of the direct tragedies I spoke about, so that they implement more stringent regulations.

I am thinking, for example, of the country whose withdrawal from the international whaling commission's moratorium last December, poses a problem and which would be held in higher esteem were it to clarify its position in regard to the protection of cetaceans despite a local tradition of which we are all aware. I am also thinking of dolphinariums which need to be managed more effectively. I am thinking of the trade networks that supply them, where the scandals I mentioned just now came to light. Moreover, many of the businesses implicated supply dolphinariums that are in Asia where the price of the animals is worth millions of dollars.

In this respect, I believe that the authorities need to take a firm stand which should lead to concrete measures for these animals. However, mammals in captivity are sadly not the only ones to suffer from the negligence, irresponsibility and cruelty of humankind.

The havoc wreaked by fishing nets is another well-known cause. Yet we increasingly have the ability to prevent this, in particular by using acoustic deterrents and fish net markers, which must be brought into widespread use. In this regard, I believe it is essential to work with the fishing industry, the majority of whose stakeholders are in favor of such precautions. But we must also ensure we have the necessary resources for such policies, by developing a binding legal arsenal, and more importantly by implementing proper monitoring. However, the direct injuries inflicted by certain fishing techniques on marine mammals are unfortunately not the only thing making them vulnerable. Other elements, which I mentioned, also have extremely adverse effects on their health and their survival. In particular, all types of pollution and the degradation of the ecosystems.

These phenomena are obviously more difficult to address.

They need to be clarified. That is why scientific knowledge, as is often the case, needs to be our first ally. That is why I welcome for example the exhaustive inventory of cetaceans undertaken in the Mediterranean last year by the ACCOBAMS agreement whose secretariat is based in Monaco and which will continue this summer in certain Mediterranean countries.



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That is why I am delighted that my foundation has been supporting various programs focused on marine mammals for several years, including the monk seal, for which we will sign an MOU at this conference, which will provide us with more resources to protect this emblematic and endangered species of the Mediterranean.

That is why we also support, via our Canadian branch, a research initiative focused on the St Lawrence beluga whale. Conducted by a consortium of private laboratories and academics. Its purpose is to gain a better understanding of the beluga whale by studying its behaviour and habitat, and monitoring its state of health. But also, to offer support to stray or live stranded belugas, and to promote public awareness and appreciation.

Beyond any specific population, knowledge, and above all awareness of the great damage we are inflicting on marine mammals should prompt us into adopting broader conservation measures. Obviously, these include marine protected areas which feature on the agenda of this conference.

The benefits of marine protected areas vis-à-vis marine mammals have, I believe, long been proven. We have seen this in the Mediterranean, for example in the Pelagos sanctuary, created in 1999 by the principality of Monaco, France and Italy: this area covering close to 88,000 km² – the first trans-border area in the Mediterranean – is currently home to many marine mammals, including twelve species of cetacean.

We have also witnessed this in other sanctuaries that have been established across the globe, in particular in the Southern Ocean and the south Atlantic. And this has been confirmed more widely in all marine protected areas which have been set up over the last few years. That is why we need to develop and strengthen them, by imposing greater control of their delineation in order to guarantee their efficiency.

The very term of marine protected area, as we know, covers very different realities, as shown, for example, by their breakdown into seven categories by the IUCN.

CBD COP 15, which is taking place next year in China will, I think, provide an opportunity to clarify these objectives and strengthen the resources intended for MPAs. However, this meeting requires preparation: this is also one of the challenges of this conference.

In addition to multilateral agreements, other strategies can be developed for the expansion of marine protected areas. National strategies, through the development of initiatives in waters under national jurisdiction. Multilateral strategies, involving a certain number of negotiations, such as the ones we are conducting at the moment at the un on biodiversity beyond national jurisdictions. Strategies also involving private stakeholders, through the development of appropriate tools, such as the trust fund we have set up in the Mediterranean with France and Tunisia, and whose purpose, with public and private funds, is to promote the development of marine protected areas and their networks.

It is the combination of these levels, of all these stakeholders involved and of all these resources which will enable us to progress quickly and efficiently. But it is also the mobilization of other resources and other players. In this respect, I would like to stress the fact that these



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mammals are often indicators of the general condition of our seas. And that to save them, we need to save our seas.

We need to protect them from plastic pollution, which is currently one of the most serious harms they face, and which contaminates the entire food chain. We need to protect them from overfishing, which is destroying entire ecosystems and depleting certain seas of their life. We need to protect them from global warming, which is seriously jeopardizing the entire marine environment. I hope that the IPCC's interim report devoted specifically to the oceans and the cryosphere, the initial project of which was put forward by my foundation and which will be presented in Monaco in a few months' time, will provide additional tools.

We all need to take action to save the oceans, to save their ecosystems, to save their fauna and to save their marine mammals.

This is the meaning I would like to give to the story I told you about Dionysus at the beginning: the vocation of these species to which we are so close, to which we are naturally so sensitive, is indeed to save us. To save us by encouraging us to further protect our seas, one of the key challenges of this century. To save us by prompting us to change our attitude in regard to our environment. To demonstrate inventiveness, determination and responsibility.

In doing so, we can gain a deeper understanding of the ancient poet Oppian of Corycos, well-known here, when he wrote that “the hunting of dolphins is immoral and whoever willingly devises destruction for dolphins can no more draw nigh the gods, [...] for equally with human slaughter the gods abhor the deathly doom of the monarchs of the deep, [...]”.

Thank you.





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Keynote 1: Celebrating a Decade of MMPA Collaboration: Identifying a Path Forward



Naomi McIntosh & Brad Barr

This keynote presentation told the story about the International Committee on Marine Mammal Protected Areas (ICMMPA) and its accomplishments over the past decade, including organizing the five ICMMPA meetings to date. The presentation also explored what the focus of the Committee should be over the next 10 years.

Since 2009, ICMMPA has worked to foster a community of practice by providing opportunities to bring people together who study, manage and protect MMPAs around the world to share experiences, solutions and ideas. Over the last 10 years, ICMMPA has hosted five international conferences in 5 different countries. This year marks the 10th Anniversary of ICMMPA and is a time for the committee to not only reflect on past accomplishments, but also an opportunity to explore its future.

This presentation was delivered in two parts. Part 1 was a historical reflection of ICMMPA and its accomplishments over the past decade, led by Naomi McIntosh. After a brief overview of ICMMPA's history, Naomi invited two founding members of the steering committee (Erich Hoyt and David Mattila) to join her in telling the story of ICMMPA's key accomplishments, in an interview-style discussion. Following this, part 2 was led by Brad Barr, and began with the sharing of some perspectives about ICMMPA's future. Brad then described a process for engaging the conference participants in exploring what the ICMMPA's future should look like for the next 10 years and beyond.





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Keynote 2: Striving to Conserve the Seas and Their Life in a Changing World: A Dialogue Across Generations

Amalia Alberini

and

Giuseppe Notarbartolo di Sciara



This keynote, delivered by two marine mammal practitioners from relatively comparable backgrounds but different generations, focused on exchanging views of the evolution of marine mammal conservation throughout the decades and on the priorities that need to be tackled for the future. Starting from a short presentation on each speaker's background and mission in the field, the animated discussion then turned to a question-to-answer format that focused particularly on:

- 1) How the field of MMPAs has evolved the last 50 years: What has the community achieved and learnt these last five decades?
- 2) Is there a new narrative in combating the simplistic way of thinking that puts nature conservation and human wellbeing in two opposite sides? What is new today?



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- 3) Can a scientist become an advocate while preserving her/his objectivity and integrity in a world where decision making is often failing to recognize science as one of key elements driving marine environment conservation processes?
- 4) How can we break public perceptions that still consider marine mammals as a resource that should be exploitable, such as fish?
- 5) Should we shift focus from worrying about conserving populations to granting a better quality of life to marine mammals, and if yes, how?

The dialogue between Giuseppe and Amalia about the scientists' role in conserving the marine environment presented an opportunity for comparing the points of view of two practitioners separated by almost half a century. This allowed appreciation of how the challenges in the profession have shifted, and in part increased, despite the advantages gained through a greater understanding of the science involved, the technological progresses, and the greater public awareness about the need to conserve nature. As the conversation unrolled a contrast became evident between the approach of the older speaker, with a predisposition for considering a wide range of concern including individual welfare of the study subjects, and that of the younger speaker, representing a pragmatic approach where the problems are foreseen, based on what is actually happening today.



Keynote 3: Valuing Marine Mammals Through the Centuries: A Feasible Goal or Herculean Feat?

Demetres Karavellas, WWF Greece



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While marine mammals hold a very special place in the hearts and minds of many and in the history and culture of civilizations throughout the world, there are questions regarding how these species may have been valued in the past compared to the present, and what needs to be done so that we can attach more value to marine mammals in the future.

For Greeks, marine mammals were considered sacred symbols and have been depicted on frescoes, sculptures, emblems, and coins. Ancient Greeks held dolphins in extremely high regard and killing a dolphin was equal to killing a person. Marine mammals were an important part of Greek civilization and with few notable exceptions, were valued greatly.

In present day Greece, relatively little is known about marine mammals and where such knowledge does exist, their presence is to a large extent either taken for granted, considered a luxury topic in times of crisis or even, an expendable entity



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in search for short term profit. Regarding marine mammal conservation in the same country, this has a history of roughly three decades, initiated by a small group of scientists who to this date are still active primarily through NGOs and universities, in research, awareness building and advocacy work.

Looking into the future, a number of ideas are presented, with a view to increasing the intrinsic and other values placed on marine mammals – telling the stories, linking their conservation to tangible benefits to local communities, addressing the conflicts and challenges (e.g. interaction with fisheries), shifting the discussion on MPAs and IMMAs from analysis to implementation into action on the ground, addressing negative developments such as oil & gas exploration in critical habitats, linking marine mammal conservation with important developments in the international policy arena (e.g. CBD, SDGs).

We must remain hopeful and optimistic, with that hope and optimism rooted in bold and collective action. While many are inspired to these days by the teachings of Ancient Greeks and the value that was placed on marine mammals, value is not a given. The value of these magnificent creatures must be upheld, it must be defended and it must be kept alive - for themselves and for the generations to come.



Keynote 4: The Mysterious Language That Bridges Species with Spaces

Claudio Campagna



It has been said, regarding human-caused extinctions, that “species extinction is a great moral wrong”.

This language relates conservation to philosophy. I am a conservation practitioner, working with a philosopher named Daniel Guevara on something we call “The Language of Conservation Project.” One form of language, used by Charles Darwin (among others), is “form of life” language.

For example: “Flying squirrels have their limbs... united by a broad expanse of skin, which serves as a parachute and allows them to glide through the air to an astonishing distance from tree to tree” (Darwin, *The Origin of Species*). Daniel and I suggest using form of life language, referring to the notion that makes it possible to identify living things in the first place, and define necessities an individual must satisfy in order to be representative of its form.

Philosopher Michael Thompson calls these statements natural-historical judgments or Aristotelian categoricals (ACs). ACs are facts about life forms that also inform us of a standard for evaluating the goodness of specimens. From here, we can clarify our



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motivations to conserve species, as well as explore we consider to be “morally good” in them.

This differs from the logic of the language that speaks of “species” and “spaces.” Species language is dominated by “population” language and is concerned with quantitative measures. Spaces are places, sites, zones, areas, locations, surface areas, etc. Spaces are understood in terms of “jurisdiction,” “sovereignty,” “borders,” “property.” “Pristine” applies to spaces. Spaces are planned, degraded, restored.

Many of us here work in the interface of species and spaces. We describe facts, evaluate what is wrong, and intervene, via place-based approaches, such as MPAs, to correct the wrong. Unfortunately, we often practice conservation without concern for the way language expresses a variety of distinct wrongs. Sticking strictly to species language may obscure the distinct vision of our practice, which has always aspired to be an ethical practice.

Life form language, expressed by ACs, not only describe facts, but also provide a standard, a template, for judging good or bad, right or wrong, in terms of natural goodness or badness in the living things themselves. This standard is now hidden from view by the language of species and spaces. We discuss seven steps that might set conservation on the right track, where the primary standard of evaluation lies in the forms of life themselves. We propose that we all ought now to practice life form conservation.

Claudio Campagna and Daniel Guevara invite anyone who wishes to follow up on their work on the language of conservation to send their contact information to: Claudio Campagna <ccampagn@ucsc.edu> and Daniel Guevara <guevara@ucsc.edu>. Thank you!



Panel 1: Important Marine Mammal Areas (IMMAs): Transiting from Science to Management

Conveners: Giuseppe Notarbartolo di Sciara and Erich Hoyt, MMPA TF

Speakers:

Giuseppe Notarbartolo di Sciara, MMPA TF and Tethys, Italy

Erich Hoyt, MMPA TF and WDC, UK

Dipani Sutaria, Save our Seas Foundation, India

Tilen Genov, Morigenos, Slovenia

David Mattila, IWC, USA

Jon Day, James Cook University, Australia

Fotios Papoulias and Vedran Nikolić, European Commission, Belgium

Introduction and Overview

Important Marine Mammal Areas (or IMMAs) are being identified around the globe. The IMMA initiative brings together scientists and managers across wide regions and results in objective, data-derived and expert assessed mapping of coastal and pelagic areas that are distinctive due to their importance for a wide range of marine mammals. This panel discussed the challenges the IMMA programme, as managed by the IUCN Marine Mammal Protected Areas Task Force (MMPA TF), is facing as it begins to address implementation of the growing IMMA world map. Why is it so difficult to transition from science to management? What are the possibilities for using IMMAs as a spatial design and management tool for marine protected areas and other conservation actions?

To begin to answer these questions, members of the MMPA TF presented overviews of IMMA processes that have taken place. Giuseppe Notarbartolo di Sciara (MMPA TF and Tethys Research Institute) gave a brief background on the process of IMMA identification and the challenges in transitioning from science to management, followed by Erich Hoyt (MMPA TF and WDC) who gave an overview of the potential for IMMAs to serve as a spatial design and management tool. Dipani Sutaria (MMPA TF) described an IMMA implementation case study from South Asia (Andaman and Nicobar Islands, India), while Tilen Genov (MMPA TF and Morigenos – Slovenian Marine Mammal Society) presented a similar situation but in Slovenia, Mediterranean Sea. David Mattila (MMPA TF and IWC) addressed a problem-oriented (vessel strike and net entanglement) implementation of the IMMAs. Jon Day (MMPA TF and James Cook University) expanded on what management aspects might be necessary to



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ensure the animals' good status in an IMMA is maintained or enhanced. Finally, Vedran Nikolić (European Commission) discussed IMMAs as a tool for the protection of marine mammals under the EU Habitats Directive.

The MMPA Task Force has also engaged in on-the-ground implementation exercises in Palau and in the Andaman Islands, and organized a workshop looking at the value of overlapping selected threats such as marine traffic and seismic survey concession blocks with the IMMA map for the Mediterranean. Much of the discussion following the overviews and case studies revolved around the potential for IMMAs to catalyze solutions to marine mammal management problems, including facilitating implementation of marine mammal protected areas and other management or conservation measures that might follow IMMA selection. In the extended discussion period, the speakers and members of the audience explored strategies for implementing IMMAs and expanding their use and value for conservation.

Session objective

The session objective was to explore strategies for implementing IMMAs and expanding their use and value for conservation.

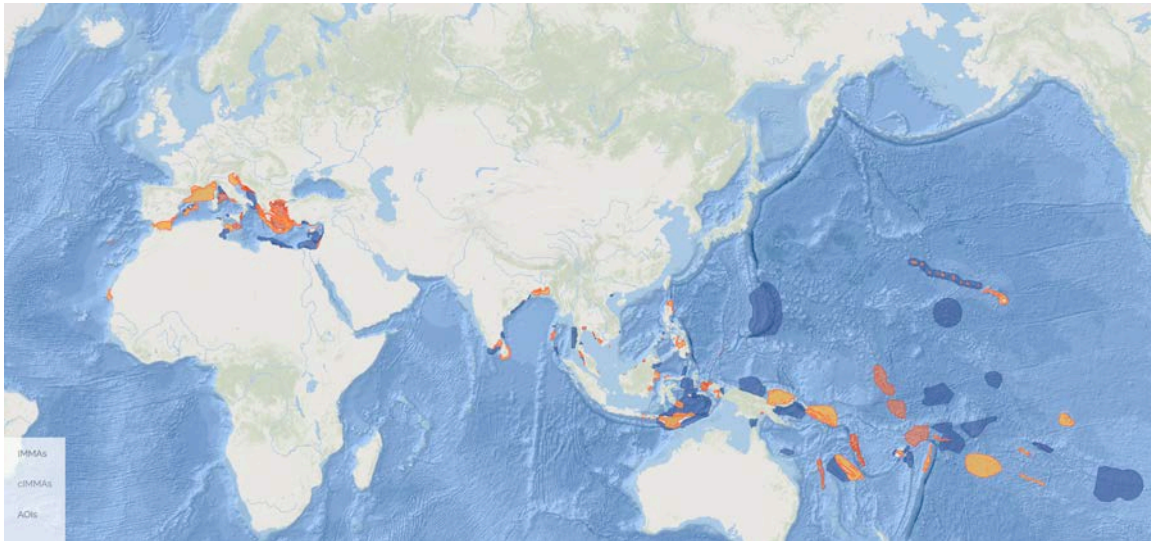


Presentation Summaries

Introduction to IMMAs

Giuseppe Notarbartolo di Sciara

The IMMAs have great potential to spur and guide marine planning and management for marine mammal conservation. The IMMA regional map is rapidly growing with 77 IMMAs declared to date. With two more regions under peer review, there will be more than 100 IMMAs by end of 2019.



Worldwide IMMA designations to date (July 2019) -provided by IMMATF

The Potential for Using IMMAs as a spatial design and management tool

Erich Hoyt

Identifying IMMAs is a biocentric process, based on best available evidence assessed by experts independent of political and socioeconomic considerations. Initially an IMMA is a data layer. Following that, the information embodied in an IMMA must be taken up by civil society, national governments, intergovernmental processes and so on. If the goal is to implement an MPA within a selected IMMA area, then community stakeholder engagement, network building, and other processes need to be followed.

Products of the IMMA process can be utilized in various ways, including:

- Support for the identification of the Convention on Biological Diversity's Ecologically or Biologically Significant Areas (**EBSAs**);



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- Consideration of part or all of an IMMA as a Key Biodiversity Area (**KBA**);
- Marine Spatial Planning (**MSP**) and the planning of any human activity at sea that can have negative impact on marine mammal status (e.g., shipping, fishing, industrial and scientific exploration);
- Designation of International Maritime Organization (IMO) Particularly Sensitive Sea Areas (**PSSAs**) and other shipping directives; and
- Planning and implementing of Marine Mammal Protected Areas (**MMPAs**), including the design, modification, zoning, management and monitoring.

With Resolution 12.13 (2017) the Convention on Migratory Species (CMS) acknowledged the IMMA criteria and process, requesting Parties and inviting Range States to identify specific areas where the identification of IMMAs could be beneficial, and inviting the CBD, the IMO and IUCN to consider IMMAs as useful contributions for the determination of EBSAs, PSSAs, and KBAs. It helps to encourage uptake of IMMAs to have this CMS resolution as it requests the parties and range states to take action both in terms of identification and implementation. The MMPA Task Force has also developed close relationships with CBD, the International Whaling Commission (IWC), the French Biodiversity Agency, and is working on developing a working relationship with CCAMLR. All these institutions are important for implementation of marine mammal management.

At CBD COP14 Parties were not able to finalize options for modifying the description of EBSAs, for describing new areas and for strengthening the scientific credibility and transparency of the EBSA process. However, IMMA Workshops are reinforcing and reaffirming the reasons for modification of EBSA descriptions as set out in CBD/COP/DEC/XIV/9, Annex II, Section B. On this basis, the results of the IMMA workshops should be part of the strong scientific and technical basis needed to keep EBSAs current and of use to decision-makers. In common with EBSAs and Important Bird & Biodiversity Areas (IBAs), IMMAs are area-based planning tools and in some circumstances may also trigger area-based management measures in their own right.

The relationship between IMMAs and MMPAs is variable. In general, the boundaries of MMPAs are political and socioeconomic, whereas IMMAs tend to be much larger areas based on the ecology and conservation status of marine mammals. IMMAs could play a role in MMPA management review processes, as decisions are made to expand MMPAs, create a network, and/or also create special zones for higher levels of protection of marine mammals. This is what we see in terms of MMPAs evolving in design, and through review, zoning expansion. There are other possibilities for IMMA-driven spatial implementation through shipping directives. For instance, with noise and shipping/ ship strike issues within an IMMA, shipping companies might be informed and urged to change lanes or reduce ship speeds.



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IMMAs can also spur more consistent and standardized monitoring across wide regions. A future role for the MMPA TF, ICMMPA and larger marine mammal community is to develop the monitoring aspect of IMMAs with a procedure that is followed consistently. This would put IMMAs on the map, even if they are not formalized as protected areas or other effective conservation measures.

Making IMMAs Work in South Asia

Dipani Sutaria

Marine Protected Areas in South Asia present very complicated conservation challenges not unknown to other parts of the world, but perhaps more intense and complex because of the governance model used by various management agencies. The heightened dependence of traditional and commercial fishers on marine fisheries and coastal ecosystems in the part of the world with highest human population density is unsurprising. Within this complex societal fabric is also a wariness felt by fisher communities because of their total exclusion from MPA planning processes, and the complicated weave of administrative bureaucracies managing common resources and protected areas. Our teams in India work to study and manage marine mammals, but our first point of contact and source of information are fishermen, and we are rebuilding trust between the research community and them to better achieve win-win situations or at least something close to this. Being part of the IMMA process from 2017 onwards, we helped researchers utilize data from the last 18-20 years to propose multiple 'Areas of Interest' (Aois) and 'candidate Important Marine Mammal Areas' (cIMMAs).

Of those assessed in the western Bay of Bengal, seven IMMAs and six Areas of Interest (Aoi) have been identified and are now on the IMMA World Atlas. In one of the IMMAs, the south Andaman Islands, the MMPA TF successfully conducted a 'Stakeholder Consultation Meeting' in November 2018 hosted by the AN Forest Department, with representation from eight government departments, including the Indian Navy and Department of Fisheries; six NGOs; and game fishers and recreational fishers. For the first time, all these groups spent the morning together listening about the marine mammal richness of the seas of South Andamans and discussed how to tackle conservation threats. Follow-up meetings are to take place every year in Port Blair, to keep the dialogue continuity and start work for on-ground actions. In April 2019, the Ministry of Environment, Forests and Climate Change in New Delhi has informed all State offices to assess IMMAs in their waters. We hope the IMMA process inspires national level awareness, conservation trust, scientific research and funding for marine mammals in India.



Implementing IMMAs in Europe - Case study from Slovenia

Tilen Genov

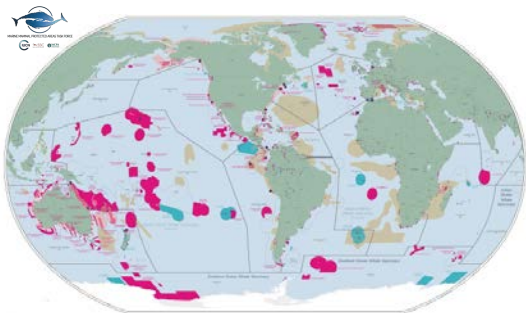
This contribution provided an overview of the IMMA process for Slovenia, and discussed its potential impact on cetacean conservation in the region. Slovenian waters, together with the rest of the Gulf of Trieste and adjacent waters in the northern Adriatic Sea, are home to a resident population of common bottlenose dolphins (*Tursiops truncatus*). This population has been the focus of a long-term study and monitoring by Morigenos – Slovenian Marine Mammal Society since 2002, primarily through boat- and land-based surveys, photo-identification and biopsy sampling, and is now relatively well studied. These animals are present within the area year-round and appear to be demographically and genetically distinct. The annual abundance estimates range between about 70 and 150 animals. Dolphins use this area for all important activities, including feeding, socializing and resting, as well as for breeding and nursing. Threats to this population include disturbance from nautical traffic, occasional bycatch in fishing gear, high levels of organochlorine pollutants and impacts of marine litter. At the first Mediterranean workshop on Important Marine Mammal Areas (IMMA) in 2016, the Gulf of Trieste and its adjacent waters were designated as a candidate IMMA (cIMMA). Reviewers recommended merging this area with other cIMMAs in the northern Adriatic Sea, to form the Northern Adriatic IMMA. Due to the IMMA process being relatively new, it remains to be seen how it might enhance cetacean conservation in Slovenia and in the regional generally. Nevertheless, it is hoped that it will contribute to a better conservation of marine mammals in the region, also in light of Slovenia's obligations under the EU Habitats Directive.

Problem-oriented implementation including ship strikes and entanglements and how IMMAs can help

David Mattila

Shipping and other human activities at sea affects marine mammals, and IMMA identification can lead to mitigation of many of these threats. If one looks at the IMMAs and MMPAs globally, at global shipping, it is easy to see why there are many conflicts.

Current MMPAs and other areas



Global shipping



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The International Whaling Commission (IWC) has developed a strategy to reduce ship striking whales. Identifying areas of “high risk” for ship strikes is a part of this strategy, and according to the IWC, a high-risk area is defined as the convergence of either areas of high volume shipping and whales, or high numbers of whales and shipping. As the IWC, and others, are looking for strategies to address the impacts of a number of other human activities as well, we suggest the expansion of this definition to include other potentially harmful human activities (e.g. noise, bycatch, pollution... etc). As such it would be defined as the convergence of either areas of dangerous human activity and whales, or high numbers of whales and dangerous human activity. Areas of high numbers of whales include areas where whales aggregate, whales are known to return in numbers on a regular basis, or critical population areas or habitats (Russell, 2001). As used herein, the term “High Risk Area” is a relative term with as yet, no specific threshold assigned to its use.

A pre-conference workshop reviewed the criteria and process for identifying IMMAs, and discussed their applicability for helping to identify areas of high risk for ship strikes. The results were summarized in the report of ICMMPA Workshop 3. The group used the IMMAs identified in the Mediterranean Sea in conjunction with AIS shipping data. As a result, the group recognized that IMMAs represent a systematic and biocentric approach to identifying important habitats, and that as such it was agreed that they can be helpful in identifying potential High Risk Areas for ship strikes. Moreover, for the same reasons it was noted that IMMAs might also be useful for identifying areas of high risk for interaction with other human activities. In particular, using overlays of fishing effort and ocean noise were noted. The feasibility of this depends on the quality of data about the human activity, the species that are potentially at risk, and the understanding of the interactions between the two. But with the proper data it was suggested that IMMAs might provide a systematic and objective starting point toward identifying areas of high risk for marine mammal and potentially deleterious human activities, thus providing a starting point for global management initiatives.

So Let’s Assume You Now Have an IMMA, What Are the Management Challenges That Should Be Considered?

Jon C. Day

This presentation outlined four management challenges that should be addressed to help turn an IMMA from a conceptual proposal into a practical reality. The first is a need to recognize that MPA managers have differing perspectives and incentives compared to marine mammal researchers. These differences include such fundamental aspects as differing ways of writing and justifying their decisions, differing emphases and drivers for their work, and differing timeframes to achieve outcomes. The second management challenge is the essential requirement to work with the community to achieve an effective outcome; management implementation



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within even the best conceptual IMMA will not succeed without local/public support, so there is a need to work with the community from very start and to listen to community concerns (especially any socio-economic consequences) and be prepared to compromise. The third challenge discussed is an understanding that effective management is rarely, if ever, achieved using a singular management tool like zoning. Many spatial and temporal management tools are available for the manager, and it is the application of a range of these complementary tools that usually is the most appropriate way to ensure effective management. The last challenge discussed is the value in both identifying threats but also prioritizing them. To do this effectively, the value of a risk assessment approach and periodic monitoring was discussed.

IMMAs as a tool for the protection of marine mammals under the European Union Habitats Directive

Fotios Papoulias and Vedran Nikolić

The EU Habitats Directive provides a strong legal framework for the protection of marine mammals, both through the establishment of conservation sites under the Natura 2000 network and through its strict species protection provisions (covering all cetaceans). The marine Natura 2000 network covers now almost 10% of EU seas and makes the most substantial contribution to reaching international objectives under the Aichi Target 11 and SDG14. It encompasses significant marine sites designated for the protection of marine mammals like seals, porpoises and dolphins, which largely overlap with IMMAs in marine regions like the Mediterranean where such areas have been identified. There are several opportunities for synergies between IMMA work and the implementation of the Habitats Directive or other relevant EU legislation. IMMAs can contribute to the scientific basis for Natura 2000 designation and management and to strict species protection, as well as to risk and environmental impact assessments, programmes of measures under the Marine Strategy Framework Directive, maritime spatial planning or other conservation measures under the Common Fisheries Policy.

Examples of such synergies include the cetacean migratory corridor declared by Spain or the opportunities for risk analysis and spatial planning in the Adriatic. Similarly, the Habitats Directive can underpin IMMA work by providing data from the surveillance and assessment of species conservation status, from Natura 2000 monitoring and management, or from LIFE projects. A coherent protection regime for marine mammals in the EU relies on full implementation of EU nature legislation and its integration with other key EU policies and legislation (marine, water, fisheries, MSP) applying the ecosystem approach, adequate financing through EU funds and effective science-based cooperation of parties concerned at all levels.



Discussion

Brad Barr opened the Q&A by lamenting the existence of a wall between scientists and managers, which he hoped that the IMMA initiatives could help overcome. In their implementation, IMMAs can essentially be ‘fit to purpose’, engaging scientists, managers, and business people. Lorenzo Rojas Bracho reiterated that IMMAs could help facilitate bringing scientists into management processes, through data-sharing and individual participation in IMMA identification initiatives. Rochelle Constantine noted that the progression from science to management was made easier by the information contained in IMMA maps (and the data behind the maps). Participants made a plea for open access to maps and data – a democratization of science, and suggested that management authorities require some sort of information or data-sharing as a condition of granting permits to do research.

Claudio Campagna noted that ‘when we transition from being a biologist to being a conservation biologist, we bring in ethics—but we must leave ethics behind when talking to managers’. Again, the IMMA process allows all sorts of discussions of marine mammals to take place about their current status and future prospects.

Participants discussed the role of traditional knowledge in identifying IMMAs, and designing the MMPAs that might eventually flow from IMMAs to protect vulnerable marine mammal species. Discussion also centered around the fact that the IMMA process had not yet addressed the Arctic (nor any of the northern hemisphere, save the Mediterranean Sea). Brad Barr pointed out that the Arctic Council had already done some of the groundwork for IMMA identification, having delineated important marine mammal areas (without directly using IMMA criteria). David Mattila suggested that the IWC had great interest in expanding IMMAs to all ocean basins and seas, since the objective biocentric approach had great value. Tundi Agardy pointed to a forthcoming paper (in *Aquatic Conservation*) on using Early Warning Systems in IMMAs to alert the management community about changes in marine mammal status and distribution – another example of bridging science and management through IMMAs.

How to make IMMAs matter? Dipani Sutaria suggested re-establishing linkages between marine mammals and the humans that affect them, positively or negatively. Erich suggested that IMMAs would be increasingly made relevant as IMMAs provided information for the design of MMPAs, for MSP, and for review and evaluation of MMPA management effectiveness.



Panel 2: Oil and Gas Exploration in Key Marine Mammal Habitats: Emerging Challenges

Supported by WWF Netherlands and WWF Belgium via the ‘No New Oil and Gas Campaign’

Conveners: Tundi Agardy and Dimitris Ibrahim

Speakers

Tundi Agardy, Sound Seas, USA

Natacha Aguilar de Soto, Universidad de La Laguna, Canary Islands, Spain

Dimitris Ibrahim, WWF Greece, Greece

Alexandros Frantzis, Pelagos Cetacean Research Institute, Greece

Carlos Bravo, Salvia EDM, Spain

Miguel Mir and Vicens Vidal: Balearic Islands Regional Minister for Environment, Agriculture and Fisheries, Conselleria de Medi Ambient, Agricultura y Pesca – Govern Illes Balears

Jon C. Day, James Cook University, Australia

Nicolas Entrup, Ocean Care, Switzerland

Introduction and Overview

This session, organized by WWF Greece, in collaboration with international experts, had the aim to bring together different stakeholders (scientific community, civil society, tourism industry and decision makers from the European, national and local level), to discuss the importance and ways on how to protect endangered cetacean populations from oil and gas impacts, one of the main major threats identified worldwide. The impacts of hydrocarbons exploration and exploitation on cetaceans will be presented to demonstrate the necessity of protecting key cetacean areas from hydrocarbon exploration and exploitation. A number of global examples will be showcased in which oil and gas development plans in cetacean hotspot areas have been overturned. This special session will focus on the Hellenic Trench-an area that has iconic habitats with threatened species, such as sperm whales, Cuvier beaked whales, bottlenose dolphins, and monk seals that will be massively impacted if current oil and gas plans materialize. During the session key challenges and opportunities of the change process to overturn current and future oil and gas plans will be identified. The output of the session will be the adoption of a draft resolution/declaration in support the protection of cetaceans from oil and gas developments in the Hellenic Trench by the plenary of ICMMPA5.



Session objectives

The session objectives were to: bring the international spotlight on the potential impacts of hydrocarbon exploration and exploitation to cetaceans in the Hellenic Trench; to build political momentum and mount political pressure to change the current government policies and industry plans; and to establish a network of credible and outspoken voices from Greece and around the world to oppose hydrocarbon exploration and exploitation in Greece.

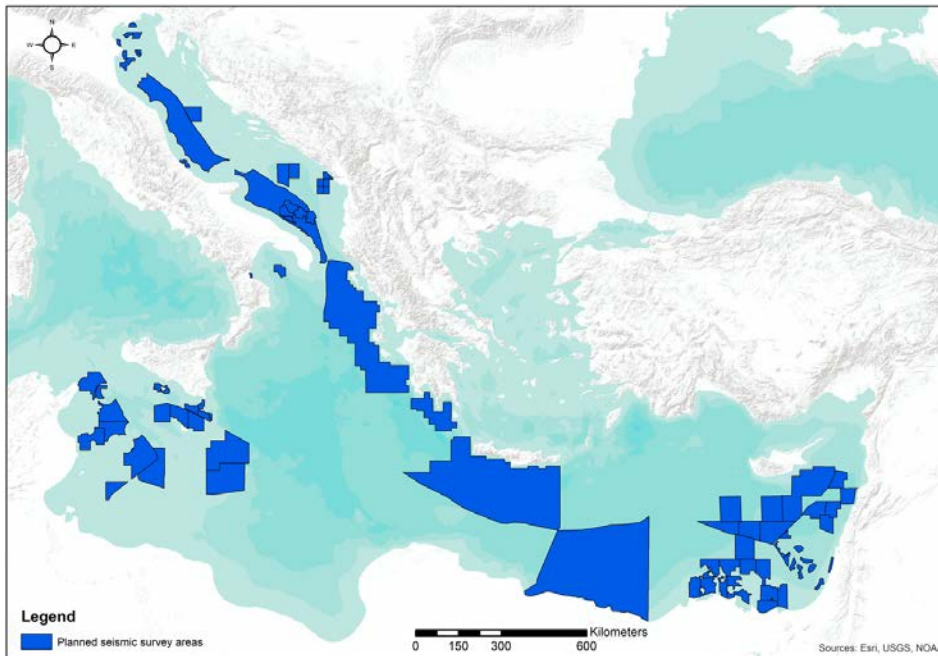
Presentation Summaries

Introduction to the Session

Tundi Agardy

Oil and gas exploration and recovery is ramping up across the Mediterranean Sea, with potentially damaging impacts on marine mammals. Costa Navarino is an apt site to have an honest discussion about oil and gas exploration, and ways to mitigate the impact of this potentially harmful industrial use of the ocean on marine mammals, in the Mediterranean and across the world. We sit here at the edge of the Hellenic Trench – an area with a preponderance of marine mammals that is also being eyed for energy development. As this panel describes, there are many steps that can be taken to prevent oil and gas exploration in marine mammal critical areas, and there are other steps that can be taken to reduce impacts in places where energy development cannot be stopped. Such mitigation measures include: 1) spatial planning with the aim of careful siting of oil and gas exploration and recovery, 2) conducting robust and thorough Environmental Impact Assessments, 3) developing and implementing strong management plans for MPAs if they exist within the development area, and 4) utilizing technologies to reduce noise levels during exploration and reduce the chance of ship strikes during both exploration and recovery of fossil fuels. We review all these measures and more in the following panel.





Planned seismic survey areas in the Mediterranean Sea, courtesy Nicolas Entrup

Effects of seismic underwater exploration on marine fauna

Natacha Aguilar de Soto

Seismic exploration is behind some of the most powerful human-induced noise on the planet, and seismic pulses can be detected from hundreds of kilometers away. There are many observed negative effects caused by seismic surveys on marine vertebrates. Known effects include masking intraspecific communications, stress, and physical injury, but it is difficult to understand full impact as noise is not constant and travels in waves or pulses.

Beaked whales are the canary in the coal mine when it comes to seismic activity – with extreme vulnerability to the noise produced during surveys. Beaked whale strandings can indicate previous seismic activity, although mortality is likely far higher than observed since not all dead whales strand. Fin whales have variable responses, but seismic activity often causes behavioral change. Interestingly, although there are records of humpback whales developing barotrauma as a result of exposure to seismic sound waves, animals were observed not leaving seismic explored areas despite their injuries. There have also been observed effects on invertebrates, including giant squid, which have been known to strand due to tissue damage coinciding with seismic activity, larval and adult zooplankton mortality, and scallop behavioral change and larval and adult mortality.



Unfortunately, scientific reviews have been used in court to challenge oil companies, but such court cases have focused on accidents such as oil spills instead of the chronic noise pollution that arises from seismic exploration and other human activities.

Oil and Gas Exploration in Greece

Dimitris Ibrahim

Since 2011, crisis struck Greece has been persistently promoting hydrocarbon extraction in terrestrial and marine areas, as a spearhead of economic recovery. As a result, a large offshore marine area (approximately 56,000 sq. km) has been granted as concessions to the oil and gas industry for hydrocarbon exploration and exploitation. This marine area overlaps with a large part of the west and south Hellenic Trench, a marine biodiversity hotspot of global ecological importance.

The Hellenic Trench is a core habitat for the endangered Mediterranean sperm whale's subpopulation and the largest among the five high-density areas for the vulnerable Cuvier's beaked whale in the Mediterranean. Fin whales, bottlenose, common, Risso's, striped and rough-toothed dolphins, Mediterranean monk seals, but also sea turtles are found in the Hellenic Trench. These species are protected by either international, European or national legislation and strict measures are required to ensure their effective protection. In this context, two Important Marine Mammal Areas have been identified (Hellenic Trench, Ionian Archipelago), whereas the wider Hellenic Trench has been proposed as a Marine Protected Area.

The exemption of the seismic testing phase of oil and gas operations from EIA obligations, even within protected areas, marks a major regression on critical environmental acquis. The impacts of seismic research operations in the Hellenic Trench on marine mammals and marine ecosystems in general are extremely hazardous.

Specifically, the laws ratifying oil and gas concession contracts state that the seismic testing phase is simply described in an "environmental action plan", which however constitutes a novel tool of indefinite content. Such plans are nowhere to be found in the Greek EIA legislation, whereas no reference to their content and approval procedure is mentioned in the ratification laws. Simply put, these plans are a private commitment of the petroleum industries to implement measures which may or may not fall in the existing environmental licensing framework and whose control does not necessarily fall within the jurisdiction of any inspections authority.



In any coherent and consistent environmental licensing framework, the impact caused by seismic testing for oil and gas would be subject to a full EIA procedure, covered with the transparency and public accountability appropriate for a modern democratic state. At a time when oil and gas programs in other parts of the Mediterranean are cancelled on environmental protection grounds, the fact that Greece looks backwards and opens large parts of western Greece to hydrocarbon extraction, through a manifestly biased environmental licensing regime, raises reasonable doubts over whether the public interest is indeed served.

Hellenic Trench: an unexpected hotspot of marine mammal biodiversity: Will it remain as we know it?

Alexandros Frantzis

The southern East Mediterranean Sea is one of the most oligotrophic areas on the planet, semi-enclosed in a semi-enclosed sea. These characteristics make the eastern Mediterranean basin and the Hellenic Trench (HT) a very fragile ecosystem by definition, standing on naturally weak biological foundations. Nevertheless, surprisingly, some two decades ago it was discovered that both of the two largest species of the Mediterranean fauna inhabit the HT. As knowledge was acquired almost all the marine mammal species of the Mediterranean Sea were found to inhabit or use the coastal or the pelagic HT. Bottlenose dolphins, common dolphins and monk seals are resident in the coastal waters. Fin whales, sperm whales, Cuvier's beaked whales, striped dolphins, Risso's dolphins and rough-toothed dolphins inhabit the slope and the pelagic waters of the HT.



For the 'Endangered' common dolphins and sperm whales, the 'Vulnerable' Cuvier's beaked whale and possibly for the rough-toothed dolphin, the HT is a critical area for their Mediterranean population. The coastal HT and the Ionian Archipelagos are inhabited by the last tens of individuals of common dolphins in the entire Adriatic and Ionian Seas, and the local population unit decreased dramatically during the last decades. The rough-toothed dolphins are present only in the offshore waters of the Ionian Sea and in the south-eastern part of the Mediterranean Sea. In both areas there is already or is planned heavy activity of oil and gas exploration and use of military sonar as well.

The HT is the core habitat for sperm whales in the entire eastern Mediterranean Sea. Apart from being an important feeding ground all year-round, the HT is the only known breeding, calving and nursing ground for sperm whales in the eastern Mediterranean. The population unit of the HT (including the segregated males) is estimated to number



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some 200-300 whales. There are indications that this is the total for the entire eastern Mediterranean population. Because of its very small size, this population unit is at very high risk of extinction if any kind of pressure is exerted on it by anthropogenic threats. For all these reasons in 2007 ACCOBAMS listed the HT as the only area in the entire Mediterranean Sea where a MPA should be created for the sperm whales. The HT is a perfect habitat also for Cuvier's beaked whales. According to the mapping and modelling effort of the "ACCOBAMS Ziphius Initiative" the HT and its adjacent waters is the wider among all other four habitats in the Mediterranean and has great importance for this species.

The HT was the first Mediterranean IMMA to be approved. A second IMMA (Ionian Archipelagos) was created to include the coastal part of the HT, which is important for the 'Endangered' common dolphins. Despite ACCOBAMS Resolutions and the IMMAs, no protection measures have been taken so far for the threatened marine mammal species in the area. 60% of the sperm whales have macroplastic debris in their stomach and some die because of this. Similar cases of Cuvier's beaked whales and other squid-eating cetaceans have been recorded along the HT. Ship-strikes are likely unsustainable for the very small population unit of sperm whales. Military sonar use has caused many repeated mass strandings of tens of Cuvier's beaked whales along the HT with an impact at the population level that cannot be estimated.

If on the top of all this we add an intensive oil and gas exploration activity we are likely to drive the marine mammal species in the area beyond their survival limits. The seismic and drilling noise pollution together with additional marine traffic and potential chemical pollution from a disaster that statistically will occur one day (at the huge depths where drillings are going to occur) will erase this hotspot of marine mammal biodiversity from the map. The scientific community has to convince the society and the decision makers before it's too late. The treasure for the oil companies may be under the sea floor, but the real treasure for the society and humanity is found in the water – and once we lose it, there may be no return point.

The creation of a strategic alliance among the public administration, the private sector, and civil society: A decisive element in the protection of the environment and the economy of the Balearic Islands against the threat posed by oil and gas development plans

Carlos Bravo

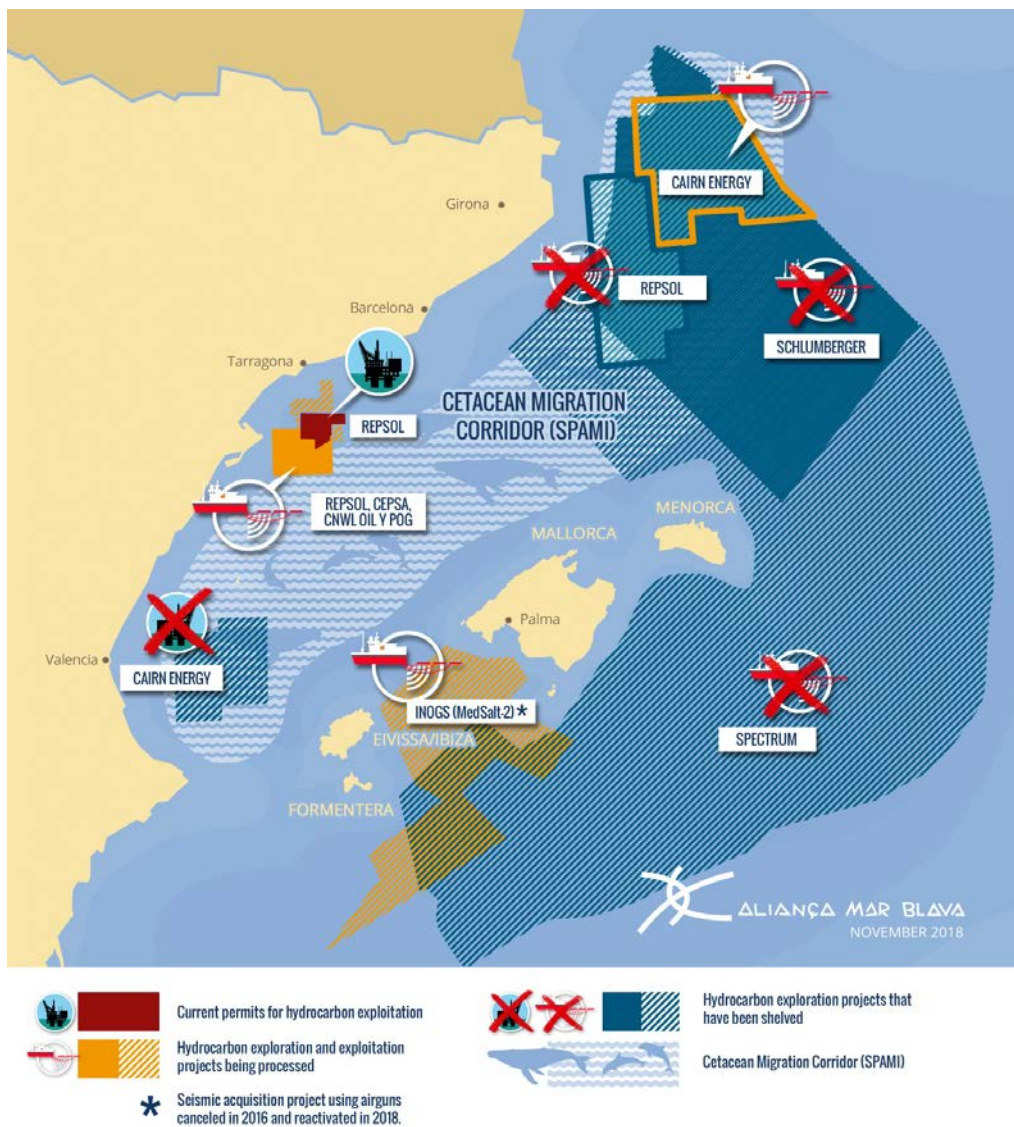
The Mediterranean Sea provides important ecological and, consequently, economic values, due to the fact that certain activities that depend on the good state of its waters and its coasts, such as fishing and quality tourism, are fundamental axes of the economy of the riparian communities of this sea. This is the case of the Balearic Islands,



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whose main economic activity is tourism. This industry accounts for 44.8% of the GDP of this region (compared to 11.7% in the whole of Spain) and generates 32% of employment (compared to 12.8% in Spain).

In recent years, several companies in the oil sector have presented numerous hydrocarbon exploration and exploitation projects in the waters of the Levantino-Balear Spanish marine demarcation. These projects, in addition to being incompatible with our international commitment to fight against climate change and phasing out fossil fuels, pose a threat to marine ecosystems, marine fauna and fisheries resources, as well as tourism.



Map of hydrocarbon prospecting, research and exploitation projects actually active, being processed or shelved in the Levantine-Balearic marine area of the Mediterranean Sea (provided by Alianca mar Blava)

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The growing awareness in the region of the potential risks derived from these projects was the cause of the creation, in 2013, of the Alianza Mar Blava. This is an intersectoral platform, currently made up of over 120 members, ranging from public administrations (Balearic Islands Government, Island Councils of Formentera, Ibiza, Menorca and Mallorca, various city councils on these islands and the Barcelona City Council), to private organizations (from the tourism, fishing and nautical sectors) and civil society entities (NGOs, trade unions and other associations). The strategic union of all these actors, working together for the same goal, is a highly relevant milestone, which gives Alianza Mar Blava an extraordinarily significant social representation.

The work by Alianza Mar Blava over these years has contributed significantly to achieve the definitive cessation of four hydrocarbon exploration projects in the aforementioned marine demarcation and also the declaration of a Marine Protected Area called the Cetacean Migration Corridor. This is a highly valuable area for marine fauna of more than 46,000 km², located between the coasts of the Balearic Islands and those of Catalonia and the Valencian Community, where several oil companies had requested an important number of hydrocarbon research permits.

Alianza Mar Blava has also successfully promoted the approval, by unanimity in the Balearic Parliament, of a Proposal of Law to ban new hydrocarbons exploration and exploitation projects in the whole Spanish Mediterranean area. This law is due to be discussed in the Spanish Parliament in the next months.

Balearic government conservation policies as a tool against impacts on marine biodiversity

Miguel Mir and Vicenc Vidal

The Balearic Islands have successfully mitigated prospective damage to marine biodiversity caused by oil and gas exploration by creating and adopting a comprehensive strategy for marine management. This strategy entails: 1) anticipating oil and gas activity by getting files on proposed hydrocarbon projects; 2) proposing a law to forbid oil and gas in the Spanish jurisdictions within the Mediterranean Sea; 3) declaring Specially Protected Areas of Mediterranean Importance (SPAMI) in the waters around the Balearic Islands, which support particularly diverse communities of organisms. This strategy has been coupled to increasing marine protection throughout Spanish waters, including the establishment of new MPAs and coastal parks with significant marine components. Surveillance has been ramped up to ensure that users abide by regulations, and to promote effective rescues when necessary. The Balearic government has also undertaken developing an economic model to steer policy, which has affected waste management and has led to reductions in climate change-driving emissions, including a strong policy to reduce plastic waste.



Oil and Gas Exploration in Key Marine Mammal Habitats- Experience from Australia

Jon C. Day

This presentation started by showing the potential oil and gas resources around Australia, along with the key areas for marine exploitation. However not all marine areas with oil and gas resources are open for exploration; for example, the total ban on any exploration or mining within the entire Great Barrier Reef Marine Park following a Royal Commission in 1970-74. The key pieces of Australian (federal) legislation to minimize impacts of oil and gas activities on any threatened and migratory species including cetaceans are discussed, along with information about the peak industry body (Australian Petroleum and Exploration Association, APPEA). APPEA has considerable management experience in the marine environment leading to many useful reports; for example, the document titled '*A Compilation of Recent Research into the Marine Environment*' includes some 30 pages on whales and dolphins.

The presentation then addressed some of the current issues facing the oil and gas industries in Australia. Firstly, these industries are very influential – so much so, the national network of MPAs was heavily influenced by the industries' interests. Secondly, the EIS provisions in the Australian federal legislation effectively allows the oil and gas industries to operate (albeit with numerous environmental conditions) rather than comprehensively assessing all impacts on the environment. Thirdly, many of the environmental permit conditions rely on industry self-monitoring and self-regulation. Experience, such as the Montara oil spill in 2009, has shown this has not always been effective to achieve sound environmental protection.

Oil and Gas exploration: a “dying” energy sector on the rise?

Nicolas Entrup

With the Paris Agreement in place and with the majority of countries as signatories, one would expect that strategies and/or policies are put in place to phase-out the fossil fuel era. Such policies might first address the question to what extent new hydrocarbon-sites might be explored or whether even exploring such new sites should be permitted. However, while such thinking might be logical to – at least – those taking climate change mitigation seriously, ongoing exploration activities on a global scale and in particular the Mediterranean Sea prove a different reality.

From the perspective of marine wildlife, exploration and exploitation of hydrocarbon resources pose a diversity of risks. Recalling the devastating pictures of the Deepwater Horizon catastrophe in the Gulf of Mexico in April 2010, an oil rig in flames, people killed



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and injured, hundreds of millions liters of oil entering the marine environment covering sea birds, marine mammals and other marine life in oil, we might also remember voices of concern by many politicians around the world, and in particular within Europe, calling for an immediate end of deep sea drilling. Today, nine years later, it is in European waters, twice as deep as where the deepwater horizon catastrophe happened, where the industry is searching for new oil & gas resources.

It is precisely this exploration activity itself, which will be given priority to within this session. Explosions generated by so-called ‘air guns’ carried by research vessels, fired every 10 to 15 seconds for several weeks or even months reaching up to 260 dB, are used when searching for oil and gas resources beneath the seabed. Such activities are well recognized to pose a serious threat to many marine species, from the smallest, zooplankton, to the largest, baleen whales.

Looking at the legal framework, under which exploration activities are permitted, illustrates an interesting exercise exposing deficits in compliance and enforcement of existing provisions and questions the reputation of decisions adopted at multilateral agreements. From a European Union Member States perspective, many marine species, sensitive to ocean noise, are strictly protected (FFH Directive adopted in 1992). With the adoption of the Marine Strategy Framework Directive in 2008 Member States agreed to the objective that the *“Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment”*. Six years later, Member States agreed on a revision of the Directive laying out the framework for undertaking Environmental Impact Assessments (EIAs), however some Member States continue to argue that it isn’t clear whether EIAs are required prior to noise-generating activities, such as seismic surveys. Such disputable argumentation should have vanished, at the latest, when it was the European Union and all its Member States that supported and adopted a Resolution (12.14) at the COP of the Convention on Migratory Species in 2017 which agreed Guidelines for undertaking EIAs prior to noise-generating activities.

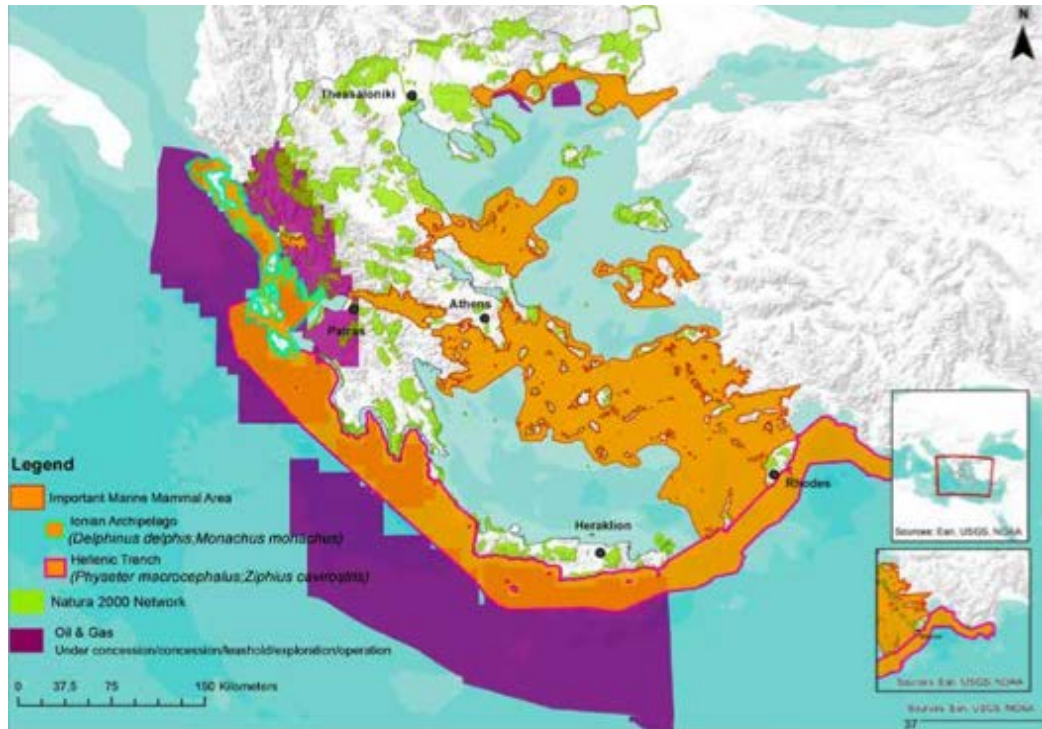
This presentation briefly touched on further provisions and decisions, including in multilateral and regional agreements, such as the Convention on Migratory Species, the Agreement for the Conservation of Cetaceans in the Mediterranean and Black Seas, the Barcelona Convention and others.

By reflecting upon the existing, overall quite robust protection scheme, the question about compliance and enforcement deficits has to be asked when not even critical habitat of noise-sensitive and strictly protected species remain off limits from the hydrocarbon exploration industry. However, positive developments exist from a conservation perspective, allowing us to conclude it is again up to civil society engagement achieving change.



Declaration on the Hellenic Trench

The ICMMPA 5 participants were presented with a declaration put forward by WWF Greece on the dangers of allowing oil and gas development in the Hellenic Trench – arguably one of the most important places for marine mammals in the Mediterranean Sea. The text of the Declaration is found on page 46.



@WWF Greece, 2019

ICMMPA 5 participants were given the opportunity to sign their names to the statement if they so choose, and many added their names to join the over a hundred individuals and organizations that support the Declaration. The support from renowned scientists around the world has contributed to the Declaration gaining significant public attention in Greece and abroad. This unprecedented initiative in Greece has been prominently positioned in dozens of media outlets, including The Guardian, and has been presented in several public conferences in Greece as a means to raise awareness of the importance of the Hellenic Trench to decision makers, stakeholders and the public. Furthermore, WWF Greece has submitted to the Council of State a petition of annulment of the approval of the Strategic Environmental Impact Assessment of the concessions in Crete. The importance of the Hellenic Trench has been central in our legal argumentation. The Declaration had been addressed to the former Prime Minister, Mr. Alexis Tsipras, however following the national elections, WWF Greece intends to reintroduce the matter to the incumbent Prime Minister, Mr. Kyriakos Mitsotakis.

CALL FOR PROTECTION OF THE HELLENIC TRENCH FROM HYDROCARBON EXPLORATION AND EXPLOITATION *The undersigned organizations and individuals call for immediate and effective protection of the Hellenic Trench from offshore hydrocarbon exploration and exploitation.*

In recent years, a large offshore marine area (approximately 56,000 sq. km) has been granted as concessions to the oil and gas industry for hydrocarbon exploration and exploitation. This area extends from the north of Corfu to Southern Crete and largely overlaps with a large part of the west and south Hellenic Trench, a critical habitat and marine biodiversity hotspot of global ecological importance.

The Hellenic Trench is a core habitat for the endangered Mediterranean sperm whale's subpopulation. It is estimated that only 250 individuals live in the entire eastern Mediterranean basin and the Hellenic Trench constitutes their only known breeding area. The Hellenic Trench is also the largest among the five high-density areas for the vulnerable Cuvier's beaked whale in the Mediterranean. Fin whales, bottlenose, common, Risso's, striped and rough-toothed dolphins, Mediterranean monk seals, but also sea turtles are found in the Hellenic Trench. These species are included in Annex II to the Protocol of the Barcelona Convention concerning Specially Protected Areas and Biological Diversity in the Mediterranean, and in Annex IV to the Habitats Directive 92/43/EEC. Parties to the Convention and Member States of the European Union are required to establish strict measures to ensure their effective conservation.

The paramount ecological significance of the Hellenic Trench has been recognized by international agreements, such as the Agreement for the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS). In this context, two Important Marine Mammal Areas have been identified, whereas the wider Hellenic Trench has been proposed as a Marine Protected Area. However, to date only a very small proportion - mostly coastal - of the area has become part of the Natura 2000 Network in which cetaceans not only have limited presence, but are also inadequately protected.

Despite its global importance, cetaceans in the Hellenic Trench are already facing a series of direct and severe threats, such as anthropogenic noise, (studies in the area have demonstrated significant lethal impact of naval exercises to Cuvier beaked whales), ship strikes (severely threatening the survival of the sperm whale population), fisheries interactions, plastic pollution and climate change, that are already poorly addressed by national authorities and international agreements. Oil and gas exploration and exploitation projects as an additional, important threat to marine mammals in the Hellenic Trench, would become an important blow to their chances of survival. There is abundant scientific evidence that demonstrates that hydrocarbon development causes detrimental effects to marine mammals throughout their whole cycle by:

- Causing auditory - sometimes lethal - injuries to marine mammals from air-gun noise during exploration activities.
- Leading to marine mammals' displacement from their habitat, disrupting their behavior and causing stress, due to increased marine noise from exploration, extraction activities and marine traffic.
- Increasing air and marine pollution due to effluent discharges, marine traffic, operational and accidental spills.
- Posing a significant risk from ship collisions with cetaceans, due to increased marine traffic during infrastructure construction and fuel transportation.
- Causing physical damage to benthos and disturbing their marine mammal populations in coastal or remote marine areas during the construction phase of port facilities, rigs and pipelines.

In recent years, several governments in countries such as Italy, France, Spain and Portugal have made bold political and investment decisions to phase out or ban oil and gas exploration and production activities. These decisions are largely driven by the need to invest in a clean energy future and protect the marine environment, as a pillar of a thriving and sustainable, touristic economy.

Therefore, we express our grave concerns over these plans that place the Hellenic Trench's marine biodiversity under serious threat. To ensure a healthy and viable marine environment in Greece, we urge reconsideration of all licensing procedures for oil and gas drilling operations and call for the effective protection of the Hellenic Trench, towards a permanent ban in Greece.



Panel 3: Conservation, Controversy, and Courage in the Upper Gulf of California: Fighting the Vaquita Vortex

Sponsored by the Marisla Foundation

Conveners: Lorenzo Rojas-Bracho and Frances Gulland



Speakers:

Lorenzo Rojas-Bracho, Instituto Nacional de Ecología y Cambio Climático, Mexico
Armando Jaramillo Legorreta, Coordinación de Investigación y Conservación de Mamíferos Marinos, Instituto Nacional de Ecología, Mexico
Sarah Mesnick, NOAA, USA
Frances Gulland, Marine Mammal Center, USA

Introduction and Overview

The vaquita (*Phocoena sinus*) is the world's most critically endangered marine mammal species. The species is endemic to Mexico's Gulf of California, and occurs only in the northern portion of the gulf. Despite serious efforts by the government of Mexico to prevent its extinction, the vaquita population has continued to decline at a high rate. The international recovery team (CIRVA—Comité Internacional para la Recuperación de la Vaquita) has reiterated for years that if vaquitas are to survive, bycatch of the small porpoise in fisheries has to be reduced to zero. To achieve this there has to be an effective, permanent ban of all gillnets within the range of vaquitas, including the illegal ones used for the fishery of an endangered and legally protected fish species called the totoaba. Between 1997 and 2008 vaquitas declined by more than 50%, primarily as a result of being incidentally caught in legal gillnet fisheries. Since 2011 and especially following the resumption of illegal totoaba fishing in the gulf, the decline accelerated to over 40% per year despite increased legal protections and expanding the protected areas. The vaquita's current population size is now less than 30 animals.

In this session a review of the vaquita's biology, the impact of legal and illegal fisheries on its population's status, and the conservation actions to prevent its extinction, including the marine protected areas decreed, was presented. The session also discussed the attempts to bring vaquitas under human care (Vaquita CPR), and discussed what has failed and what lessons were learned that might be of use in the conservation of other critically endangered marine mammal species. It is worth emphasizing that vaquitas and river dolphins are generally good candidates for protected areas since they have naturally small ranges and are non-migratory. Nevertheless, the only known extinction of a small cetacean occurred despite legally protected areas – and vaquitas are close to the same fate, raising critical questions about how to achieve effective protection of this rare and iconic species.

Session objective

The session's objective was to critically assess the recovery efforts to save the vaquita and to draw key lessons learned that might be of use in the conservation efforts of other critically endangered marine mammal species.

Presentation Summaries

- 1) **Vaquita 101: life history, ecology, population genetics** (Lorenzo Rojas-Bracho)
- 2) **Development of science to adapt to increasing rarity... from visual to acoustic to photographic identification** (Armando Jaramillo Legorreta)
- 3) **Totoaba swim bladder black market: What do we know of this market and how this illegal fishery has impacted vaquita population status?** (Lorenzo Rojas-Bracho)
- 4) **MPA measures** (Lorenzo Rojas-Bracho). There have been several MPA decreed in the Upper Gulf of California (e.g. World Heritage Sites, Biosphere Reserve of the Upper Gulf of California and Delta of the Colorado River; Vaquita Refuge and PACE vaquita, the Gillnet Exclusion Zone and Enhance Enforcement Area). The full area is a Biosphere Reserve and was designed to protect not only vaquita but also several other species. Smaller areas have been established specifically for vaquita. We reviewed these MMPAs and discussed what has failed.
- 5) **Fishing Gear Extraction Program** (Lorenzo Rojas-Bracho). As another measure to protect the Upper Gulf of California and vaquita, an interinstitutional program to remove fishing gear that was lost, abandoned, or discarded at sea was established. However, most of the gear removed turned out not to be derelict but were instead active illegal totoaba gillnets. Every year these illegal gillnets are responsible for trapping and killing different species of marine mammals, sharks, rays, finfish, turtles and crustaceans. The results of this inter-institutional program were presented.
- 6) **Alternative fishing gear development** (Sarah Mesnick). To prevent vaquita extinction the threats must be abated at the same time that fishers are allowed to execute their livelihoods. One of weakest components of the vaquita conservation actions has been the lack of alternative fishing gears for the fishers of the Upper Gulf. Here we assessed what has failed in making fisheries less destructive to the vaquita and other marine organisms.
- 7) **Fishing and market incentives** (Sarah Mesnick). Mexico's world-class gastronomy is a powerful yet untapped tool of conservation that recognizes healthy ingredients, cultural traditions and is committed to supporting producers. How can this help vaquita conservation?
- 8) **Conservation, protection and recovery of the vaquita (Vaquita CPR): decision making, planning, and execution** (Frances Gulland). An unprecedented international effort to bring vaquitas to a safe haven in the Upper Gulf did not succeed as expected. We present how and why this effort was implemented, the components of the program and the results.



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9) **Next steps and current situation with the new government in power** (Lorenzo Rojas-Bracho, Armando Jaramillo Legorreta and Frances Gulland)

10) **Lessons learned**

Discussion

The discussion further emphasized the challenges that remain in keeping the endangered vaquita from extinction. The drivers behind loss are not straightforward, and therefore the response cannot be simplistic. Organized Mexican-Chinese cartels drive illegal trade in totoaba swim bladders, which are more valuable than cocaine or gold by weight – this is but one driver of vaquita loss that is difficult to counter with conservation strategies.



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Photo by Thomas A. Jefferson



Panel 4: Beaked Whale Strandings: Effect of Underwater Noise on Marine Mammals and the Role of Marine Protected Areas in Addressing the Threat

Conveners: Miguel Iñíguez Bessega and Alexandros Frantzis

Speakers:

Alexandros Frantzis, Pelagos Cetacean Research Institute, Greece

Yara Bernaldo de Quirós, Institute of Animal Health. University of Las Palmas de Gran Canaria, Spain

Miguel Iñíguez Bessega, Fundación Cethus, Argentina and WDC

Natacha Aguilar, Ramon y Cajal research and teaching fellow, University of La Laguna, Tenerife, Canary Islands, Spain

Nicholas Entrup, Ocean Care

Erich Hoyt, Marine Mammal Protected Areas Task Force – IUCN and WDC, UK

Introduction and Overview

The family Ziphiidae is one of the most wide-ranging families of cetaceans, occurring from the ice edges at both poles, to the equator in all the world's oceans. However, of the 21 beaked whale species recognized, some of them are only known from less than 20 records or the occasional rare sightings at sea. These species seem to show an extreme sensitivity to loud sounds, such as naval sonar and seismic surveys, which has caused an increase in the number of stranding events in regions such as the Mediterranean Sea (specially Greece), the Canary Island, the Southwest Atlantic, New Zealand, Japan, Puerto Rico and Bahamas among others. Marine Protected Areas are known to play a key role in conservation. The main question is how protected areas could help to reduce or mitigate the effects of underwater noise on beaked whales.

Session objectives

The session objectives were to evaluate the main threats for beaked whales; identify measures of mitigation; establish the role of protected areas for beaked whales and make recommendations to protect beaked whales.





Presentation Summaries

Two decades of repeated sonar induced strandings of Cuvier's beaked whales in the Hellenic Trench: Would a MMPA be enough to stop them?

Alexandros Frantzis

The Greek seas and especially the Hellenic Trench provide perfect habitat for Cuvier's beaked whales. Although no population estimate is available, sighting frequencies reaching 13 sightings per 100 hours of visual effort have been recorded in the past.

Due to its particular geomorphological characteristics the Hellenic Trench also attracts international naval forces, namely NATO or joint national navies, to conduct exercise of anti-submarine warfare with use of low and/or medium frequency military sonar. Five such sonar exercises are known to have provoked strandings of Cuvier's beaked whales: four mass strandings and one single stranding during the period from 1996 to 2014. The total number of recorded Cuvier's beaked whales strandings in Greece (to 2018) is 162: 130 strandings recorded after the establishment of a national stranding network in 1992, and 32 in the earlier period from 1954-1991. The five sonar-induced strandings involved at least 46 stranded Cuvier's beaked whales: 20-21, 9, 1, 10 (+2 in the Italian coasts) and 6-10 in stranding events in 1996, 1997, 2000, 2011 and 2014, respectively. All the four cases that involved more than one individual had the characteristics of atypical mass strandings. Furthermore, 11 strandings of 2-4 individuals recorded from 1962 to 2000 involved at least 29 animals in total, but no data concerning sonar use in the area have become available so far to examine possible coincidence in time and space with the stranding events.



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Recently the Hellenic Trench was nominated as IMMA for deep diving cetaceans. ACCOBAMS and other international bodies repeatedly urged for the creation of a MMPA along the Hellenic Trench. However, despite the numerous recommendations and resolutions, military sonar has been used with catastrophic results in the core of Cuvier's beaked whale habitat, even after the mapping of high-risk areas. The disrespect of decision makers towards the marine environment and the international scientific community in this case should create deep concern. But one could ask, 'would a properly designed MMPA be enough to protect the Cuvier's beaked whales from military sonar?'

Cetacean research as a tool for conservation: lessons learnt in the Canary Islands

Antonio Fernandez, **Yara Bernaldo de Quirós**, Eva Sierra, Jesús de la Fuente, Pedro Herráez, Antonio Espinosa de los Monteros, Marisa Andrada, Maria José Caballero, Josué Díaz Delgado, Marina Arregui, Raquel Puig, Nakita Câmara, Idaira Felipe, Francesco Consoli, Tania Ramírez, Yania Paz, Oscar Quesada, and Manuel Arbelo.

Beaked whale atypical mass stranding events started after the development of naval mid-frequency active sonar in the sixties. Six strandings of these characteristics occurred in the Canaries between 1980 and 2000; coincidental military exercises in time and space are known in at least four of them. The Canaries had become hotspot world-wide for this kind of stranding. In 2002, a new event occurred but this time a full pathological study was performed allowing researchers to establish, for the very first time, a causal link between the military exercises and the strandings. Following the publication of these findings, multiple international organizations showed their concern about the impact of mid-frequency active sonar on beaked whale populations. The European Union urged its members in 2004 to adopt a moratorium on the deployment of high-intensity active naval sonars. The Spanish Government is the only member which has adopted such a moratorium, but Spain's moratorium is limited to the east coast of the Canary Islands. Since then, no more beaked whale mass strandings have occurred in the islands, however they have continued in other regions including the Spanish Mediterranean coast. In the last years, sites of Community Importance and Special Areas of Conservation have been implemented in the Canary Islands, while a cetacean sanctuary has been proposed but not implemented. The ban on military sonar use in the Canary Islands has proven to be an effective mitigation tool, and conservationists believe that similar mitigation measures should be established in other areas.



Strandings of beaked whales along the Santa Cruz province, Argentina

Miguel A. Iñíguez Bessega, Jimena Belgrano, Frank Cipriano, Celeste Forlenza, Cecilia Gasparrou, Leonardo González, Marta Hevia, Vanesa Reyes, Vanesa P. Tossenberger and Antonio Fernández.

Records of beaked whales stranded in the Santa Cruz province, Southern Patagonia were collated for the period 1998 to 2019. Seventeen records, involving at least five species in five genera, were documented. The most common species were Strap-toothed whales (*Mesoplodon layardii*) with seven recorded strandings, followed by Cuvier's beaked whales (*Ziphius cavirostris*) with five records. Other species recorded were Arnoux's beaked whales (*Berardius arnuxii*, n=1), Southern bottlenose whales (*Hyperoodon planifrons*, n=1), Shepherd's beaked whales (*Tasmacetus shepherdi*, n=1) and two unidentified beaked whales. Species identification was based on skull morphology, tooth morphology and position in the jaw, and measurements, and mitochondrial control region DNA was sequenced to confirm the species. Due to advanced state of decomposition the cause of death was not determined for most specimens, however two Cuvier's beaked whales showed evidence of possible decompression sickness (DCS). This study provides the first record of Arnoux's beaked whale for the province of Santa Cruz and reiterates the importance of the SW Atlantic for multiple beaked whale species.

Mitigation of the impact of underwater noise for beaked whales

Natacha Aguilar de Soto

Studied species of beaked whales and porpoises (Ziphiidae and Phocoenidae) show a high sensitivity to underwater noise. Behavioral responses of beaked whales to low level, controlled exposures to naval sonar include silencing (in which they stop foraging) and spatial avoidance. These responses are similar to their reactions to controlled exposures of predator sounds, such as calls of killer whales. This suggests that beaked whales interpret naval sonar as a predator sign, which is consistent with the most accepted explanation for the mass strandings of beaked whales related to sonar exercises: a stress flight response elicited by sonar. This stress response disrupts their homeostasis and results in fat and gas emboli that can lead to death even in the absence of stranding syndrome. Several mass strandings of beaked whales have been recorded in spatial and temporal coincidence with seismic explorations, but no pathological assessment has been performed to resolve potential cause-effect relationships. Beaked whales show behavioral reactions to ship noise and pingers also. Their enhanced sensitivity has rendered scientists to compare beaked whales to the "canary of the coalmine" for the impacts of underwater noise on cetaceans.

In spite of the international scientific and institutional recognition of the vulnerability of beaked whales to naval sonar and other noise sources, few advances have been



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achieved towards noise impact mitigation. Some nations have set mitigation measures with different degrees of effectiveness. The most successful has been spatial avoidance of beaked whale concentration areas; this is exemplified by the 2004 ban on naval sonar at the Canary Islands, stopping atypical mass strandings of beaked whales at the archipelago, which was previously identified as a hot spot for these mortalities. Other nations have developed modelling tools to aid the planning of naval exercises by predicting potential impacts on beaked whales from sonar. However, these tools are challenged by the scarcity of data about beaked whale distribution and how these may or may not vary with season. Further, research results suggest that the threshold in received sonar level driving potentially lethal behavioral reactions may vary among individuals and populations. This means that when navy modelling tools predict behavioral responses, some of these responses might lead to lethal stress reactions.

The US and other NATO navies have funded research that has significantly contributed to increasing our understanding of beaked whale biology and population dynamics: beaked whales reproduce slowly, their local populations are small, they seem to have high site fidelity and little population connectivity (albeit discrete long distance movements have been recorded and this might favor genetic mixing). These characteristics enhance the vulnerability of local populations to repetitive impacts. In addition, navy funded studies have provided evidence that beaked whales react to naval sonar at distances that are too far for real-time mitigation to be highly effective. In this context, it is a no-brainer that spatial avoidance of known concentration areas should be applied to prevent potential population-level impacts on local populations of beaked whales. One of these areas is without doubt the Hellenic Trench, where several mass mortalities have been already related to naval sonar use.

In addition to spatial avoidance of concentration areas, new technologies are available, but not yet in use, to reduce noise impacts on beaked whales in other areas. These technologies can be applied for pre-exercise acoustic surveys of planned locations of naval exercises, allowing planners to choose the area with least beaked whale detections. Another is real-time acoustic and visual monitoring followed by mitigation protocols in the case of detection. Information can be widely shared to improve planning of future actions. Also, it is important to perform scientifically designed pre-during-post activity monitoring for other activities involving high intensity noise, such as seismic explorations. This is currently feasible with the application of new technologies readily available in the industry. Gathering whale presence data and how whale abundance changes or not in response to noise exposure is essential to inform the design of mitigation measures using data driven mitigation radii for beaked whales.

In sum, a combination of measures is required to harmonize government and public interests, including national defense, economic development and fulfillment of nature conservation laws.



Protection Status of and Conservation Measures for Beaked Whales from Threats of Anthropogenic Ocean Noise Pollution: Specific consideration is given to the protection of the Cuvier's beaked whales in the Mediterranean Sea

Nicolas Entrup

The Mediterranean Sea is home to a subpopulation of Cuvier's beaked whales (*Ziphius cavirostris*). The species is particularly vulnerable to ocean noise. Numerous national, regional and international Legislation and Agreements grant the species strict protection from anthropogenic ocean noise pollution.

The European Union's Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora strictly protects all cetacean species (as listed in Annex IV) and requires Member States to establish a system of strict protection in their natural range, prohibiting (a) all forms of deliberate capture or killing of specimens of these species in the wild, and (b) deliberate disturbance of these species, particularly during the period of breeding, rearing, hibernation and migration.

In 2014 at the 11th Conference of the Parties to the Convention on Migratory Species (CMS), following a proposal from the European Union and its 28 Member States, the Mediterranean Sea subpopulation of Cuvier's beaked whales was listed on CMS Appendix I. Such a listing obliges Party Range States among others to a) conserve and restore critical habitats of the species, and b) prevent, reduce or control factors that are endangering the species. This listing allowed the recognition of the vulnerability of the species to ocean noise and resulted in it receiving the highest level of protection possible by all Range States. This had also been imposed by the CMS daughter Agreement ACCOBAMS, its Conservation Plan, and was reflected in numerous Resolutions.

The EU's EIA Directive 2014/52/EU, the EU's Marine Strategy Framework Directive 2008/56/EC add binding provisions for undertaking environmental impact assessments and receiving Good Environmental Status by reducing noise levels that should benefit this beaked whale species. The list is not exhaustive but is indicative of the strict conservation regulation in place. However, the special legal status of military activities, as one source of noise generating activities, is interpreted by many nations as not being bound by environmental legislation and provisions, which further complicates conservation efforts.

Given regional differences, one might think that in some areas provisions remain on paper but aren't imposed or enforced. Is the conservation status of a species worth the paper?



Beaked Whale Strandings: Effect of Underwater Noise to Marine Mammals and the Role of Protected Areas: How can IMMAs help

Erich Hoyt

Important Marine Mammal Areas (IMMAs) are a place-based conservation tool identifying: “discrete portions of habitat, important for one or more marine mammal species, that have the potential to be delineated and managed for conservation”. IMMAs are NOT Marine Protected Areas, and are NOT identified on the basis of management considerations. The identification of IMMAs is an evidence-driven, purely biocentric process based on the application of scientific criteria and on the best available science.

Each workshop for identifying IMMAs within a region follows a predefined process, developed in consultation with the regional marine mammal science and conservation community, to identify candidate IMMAs (cIMMAs) on the basis of received proposals for Areas of Interest (AoI) which include (1) expert-submitted areas, (2) EBSAs with MM habitat, and (3) MMPAs.



Image: Eric Hoyt

After an IMMA workshop, cIMMAs are submitted to an independent Review Panel to verify that the criteria were applied correctly and that cIMMAs were identified on the basis of robust scientific information. Candidate IMMAs are then converted into IMMAs and are made publicly available online via the IUCN-MMPATF website and dedicated IMMA e-Atlas: www.marinemammalhabitat.org/imma-eatlas.

IMMAs have now been identified and approved in three marine regions: the Mediterranean, the Pacific Islands and the North East Indian Ocean and South East Asian Seas. Two more regions have had workshops and will be complete by the end of 2019: the Extended Southern Ocean and the Western Indian Ocean and Arabian Seas.

Across the three regions, there are 77 IMMAs approved and beaked whales are found in 23 of these IMMAs. In four IMMAs, they are primary species used to satisfy the IMMA criteria. Cuvier’s beaked whales are represented in 3% of the IMMAs, mainly in the Mediterranean, while Blainville’s beaked whales are primary in just one large IMMA in the Hawaiian Islands.

To date, only Cuvier’s and Blainville’s beaked whales have been included in the IMMAs/AoIs. It is proving difficult to get data for most other beaked whale species.

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IMMAs could be part of a monitoring system for noise, spotlighting areas where certain beaked whales are found. However, IMMAs going into some kind of management for noise would need to be larger, or have larger buffers, to protect against mid-frequency and low-frequency noise. The Aol tool can be useful too in terms of flagging up necessary research and monitoring for noise related to beaked whales. They can indicate presence but don't need as much evidence as IMMAs to be put on the map. Additionally, IMMAs may provide a new impetus for addressing concerns about noise levels in several areas of the Mediterranean.

Discussion and Recommendations

Numerous bodies, including national governments, and regional and international environmental agreements, recognize the need to protect the important habitat of beaked whales and to provide them specific protection from the impacts of anthropogenic noise. Special protection is given to the Mediterranean Sea subpopulation of Cuvier's beaked whale which is listed in Appendix I of the Convention on Migratory Species (CMS) and through the ACCOBAMS Agreement and several of its relevant resolutions.

In particular, we have identified the necessity for the following, non-exclusive, actions:

Proper impact assessments must be undertaken prior to any noise-generating activities, with a precautionary approach taken in the case of uncertainty, and impulsive noise levels reduced. Such actions should be applied to all beaked whale species.

Acknowledging that a global scientific ongoing IUCN process has now identified four Important Marine Mammal Areas (IMMAs) for beaked whales, three of which are in the Mediterranean, we recommend to:

1. Apply the Convention on Migratory Species Guidelines on Environmental Impact Assessments for marine noise-generating activities and transpose them into domestic legislation;
2. Use IMMAs as guidance towards designation of protection areas with exclusion zones of intense anthropogenic noise such as naval sonar, seismic exploration and explosives. This is the case for: i) the Hellenic Trench, ii) the Alborán Deep, iii) the Western Ligurian Sea and Genoa Canyon, and iv) the main Hawaiian Archipelago;
3. In areas where IMMAs have not been evaluated yet, use best available knowledge to protect core habitats of beaked whales, such as in the Bahamas, and the Canary



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Islands, among other places and apply new technologies to gather distribution data where this is scarce;

4. Congratulate the Spanish and Canary Island Governments for the 2004 declaration of a moratorium on the use of naval sonar within 50 nm of the Canary Islands, and encourage them to provide a legal permanent framework for this initiative;

5. Encourage the Spanish Government to fulfill their initiative of creating a Marine National Park at El Hierro (Canary Islands), which is core habitat for beaked whales;

6. Encourage the Greek Government to declare a Marine Protected Area for the Hellenic Trench, the core habitat of beaked whales where several mass strandings have been recorded, or at least declare a moratorium for military sonar use and seismic survey activities in this area;

7. Congratulate the Government of Argentina and the National Park Administration for the creation of Marine National Parks Yaganes and Banco Burdwood II; and

8. Perform veterinary pathological examinations of stranded cetaceans to evaluate causes of death, especially of beaked whales and any atypical strandings.



**Panel 5: MMPAs in the Polar Regions:
Habitat Identification and Protection in the Presence of
Emerging Threats and Transformation Change**

Sponsored by the WWF Arctic Programme

Conveners: Melanie Lancaster and Brad Barr

Speakers:

Brad Barr, ICoMMPA

Giuseppe Notarbartolo di Sciara, MMPA Task Force and Tethys, Italy

Melanie Lancaster, WWF Arctic Programme

Introduction and Overview

The session addressed the challenges for effective conservation of Polar marine mammal populations, and particularly the need for identifying and establishing MMPAs, and networks of protected areas, to facilitate and enhance this much-needed focused management framework in these regions. To accomplish this the following elements were addressed through the presentations and panel discussion:

- existing status of marine mammals in the polar regions and emerging threats resulting from climate change and concomitant expanding human use;
- existing and potential frameworks and tools for the development of protected areas and circumpolar networks of protected areas in the Arctic and Antarctic, as well as their relevance to conserving threatened marine mammal populations and their critical habitats, and the status of these initiatives;
- the recent identification of Important Marine Mammal Areas (IMMAs) in the Southern Ocean, and the implications of this work for establishing MMPAs and MMPA networks.

The session highlighted the work of the IUCN MMPATF in their efforts to identify IMMAs for the Southern Ocean and the importance of this effort in supporting the robust identification of critical marine mammal habitat areas in this region. The discussion centered on how this might be critical information to facilitate the



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establishment of MMPAs and networks of MMPAs, and how existing information could be used and indigenous participation facilitated in an IMMA process in the Arctic. In addition, participants were able to advance the idea of holding the 6th ICMMPA somewhere in the far North (or South) with a focus on these polar regions and issues they face as a central conference theme.

Session objectives

The session objectives were to expand awareness of the issue of providing effective conservation and management of marine mammals in the polar regions; explore the potential for identifying and establishing individual and networks of MMPAs to provide a place-focused, precautionary management framework for achieving this goal, and the significant challenges facing this implementation.

Presentation Summaries

The Arctic, and why MMPAs should be a part of the (very near) future

Brad Barr

Both the Arctic and Antarctic are warming as a result of climate change, and potentially significant alterations in these ecosystems are being observed and will be increasing. Human activities are also similarly increasing and anticipated to expand in these remote areas, as economically valuable resources become more accessible. Both poles support globally important populations of marine mammals that will have to not only adapt to these changes, but face threats from the ensuing expansion of human activity as the ice recedes.

The Arctic is estimated to hold up to 13% of the world's undiscovered oil and 26% of remaining natural gas reserves, with more than three-quarters of these non-renewable resources found offshore. Increasing open water in the Arctic and Antarctic, what some have described as a "new ocean", will provide opportunities for expanded exploitation by commercial fisheries and will improve the navigability of three global shipping routes through the Arctic, dramatically increasing ship traffic. A longer open water season will bring more cruise tourism to the Antarctic and the Arctic, largely unregulated and "out of sight" in the Arctic, and associated construction and use of coastal infrastructure (e.g., deep water ports) to support the expansion of maritime transportation will also pose potential threats for marine mammals.

Sustaining the capacity of polar marine mammals to cope with these significant alterations to and new uses of their environment requires comprehensive risk management, a precautionary approach to economic development, and careful



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marine spatial planning recognizing the critically important need for conservation of marine mammals and their essential habitats. Some key information has already been developed to identify “ecologically and biologically sensitive areas” and “areas of heightened ecological and cultural significance” under the Convention on Biological Diversity and the Arctic Council, respectively, where MPAs might most appropriately be established. While these critical area identification processes have incorporated limited information about marine mammal populations and their critical habitats, this was just one of many criteria used to identify relative vast areas of the Arctic (some 98 areas encompassing 76% of the Arctic) as “significant”. The Arctic Council has also been engaged in planning a circumpolar MPA network for at least two decades, yet few MPAs have been established as a result of this planning. The current coverage of MPAs in the region has been estimated to be, at most, only 4.7%, so much potential exists to create new and effectively managed MMPAs, once the areas that are most important to marine mammals have been specifically identified. Networks of MMPAs could offer a focused and comprehensive management framework for protecting important marine mammal areas. Effectively connecting such networks to protected areas outside the polar regions will also be essential to enable safe transit by marine mammals to and from important habitats.

The relative intactness of polar environment means that there is still ample opportunity to apply what has been learned from other parts of the world to these regions. There is a pressing need to identify important marine mammal areas in the Arctic. The Arctic is home to around four million people, many of whom view marine mammals as important resources that hold special cultural significance. An IMMA process in the Arctic should be an inclusive process that brings together scientific and indigenous knowledge on important marine mammal areas. To that end, key stakeholders must be identified and engaged to evaluate whether MMPAs are an effective solution for the Arctic and to develop the political will to take actions addressing these emerging challenges.

Identification of IMMAs in the Extended Southern Ocean, and implications for replicating this effort in the Arctic Ocean

Giuseppe Notarbartolo di Sciara

The process for IMMA identification was presented, explaining how the process was applied to the identification of IMMAs in the Extended Southern Ocean, with support of the French Agency for Biodiversity. The process involved the gathering of all pertinent knowledge about marine mammal habitats in the Southern Ocean, Antarctic region and Sub-Antarctic islands, and the submission of relevant Areas of Interest to be examined during an expert workshop which was held in Brest, France, in October 2018. As a result of the workshop, 15 candidate IMMAs were proposed by the convened experts, accompanied by concise profiles, proposing boundaries and



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detailing how each proposal meets one or more of the IMMA criteria. Candidate IMMAs were in the process of being reviewed by an independent review panel at the time of ICMMPA5, and the final results of this effort will be made public later this year. The presentation concluded by stating that the IMMA process is now well developed and that the Task Force would welcome being able to apply it to the Arctic Region.

Marine mammal important and protected areas in the Arctic

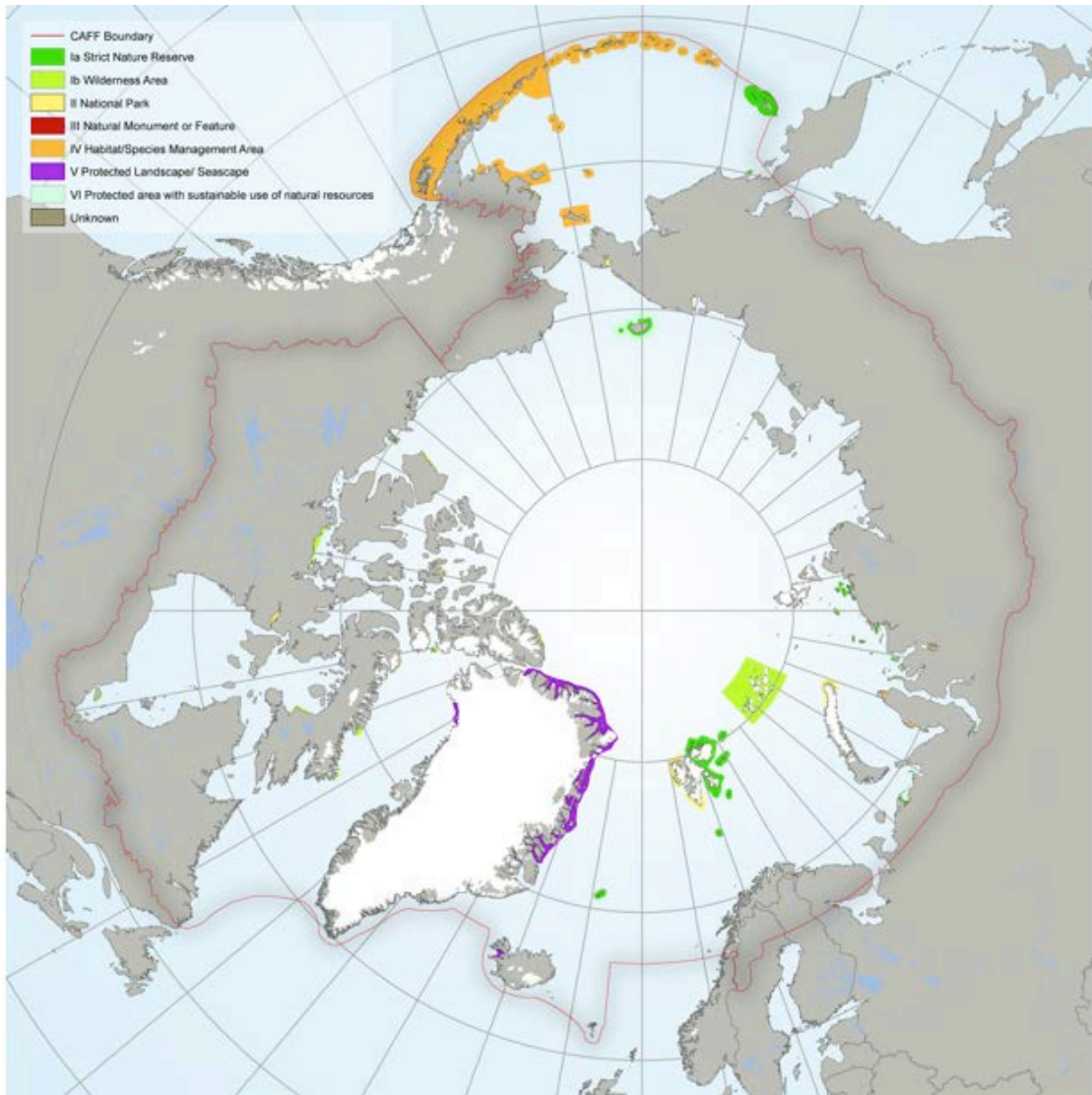
Melanie Lancaster

The Arctic is home to seven species of endemic marine mammal, as well as sub-Arctic species and seasonal visitors. As well as their importance to Arctic ecosystems, marine mammals have significant places in the traditions, cultures and livelihoods of many coastal indigenous peoples. Almost all populations of Arctic marine mammals have seasonal migrations – some across national boundaries and others from further south into productive Arctic waters each summer. Implementing spatial management or protection only at the national level is therefore of limited effectiveness, hence the necessity for an ecosystem-based approach to protect important marine mammal habitats, both within the Arctic and beyond.

According to a report by the Arctic Council, only 4.7% of the Arctic coastal and marine environment is currently under protective regimes. Given rapid changes in the Arctic Ocean resulting from climate change and concurrent industrial development of the region, there is an urgent need to develop a network of areas to conserve marine biodiversity at an ecologically-relevant scale. WWF's Arctic Programme is currently leading a project to identify and map an ecologically representative and well-connected pan-Arctic network of marine areas that are specially-managed for the conservation and protection of Arctic marine biodiversity, ecological processes, and associated ecosystem services and cultural values. As part of this project, important habitats for 25 marine mammal species have been identified, based on published information and input from subject matter experts. These data could provide a starting point for an Important Marine Mammal Area (IMMA) process by the IUCN MMPA Task Force, in collaboration with indigenous peoples, using a combination of indigenous and scientific knowledge, and taking place in the Arctic: a natural "laboratory" for marine spatial protection in a time of transformative change.



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Map provided by Melanie Lancaster

The purpose of PAMPAN is to identify and map an ecologically representative and well-connected pan-Arctic network of marine areas that are specially-managed for the conservation and protection of Arctic marine biodiversity, ecological processes, and associated ecosystem services and cultural values. The objectives of PAMPAN include: 1) showcasing and applying a transparent analysis; 2) producing maps as concrete proposals for planning and implementation processes; and 3) initiating and engaging a community of practice in an open and inclusive process.

Spatial information has been mapped for 25 marine mammal species, including 2 otariid seals, 7 phocid seals, 1 walrus, 1 polar bear, 1 sea otter, and 13 cetacean species. We now have a starting point for an inclusive IMMA process, as well as establishing a laboratory for managing MPAs in a time of rapid change.



Discussion

In this session, panel participants: 1) expanded awareness of issues of providing effective conservation and management of marine mammals in the polar regions with a focus on the Arctic, 2) discussed existing and potential frameworks and tools for identifying important marine mammal areas in the Arctic, and 3) advanced the idea of holding the 6th ICMMPA somewhere in the far North (or South) with a focus on these regions and issues as a Conference theme. A lively discussion ensued following the presentations, with a focus on how frameworks could be optimally employed or strengthened. The discussion is an indication that polar MMPAs will be a priority topic in future ICMMPAs.



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Panel 6: Presentation of the Key Outputs from the ICMMPA5 Non-Plenary Sessions

In this session the conveners of all conference sessions that were not in plenary, and therefore ran in parallel, presented the key results and outputs produced in their respective sessions. Participants discussed the key issues that emerged during the conference, moving closer towards achieving effective place-based protection and management for marine mammals.

Session objective

The objective of this session was to disseminate to the ICMMPA community of practice the results and outputs of the conference sessions that participants may have missed when attending other concurrent sessions.

Next step for the managing of whale watching activities... How to move from a voluntary commitment to an effective regulation?
Benjamin Guichard (French Agency for Biodiversity)
Alain Barcoz (Port-Cros National Park)
Whale watching knowledge café, 12th April 2019

Beaked whale strandings: The effect of underwater noise on marine mammals and the role of protected areas
Panel 4

THE IDENTIFICATION OF NEW ACCOBAMS CDE: A COLLABORATIVE THREAT-BASED MANAGEMENT APPROACH
Mitsuru Onozu, 17 April 2019

The Inspiring Story of the Monk Seal: a critical assessment for the future in view of new challenges from increasing expanding populations

Workshop 5: Conflict resolution in coastal MMPAs: focus on interactions between marine mammals and small-scale fisheries.
Arne Bjørge, Spyros Kotomatas

The ACCOBAMS Survey Initiative (ASI): lessons learnt and future plans
Simone Panigada, Julie Belmont, Mehdi Aissi, Ibrahim Bonamer, Benjamin Guichard, Sophie Laran, Ayaka Otsuka

ICMMPAS Costa Navarino, Greece 11 April 2019 Round Table #2 Creative models for sustainable financing of MMPAs

Workshop 9: Co-Management: Improving the governance and management effectiveness of MMPAs
Anne Wilson, Yasrak Azis, Spyros Kotomatas

Marine Mammals and MSP in the Context of Blue Growth: Objectives
Build on previous ICMMPAs to link MSP and MMPAs
Promote the uptake of marine mammal information into planning and the management that results
Put forward elements of a strategy and actions to specifically influence MSP processes unfolding in the European Seas, as well as those MSP processes that look to the EU as a model for MSP for sustainable development

W3: Mitigating the impact of shipping on cetaceans in the Mediterranean Sea: Opening the dialog in search of feasible solutions
ICMMPA 5 Monday April 8th 14:15-18:30

Improve enforcement and compliance within MMPAs: Can new technologies support effective enforcement?
Presenters: Borycky, Beudé, Bisher, Collins, Constantine, Jaramillo, Kotomatas and Noya-Bracho

Incorporating marine mammal observation needs in MPA management plans
Wednesday 17 April 14:15-18:30

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Workshop 1: The Inspiring Story of the Monk Seal – A Critical Assessment for the Future in View of New Challenges from Increasing/Expanding Populations

Sponsored by the Prince Albert II of Monaco Foundation



Conveners: Joan Gonzalvo, Manel Gazo, Giulia Mo and
Harun Güçlüsoy

Speakers:

Panos Dendrinou, MOm, Greece

Cem Orkun Kiraç, SAD-AFAG, Turkey

Meltem Ok, Middle East Technical University, Turkey

Melina Markou, Department of Fisheries and Marine Research, Cyprus

Giulia Mo, ISPRA, Italy

Aviad Scheinin, Israel

Pablo Fernandez de Larrinoa, Monk Seal Conservation Program / Fundacion CBD-
Habitat

Rosa Pires, Instituto de Florestas e Conservação da Natureza, IP-RAM

Joan Gonzalvo, Tethys, Italy



Introduction and Overview

This workshop was the first workshop of ICMMPA5 and one of the most well-attended. The first part of the workshop focused on presenting an overview of the Mediterranean monk seal populations, their status at various locations across the animal's current range, specific threats to these populations, and the progress made towards securing their conservation at specific locales.

According to Ok et al., 2019, the Mediterranean monk seal, *Monachus monachus* (Hermann, 1779) is one of the rarest and most threatened species in the world. It is also Europe's most endangered marine mammal. It is the only representative of the genus *Monachus*, and the worldwide abundance of this elusive seal species is estimated to be fewer than 700 individuals.

The first part of the workshop focused on threats to Mediterranean monk seal due to increasing or expanding population. Presenters provided an overview on the population status, threats and conservation needs for Greek (Aegean and Ionian) seas, Turkish Aegean and Levantine Seas, Cyprus, the small and scattered population areas around the Mediterranean, as well as for Cabo Blanco (Mauritania/Morocco) and Madeira (Portugal) in the Atlantic.

Reflecting on the presentations from around the Mediterranean region, the participants concluded that the major threats to the Mediterranean monk seal include: habitat loss, increasing tourism pressure, fisheries by-catch, destructive fishing practices in the Mediterranean, and limited coastal habitat (Cabo Blanco), breeding in suboptimal habitats, interactions with coastal gillnets (Cabo Blanco) and cages (Madeira), limited fish resources (Madeira), coastal development, risk of epizootic outbreaks or other pathologies due to density in the Atlantic.

There is clearly a need to mitigate human conflict with seals, to combat coastal development, to define spatial protection measures in critical areas, and to improve the adequacy of protection measures in existing MPAs.

The second part of the workshop focused on continuing dialogue on a robust and effective Mediterranean monk seal strategy at the Mediterranean level, with linkages at the global scale. Participants were presented with the draft Updated Strategy for the Regional Conservation of Monk Seals in the Mediterranean Sea, adopted by the Contracting Parties to the Barcelona Convention at their 18th Meeting [Istanbul, Dec. 2013]. This version is a work in progress, presented at ICMMPA5 to receive input/suggestions in order to produce a final draft by the end of April. The document of the draft Strategy was circulated after the workshop to those interested in order to receive comments, which will be integrated, as much as possible, in this final draft.



Session objectives

The session brought together monk seal experts, conservationists, and policy makers from around the globe to facilitate cooperation amongst monk seal researchers and conservation practitioners; assess the current ecological needs and the threats faced by the Mediterranean monk seal in view of the new challenges stemming from increasing or expanding populations; examine the need and the appropriate process for developing a common strategy and for implementing key priority actions for the Mediterranean monk seal at the global scale; identify the key elements that would promote the long-term sustainability of the conservation efforts and ensure impactful results.

Presentation Summaries

Monk Seals in Greece

Panos Dendrinou, S. Adamantopoulou, E. Tounta, K. Koemtzopoulos, and A.A. Karamanlidis

With fewer than 700 individuals remaining, from which approximately 350 live in Greece, the Mediterranean monk seal is classified as “Endangered” by the IUCN. Monitoring efforts for the Mediterranean monk seal in Greece were initiated in the 1970s; soon thereafter the dire situation of the species led experts to believe that the species would go extinct in the country before the turn of the century. However, in the past 15 – 20 years Mediterranean monk seals have been gradually recovering, which has led now to the development of a new conservation situation for the species in Greece. This is characterized by: a) An increasing number of seal sightings throughout the entire coastline of the country, b) The discovery of new pupping sites, c) An increasing number of close interactions between humans and seals (e.g. at the islets of Lichadonia and Formicula). Despite clear signs of population recovery of monk seals in Greece, significant threats to the survival of the species are still in place. These include: a) Human disturbance at the main pupping sites, leading often to loss of pupping space, b) Negative interactions with artisanal fisheries, c) Overfishing. Priority management actions for dealing with this new conservation situation for the Mediterranean monk seal in Greece are: a) Effective Management of all MPAs, b) Further development of the National Monk seal Rescue and Information Network and of the Monk Seal Rehabilitation Program, c) Promotion of national/local education and awareness activities, d) Effective mitigation of negative seal – fisheries interactions, e) Pilot restoration of important pupping sites. Finally, all the experiences that have been gained while dealing with the species in the past 30 years and the current scientific knowledge on the status of the Mediterranean monk seal, need to be compiled in order to formulate a new effective Action Plan that will guide conservation actions for



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the species in Greece in the years to come.

- Goedicke (1981) estimated that by 2000 the monk seal would be extinct from Greece. However, today we have many observations proving this prediction to be incorrect.
- Currently there is a lack of scientific knowledge about all populated areas in Greece but MOM is striving to have a complete 'map' by 2020.
- One well known breeding site is the island of Gyaros – which is now an MPA
- Important areas include sites within the Ionian and Aegean Seas, both of which have permanent monk seal populations and organized tourism (meaning that there is a coexistence between humans and seals).
- Indirect threats in these areas include: disturbance at pupping sites, boats, 'seal cave' diving tourism and kayaks – in need of management to maintain these as ecofriendly activities.
- Also, the loss of pupping spaces due to increased proximity to human activity leads to competition for space among adult females, which can attribute to increased pup deaths.
- Direct threats include: deliberate killings (which are decreasing every year) and ghost nets (which are increasing every year).
- How do we promote monk seals in Greece?
 - Effective management of Natura 2000 sites
 - Supporting national monk seal rescue network
 - Supporting Monk Seal Rehabilitation Network
 - In addition to all of the above, creating national and local education and awareness programs
 - Enforcing measures to mitigate the conflict with artisanal fisheries
 - Implementing a New Action Plan focused on restoring pupping sites

Assessments for threats and ecological needs of monk seal populations in Turkish Aegean and the Sea of Marmara

Cem Orkun Kıracı and Yalçın Savaş

Turkey has suitable coastal habitats for monk seal even though habitat deterioration has occurred in some coastal segments since the 1980s until today and its pristine coasts are still home to regularly breeding monk seal populations. The current distribution of the species covers the southwestern coasts of the Sea of Marmara, the Aegean Sea and the Levantine coasts of Turkey including islands while sightings occur more frequent and in expanded ranges in the recent years.

The threats to monk seals can be divided into two broad categories as primary and secondary, based on degree of risks they pose as observed in the last 32 years in the



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country. The primary threats are: coastal habitat deterioration, monk seal deaths mainly due to pup/young entanglements to set nets and deliberate killings, and disturbances inside their caves by tourist divers and recently by photographers/video shooters and conservationists! Coastal development and urbanization pressure accelerated in the coasts of Turkish Aegean and the Sea of Marmara recently resulting in habitat destruction in certain pristine coasts, whose impact on monk seal's ecology will be forever as an irreversible process. The primary threats are mainly observed in the coasts of Izmir, Aydın, Muğla and Antalya provinces. The secondary threats include –intense human activities & boat traffic along coasts near seal caves/caverns, –decreased fish stocks and –marine pollution. The effect of decreased fish stocks and marine pollution on monk seals ecology are not fully assessed although a few findings are published until now.

It is envisaged, in the near future, that monk seal-human interaction will be more intense in the following two economic areas especially in the above-mentioned provinces as a result of increased human activities and expanding monk seal populations; 1- *fishery* including recreational & artisanal and 2- *coastal tourism activities* including excursion boat tours and diving in the main tourist attraction locations and adjacent coastal zones. In order to mitigate negative interactions between human and monk seals, a wide range of public awareness and information & rescue network should be enhanced in the country, which will also serve early warning for any infringements relevant to coastal habitat destruction.

On the other hand, the threats issue is rather complicated and not homogeneous throughout Turkish coasts and it won't be a solution to do a single threat prioritization for the whole country. In other words, remedial actions based on a general threat priority model cannot be utilized for whole coasts. This is due to the existence of various socio-economic structures with different weights in each sub region within the country. Hence, threat analysis studies should be made on sub regional basis in which threat priorities be established exclusively.

In sum, monk seals are mostly observed along the coasts of Izmir, Muğla, Antalya and Mersin provinces while the species is believed to be extinct in the Black Sea coasts in Turkey. Despite certain threats, the number of pups/juveniles and newly identified adult individuals has been greater than the number of deaths encountered and the population seems slowly increasing overall. Primary threats include: habitat deterioration, entanglement of pups/juveniles to set nets and disturbance of monk seals in their caves via thoughtless penetrations by tourists and photographers and nowadays even irresponsible conservationists (!). Secondary threats due to heightened fishing and tourism sectors include: boat traffic, decreased fish stocks and general intensified human-seal interaction. Mitigation tools include increasing public awareness and altering wrong perceptions, taking steps to mitigate negative interaction between seals and artisanal fishermen and enhancement of the existing



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“monk seal information & rescue network (AFBİKA)” which has been run by SAD-AFAG throughout Turkish coasts since 2003 successfully. It is believed that actions related to conservation and public awareness should be taken prior for the continued survival of the species with the existing scientific knowledge.

The flow of information through AFBİKA network as civil science increased in the last years and therefore identification and cataloging of monk seal individuals become easier. On the other hand, in general, the overall threat assessment is a complicated issue and it is important to consider the socio-economic circumstances and make decisions on a sub-regional basis in the country. A great effort, time and resources are allocated by SAD-AFAG to protect pristine coastal habitats against habitat destruction due to rapidly evolving tendency towards housing, tourism & development, in which successful results are achieved in many several cases along the coasts in the Sea of Marmara, the Aegean Sea and the Levantine Sea in favor of monk seals. The pristine coastal habitats still prevail along considerable length of Turkish coasts.

Monk Seals in South of Turkey

Meltem Ok

There are known monk seal populations in Antalya, Mersin, and Samandağ. This population has fallen from 42 individuals in 2009 to 37 in 2019 due to decreased fecundity and increased mortality.

Threats include: habitat loss, mainly due to industrial construction, tourism and coastal roads and constructions (such as secondary houses). Measures to promote sustainability include protection of breeding habitat and measures leading to increased dispersal among and connectivity between populations.

Monk Seals in Cyprus

Melina Markou

There are 14 documented monk seal individuals on Cyprus and some breeding activity was confirmed through increased monitoring.

Threats include: loss of habitat, urbanization, tourism and overfishing – however no documented cases of seals as bycatch. Most seal habitats in Cyprus are already listed as Natura 2000 sites.

Further mitigation steps that can be taken against threats include: no-take/ no-entrance MPAs on important breeding sites (such as Peyia Sea Caves), increased public



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awareness, and implementation of a National Action Plan to protect a buffer of at least 200 meters around sea caves (important seal habitat).

Scattered Monk Seal Populations in the Mediterranean Sea

Giulia Mo

Until recently small and scattered populations were believed to exist in some Mediterranean north African countries and seal sightings in the remaining Mediterranean states were attributed to vagrant individuals.

Analysis of reported sighting records /seal monitoring activities in the last thirty years indicate the following sightings around the Mediterranean:

- Morocco, Algeria, Tunisia: decreasing sighting records (only two between 2010-2018); no monitoring is in place despite the habitat study efforts.
- Italy: increasing validated sighting records at insular locations /areas proximate to known breeding populations and cave use confirmed through start-up of monitoring programs (northwestern Sicily).
- Albania and Montenegro: increasing validated sighting records and increasing habitat and monitoring studies.
- Eastern Libya: sighting records reported through fishermen surveys (2000-2009), a juvenile by-caught individual (2012) and one sighting in western Egypt suggest the species presence in the area but monitoring has halted.
- Syria, Lebanon, Israel: increasing sighting records have been observed since 2000 in areas where the species was previously considered extinct. Findings of by-caught and killed individuals in Syria and Lebanon include pregnant females.

The above trends suggest that the species range is expanding into areas where the species had previously disappeared or that it may be recovering in areas where it survived in low numbers before.

The records confirm the risk of intentional killing and accidental capture in fishing gear in the eastern Mediterranean. Disturbance from recreational activities is common in most countries and illegal destructive fishing practices in proximity to seal caves are a threat in several western and southeastern Mediterranean range states.

Monk Seals in Israel

Aviad Scheinin

From 2010 until April 2019 there were 81 monk seal sightings in the Israeli waters. All the photo-identified monk seals photos were of the same female first sighted in 2010



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with last sighting in 2018. Potential breeding caves have been mapped and an attempt to set up camera traps in one cave was not successful.

Monk seals in Mauritania/Morocco

Pablo Fernandez de Larrinoa

Cabo Blanco peninsula (Mauritania/Morocco) holds the largest remaining monk seal colony worldwide. The monk seal population uses the 3 best caves available in the whole coast from Cabo Blanco to Cabo Barbas, all year around. A 6 km coastline where the caves are located, and surrounding waters, are permanently protected since 2001 by “Costa de las Focas” marine and coastal Reserve, to minimize disturbances to the seals in the caves, as well as to avoid the use of fishing gears in the area.

A temporal non-fishing area declared by Morocco along the western coast of the Cabo Blanco peninsula to 12 nautical miles off shore, has proven to be essential for monk seal conservation thanks to GPS monitoring of the animals. The area needs to be renewed every 10 years.

The population has risen from 103 individuals in 1998 to 360 in 2018, and annual pup production from around 26 animals to more than 70. Survival rates during first year are low due to reproduction in suboptimal habitat (marine caves) and interaction with fisheries.

The main threats for the population are the limitation of current breeding habitat (caves) and risk of cave collapse, increasing fishing pressure, expansion of Nouadhibou City, and the risk of concentration of the population due to potential massive die offs.

Main challenges for the future include reducing first year mortality, expansion of the distribution of the species, breeding in open beaches and creation of new monk seal populations in the Atlantic range.

Monk Seals in Portugal

Rosa Pires

Work in Madeira started in 1988 with a monitoring program based on the direct observation, today an EU-funded LIFE Madeira Monk Seal Project allows autonomous monitoring systems and GPS tracking.

The population has 20 individuals (individuals older than 1 year), recovering very slowly due mainly to a low survival rate during first year (0.38). The age and sex composition



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of this population has been established. Most of the population are adult females. The adult sex ratio is approximately 3:1 in favor of females, due to a differential mortality by gender. High pup mortality is due to use of suboptimal habitat for reproduction (caves).

The Madeiran monk seal population is being affected by problems related to food limitation, probably due to limited size and degraded quality of foraging habitat.

Conservation priorities for monk seal conservation in Madeira including: 1) reduction of first year mortality due to breeding in caves and interactions with fisheries; 2) determining feeding resources availability for the monk seal population; 3) determining mortality causes related to gender in adult animals; 4) determining the impact of interactions with aquaculture facilities on monk seal; 5) maintaining an effective surveillance of the conservation status of the species; and 6) maintaining and improve the measures that have been implemented to mitigate known threats (fishing and touristic activity).

Are these population increases due to our efforts or due to life history traits of monk seals?

- Maderia monk seal population increase is definitely attributed to the removal of dangerous fishing traps (replaced where necessary by sustainable ones).
- Either way – it is a positive phenomenon and a reason to keep working towards building an understanding.
- We have to be careful to also consider genetic diversity as a measure of a stable population.

How was the local community involved in the preservation of the Cabo Blanco monk seal population? Compensating artisan fishermen helped them solve some of their main problems, including security problems at sea, to gain trust and create a positive relationship. Security materials at sea (lifejackets, position lights for artisan pirogues, radar reflectors, first aid material, marine clothes, etc.), were donated, and training took place on security at sea for fishermen. Training in repair and maintenance of out-board engines was also undertaken. The first aid center at artisan fishing harbor was also repaired and equipped.

Those communities which are poor and have no marine or fishing historical tradition, were presented with responsible and sustainable fishing training. An artisanal fish market was built at the city to improve sanitary conditions. Through all of these efforts, a baseline of mutual respect and understanding was established.



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Photo by Joan Gonzalvo

Draft Updated Strategy for the Regional Conservation of Monk Seals in the Mediterranean Sea

Joan Gonzalvo, Giuseppe Notarbartolo di Sciara, Giulia Mo and Manel Gazo

A draft update of the Regional Strategy for the Conservation of Monk Seals in the Mediterranean (adopted by the Contracting Parties to the Barcelona Convention at their 18th Meeting in Dec. 2013) is presented. This updated version in progress was presented at the 5th International Conference on Marine Mammal Protected Areas in order to collect comments and feedback from experts working with this endangered species. A final draft will be produced after the workshop taking into consideration input and suggestions from the participants. The main problem encountered in envisaging a region-wide Strategy derived from the quite diverse conservation status of monk seals in the different portion of the Mediterranean and by consequence the quite different priorities and responsibilities saddled onto the various monk seal Range States. To handle this challenge, it is proposed to assign Mediterranean countries to following three groups: a) countries where monk seal breeding has been reported after year 2010; b) countries where no monk seal breeding is reported, but where repeated sightings of monk seals (>3) were reported since 2010; and c) countries where no monk seal breeding is reported, and where very rare or no sightings of monk seals (≤ 3) were reported since 2010. Year 2010 was selected as a criterion to separate the present from the country assessment described in the past regional strategy (UNEP-MAP RAC/SPA, 2013). The Goals described in the Strategy are: Goal 1, Mediterranean Range States implement this Strategy in pursuance of the Strategy's Vision, through the expeditious development and adoption of appropriate national policies and administrative frameworks, and with the effective, coordinated support from relevant international organizations and civil society; Goal 2, monk seal breeding nuclei in sites located in "Group A" countries are effectively protected from deliberate killings and habitat degradation, so that seal numbers in such sites increase and seals



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are able to disperse to and re-colonize the surrounding areas; Goal 3, monk seal presence in sites where they are repeatedly seen today in “Group B” countries is permanently established, and breeding resumes (“Group B” countries are upgraded to “Group A”); and Goal 4, monk seal presence is reported repeatedly in the species’ historical habitat in “Group C” countries (these “Group C” countries are upgraded to “Group B” and once all “Group C” countries are upgraded, Group C is deleted). The suggested time horizon of this Strategy is six years, to be concluded in 2025.



Discussion

Joan Gonzalo, Giuseppe Notarbartolo di Sciarra, Giulia Mo and Manel Gazo led a discussion about how to achieve a robust and effective Mediterranean monk seal strategy, with linkages at the global scale.

Participants discussed the potential for integration of key common elements of the East Atlantic monk seal population Strategy (i.e. monitoring methodology).

A further session explored the lessons learnt from the Hawaiian monk seal programme in which conservation actions have led to the expansion of the species into the main Hawaiian Islands. John Baker made a presentation on the conservation efforts in Hawaii. Public awareness and community engagement were key factors in the success of this program. Additionally, the Monk Seal Alliance, composed of 5 Foundations (Prince Albert II, MAVA, Segré, Santa Devota, Thalassa), announced the signing of a MoU to support monk seal conservation initiatives.

In the general discussion about monk seal conservation around the world, there was consensus on the usefulness of:



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- regular group meetings to exchange information on monk seal conservation actions
- the development of collaborative projects and tools (e.g. shared photo-identification catalogue);
- region-wide improvement on data collection mechanisms and standards; and
- common protocols for contingency events occurring in the Mediterranean region.

Key elements that would promote the long-term sustainability of the conservation efforts for the Mediterranean monk seal include protecting breeding habitat and promoting the dispersal of individuals amongst neighboring populations so as to enhance the connectivity of the surviving isolated populations between regions.

This workshop presented an opportunity to delve into the details of the Mediterranean monk seal situation, which was brought to the attention of the entire ICMMPA audience by Spyros Kotomatas of WWF Greece in his remarks. Much has transpired since a systematic analysis of monk seal in the Mediterranean was done by Giuseppe Notarbartolo di Sciarra in preparation for the monk seal action plan (UNEP/MAP 2013) – a document that formed the basis for the Regional Strategy for the Conservation of Monk Seals in the Mediterranean- 2014-2019. Today Mediterranean countries can be categorized into three types of status for monk seals: A) countries with breeding areas; B) countries with monk seal sightings; and C) countries without monk seal sightings. The overall aim of conservationists is to ensure that deliberate killings and indirect threats to the monk seal are reduced or eliminated in countries belonging to category A and B, and that the Mediterranean monk seal population will grow so robust as to expand its breeding range, and create a situation in which monk seals would be regularly occurring throughout the Mediterranean, and thus in which category C would be eliminated.

A post-ICMMPA 5 update: The Strategy was widely circulated among those currently dealing one way or another with Mediterranean monk seal, and the input provided was considered and incorporated to the final draft. The newest version of the **Draft Updated Strategy for the Regional Conservation of Monk Seals in the Mediterranean Sea** was sent to SPA/RAC on the 7th May. This document was disseminated to all Focal Points before being endorsed at the Focal Point Meeting held in June 2019.



Workshop 2: Towards Building a Global Networking Mechanism of MPA Managers & Practitioners: Promoting Ecological Solidarity

Conveners: Puri Canals, Susan Gallon, and Phénia Marras- Ait Razouk



Speakers:

Alain Barcelo, Port-Cros National Park, France
Laurent Sourbes, Zakynthos National Marine Park, Greece
Gerald Mannaerts, Agoa Sanctuary, French Biodiversity Agency, Martinique Island
Valentina Cappanera, Portofino MPA, Silvia Visca WWF Italia, Italy
Puri Canals, MedPAN & TransAtlantic MPA Network, Spain
Stephanie Sorby, University of La Réunion, Reunion Island
Constanza Favilli, Acting Executive Secretary of the Pelagos Agreement, Monaco

Introduction and Overview

Marine mammals depend on critical habitats throughout their seasonal movements, including breeding and foraging sites as well as the pathways between them. An efficient network of MPAs could contribute to their long-term conservation by facilitating the implementation of management and conservation measures in key habitats of their life cycle, thus ensuring coherent management and strengthening ecological solidarity. During this workshop, the marine mammals protected areas (MMPA) managers from the Mediterranean Sea, the Caribbean, the Indian Ocean and the Atlantic Ocean will highlight how MMPA networks provide and organize their



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activities in every region. We will then focus on the prominence of MMPA managers networks and their capacity to mutualize means for sites management, although they enable a multiplier effect of key messages and common actions for MMPA policies implementation at several scales, from local to regional, national and macro-regional levels. The final discussion will address the aims and means in connecting at global level MMPA managers networks from different seas and oceans.

Session Objectives

The session objectives were to: highlight the role of networks of managers to exchange best practices and experiences between MMPA and MPA managers on issues related to addressing marine mammal conservation needs; develop potential common activities & tools to promote linkages between MPAs within regional MPA networks; identify potential tools and fora to link MMPA and MPA networks at a global scale; examine international regulation tools to support and develop ecologically representative and connected system of MPAs; and identify aims and means to enhance the sustainability and improve global networking mechanisms of MPA managers and practitioners.

Presentation Summaries

Past, current, and future challenges of addressing marine mammals in a MPA and how networks of managers at different scales (regional, sub-regional, national) facilitate the exchange of best practices

Alain Barcelo

Port-Cros National Park (PCNP), created in 1963 on the French Mediterranean coast, is the oldest MPA in European Union. This Park has a long tradition of networking and collaborating with other MPAs. It contributed to the creation of MedPAN network and the French MPA Forum, and actively pursues collaborations with MPAs members of these structures. The French MPA Forum, created in 2001, is an informal technical exchange network of 65 French MPAs managers in mainland France and its overseas territories. It aims to create a technical platform for discussing and capitalizing on the real-life experiences of MPA managers. The aims of the Forum are to improve knowledge of MPA stakeholders, discuss and capitalize on their daily management and field experience and, on the basis of these discussions, revamp or improve their own project on their site.



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Designated in France by the Ministry in charge of the environment, Port-Cros National Park ensures since 1999 the coordination of the French Part of the Pelagos Agreement. It relies on a network of active partners, thus substantially increasing its operational capacity. It develops tools and initiatives and shares them with Monaco and Italy. The main awareness-raising tools (billboards, flyers, website, etc.), the concept of the Charter with the municipalities, the Pelagos Ambassadors, the High Quality Whale-Watching Label (with ACCOBAMS agreement), the stranding kit were all developed in France and then adopted by the three countries. These tools, and those it continues to develop (IMMERCET and Trackass projects), are shared with other MPAs, mainly located in the Pelagos area, but also more widely in the Mediterranean Sea, in the Caribbean (Agoa) or the Indian Ocean (Island of Mayotte).

Networking is an important part of the activity of the PCNP, an old and well-managed MPA with substantial financial, human and materiel resources. Collaboration with MPAs within Pelagos, the MPA Forum, MedPAN (whole Mediterranean Sea) or on a global scale is essential, useful and meaningful. The PCNP will carry on in this direction and will improve it for the future.

Towards the integrated Mediterranean-level conservation of marine turtles: the need to design and establish an MPA marine turtles working group within the MedPAN network

Laurent Sourbès, C. Webster, B. Meola, P. Vignes, R. Neveu, M. Romani, M. Mabari, P. Canals, and D. Koutsoubas

Marine Turtles in the Mediterranean have received increasing scientific attention over the past 30 years with data collected by different entities across the basin for two species: *Caretta caretta* (Loggerhead turtle) and *Chelonia mydas* (Green turtle). Efficient conservation of migrating marine species is highly complicated since numerous anthropogenic threats must be addressed over a very large geographical area. Global protection of such species is therefore difficult as just one successful protection measure in a given area doesn't mean there is an efficient protection throughout the whole life cycle (Sourbès et. al., 2011, 2015). Marine Protected Areas (MPAs) managers can adopt measures that help decrease pressures on nesting beaches and sometimes in waters around and by collaborating, spanning a given geographical area, they can be increasingly effective at curbing pressures and impacts in mating, migrating, foraging and wintering areas.

The network of Marine Protected Areas managers in the Mediterranean, MedPAN, established a Mediterranean MPAs Marine Turtle Working Group (MPATWG) bringing together MPA managers and involving NGOs and researchers working on marine turtle conservation from 10 Mediterranean countries. This group enables exchanges to tackle site-specific issues and allow a real-time exchange of information and thus, the



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possibility to take adaptive management decisions at MPA local level. At network level, this group also supports an integrated management strategy for these species.

The MPATWG is developing a Cooperation Framework for monitoring marine turtles, which includes a Data Sharing Charter. It intends to consolidate trust and to set the rules whereby data can be shared and borders issues overcome. A Guide is also developed to pull together protocols for monitoring marine turtles for management purposes, including adaptive management principles implementation. The MPATWG will also explore a potential database to store the data collected. To support this effort, MedPAN organizes regular exchange visits in the field for MPAs, providing the opportunity for the MPATWG to meet.

Maintaining a continuous and active MPAs Marine Turtle Working group, within the MedPAN network, can have a key role in advancing integrated marine turtle conservation and protection in the Mediterranean, through strong commitment and long-term cooperation among MPA managers, NGOs and researchers working towards this common goal.

Caribbean Marine Mammal's Preservation Network (CARI'MAM)

Gerald Mannaerts

The CARI'MAM project is a European funded project through the ERDF/Interreg program, led by the Agoa Sanctuary. The Agoa Sanctuary (named after a Caribbean - Amerindian sea goddess) was established because of the abundance and diversity of cetacean species present in the waters of the French Caribbean islands. One of its goals is to enhance international cooperation among Caribbean territories to enhance marine mammals' protection.

Following this guiding principle, the main objective of the CARI'MAM project is to develop a network of marine protected areas dedicated to the conservation of marine mammals in the Greater Caribbean and beyond. This network will aim at strengthening managerial skills and developing common tools for management and evaluation purposes. Furthermore, the proposed network includes a focus issue on the development of a respectful long-term commercial offer for the observation of marine mammals across the Caribbean.

Around some common ecological questions, the project team acts as coordinator to develop common tools for survey. Since the beginning of the project, this include passive acoustic monitoring, transect and photo-ID tools and biopsy and tracking.



The conservation of marine mammals in the management plans of Pelagos MPAs

Valentina Cappanera

The Pelagos Sanctuary for Mediterranean Marine Mammals is a special marine protected area extending about 90.000 km² in the north-western Mediterranean Sea among Italy, France and Sardinia, encompassing Corsica and the Archipelago Toscano. Created in order to protect marine mammals from all sources of disturbance caused by human activity, the Sanctuary is thus intended to enable socio-economic development while providing the habitats in the area and species living there with the protection they need. In this context Italian MPAs could represent an added tool useful to improve conservation effectiveness of the Sanctuary.

Italian MPAs have a specific management plan adopted by the Italian Ministry of Environment in 2010.

In each management plan, specific conservation strategies adopted by the MPA are included. Since a lot of years, Italian MPAs in Pelagos have taken specific monitoring activities and actions on marine mammal conservation in line with each MPAs conservation objectives. Portofino MPA has tried to collect information from other MPAs of the Pelagos Sanctuary in order to show the general framework of marine mammal conservation.

Towards building a global networking mechanism of MPA managers & practitioners: Promoting ecological solidarity - Transatlantic and beyond

Purificació Canals

The European Commission has set up the Transatlantic MPA network project to promote cooperation between managers of Marine Protected Areas (MPAs) in countries and territories around the Atlantic Ocean. It is designed to stimulate exchange and the sharing of best practice to improve the effective management of MPAs in coastal and offshore areas of the Atlantic. The project is inspired by a new concept of Atlanticism that includes Africa and South America as well as Europe and North America.

The EU and its fellow parties to the UN Convention on Biological Diversity have committed to protect 10% of their marine and coastal areas through the effective management of Marine Protected Areas by 2020 (Aichi Target 11 within the Strategic Plan for Biodiversity 2011-2020).



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MPAs are an important tool to manage and enhance marine ecosystems while overseeing sustainable human activities compatible with conservation objectives. However, while their number has increased rapidly around the world in recent years, many designated MPAs lack clear conservation objectives and effective management measures. The project seeks to address this situation through a variety of activities around three twinning/partnership projects to improve the management of MPAs in the Atlantic area:

1. Cooperation and common strategy between MPA networks of managers in the Atlantic region
2. MPAs and coastal resilience, coping with rapid changes
3. Marine mammals' protection, a way to enhance transatlantic cooperation between MPAs

The twinning projects aim to build partnerships across the Atlantic and contribute to better MPA management effectiveness for improved conservation of marine ecosystems. They have been designed to address common challenges facing MPA managers, and all three include partners from North and South America, Africa and Europe, establishing genuine transatlantic partnerships around the Atlantic rim.

Existing challenges to develop an MPA network in the Western Indian Ocean dedicated to the conservation of migrating whales

Stéphanie Sorby

Humpback whales can be observed in large areas of the Western Indian Ocean and off the coast of many countries. From June to October, migrating from Antarctica, Humpback whales breed and give birth off the coast of Reunion and Madagascar, traveling also to Mauritius, Mayotte, Seychelles and Comoros. During their trip, they can face many dangers such as ship strikes, entanglement in fishing gear, pollution, and sometimes, even whale watching can generate damaging effects. As whales do not confine themselves to a specific area, crossing waters and jurisdictions of multiple nations as well as areas beyond national jurisdiction, the implementation of management and conservation measures at a regional scale are thus essential for their protection. A network of MPAs in the Western Indian Ocean appears as an interesting option for consistent protection in the area. The Nairobi Convention, which aims to protect, manage and develop the coastal and marine environment of the Western Indian Ocean region, could be a key instrument for the establishment of an MPA network. However, the countries of the region have various legal, political, cultural, social and economic contexts, which could be a serious impediment to a regional cooperation. The purpose of this presentation is thus to the challenges and prospects of an MPA network in the region in order to contribute to the conservation of Humpback whales.



A Challenge for the Protection of Marine Mammals in the Mediterranean Sea: the Pelagos Sanctuary

Costanza Favilli

The Pelagos Agreement was signed in 1999 in Rome by France, Italy and Monaco and came into force in 2002 in order to jointly coordinate initiatives to protect the Sanctuary which represents a crucial feeding area for 8 species of marine mammals in the Mediterranean Sea.

The creation of a marine mammal Sanctuary in the Mediterranean Sea is an original challenge because it is an open-sea, wide multinational SPAMI managed by three countries for the protection of migratory species in a very anthropized environment.

The Parties, member states of the ACCOBAMS Agreement, decided to strengthen their regional cooperation to go forward thanks to concerted political decisions, promoting the exchange of information and collaboration among scientific teams from the three countries, able to find innovative management measures in the context of the protection of marine mammals and the preservation of biodiversity in the area of the Sanctuary.

The goals of the Agreement are pursued through a six-year management plan implemented in a two-year working program approved by the Parties and executed by them in cooperation with the Permanent Secretariat of the Agreement, the Scientific and Technical Committee (TSC) and the working groups.

There are three levels dividing the scope of activities undertaken as part of the Agreement:

- Rules and Regulation (i.e. Prohibition of offshore courses in the Italian waters of the Sanctuary, and lately the obligation for French ships to be provided with the REPCET Anti-collision system in the French waters of the Sanctuary);
- Education and Public awareness (for instance through the organization of conferences and workshops); and scientific research aimed at improving the concrete management measures in the area of the Sanctuary;
- Prevention Strategies: soft law, on the basis of voluntary agreements (Pelagos Partnership Charter, “High Quality Whale Watching ®” label, MoU with other international agreements, such as ACCOBAMS or RAMOGE, etc.). In this framework, many activities are developed in order to reinforce the collaboration with the stakeholders, the local actors and the intergovernmental organizations whose activities are complementary to its own. The partnerships and networking with MPAs in the area of the Sanctuary for example is one of the actions planned in the working program and will be further developed to ensure coherence and effectiveness to the objectives of the Agreement.



Discussion

An original and on-going goal of ICMMPA has been to engage MPA practitioners in marine mammal conservation, and connect the marine mammal science community with the marine management and public outreach communities. The participants at this workshop came from highly diverse backgrounds and enriched the discussion with examples of how marine mammal science is now or could be used in MPA and MMPA management. Conversation fluctuated between the theoretical – as in how institutional frameworks and networks could be strengthened – to the practical – as in how MPA managers have met marine mammal conservation challenges.





Photo by Tundi Agardy



Workshop 3: Mitigating the Impact of Shipping on Cetaceans in the Mediterranean Sea: Opening the Dialogue in Search of Feasible Solutions

Convener: Amalia Alberini

Linwood Pendleton – Co-moderator, WWF International, Switzerland
Constantinos Liarikos – Co-moderator, WWF Greece, Greece

Speakers:

Russell Leaper, International Fund for Animal Welfare, UK
Dave Wiley, Stellwagen Bank NMS, NOAA, USA
Stephanie Sorby, University of La Réunion, Reunion Island
Rochelle Constantine, University of Auckland, New Zealand
Vedran Nikolić, European Commission, DG Environment, Belgium
Lorenzo Rojas-Bracho, International Whaling Commission, USA
Simone Panigada, Tethys, Italy
Denis Ody, WWF France, France
Aurelie Moulins, CIMA Foundation, Italy
Elvira Garcia-Bellido Capdevila, Ministerio para la Transición Ecológica, Spain
Alexandros Frantzis, Pelagos Cetacean Research Institute, Greece
Greg Silber, Smultea Sciences and Kutztown University, USA

Introduction and Overview

The Mediterranean is one of the most highly navigated seas worldwide, accounting for 30% of the global merchant shipping, while representing only 0.8% of the oceans' surface. At the same time, the Mediterranean is a hotspot of biodiversity, including marine mammals. At any moment, there are approximately 2,000 merchant vessels of over 100 tons in the Mediterranean, totaling 200,000 vessels crossing it annually, while the fin whale population is estimated at approximately 3,000 individuals. In the case of the Mediterranean Sea, several regional organizations work together towards mitigating shipping impacts to marine mammals. Despite efforts in providing scientific advice to the shipping industry, the shipping industry has not been involved in the design and decision-making process of establishing management measures contributing to the reduction of marine mammal interactions linked to maritime transportation activities.



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An open discussion was conducted actively engaging scientists, MMPA managers, and conservationists with shipping community members and policy makers in relation to possible mitigation measures to vessel-related impacts addressing the cases of key Mediterranean areas (Northwestern and Eastern Mediterranean) and examining the feasibility of such measures. During the session, worldwide experience in working with the industry was presented to provide lessons learned and guidance from best practices from key areas where mitigation measures have been successfully implemented. Additionally, the outcomes resulting from the IWC/IUCN/ACCOBAMSMPA pre-conference workshop to investigate how such measures could be implemented in practice in hot spot areas (such as Important Marine Mammal Areas or IMMAs), the potential challenges encountered, and the opportunities that a multi-stakeholder cooperation approach could bring to mitigate shipping interactions to cetaceans were presented and discussed. The session was structured so as to present global cases and best practices in plenary, followed by two parallel break-out workshops (presentation and discussion on recommendations/road map of next steps of the 2 Mediterranean case studies), with a final plenary to present the workshops' main outcomes and wrap up.

Session Objectives

The session objectives were to develop feasible proposals for mitigating the interactions of shipping with cetaceans in two key Mediterranean subregion; and to enhance the development and implementation of shipping mitigation measures through the active involvement of industry representatives from these regions.





Presentation Summaries

A. Plenary Presentations on International Case and Best Practices

Chair: Amalia Alberini

Reducing Whale/Vessel Collisions: Mitigation, Management Approaches / Options & Effectiveness

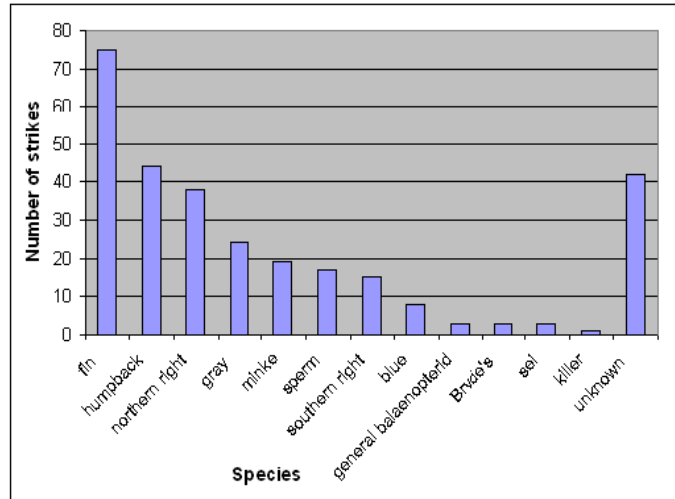
Gregory Silber

Shipping is global and extensive. Given the magnitude and spatial extent of shipping activities, and its importance to international commerce, impacts on cetaceans can be numerous. For some endangered cetacean populations, whale/vessel interactions are a significant threat to recovery.

Large-scale commercial shipping operations occur in all oceans, all seasons, involve all vessel types, and all whale species are potentially impacted.



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From: Jensen, A.S., and G.K. Silber. 2003. Large Whale Ship Strike Database. U.S. Department of Commerce, NOAA Technical Memorandum, NMFS- F/OPR-25

The fact is, nobody wants to hit a whale... especially mariners. Likely, marine mammals are just in the wrong place at the wrong time. These animals might be engaged in vital behavior, e.g., feeding, migrating, nursing and simply are not aware of an approaching ship. Potential Impacts are not limited to collisions with large ships. Vessel engaged in commercial trade, military exercises, fishing and recreational activities, and in support of oil/gas and renewable energy operations have the potential to strike a whale. Impacts on cetaceans may also include: fuel and oil spills, pollutants/refuse from routine operations, and the introduction of underwater noise and non-invasive species.

To reduce these potential impacts, it is important to remember that one size does not necessarily fit all... settings and circumstances may differ. Separating whales from ships is generally not feasible. On the other hand, separating ships from whales may be possible. Actions to minimize overlap of whales/ships include: routing measures, may involve reducing temporal (e.g., seasonally) or spatial (e.g., specified routes) overlap, but this may not always be possible in all locations. Other measures include vessel speed restrictions. However, timelines to implement these measures can be lengthy (typically IMO designations take 1 ½ years to approval). Nonetheless, such measures have been successfully implemented in Cabo de Gata (Strait of Gibraltar), U.S. east and west coastlines, and in Eastern Canada.

In conclusion, as conservation measures are contemplated, it is imperative to first clearly establish the need and the conservation value of the mitigation measure. It is necessary to identify/explore best approaches, and quantify the conservation value, i.e., reduced risk. It is also necessary to consider and assess impacts to the industry and others, including navigational safety and economic impacts. In determining processes



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for possible implementation, industry and stakeholder involvement is key. Once implemented, it is important to assess the effectiveness of measures, to know if they are working.

Protection of marine mammals under European Union Habitats Directive: mitigating the impact of shipping

Vedran Nikolić

There are two pillars of marine mammal protection in the European Union: Natura 2000 sites and strict protection of species. There are more than 3200 marine sites under Natura 2000, covering more than 9.5% of EU seas, and this area has doubled over the past five years. However, Network is not complete in the offshore area and big differences across regional seas.

The strict protection of species aims to avoid and prevent a number of situations that could negatively impact a species, utilizing the precautionary principle in case of lack of knowledge. Some species benefit both from general protection regime and specific measures in Natura 2000 sites. To fulfil their legal obligations under EU law, Member States need to work together and if necessary, with the International Maritime Organization (IMO) to propose and adopt the necessary measures

- Cooperation between different authorities and sectors
- Good knowledge required, but precautionary principle applies
- Early and effective involvement of all stakeholders is crucial

The LIFE WHALESAFE Project focuses on the reduction of ship collision risks and stress derived from noise pollution from marine traffic for sperm whales in the Pelagos Sanctuary. As well as the defining of specific regulations and strategies to prevent ship collision, increased public awareness concerning the threats affecting cetaceans and creating a database of cetacean sightings that can be easily consulted and used for management, conservation and public dissemination purposes.

Mitigation, outreach and education to reduce whale/ship interactions along the eastern seaboard of the US

Dave Wiley, Michael Thompson, and Patrick Ramage

A number of stakeholder-involved projects have been led by NOAA's Stellwagen Bank National Marine Sanctuary (sanctuary) to promote the conservation of large whales. The sanctuary uses a process of innovation and diffusion to pilot projects at the sanctuary level and export concepts and processes to other marine protected areas. An iterative data-driven process engaged the maritime community to successfully



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realign the traffic separation scheme (TSS) through the sanctuary and into Boston USA harbor. Following that, engagement with energy stakeholders building a deep-water liquid natural gas (LNG) terminal near the sanctuary resulted in the creation of the first, near real-time, acoustic detection system focused on right whales in the TSS through and around the sanctuary, and funded by energy companies. The need to provide information directly to transiting LNG ships led to the initial creation of *Whale Alert*. *Whale Alert* is a free mobile app (supported by a cloud-based data infrastructure) designed to provide comprehensive and immediate information to mariners relative to endangered whale conservation and management. *Whale Alert* is now an internationally used tool that includes the operating ship's location, speed restriction zones to protect whales, International Maritime Organization sanctioned Areas to be Avoided and Traffic Separation Schemes, recommended routes, acoustic whale detections (gliders and auto-buoys), short term whale aggregations and potentially individual whale sightings are visualized on raster nautical charts that can be updated in near-real time. Mariners and other users (i.e. fish harvesters, citizen scientists, whale watch naturalists) can input whale sightings or report distressed or injured whales to authorities through *Whale Alert*, assisted by an easy to use whale identification guide. *Whale Alert* is currently available for iOS and Android devices and can be downloaded from whalealert.org. The sanctuary also created a Corporate Responsibility/Report Card program to document and increase compliance with NOAA's Seasonal Management Area (SMA) speed restrictions for right whales. The concept of corporate responsibility involves companies increasing their commitment to behaviors that benefit society, such as slowing to safeguard right whales, and acknowledging positive corporate behavior. Using the USCG AIS network, the sanctuary tracks vessels through the two SMAs that occur in the sanctuary. We used these data to grade ships based on the percent SMA distance traveled at compliant speeds. Report cards are sent to each ship and to the companies using the ships. Ships and companies receiving A+ or A grades were sent a certificate acknowledging their behavior.

Reducing the risk of collisions between ships and whales in the Western Indian Ocean

Stephanie Sorby

The South West Indian Ocean comprises many different species of baleen whales, however Humpback whales are particularly common in the region. From June to October, migrating from Antarctica, Humpback whales breed and give birth off the coast of Reunion and Madagascar, traveling also to Mauritius, Mayotte, Seychelles and Comoros. Even though they are protected from commercial whaling when they migrate in the Indian Ocean Sanctuary, besides the moratorium, Humpback whales are exposed to many threats in the area. These include entanglement in fishing gear, pollution but also collision with ships. Indeed, the Western Indian Ocean has busy



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shipping lanes, which are a cause of concern as they cross the migrating route of Humpback whales.

Many large ships are also entering the Port of Reunion, close to whale's distribution. However, currently, scientists do not have any data on potential collisions due to international shipping in the area even though there is no doubt about their existence.

Information gathering on vessel traffic (types of vessel, speed etc.) and the whales' preferred way to reach the coast of another Island is an essential first step to assess the situation and discuss solutions. Considering the lack of data for the region, this presentation does not intend to find one solution but rather suggest tools that have demonstrated their usefulness in other States.

In addition to this international navigation issue, Reunion Island is faced with an emerging problem at a local level. Skipper inattention during the whale watching season and the high speed of boats close to shore also cause collision. At least two cases of collision were officially reported for 2017 and 2018, which were two outstanding years in terms of occurrence of Humpback whales and associated whale watching. Different options could then be developed to avoid ship collisions near the coast. There are many proposals easy to implement, which could have great effect. The next season, starting in June 2019, will be decisive as local institutions plan to adopt a new regulation on whale watching. Although this regulation will not concern the risk related to international navigation, the risks to whales during whale watching activities could be mitigated. The near future will tell.

Ship-strike mitigation – Hauraki Gulf, New Zealand

Rochelle Constantine

The Bryde's Whale population in the Hauraki Gulf is around 150 whales and is classified as "Nationally Critical". Since 1996, 44 whale carcasses have been recovered, 85% of which have died due to vessel strikes (the other 15% due to entanglement). One solution is to slow all ships in the Gulf to 10 kts, which adds an extra 40 minutes to transit time and costs an estimated US \$3,500,000 - \$7,000,000 to industry. The industry preferred solution is to reroute traffic through a flexible, non-binding voluntary protocol. This involves a) passage planning and speed reduction if possible; b) keeping watch for whales and taking avoiding action if necessary; c) reporting whale sightings via the Large Whale Warning System.



Western approaches to the Panama Canal

Gregory Silber

This presentation summarized the important work of Dr. Hector Guzman and others at the Smithsonian Tropical Research Institute. Researchers tagged 105 humpback whales to determine their distribution and ship strike risk. The Panama Canal sees some 17,000 large vessel crossings a year, and based on the tagging data, Panamanian officials were able to put in place a traffic separation scheme in the Gulf of Panama. This includes an IMO-endorsed 10 knot vessel speed restriction from 1 August to 30 November every year. Along the Pacific coast of Costa Rica, a traffic separation scheme and 2 ABTAs have been proposed.



Problem-oriented implementation including ship strikes and entanglements and how IMMAs can help

Lorenzo Rojas-Bracho, on behalf of David Mattila and Simone Panigada

A pre-conference workshop reviewed the criteria and process for identifying IMMAs, and discussed their applicability for helping to identify areas of high risk for ship strikes. The results were summarized in the report of ICMMPA Workshop 3. The group used the IMMAs identified in the Mediterranean Sea in conjunction with AIS shipping data. As a result, the group recognized that IMMAs represent a systematic and biocentric approach to identifying important habitats, and that as such it was agreed that they can be helpful in identifying potential high-risk areas for ship strikes. Moreover, for the same reasons it was noted that IMMAs might also be useful for identifying areas of high risk for interaction with other human activities. In particular, using overlays of fishing effort and Ocean noise were noted. Of course, the feasibility of this would depend on the quality of data about the human activity, the species that are potentially at risk, and the understanding of the interactions between the two. But with the proper data it was suggested that IMMAs might provide a systematic and objective



starting point toward identifying areas of high risk for marine mammal and potentially deleterious human activities. Thus, IMMAs can provide a starting point for global management initiatives.

B. Mediterranean Case Studies

Co-Chairs: Linwood Pendleton (NW Mediterranean) and Amalia Alberini /Constantinos Liarikos (Eastern Mediterranean –Hellenic Trench)

1. NW Mediterranean

Proposal to develop and evaluate mitigation strategies to reduce the risk of ship strikes to fin and sperm whales in the Pelagos Sanctuary

Simone Panigada, and Azzellino, A., Cubayanes A., Folegot T., Fretwell P., Gamba D., Lanfredi, C., Leaper R., Ody D., Peldleton L., Ratel M.

The ship strike project aims to draw on the extensive experience of a number of groups in a collaboration to gather new data, provide a spatial analysis of ship strike risk - to define operational indicators and to quantitatively evaluate mitigation strategies. This will result in practical recommendations for a range of options for optimizing the effectiveness of current existing schemes.

Currently, there are key data gaps in the understanding of whale distribution patterns and the recent rates of injury and mortality from ship strikes. The project is addressing these gaps in knowledge by using new satellite imaging technologies to remotely detect whales as a means of validating predictive models of whale habitat. Another important component of the project relies on the detailed examination of stranding and photographic records of injured animals to assess any eventual trend in collision rates.

These results are going to be combined with data on shipping to conduct spatially explicit risk assessments, define risk collision indicators for decision aid and to consider how risk might be reduced by changes to ship's routing or operational practices, including vessel responses to real-time information.

A final workshop will be organized towards the end of the project to assess how the results could be used most effectively to reduce risk. This will include eventual recommendations for future research needs and management actions. Particular attention will be given to combining different sources of data and predictive models to provide routing advice at spatial scales that are practical for shipping. The synthesis

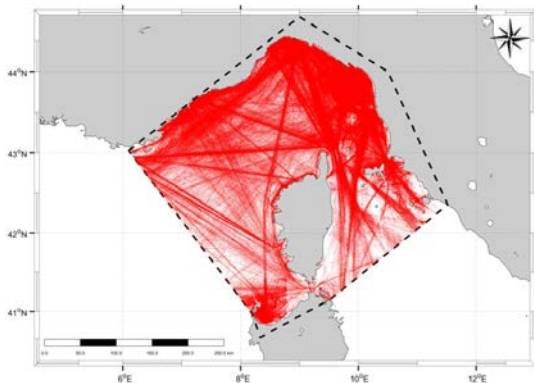


will also be structured in such a way that the outcomes of the project can be effectively communicated to relevant international bodies such as IMO, ACCOBAMS and IWC.

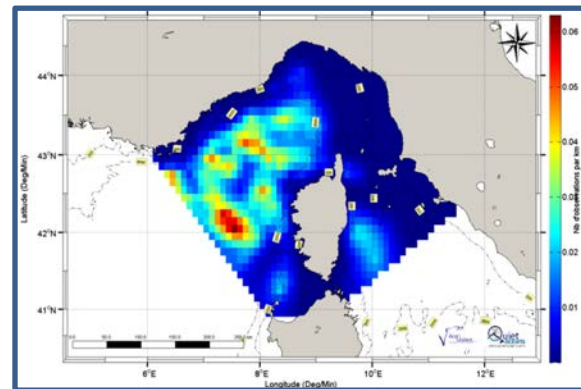
Maritime Traffic and Collisions in Pelagos

Denis Ody

To what extent does maritime traffic in Pelagos Sanctuary affect marine mammals? The existing maritime traffic in Pelagos is a huge pressure in fin whale habitat and affects the distribution of this species.



AIS signals for all vessels in summer 2018



Fin whale distribution in Pelagos Sanctuary

These pressures are only set to increase as both cargo and passenger ships are on track to continue traveling further every year. Cargo ships have traveled an estimated 38% further from 2010 to 2018 and passenger ships have traveled an estimated 35% further. This, coupled with speeding, has led to a 35% increase in collision risk in the Pelagos.

The use of the anti-collision system REPCET could greatly reduce the number of fatal collisions. However, the success of anti-collision systems is hugely dependent on having a well-trained and motivated crew. While inexpensive and relatively effective, the ultimate solution requires new technological developments -- allowing for acoustic real time localization of large cetacean to be connected to REPCET interface to create a fully complementary system.

The SICOMARplus, a strategic territorial integrated project designed to improve governance and mitigation measures for cetacean conservation

Aurelie Moulins

The Pelagos Sanctuary is bordered by the five eligible administrative regions dedicated by the EC Programme 2014 - 2020 INTERREG V-A Italy - France (Maritime). Specifically, this fund programme is dedicated to increase the cooperation in the cross border



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priority sectors for micro, small and medium-sized companies linked to green and blue growth. A common specific objective of both the Pelagos Sanctuary and this EC Programme is to improve sea safety against navigation risks. On this specific topic, SICOMARplus is the strategic territorial integrated project designed by the five regions and the General Commander of Italian Coast Guards to improve governance and mitigation measures. For the Italian Coast Guards, the main issue about navigation safety is the risk of collision with large cetaceans. Therefore, a series of activities has been defined in collaboration with CIMA Research Foundation.

This presentation illustrates the different actions undertaken in the project. Action 1 consists to create maps of risk index based on cetacean distributions, as the exposure variable and marine traffic intensity as the magnitude variable, along the main routes crossing the Pelagos Sanctuary. The exposure map is the model of 10 years of large cetacean distributions along the main routes. The magnitude variable is calculated according to 18-months of AIS passenger ship data. Action 2 consists to conduct a training for maritime staff in order to increase awareness about risk of collisions with large cetaceans. This course is supposed to be integrated to the normal training conducted by certified training centers for maritime staff. Action 3 is focused on the development of the reporting tool, under the AIS framework, conducted by the General Commander of Italian Coast Guards. For the tool development, the Coast Guards organizes a workshop in April in Genoa in order to discuss the issues about existing devices, reporting procedures, involvements of local maritime companies, research institutes and marine protected areas. Action 4 is about the capitalization of the Seawetra platform, integrating all maps created during SICOMARplus provided by the all partners of the projects. Obviously, the project will be conducted with active feedback and discussions with policy makers at regional, national and local levels.

The Spanish Cetacean Migration Corridor: A Marine Protected Area

Elvira Garcia-Bellido Capdevila

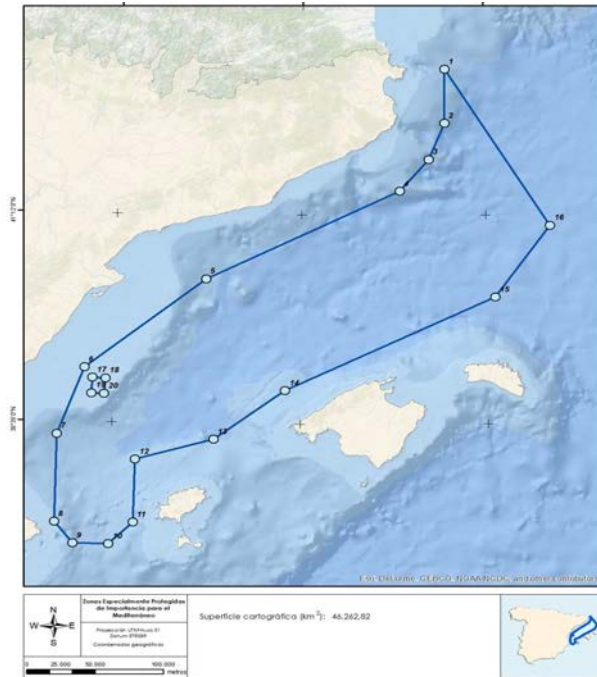
This presentation focused on the international, European, and Spanish national legal frameworks for protection of marine species and habitat, describing in detail the newly established Marine Protected Area Cetacean Migration Corridor of the Mediterranean Sea (hereafter Cetacean Corridor). International agreements behind MPA designation in Spain include the CBD marine protected area Aichi Target, as well as commitments made under OSPAR (Convention for the Protection of the Marine Environment of the North-East Atlantic), the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its SPA Protocol calling for the designation of SPAMIs (Specially Protected Areas of Mediterranean Importance), and ACCOBAMS. There are currently 9 designated SPAMIs within Spanish waters. With regards to the European framework, Spain has designated nearly 9% of its waters as SPAs (Specially Protected Areas), SCIs (Sites of Community Interest), or



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SACs (Special Areas of Conservation), under the Natura 2000 network of the Habitats Directive. With 13% of its waters protected, Spain has already met Aichi Target 11.

The newly established Cetacean Corridor (figure below) has as its main aim the conservation of natural heritage; but it is also the needed institutional response to substantial scientific information and a broad social, political and NGOs' demand and support to protect this area from the risk of offshore oil and gas exploration and exploitation projects.



Provided by Ministerio para la Transición Ecológica

This MMPA is a continuous strip of open waters under Spanish jurisdiction, between the Iberian Peninsula and the Balearic Islands. The Cetacean Corridor covers 46,385 square kilometres of the Ibiza channel and the slope area off the coasts of Valencia and Catalonia, is 85 km wide, and ranges in depth from 25m on the continental shelf to 2,600 meters in the deepest canyons. It is a deep water area in whose central part is located an ocean front with a very high primary production; this provides an abundant availability of food for the ten marine mammals ranked as “threatened” which are present in quite high densities. The area hosts a resident fin whale (*Balaenoptera physalus*) population and also supports approximately 3500 fin whales that migrate through it. Other marine mammals present include striped dolphin (*Stenella coeruleoalba*), common dolphin (*Delphinus delphis*), bottlenose dolphin (*Tursiops truncatus*), Risso’s dolphin (*Grampus griseus*), long finned pilot whale (*Globicephala melas*), sperm whale (*Physeter macrocephalus*), and humpback whale (*Megaptera novaeangliae*), and the area also provides critical habitat for seabirds and sea turtles.



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The designation process for establishing this the Cetacean Corridor SPAMI (see figure below) was outlined. Specific preventive protection measures are being put in place to regulate offshore oil and gas projects. Future steps that need to be taken to effectively implement the corridor were also discussed.

2. Eastern Mediterranean

Sperm whale survival is at risk by ship-strikes along the Hellenic Trench: Can we change course?

Alexandros Frantzis, Russell Leaper, and Paraskevi Alexiadou

The Mediterranean sperm whale population is listed as 'Endangered'. The Hellenic Trench is the core habitat of the entire eastern Mediterranean sperm whale sub-population that numbers two to three hundred individuals. Both social units and males (either as small loose aggregations or as segregated males) inhabit the area. Breeding, calving and feeding are taking place along the Hellenic Trench. In no other places of the eastern Mediterranean social units are known to occur, with the exception of some rare sightings in the Aegean Sea. At least the female sperm whales are thought to spend their entire life in the Hellenic Trench, where sperm whales are present year-round. Sperm whales show a very strong preference for the 1000 m bathymetric contour of the Hellenic Trench, around which there is a pronounced peak in density. The density of sperm whales decreases in both shallower and deeper waters, with 74% of observations occurring within 3 km of the 1000 m contour. The current major shipping routes run on or very close to the 1000 m depth contour along the Hellenic Trench. They are causing an unsustainable number of ship strikes with sperm whales according to the examination of carcasses found with propeller or collision marks and injuries.

The IWC listed the Hellenic Trench among identified high-risk ship-strike areas of particular concern at the global level, while more than a decade ago ACCOBAMS proposed it to become a MMPA and the IUCN have recently listed it as an IMMA. The survival of sperm whales is at risk, but the collision problem could easily be mitigated if all the large vessels were adjusting their routes so that they avoid the core habitat of sperm whales by passing a few km away from the 1000 m bathymetric contour.

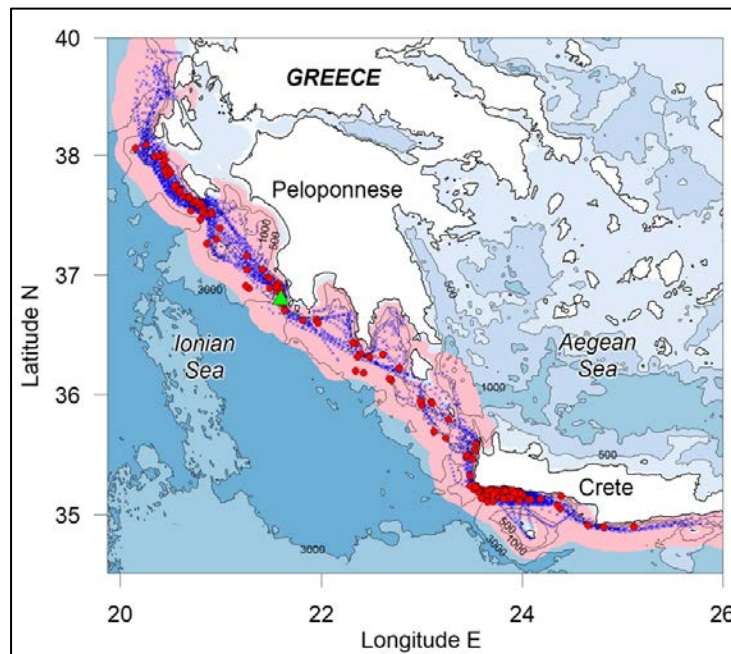
Management of shipping is needed to reduce ship strikes; here we evaluate options for mitigating impacts of shipping on sperm whales in the Hellenic Trench. Collisions between whales and ships can occur worldwide wherever vessel activities overlap with cetacean habitat. The IWC has concluded that the only proven, effective mitigation measures, are to avoid areas with known concentrations of whales and reduce speed while transiting those areas. This makes the issue particularly relevant to consideration



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of Marine Protected Areas and the identification of Important Marine Mammal Areas. These measures require detailed information on spatial and temporal patterns of animal distribution that can be used alongside data on shipping to identify high risk areas and evaluate mitigation options. Ship routing measures are established through the Maritime Safety Committee (and its Sub-Committee on Navigation, Communications and Search and Rescue) of the International Maritime Organization (IMO). The IMO issued guidance on minimizing the risk of ship strikes to cetaceans in 2009 which outlines the steps required to bring proposals for routing or speed restrictions to IMO. Subsequently a number of routing measures and speed restrictions, specifically to address ship strike risks to whales, have been established through IMO. Routing is principally established through Traffic Separation Schemes or Areas to Be Avoided but can also include Recommended Routes or Recommended Tracks. Some high risk areas may be appropriate for designation as Particularly Sensitive Sea Areas (PSSAs). The IMO has indicated that where minor routing changes in high risk areas have been shown to substantially reduce risk, this is likely to be the preferred mitigation option.

In 2016, IWC approached the Ministry of Mercantile Marine in Greece in order to assist in developing a proposal for routing measures in accordance with the IMO guidelines. Measures should be narrowly tailored to the areas where sperm whales are present and any implications for maritime safety and commerce need to be considered. Based on the available research on sperm whales as well as information pertaining to the vessel traffic in the area (e.g., types of vessels, traffic patterns, and density of traffic) we discuss and assess possible routing options for the area within the Hellenic Trench IMMA west of Crete and the Peloponnese.



Recorded ship strikes in the Hellenic Trench area @Pelagos Cetacean Research Institute



Ship strikes to whales: a global issue that can be addressed at a local level

Russell Leaper

Anywhere where ships and whales coincide, there is a risk of collision. Collision risk increases with ship speed and currently the only effective mitigation measures are to keep ships and whales apart or for ships to slow down.

IMO MEPC agreed that minor routing changes in high risk areas was possibly the best measure for reducing ship strikes and could lead to substantial reduction in risk. The shipping industry has indicated that small changes in routing are often acceptable.

Further work should focus on

- Further consultation with stakeholders to obtain specific feedback on proposed options.
- IALA and IMO Secretariat could be consulted on current best practice design parameters for routing systems to ensure that any options which may be considered are fully compliant with these.
- Routing proposals need to be considered by the IMO Navigation, Communications and Search and Rescue (NCSR) sub-committee (which reports to Maritime Safety Committee). Next meets in early 2020.

The workshop recommends that the Greek Ministry of Maritime Affairs and Insular Policy work together with other Greek Ministries (e.g. Ministry of Environment and Energy) in order to work with all the relevant stakeholders including shipping industry, the European Commission and other countries, NGOs, IGOs and scientists to put in place risk reduction measures and submit a formal proposal by 2020 to the IMO for approval. In order to facilitate this process, a short document providing specific risk reduction options could be prepared by relevant experts to provide the necessary information.

Discussions

This well-attended session combined plenary overviews with breakout working groups discussing both Northwestern and Eastern Mediterranean case studies, all focused on mitigating the impacts of shipping on cetaceans in one of the most-heavily trafficked marine regions of the world. The workshop began with an introduction to shipping impacts on cetaceans, then heard about the European Framework for managing shipping impacts. The plenary then heard international case studies on shipping mitigation, including from Boston Harbor, Reunion Island, New Zealand, and Panama Canal. Before breaking out into subregional working groups, the plenary discussed the IWC/IUCN/ACCOBAMS ship strike workshop outcomes.



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Participants in breakout groups discussing the Northwestern Mediterranean case heard presentations on: 1) a proposal to develop and evaluate mitigation strategies to reduce the risks of ship strikes to fin and sperm whales in the Pelagos Sanctuary; 2) the risk of collision assessment & evaluation of existing anti-collision devices; 3) the Spanish MPA Cetacean Migration Corridor; and 4) preliminary findings of the EU funded SICOMAR project.

The Northwestern Mediterranean cases demonstrate that some ship owners are now showing interest in collision mitigation because ship strikes confer costs on them and create a bad image. Owners want international rules, applied to everybody equally, and they are interested in new technologies as automatic detecting devices. Companies should be engaged in ship strike mitigation in different ways, as the needs, requirements, and acceptable measures are very different (ferry, cargo, etc.). Ship owners/ operators want to know rules in advance so they can be ready to plan. In general, ship owners cannot accept rules requiring decreased ship speeds in the middle of the crossings, but rather need to plan ahead to ensure timetables are kept. Voluntary reductions of speed are generally not respected, so we need to look for alternative and feasible solutions.

For passenger vessels, passengers/tourists would be willing to lose only about 20 minutes per ferry crossings for ferry companies that have to respect speed reduction limits. The measures should be applied to the whole NW Mediterranean area, until more science is available to assess the temporal patterns in marine mammal distribution. The community needs to consider the other actions that can work in synergy, like pollution mitigation measures, to reduce anthropogenic impacts on marine mammals in this highly impacted region.

Natacha Aguilar also made an informal presentation, urging the addition of a recommendation in the proceedings stating "In regions not yet evaluated for IMMAs, mitigation actions to reduce ship strike risk should be applied with urgency in hot spots for the occurrence of ship strikes, such as has been done in the Canary Islands."

The Eastern Mediterranean breakout group heard presentations entitled: 1) 'Sperm whale survival is at risk by ship-strikes along the Hellenic Trench. Can we change course?'; and 2) 'Strandings of cetaceans and other marine fauna in the Hellenic Trench'.

After discussions, the participants of this breakout group concluded that a shift of shipping lanes from the 1000m contour area in the Hellenic Trench area would reduce ship strike risk by 70%. Participants concluded that an IMO process should be pursued for the adoption of risk reduction measures (voluntary or mandatory). Speed regulations do not seem to be an appropriate mitigation measure, compared to a ATBA



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or/and a combination of multiple TSS. Efforts should be invested to engage the industry in addition to the Greek ministries.

The facilitators presented the following recommendation drafted during the IWC pre-conference workshop for the Hellenic Trench (to be vetted by the IWC Scientific Committee in May 2019), which was endorsed by the workshop's participants:

The Greek Ministry of Maritime Affairs and Insular Policy work with all the relevant stakeholders (including relevant Greek Ministries, shipping industry, the European Commission, NGOs, IGOs and scientists) to put in place risk reduction measures and submit a formal proposal by 2020 to the IMO for approval.

Two Greek shipping companies represented by participants in the session endorsed the process, and committed to exploring further contacts within the shipping industry.



Workshop 4:

The Identification of New ACCOBAMS Critical Cetacean Habitats: A Threat-Based Management Approach

Organized and Sponsored by ACCOBAMS

Convener: Léa David

Speakers:

Maylis Salivas and Léa David, ACCOBAMS, Monaco

Aurelie Moulins, CIMA Foundation, Italy

Simone Panigada, Tethys, Italy

Alessio Maglio, SINAY, France

Ibrahim Ben Amer, UNEP/MPA-RAC/SPA, Tunis

Julie Belmont, Université de La Rochelle, France

Ayaka Ozturk Amaha, TUDAV / Istanbul University, Turkey

Fabrizio Atzori, Protected Area of Capo Carbonara, Italy

Introduction and Overview

The aim of this session was to present the ongoing ACCOBAMS threat-based management approach which incorporates the concepts of both Cetacean Critical Habitats (CCH) and Important Marine Mammal Areas (IMMAs) and to propose appropriate management tools and mitigation measures. For an appropriate management of main human activities in the ACCOBAMS area, main resulting threats for cetaceans were presented as well as examples of existing legislative framework and proposed mitigation measures in some specific areas with their strengths and weaknesses. Recommendations of the workshop will assist the ACCOBAMS Permanent Secretariat in providing the Countries with advices on targeted and effective conservation measures.

Session Objectives

This session aims to show how the identification of new CCH assists countries by providing advice on targeted and effective conservation measures including: designation of new (or the extension of existing) MPAs with appropriate focused management actions; zoning within existing MPAs; corridors between MPAs; and threat-specific mitigation measures for application throughout the critical areas (shipping or noise directives, e.g., through IMO, impacts with fisheries) during marine spatial planning processes.





Presentation Summaries

ACCOBAMS: a legal conservation tool based on cooperation

Maylis Salivas and Léa David

The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS) is a legal conservation tool based on cooperation. Its purpose is to reduce threats to cetaceans notably by improving current knowledge on these animals. The Agreement Area consists of all the maritime waters of the Black Sea, the Mediterranean and the contiguous Atlantic area West of the Straits of Gibraltar.

This intergovernmental Agreement provides the demonstration of the commitment of riparian Countries to preserve all species of cetaceans and their habitats within the geographical Agreement area by the enforcement of more stringent measures than those defined in the texts adopted previously.

The 24 Parties to ACCOBAMS are required to implement a detailed Conservation Plan to achieve and maintain a favorable conservation status for cetaceans. This commitment combines total protection of threatened species with stronger habitat protection. Parties shall, in particular, endeavor to establish and manage specially protected areas corresponding to the areas that serve as habitat of cetaceans. In this context, Parties to ACCOBAMS and the Scientific Committee are engaged, since several years, in identifying Cetacean Critical Habitats (CCHs), whose concept refers to “those parts of a cetacean’s range that are essential for day-to-day well-being and survival, as well as for maintaining a healthy population growth rate”. CCHs also incorporate the concept of actual and/or human activities and potential threats at the



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population level since the objective of the ACCOBAMS CCHs is to provide Parties with advice on targeted and effective conservation measures.

Disturbance from whale watching

Aurelie Moulins

This presentation illustrates the ongoing ACCOBAMS threat-based management approach developed to mitigate the whale-watching direct and long-term impacts in collaboration with the Pelagos Sanctuary. In a first place, it is fundamental to quoted the main threats on short, medium and long terms for cetaceans linked to this activity. The legislation tools are successively summarized. Then, some mitigation measures deployed by ACCOBAMS and eventually by the Pelagos Sanctuary are presented. The two main measures were the development of the Code of Good Conduct and the High Quality Whale Watching® Certificate. Each mitigation measure is discussed according to its characteristics, its strengths and its weaknesses. Other on-going activities about whale-watching mitigation measures are developed in the Framework of the EC Programme 2014 - 2020 INTERREG V-A Italy - France (Maritime). In this case, we illustrate the work on the zoning of the whale-watching activities, the deployment of a Smart phone App dedicated to support data collection by operators, the development of the regional legislative tool in Italian administrative regions for the specialization of the naturalist guide. In conclusion, the recommendation is to reinforce as much as possible the mitigation measures and assess their efficiency.

Ship strikes and large whales - legislative aspects, ongoing initiatives and proposed mitigation measures

Simone Panigada

Every year, 220000 ships of more than 100 tons cross the Mediterranean basin. Furthermore, a total of 2000 vessels, including ferries, fast ferries and hydrofoils, as well as military, fishing, pleasure and whale-watching boats, navigate these waters daily. This vessel traffic is highest during the summer months in areas where whales often aggregate for feeding purposes.

ACCOBAMS, the PELAGOS Agreement and the IWC have been collaborating, joining efforts over the years to identify high risk areas for ship strikes in the Mediterranean Sea, to assess and promote use of mitigation measures and to develop a protocol for investigating and documenting ship strikes injuries and mortalities (IWC ship-strike data-base).

Ongoing effort includes a proposal to develop and evaluate mitigation strategies to reduce the risk of ship strikes to fin and sperm whales in the Pelagos Sanctuary. This



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will lead to a final workshop to assess how to most effectively reduce ship-strike risk. This will include eventual recommendations for future research needs and management actions. Particular attention will be given to combining different sources of data and predictive models to provide routing advice at spatial scales that are practical for shipping. The synthesis will also be structured in such a way that the outcomes of the project will be effectively communicated to relevant international bodies such as IMO, ACCOBAMS and IWC.

A possible way to identify high-risk areas would be to use maps, which provide the distribution of Important Marine Mammal Areas (IMMAs) in the Mediterranean for fin and sperm whales, as well as the potential buffer areas surrounding the IMMAs, shipping density, and marine mammal occurrence records. These maps, compiled for illustrative purposes only, were intended to support discussions on conservation and management initiatives for shipping and species distributions.

As an example, the ‘Alborán Corridor IMMA’, which includes the Straits of Gibraltar where there is a voluntary zone in which speeds of less than 13 knots are recommended, as well as a TSS, was considered in more detail. The speed restriction zone has been communicated to mariners through VHF radio notifications to mariners in the area and notes on navigational charts. However, there is no evidence of ships slowing down in the designated slow down area and the measure was not officially endorsed by the IMO. It also appears likely that most ships are unaware of the 13kt speed recommendation.

The need to further develop the process for the designation of a PSSA by IMO at a scale that includes the North West Mediterranean Sea, Slope and Canyon IMMA, plus potentially the Spanish corridor, was also discussed and reiterated. Such a designation would need to take into account the movement and distribution of these whales. Zoning within the area with ship strike mitigation tools such as speed reduction and routing measures could be proposed as part of Associated Protective Measures within the PSSA.

The identification of new ACCOBAMS CCH: noise and marine mammals

Alessio Maglio

Underwater anthropogenic noise is considered a major threat in the conservation of marine wildlife. Marine organisms can be adversely affected both on short and long timescales and include acute or chronic impact and temporary or permanent effects. Adverse effects can be subtle (e.g. temporary reduction in hearing sensitivity, stress effects causing reduced immunity, reproduction success or survival), or more obvious (e.g. injury, death). Finally, we may distinguish effects on individuals and groups from those on populations. Since concern and evidence of the negative effects of noise



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arose, a wide variety of efforts has been undertaken to reduce the amount of sound energy put into the marine environment and mitigate these impacts. Today, legislative tools address ocean noise pollution either from the single project or the ecosystem perspective. Tools such as the ACCOBAMS resolution 4.17 and the European Commission Directive on the Environmental Impact Assessment address mitigation measures which can be applied to single project, while the Marine Strategy Framework Directive (MSFD) and the Ecosystem Approach Initiative (EcAp) face large scale management of human activities at sea (not limited to noise-producing activities).

With regards to Critical Cetacean Habitats (CCH), reducing the potential impact of anthropogenic noise on cetaceans may be achieved through the implementation of mitigation measures recommended by many documents related to legislative tools cited here. These measures are particularly important with regards to the planning phase of activities, where impacts can be estimated, different scenarios can be drawn and adequate decisions can be taken to reduce or avoid such impacts. Also, real-time mitigation is an important phase for authorized maritime activities, although some debate still exists concerning the effectiveness of measures such as the soft start, the observation of marine fauna by professional observers or the listening of biological sounds with dedicated technologies during the activities. From the ecosystem perspective, the common sense says that reducing the number of noise-producing activities should help reducing the pressure that human activities put on the environment, and eventually achieving the good environmental status. Despite some knowledge gaps and other common difficulties, tools were produced in the last 10 years for noise monitoring, assessment, and mitigation. This progress may well be used today, or adapted, with a view of preserving favorable conditions for cetacean species in their Mediterranean habitats.

Identification of New ACCOBAMS CCH: Interactions with Fisheries

Ibrahim Ben Amer

We don't often hear about the positive side of fisheries interactions and most often any talk about fishermen is about negative interactions or focuses on depredation.



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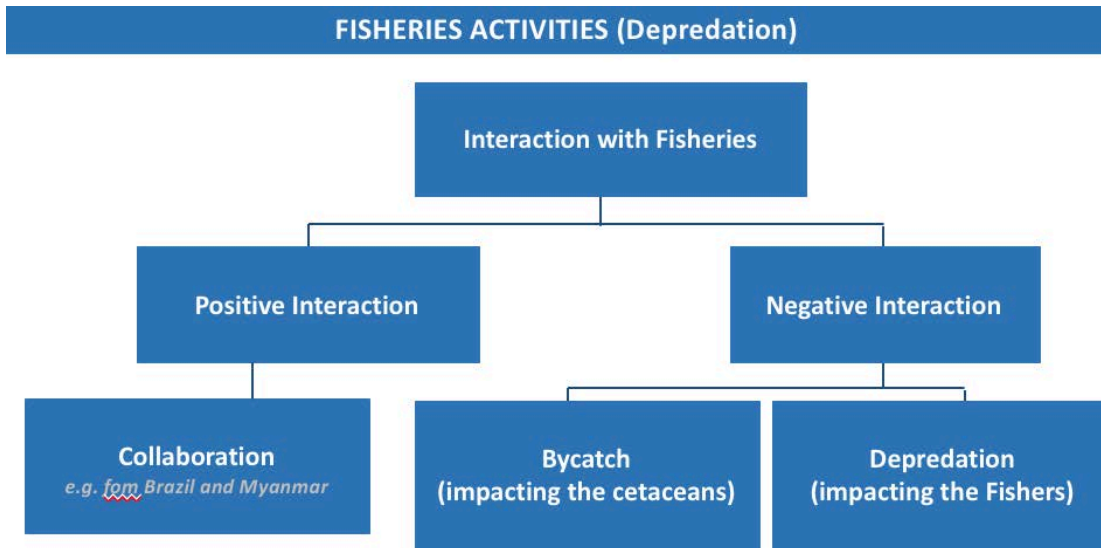


Figure courtesy of Ibrahim Ben Amer

It is important to keep in mind that information about depredation comes mostly from fishers themselves. In the Mediterranean, depredation was recorded to take place with nets, longlines and (probably) aquaculture, it is mostly done by the bottlenose dolphin, *Tursiops truncatus*, and there are spatial, cultural and fish practice variations across the Mediterranean.

The main threats for fishers are damage/loss to catch (depending on gear), damage/loss of gear, reduced fishing effort and yield and change in catch composition. The main threats for cetaceans are strong negative associations by the fishers, which leads to direct killing and culling, change in behavior of species (distribution, feeding habits and habitat) and habitat availability.

Examples of proposed mitigation measures include acoustic devices, alternative livelihoods, compensation/ subsidization, changes in fishing net material and season and modification of long-line hooks.

Proposed recommendations to alleviate the problem include: more research on cetacean behavior and population distributions; as well as increasing acoustic device effectiveness and socio-economic aspects and fisheries composition. Mitigation should be case specific for each region/country depending on socio-economic aspects, cetacean species, and fisheries type. One mitigation measure may not be enough; therefore a scheme of various measures could have more successful results.

Interactions with Fisheries: Bycatch

Ayaka Amaha Ozturk

One of the main threats to cetacean populations in the Mediterranean and Black Seas is negative interaction with fisheries. Fisheries in both seas have been overexploiting the resources, which has resulted in prey depletion for cetaceans. More serious threat, however, is bycatch in fishing gears, including ghost nets (abandoned nets). Driftnets for large pelagic fish are banned in the Mediterranean Sea but still illegally used in some areas, incidentally catching common dolphins, striped dolphins, Risso's dolphins and sperm whales. Bottom setnets for turbot and dogfish in the Black Sea are bycatching harbor porpoises mainly as well as bottlenose dolphins. There are legal tools to enhance monitoring and mitigating cetacean bycatch, such as those of ACCOBAMS, FAO-GFCM, EC Regulation No 812/2004, but they are not properly implemented in the entire regions. There are a number of mitigation measures available today, yet there is currently no single method which can be effective on its own. Combination of several methods, such as acoustic deterrent devices (pingers), spatio-temporal closure of fishing, and gear modification, should be encouraged to use for mitigating cetacean bycatch. Moreover, multi-taxa approaches (seabirds, turtles, sharks and rays), capacity building for managing authorities, cooperation among stakeholders, regional cooperation, raising awareness of stakeholders are necessary to target zero bycatch of megafauna, including cetaceans.

Discussion

The discussion centered on concrete recommendations that can be directed to ACCOBAMS. These include the following:

Regarding marine traffic and the issue of ship strikes, the workshop participants endorsed the recommendations from the IWC/IUCN MMPATF /ACCOBAMS Workshop and recommend organizing or supporting a meeting with shipping companies. The workshop also recommends developing a regional project on continuous noise monitoring and assessment (next ACCOBAMS triennial Working Programme 2020-2022). Regarding impulsive noise, the participants recommend organizing or supporting a meeting with oil and gas companies; encouraging its Member States to adapt / use existing tools to monitor and assess threats induced by manmade noise; reinforcing communication on the ACCOBAMS Regional Register, the ACCOBAMS Guidelines and the ACCOBAMS MMO/PAM certificate; assessing the feasibility of a review process for EIAs; assessing the implementation of the ACCOBAMS Guidelines to address the impact of anthropogenic noise on Cetaceans in the ACCOBAMS Area.



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On whale-watching and reducing harassment, the participants recommend evaluating the efficiency of mitigation measures, and disseminating the HQWW label within the ACCOBAMS area, especially by reinforcing awareness on certification and code of conduct. They also recommend continuing the mapping of the spatial distribution and intensity of whale-watching and continuing consideration, including collation and review of scientific literature, on potential adverse effects of cetacean-watching on cetaceans and means to mitigate them, with an emphasis on population-level impacts, swim-with activities, feeding activities, use of aerial spotter aircraft and the concept of “carrying capacity”.

Regarding fisheries interactions, including by-catch and depredation, the workshop recommends ACCOBAMS to enhance cooperation among stakeholders and relevant organizations, especially by raising awareness among fishers, local people, authorities and by proposing capacity building activities for managing authorities. The group also recommends assessing the effectiveness of current proposed mitigation measures (i.e. acoustic devices / compensation).

All the proposed recommendations will be presented to ACCOBAMS Bureau (next week) and to the ACCOBAMS Meeting of Parties (5-9 November 2019) in order to be included in the next working Programme (2020-2022).

In order to capitalize on ongoing efforts undertaken for the cetacean conservation in the ACCOBAMS Area, the ACCOBAMS Permanent Secretariat has avowed to reinforce its collaboration with:

- The European Commission, especially regarding the implementation of the MSFD and the Habitat Directive;
- The Barcelona Convention, especially regarding the implementation of the EcAp process;
- All relevant IGO and NGO, especially regarding the implementation of specific sectorial management measures.

Workshop participants indicated a willingness to continue to work with ACCOBAMS and other international fora to mitigate threats to marine mammals, in the Mediterranean and worldwide.



Workshop 5: Conflict Resolution in Coastal MPAs: Focus on Interactions Between Marine Mammals and Small-Scale Fisheries

Supported by WWF Med via the SSF Project

Conveners: Arne Bjørge, Institute of Marine Research, Norway
and Spyros Kotomatas, WWF Greece

Speakers:

Arne Bjørge, Institute of Marine Research, Norway
Gianna Minton, IWC and WWF International, UK
Umair Shahid, WWF Mozambique, Pakistan
Sarah Mesnick, NOAA, USA
Tim Collins, Wildlife Conservation Society, UK
Vangelis Paravas and Spyros Kotomatas, WWF Greece, Greece

Introduction and Overview

The interactions between marine mammals with fisheries (in the form of depredation, bycatch, accidental entanglements, deliberate killings, etc.), especially small scale fisheries, is one of the key threats with great impact on the conservations of numerous marine mammal species around the globe. This session highlighted the problem and present successful conservation initiatives and case studies from around the world on the following key areas of intervention: area based fishery management measures (within and beyond MPAs); technical measures to minimize bycatch and/or depredation through the use of alternative gear; compensatory schemes; and developing alternative livelihoods for fishermen

Session Objectives

The session objectives were to assess the effectiveness of such mitigation measures to resolve conflicts and in achieving co-existence of marine mammals and small scale fisheries; and to develop recommendations on effectively implementing mitigation measures in the above areas of intervention.



Presentation Summaries

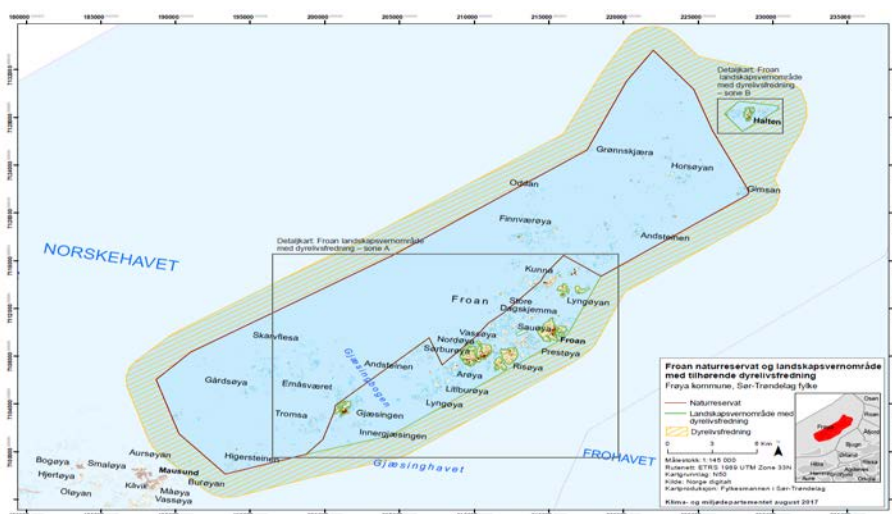
Size matters: A MMPA story from the coast of Norway

Arne Bjørge

A main objective for the Norwegian fisheries is that they should be ecologically and ethically sustainable. Therefore, bycatch of protected species should be minimized. Protected areas are a means towards achieving this goal, and a MMPA provides valuable lessons on the efficacy of this approach.

Fish and fish products are Norway's second largest export commodity - only oil and gas is bigger. Most of the Norwegian fish landings are from trawl and purse seine fisheries. These gear types have very few bycatches of marine mammals. Instead, the main problem is the small vessel fishery operating gillnets in the coastal zone. Norway has about 5,000 commercial fishing vessels less than 15 meters in total length operating gillnets in the coastal zone. The large-mesh gillnets, e.g. for cod (*Gadus morhua*) and monkfish (*Lophius piscatorius*) have a high bycatch rate of marine mammals. About 3,000 harbor porpoises (*Phocoena phocoena*), 600 harbor seals (*Phoca vitulina*) and 500 grey seals (*Halichoerus grypus*) are incidentally caught in gillnets each year.

The 25000 km long, highly convoluted and complex Norwegian coastline, makes monitoring marine mammal populations and bycatches very difficult and expensive. The coast has alpine landscapes all the way to the outer coast, 200 km long and 1300 m deep fjords, and large shallow-water areas with thousands of islands and islets. The Froan nature reserve and landscape protection area off central Norway is such a shallow-water area with very many islands and islets: The nature reserve is 480 km² and surrounded by a 3 km wide animal protection zone (see below -courtesy IMR).



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About 300 grey seal (*Halichoerus grypus*) pups are born annually in the northeastern part of the Nature Reserve. After weaning and molting, pups and adults leave the area and disperse widely. Also, about 200 harbor seal (*Phoca vitulina*) pups are born annually in the southwestern part of the Nature Reserve. After weaning the pups and adults remain in the area.

Between 1975 and 1998, a total of 2,972 grey seal pups were tagged in Froan. A total of 222 tagged grey seals were recaptured. Between 1975 and 1998 a total of 37 harbor seal pups were tagged in Froan. None of the tagged harbor seals were recaptured in Froan, but the harbor seal recapture rate was 13.5% in other areas of Norway. These studies allow us to conclude that a MMPA of 480km² provides protection against fishery bycatch for resident species, such as the harbor seal, but is not large enough to protect non-resident species like the grey seal.

So, what do we do with species that disperse widely and are under significant threat from fisheries, such as the harbor porpoise? Experiments in Norway show that we can have 100% reduction of harbour porpoise bycatches with the correct use of Acoustic Deterrent Devices (ADDs). But, ADDs are deterring porpoises from their preferred habitat. We are currently running computer simulations to see how we can get maximum reduction of porpoise bycatch with the use of a minimum number of ADDs. We need to develop a system where the use of ADDs are monitored in commercial fisheries to see if they actually are used and if they are functioning in commercial fisheries. An international expert workshop in the coastal town of Ålesund is scheduled for June 2019 to develop recommendations to the Government of Norway for the use of ADDs, and how to achieve compliance with regulations on the use of functional ADDs in commercial large mesh gillnets fisheries.

The IWC's bycatch mitigation initiative

Gianna Minton, Marguerite Tarzia, Cindy Peter, and Ellen Hines

For over forty years the IWC, as the leading global body addressing cetacean science and conservation, has acknowledged the significance of bycatch as a threat to cetaceans. This led to an agreement by the Commission to establish the Bycatch Mitigation Initiative (BMI) in 2016. Supported by an Expert Panel and a full time Coordinator, the overall aim of the BMI is to raise awareness on the need for action on cetacean bycatch at both national and international levels and to promote the use of effective tools to understand and tackle the issue.

The initiative's Strategic Plan (2018-2028) and workplan (2018-2020) were endorsed at the IWC's meeting in 2018, and implementation is now underway. Priorities for the next two years will be fund-raising, building partnerships with other stakeholders engaged in bycatch mitigation, and consolidating the expertise and advice that the IWC can



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offer to member and non-member countries seeking advice and collaboration on bycatch mitigation.

Priority for on-the-ground work during this period will be on small scale/artisanal fisheries in developing countries' coastal areas. The IWC recognizes that the global prevalence of small-scale artisanal fisheries and their use of entangling gears like gillnets and pots/traps, often situated in the habitats of vulnerable coastal cetacean populations, creates one of the most urgent cetacean conservation challenges of our time.

The presentation also included an in-depth look at a case study from Sarawak, Malaysia, where artisanal gillnet and trawl fisheries overlap with the habitat of Endangered Irrawaddy dolphins, and Vulnerable finless porpoises and humpback dolphins. The case study tracks the progress of 10 years of research and conservation activities that have assessed fisheries effort in relation to cetacean distribution, and the resulting risk of bycatch. The study area, which includes small coastal MPAs has been identified as an Important Marine Mammal Area, as well as a candidate area for an IWC BMI Pilot Project. This will support the next phase of work to trial bycatch mitigation measures, an effort that will involve close collaboration with the coastal communities who have been partners in the research and conservation efforts to date.

Following a period of consolidation of expertise and capacity - in part through accumulated learning from pilot and affiliated projects - the BMI will move towards scaling-up the initiative into an active advisory body, providing information and knowledge transfer through awareness raising programs, technical advice, capacity development/ training and input through regional and international fora.

Cetacean Interactions with tuna gillnet/driftnet fisheries in Pakistan; Exploring potential mitigation measures in small scale fisheries

Umair Shahid, Muhammad Moazzam, Babar Khan, Rab Nawaz, Shoaib Abdul Razzaq, Syed Meesum Reza Kazmi, Saba Ayub and Saeed ul Islam

Tuna gillnet fisheries are marred with high bycatch which remains one of the most significant threat to the cetacean populations at the global scale. Tuna is caught primarily with the use of gillnets in Pakistan and the extent of bycatch remains uncertain. Therefore, a comprehensive assessment and identification of mitigation measures is critical for conservation and management of cetaceans. In this regard, an assessment on cetacean bycatch focused on trialing mitigation measures was undertaken using trained skippers (four small-scale vessels ranging from 15-20 m). Data was systematically collected (2013-2017) and analyzed on target catch (tropical tuna), and bycatch data (cetaceans, sea turtles, sharks). Among these, different gear settings were used, in addition to monitoring of fishing habitats. During the study period 3,874



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drift gillnet sets were monitored, in addition to gear settings that were used, including pelagic/surface setting, sub-surface setting (2 m from surface), and demersal setting. Data was recorded for captures of target species and analyzed for comparing results of different gear settings. A total of 304,952 tunas were captured, representing six species, including neritic and tropical tuna species, whereas, a total of 203 cetaceans were captured, recorded and released. Captures per unit of effort (CPUE) were calculated for species in concern. The results from the study suggest no negative impact on target catch, however, holds promising results as the different gear settings result in positive impact on incidentally caught species. Furthermore, spatial interactions also indicate variation in both target and non-target captures. We are encourage by the results of the study and recommend coupling of technologies such as the use of electronic monitoring systems for triangulating skipper based observer data and expanding studies elsewhere, in addition to also studying the gear behavior. Sub-surface gear settings in tuna directed gillnet fisheries provide trade-off among target and non-target catch and may be considered as a potential conservation and management measure in gillnet fisheries.

Market-based incentives for conservation within marine mammal protected areas: Vaquita in the Upper Gulf of California, Mexico

Sarah Mesnick, O. Poindexter, E. Sanjuro, and R. Lent

On the brink of extinction, the world's smallest porpoise numbers less than 22 individuals despite the population living in a marine mammal protected area. The vaquita (*Phocoena sinus*), endemic to the upper Gulf of California, faces one primary threat – entanglement in gillnets. While the gillnet fisheries for shrimp (mostly exported) and some finfish (mainly consumed domestically) are currently banned by the government of Mexico, illegal fishing with entangling nets threatens the survival of the species. Despite compensation paid to the fishery sector for not fishing in the protected areas, illegal fishing with gillnets continues, motivated by the high prices paid for the swim bladders of illegal, gillnet-caught totoaba (*Totoaba macdonaldi*), which are highly prized in China and Hong Kong. The highly lucrative black market, lack of effective enforcement and other, daunting challenges face efforts to find viable alternative fishing gears and economic livelihoods for the local communities. In an effort to address these challenges, we sought incentive-based policy instruments as a complement to top-down, command-and-control measures and the indispensable needs for effective enforcement and fisheries management. We describe these efforts and the challenges we encountered in attempting to create a new supply chain with fishers willing to use alternative gears. While the adoption of non-entangling gears faces an uphill battle due to a variety of factors including a lack of implementation, training and assumed higher fishing costs, we review efforts to connect local fishers with buyers and award-winning chefs to create incentives for conservation while supporting local communities. We use market data to analyze potential net earnings



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and identify tools along the supply-chain where consumers can share costs of conservation and efficiencies or profits can be improved. Few economic investments have been developed given the lack of micro and macro policies to encourage the development of alternative livelihoods. We identify barriers for fishers desiring to exit the industry and present a menu of livelihood options. Reliance on enforcement alone cannot abate the lucrative illegal trade for totoaba swim bladders, the construction of a new system of compliance with communities is needed. Expanding the portfolio of incentive-based tools provides a broader range of opportunities for supporting local communities while eliminating entangling nets, a situation shared around the globe by other small cetaceans. However, these are mid- and long-term efforts that require time that vaquita does not have. The last ditch effort to save vaquita requires immediate action to eliminate gillnets throughout their range.

A simple but not so simple conservation conundrum: The Atlantic Humpback Dolphin project in Congo (the other Congo)

Tim Collins

The evidence of recent work and a consensus of expert opinion suggest that the total population size of the Critically Endangered Atlantic humpback dolphin (*Sousa teuszii*) plausibly falls below 3000 individuals. Most populations are small, isolated and many have experienced significant declines in recent decades. High human population densities, widespread poverty and habitat degradation are considered important determinants of the species' distribution and local status. A dependence on nearshore habitats greatly increase the species susceptibility to anthropogenic threats. Bycatches of *S. teuszii* in artisanal gillnets have been reported from many areas and are considered the principal cause for its range-wide decline. Coastal fisheries within the range have rapidly expanded, and are increasingly practiced by people with little or no fishing tradition. Extant populations generally occur in areas with low human population densities, several of which are formally protected. Some of these offer the best hope for the conservation of the species.

The Wildlife Conservation Society (WCS) began work on *S. teuszii* in the Republic of Congo in 2009, focusing on Conkouati-Douli National Park (CDNP). This park forms a transboundary protected area with Mayumba National Park (MNP) in Gabon and together they protect over 110 km of beaches and adjacent habitats. They share a small and declining population of *S. teuszii*. The decline is likely to be recent and due to bycatch in gillnets in CDNP (there is no equivalent fishery in MNP). Although average annual bycatches are limited to <4 individuals, these have significant consequences for population health. Work has included structured beach-based surveys, enforcement patrols, outreach, and extensive collaborative work with fishing communities. The latter enabled us to develop fisheries metrics for each CDNP landing site, including statistics for each landing site (e.g. boats, nets, fishermen) and empirical



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characterizations of fishing behavior (e.g. preferred fishing depth, trip duration and displacement, net alignment, max offshore distance). Work has now stopped due to a park management dispute, despite the availability of funds to continue.

The bycatches recorded in CDNP are clearly symptomatic of issues facing the species in general and the evidence suggests that time is short to halt the trend. The work within CDNP has provided a workable template for how fishing communities can be engaged and involved in the conservation effort. The work demonstrates the value of sustained and collaborative work within MPAs. Future work should include the testing of alternative fishing gears. Such a project use fishing profit per unit effort as a measure of success, rather than attempt to demonstrate a link to bycatch rates.

Mitigating the conflict between marine mammals (monk seals and cetaceans) and small-scale fisheries in Greece

Vangelis Paravas and Spyros Kotomatas

Small scale fisheries in the Mediterranean basin, including Greek seas, are considered as less intensive and more selective in terms of fishing pressures and environmental impact. However, the interaction between marine mammals and Greek fisheries is a complex one. Fishers' reactions to damages in their gear by dolphins and seals are increasing and becoming more and more intense. This is probably due to the declining fish stocks and the resulting downsizing of profits. The conflict results in detrimental effects for the survival of marine mammals and harsh financial burdens for small-scale fishers.

Interactions between marine mammals and fisheries have been extensively studied on a global scale and are considered "*one of the most pressing anthropogenic threats facing the world's marine mammals*". This conflict takes the form of seal injuries and drownings due to accidental entrapment, deliberate seal killings and overall reduction in fish stocks. The impact of this conflict to fisheries is in the destruction of fishing gear during the depredation of fish by marine mammals, the additional work and materials needed to repair/ replace gear, the reduction of catch quality and value, infection of fish and scaring of schools of fish.

Historically humans had the right to defend property and business against wild animals. Large predators were not accepted, while many species were considered pests. Today such animals are legally protected and the right of self-defense is denied to those exposed to damages by the protected species, like fishers. For some of the fishers seems unfair to carry the cost of conservation and the lack of compensations has led them to undermine the protection by disobedience.



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Numerous efforts have been carried out globally to evaluate the impacts of marine mammals to fisheries and to provide solutions. The financial repercussion of the interaction poses as the major issue, while important losses are sustained by small scale fishers, whose gear and practices are extremely vulnerable to the conflict.

In Greek seas, a first approach was carried through an EU LIFE-Nature project entitled “MOFI - Mediterranean Monk Seal and Fisheries: Mitigating the conflict in Greek seas” (2005 – 2009). The extent, consequences and impacts of the interaction between monk seals/dolphins and small-scale fisheries were recorded, both for fisheries related threats (mainly for the monk seal), and on valuating the damage caused to fishers. The

project recorded the frequency of interactions, thus the potential of depredation. Measured the average length of damaged gears through experimental fishing. Fishers’ interviews provided further insight to the conflict: The frequency of interactions was recorded at 21% of the fishing trips and on average 1.1% of the fishing gear (static net length) sustains damage during the interaction.

A fishers compensatory system could cover financial losses, and ameliorate retaliatory behaviours towards marine mammals. Only a handful of countries have in place such systems for damages caused by marine mammals. Cyprus, Sweden, Estonia and Finland in EU utilize compensation schemes, targeting small scale fisheries with financial support for damages by seals and small cetaceans. All use national funding and EU financial instruments that foster the Common Fisheries Policy. Necessary preconditions and legal provisions are necessary to support the operation of a compensatory mechanism: at the EU level

Regulations 1380/2013/EU, 1303/2013/EU and especially 508/2014/EU explicitly provide for “*schemes for compensation for damage to catches caused by mammals and birds protected by Directives 92/43/EEC and 2009/147/EC*” (Art. 40h); and at the national level Greece possesses a national regulatory legal framework for compensations for damages caused by wildlife (Law 1650/86), and a public authority (Greek Agricultural Insurance Organization) competent for compensations.

Necessary steps for a compensatory mechanism in Greece include a legislation amendment to fully include marine mammals as an insurable natural danger, and to foresee compensations for fishermen and fish-farmers; the establishment of a mutual fund for fishermen, as an integral part of the Greek Agricultural Insurance Organization; the utilization of other funding sources (fines resulting from fisheries infringements, fees for obtaining professional and leisure fishing permits, purchase fees on fishing gear etc.); and preparation of a study to estimate the actual financial impacts of marine mammal interactions with fishing gear on small scale fisheries.



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Compensatory systems should be a complementary tool providing incentives for fishers to minimize practices resulting in direct mortality of marine mammals. Thus, the operation of a compensatory mechanism along with the adoption of technical and practical fishing techniques, as well as the application of spatio-temporal conservation regulations, gear selectivity/fisheries sustainability measures will provide for a long term solution.

Discussion

The animated and extensive discussion in this session focused on: 1) area based fishery management measures (within and beyond MPAs); 2) technical measures to minimize bycatch and/or depredation through the use of alternative gear; 3) development of compensatory schemes; 4) development and capacity building for alternative livelihoods for fishermen. Having fishers from Greece present grounded the discussions in reality not seen in most scientific conferences.

The key take-home message from this session: Small scale fishers are willing to cooperate and support marine mammal conservation actions, as long as their livelihoods as fishers are supported/secured.





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Workshop 6: Improving Enforcement and Compliance Within MMPAs: Can New Technologies Support Effective Management?

Conveners: Lars Bejder and Spyros Kotomatas

Speakers:

Lars Bejder, University of Hawaii at Manoa, USA

Sophie Baudel, Collecte et Localisation par Satellite (CLS/Service Argos), France

Armando Jaramillo Legorreta, Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO), Mexico

Rochelle Constantine, University of Auckland, New Zealand

Spyros Kotomatas, WWF Greece, Greece

John Barylsky, National Oceanic & Atmospheric Administration, (OLE), USA

Introduction and Overview

Effective surveillance and achieving compliance are some of the most challenging issues in the management of marine protected areas, especially within MMPAs, due to the difficulty in monitoring the impact of human activities on marine mammals. The purpose of this workshop is to critically examine how the use of emerging new technologies (i.e. unmanned aerial systems (UASs), GPS monitoring technology on board fisheries and whale-watch vessels, passive acoustic monitoring, etc.) that has proliferated over recent years is or can actually improving the effectiveness of surveillance and compliance within MMPAs. During the workshop, case studies were presented on successful applications of new technologies within MMPAs to: monitor compliance and manage fisheries; monitor marine mammal populations; and monitor and manage human activities.

Session Objective

The session objective was to assess the contribution of such tools in improving the effectiveness of surveillance and compliance systems within MPAs at different spatial and temporal scales.



Presentation Summaries

Improving enforcement and compliance within MMPAs: Can new technologies support effective enforcement?

Lars Bejder

When evaluating impacts of human activities on cetaceans, adequate research design, spatio-temporal scale, and baseline data for comparative analysis are generally lacking. This study examined changes in bottlenose dolphin abundance in Shark Bay, Australia (8855 dolphin group encounters, 1988-2011) across five consecutive ~4.5-year time periods: no dolphin-watch tourism (T₀), one tour boat (T₁), two periods with two tour boats (T₂; T₃) and lastly back to one tour boat (T₄). Previously we documented a significant decline (14.9% per km²) in dolphin abundance within the tourism site compared with adjacent 36-km² control sites when tour operations increased from one (T₁) to two boats (T₂) (Cons Bio 2006, Bejder et al.). Subsequently, a ministerial decision allowed both licensed operators to continue their tours, but with two primary conditions: 1) only one operator was licensed to interact with dolphins within the tourism site; the second was permitted to transit through the site to interact with dolphins outside the area; and 2) GPS “black boxes” were installed on both tour-boats, which download GPS coordinates every minute to track movements. Here, we examine dolphin abundance during T₃ and T₄. Using the same modelling techniques as in the original study, and 2847 additional group encounters, analyses indicate no significant change in dolphin abundance within the tourism site before (T₃; +4.6% per km²; 95% CI=-5.7 to 22.2) and after (T₄; -6.8% per km²; 95% CI=-27.1 to 27.3) management intervention. Four years of black box data (2007-2011; 650,000 GPS coordinates) showed a reduction in the total amount of time tour operators spent within the tourism site after management intervention (T₄). The data provided through ‘black-box’ monitoring technology suggests that the declining trajectory in dolphin abundance previously reported had halted during T₃ (prior to management) but the original number of dolphins present prior to tourism (T₀) had not been re-established.

Argos System and Other Satellite Technologies for the Management of Marine Protected Areas

Sophie Baudel, Claire Garrigue, Christophe Guinet

Argos is the main satellite telemetry system used worldwide by the wildlife research community, environmental agencies, NGOs, marine parks, reserves, etc. for tracking the movements of various terrestrials and marine animals and collect scientific data that will used to propose conservation measures.



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Argos tracking data on marine mammals led to identify, to analyze, to understand large-scale migrations make available a high-precision mapping of migratory corridors, feeding and foraging areas, reproducing areas, together with seasonal and other time-scale dependent behavior analysis, such as climate change.

Satellite tracking is also used by the scientists for the identification and mapping of biodiversity hotspots. This arguing in favor of the implementation of Marine Protected Areas addressed to decision makers.

Other satellite technologies give access to a real-time and precise mapping of oceanographic parameters such as temperature, phytoplankton, primary productivity, ocean dynamics, etc., allowing to correlate and better understand the behavior of the animals together with their physical and biogeochemical oceanographic environment.

On top of that, the print of human activities at sea such as fisheries (legal or illegal), marine traffic, oil pollution, may now be monitored everywhere by satellite in real-time or in the past. This allows to conduct risk assessment, to delineate risk areas for the megafauna and reinforce arguments for conservation measures in sensitive areas.

The presentation illustrates a few case studies in which Argos and other satellite technology was used in supporting the designation, management and monitoring of four marine mammals protected areas: 1) the Northwest Mediterranean (Pelagos Sanctuary); 2) the Southern Ocean (under CCAMLR jurisdiction); 3) the “New Caledonian Southern Seamounts” as an Important Marine Mammal Area (IMMA); and 4) the Galapagos National Park protected area.

The first case study described an Argos program which deployed 11 tags on fin whales in the northwest Mediterranean and demonstrated how the Argos-based information allowed to map collision risk areas between fin whales and ferries, and described the seasonal variability of fin whale migrations in Mediterranean. This demonstrated how other satellite technologies such as infrared or optical sensors, radar altimeters allowing to access respectively to surface temperature, surface chlorophyll, and ocean dynamics, bring additional information to correlate the fin-whale habitat with their movements.

The second case study described an Argos program in the French Kerguelen Archipelago which represents an important breeding place for many species of marine top predators, among them the Antarctic fur seal, within the Southern Ocean, making the plateau hosting the archipelago and surrounding waters (CCAMLR area 58.5) a crucial area to design conservation measures and potential boundaries for a Marine Protected Area.



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In the third case study, it was presented how ARGOS satellite tracking demonstrated that shallow seamounts and unsheltered banks provide important offshore habitats to the humpback whales wintering in New Caledonia. The paths followed by the whales showed frequent stops on these seabed structures, both during the breeding season and during the southern migration, suggesting that seamounts represent a formerly overlooked cryptic habitat for the species. They probably serve multiple and important roles such as breeding locations, resting areas, or navigational landmarks. During the MARACAS (Marine Mammals of the Coral Sea) expeditions, conducted as part of the WHERE2 project, remote areas were sampled in the Natural Park of the Coral Sea, a giant MPA created in 2014 by the New Caledonian government. Seamounts and banks were identified as breeding areas for humpback whales. These structures are also hypothesized to be used as resting areas, or as stepping stones connecting the breeding ground of New Caledonia to the migratory corridors of east Australia. The recent use of a new generation of tags (SPLASH10) caught sight of the underwater diving behavior of whales, especially their dive shape and the depth reached. These new data led to the hypothesis that seamounts may be occasional feeding spots. Overall, these results have enabled the IUCN Marine Mammal Task Force to declare the “New Caledonian Southern Seamounts” as an Important Marine Mammal Area (IMMA). The frequent use by humpback whales of such remote locations has important implications for conservation and management. Indeed, in 2019, authorities plan to design a network of marine protected areas to protect critical seamount and deep-sea habitats of the Natural Park of the Coral Sea.

The last case study presented an integrated monitoring approach implemented by CLS for the management authority of Galapagos Natural Park aiming to monitor legal and illegal fisheries, maritime traffic and based on several satellites technologies which are: VMS (Vessel Monitoring System) for legal fisheries monitoring, AIS / SAT-AIS data and radar imagery for illegal fisheries monitoring.

The use of passive acoustic methods to support enforcement actions in the critically endangered vaquita

Armando Jaramillo-Legorreta, G. Cárdenas-Hinojosa, E. Nieto-García, N. Tregenza and L. Rojas-Bracho

The Vaquita is a reliable candidate for acoustic monitoring. To provide continuous information of vaquita population parameters we tested the use of passive acoustic methods back in 1997. Given the success, we continued the effort until 2007 when a decline of 58% of acoustic detection rates was detected. A comparison of 1997 and 2008 abundance estimates confirmed that acoustic detection rates were proportional to population ones. Looking to increase statistical power to keep detecting trends, in 2011 an enhanced program was started based on autonomous acoustic detectors (C-POD) deployed in 46 sites inside Vaquita Refuge. After 8 years of sampling detected



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an average annual decrease rate of 44%. Based on 2015 abundance estimate, acoustic data estimates 10 individuals for 2018 (CrI 95% 6 - 22). With two decades of experience, in 2017 we designed a sampling scheme aimed to describe vaquita distribution and movements to provide information reliable to locate vaquitas for capture in support to VaquitaCPR Program (aimed to bring vaquita specimens under human care). Previous to VaquitaCPR field operations, an 87-site sampling array was used to understand daily patterns of vaquita distribution. Given the distribution pattern, a 36-site array, later augmented to 44 sites, was used during field operations to inform daily, in nearly real time, about spots with presence of vaquitas, which helped location team to plan the area of search for the day. The scheme was able even to detect distribution patterns between day and night. A similar scheme was applied on 2018 in support for a Photo-ID survey.

The acoustic information generated since 1997 has been used by environmental agencies to design protection areas and concentrate other conservation efforts, including the removal of illegal and ghost fishing nets. In our last international recovery team meeting we recommended, based on 2018 acoustic monitoring results, to create a Zero Tolerance Area to protect the remaining vaquitas.

Acoustic data can support enforcement actions in the Vaquita Refuge: acoustic data provided information of critical distribution area; the “hot spot” was located near to San Felipe fishing town; and historical visual data and acoustics helped to design the NO FISHING AREA within the Refuge.

There is also an illegal fishing gear removal program which aims to reduce the threat that ghost fishing gear represents to the health of the Upper Gulf of California ecosystem, the vaquita and the totoaba and other endangered species. From October 2016 to March 2019, 1383 fishing gear items and 849 totoaba gillnets were removed (approx. 98% of all active nets).

The Value of Technology to Inform Rapid Ship-strike Mitigation Action

Rochelle Constantine

Hauraki Gulf Marine Park is New Zealand’s only marine National Park and spans 1.2 million hectares. It aims to protect natural and historical features for the future and is a megafauna hotspot with ~25% world’s seabird species and ~20% world’s cetacean species, as well as sharks and rays. However, despite the environmental importance of the area there are no resources for enforcement but technology may be effective.

The Bryde’s Whale population in the Hauraki Gulf is around 150 whales and is classified as “Nationally Critical”. Since 1996, 44 whale carcasses have been recovered, 85% of which have died due to vessel strikes (the other 15% due to entanglement).



Monitoring of whale activity is made possible through DTAG, GPS and AIS. AIS can also be used to monitor compliance with deviation programs meant to mitigate whale-strike. Technology is increasingly proven to be an important mitigation tool, as it is transparent and auditable and can improve behavior of mariners. Legal mitigation options could be effective but only if enforced. Important to first consider available emerging technologies for enforcement and increased precision when responding to evolving conservation threats (e.g. climate change, new issues, population status) because they are adaptive approach/ dynamic management/ spatiotemporal measures and particularly important for Marine Mammal Protected Areas of all kinds.

Using ‘black-box’ monitoring technology to quantify the efficacy of management interventions in response to decline in relative abundance of bottlenose dolphins in Shark Bay, Australia

Lars Bejder, Mann, J., Heithaus, M., Rendell, L., Hunt, H., Kobryn, H., Connor, R. and Whitehead, H.

When evaluating impacts of human activities on cetaceans, adequate research design, spatiotemporal scale, and baseline data for comparative analysis are generally lacking. Confounding factors in impact assessments include lack of long-term perspective, baseline data, “control” sites, difficulty to separate ecological from human-induced effects and the inability to stratify by age/sex/reproductive condition/etc.

This study examined changes in bottlenose dolphin abundance in Shark Bay, Australia (8855 dolphin group encounters, 1988-2011) across five consecutive ~4.5-year time periods: no dolphin-watch tourism (T₀), one tour boat (T₁), two periods with two tour boats (T₂; T₃) and lastly back to one tour boat (T₄). Previously we documented a significant decline (14.9% per km²) in dolphin abundance within the tourism site compared with adjacent 36-km² control sites when tour operations increased from one (T₁) to two boats (T₂) (Cons Bio 2006, Bejder et al.). Subsequently, a ministerial decision allowed both licensed operators to continue their tours, but with two primary conditions: 1) only one operator was licensed to interact with dolphins within the tourism site; the second was permitted to transit through the site to interact with dolphins outside the area; and 2) GPS “black boxes” were installed on both tour-boats, which download GPS coordinates every minute to track movements.

We examined dolphin abundance during T₃ and T₄. Using the same modelling techniques as in the original study, and 2847 additional group encounters, analyses indicate no significant change in dolphin abundance within the tourism site before (T₃; +4.6% per km²; 95% CI=-5.7 to 22.2) and after (T₄; -6.8% per km²; 95% CI=-27.1 to 27.3) management intervention. Four years of black box data (2007-2011; 650,000 GPS



coordinates) showed a reduction in the total amount of time tour operators spent within the tourism site after management intervention (T4). The data provided through 'black-box' monitoring technology suggests that the declining trajectory in dolphin abundance previously reported had halted during T3 (prior to management) but that the original number of dolphins present prior to tourism (T0) has not been re-established.

Developing a model remote surveillance system in a Greek MPA, assessing the effectiveness of combining new technologies with traditional practices in protecting a Mediterranean monk seal hotspot Spyros Kotomatas and Christos Papadas

Despite the high levels of marine biodiversity found in Greek waters, a very small number of marine protected areas have been established in the last 25 years. Moreover, in spite of the fact that about half of the world population of the Mediterranean monk seal, *Monachus monachus*, one of the most emblematic species in the Mediterranean, is found in the Greek archipelago, Greek society has still not embraced marine conservation nor widely accepts the creation of MPAs as a tool for protecting and managing its marine resources. Moreover, the financial crisis of the last decade that has hampered the country's resources devoted to nature conservation, especially in terms of limiting resources invested in the effective management of MPAs.

In view of this situation, we have designed, constructed, and operated a novel remote surveillance in the newly established Gyaros MPA in the Cyclades Archipelago in the Aegean Sea, Greece. The remote and deserted island of Gyaros hosts a number of important and rare species and marine habitats, with most noteworthy the largest breeding colony of Mediterranean monk seals, of more than 70 individuals. The aim for establishing this surveillance system, apart from protecting the biodiversity of the area against destructive human activities, especially illegal fisheries, was to access the efficacy and efficiency of combining remote surveillance tools and methodologies, utilizing a wide range marine radar in conjunction with an infrared high-definition camera and a Unmanned Aerial Vehicle (UAV), with regular boat patrolling.

The challenges (logistic and administrative) in the development and installation of the system in the remote and deserted island of Gyaros were presented. Furthermore, the up to date data on the system's operation over the 2016-2018 period provide evidence in support of the utilization of such tools in conjunction with regular guarding boat surveys to safeguard the area from illegal activities. The system has acted as a strong deterrent and is clearly promoting compliance, especially with local fishers. Equally important in the immediate future is the key challenge to assess its efficiency in



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minimizing operational costs and to ensure the long-term sustainability of its operation by the state authorities and its full integration in the management plan of the MPA. If proven successful, such systems can then be utilized in the management of MPAs across the globe, especially in areas with limited resources, to ensure effective surveillance and compliance and turn marine “paper parks” into effective MPAs.

Investigative challenges during two case investigations involving the endangered Hawaiian Monk Seal

John Barylsky

The presentation focused on case studies from the Hawaiian Islands to demonstrate the challenges faced during the investigations and field operations with respect to the surveillance and guarding in relation to the endangered Hawaiian monk seal. The first case study involved the killing of a pregnant Hawaiian Monk Seal on the island of Kauai. Special Agents from NOAA OLE flew to Kauai from Oahu to conduct interviews of witnesses and gather evidence. Enough evidence was obtained to apply for and obtain a federal search warrant. Further incriminating evidence was collected during the execution of the warrant. The subject admitted to shooting the seal and plead guilty to one misdemeanor count in federal court. The defendant was sentenced to ninety (90) days federal incarceration and a \$25.00 fine. The second case study involved a video depicting a subject brutally beating a Hawaiian Monk Seal on the island of Kauai. Special Agents from NOAA OLE flew to Kauai from Oahu to conduct interviews of witnesses and gather evidence. After confronting the subject with the obtained evidence, the subject admitted to committing the crime and plead guilty to one felony count in a state court of law. The defendant received a sentence of four (4) years imprisonment.

These two case studies were chosen to illustrate the difference in penalties comparing the federal and state legal systems involving violations relating to the Hawaiian Monk Seal. The second case resulted in the first person in the state of Hawaii to be sentenced regarding a felony charge relating to a Hawaiian Monk Seal. These two cases illustrate similar investigative efforts resulting in very different outcomes depending on the legal system in which they were prosecuted.

Discussion

Following the presentations of the case studies, the discussion amongst the participants focused on critically evaluating the potential, but most importantly the actual contribution, of such tools in improving efficiency and effectiveness of surveillance and compliance systems within MPAs at different temporal and spatial scales.



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The main points/conclusions that stemmed from the discussion were:

- Technology is providing good opportunities to monitor compliance
- Enforcement based on data is critical for efficacy
- But be careful what you wish for: monitoring technology is providing large datasets... not always clear how or who should analyze them...
- For successful prosecution, work on the ground is also necessary in order to ensure that evidence is clear-cut and strong





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Workshop 7: The ACCOBAMS Survey Initiative (ASI): Lessons Learned and Future Plans

Organized and sponsored by ACCOBAMS

Convener: Simone Panigada

Speakers:

Julie Belmont, ACCOBAMS Secretariat, Monaco

Ibrahim Ben Amer, UNEP/MPA-RAC/SPA, Tunis

Ayaka Amaha Ozturk, TUDAV and Istanbul University, TURKEY

Sophie Laran, Université de La Rochelle, France

Benjamin Guichard, French Agency for Biodiversity, France

Introduction and Overview

The Agreement on the Conservation of Cetaceans of the Black Sea, the Mediterranean Sea and Contiguous Atlantic area (ACCOBAMS) developed the “ACCOBAMS Survey Initiative” (ASI), a pilot programme aimed at establishing an integrated and coordinated monitoring system for cetaceans throughout the ACCOBAMS area. It is conducted by the ACCOBAMS Permanent Secretariat assisted by a Steering Committee, in coordination with Mediterranean Sea riparian countries and in line with their commitments to the implementation of European and regional policies, in particular the Marine Strategy Framework Directive (EU) and the Ecosystem Approach process (Barcelona Convention UNEP/MAP, Bucharest Convention). Under this initiative, an unprecedented large-scale synoptic survey combining aerial (visual component) and ship-based (visual and passive acoustic monitoring – PAM) methods has been carried out during the summer 2018 across the whole Mediterranean and Contiguous Atlantic area, involving a large international team alongside local scientists. The aim of this session is to present and discuss the ACCOBAMS Survey Initiative and its up-to-date results and lessons learned. Issues ranging from fund raising, logistical aspects, scientific background, results, and implications, geo-political constraints, capacity building, training and public awareness, conservation implications and future plans will be presented and thoroughly discussed. The ultimate goal of the session will be to evaluate the overall feasibility of such ambitious, multi-species, multi-countries, multi-cultural, regional programs and delineate a road-map for the use of the collected data and the potential of long-term systematic replicas.



Session Objectives

The session objectives were to consider local, ongoing small-scale projects, with an aim to evaluate the proper means so that such projects can contribute to the overall assessment at the regional scale and build local scientists' capacity to develop and conduct robust research; attempt to liaise with international commitments and policy bodies, such as those of the MSFD and the EcAp to ensure that the ASI collected data would be considered towards addressing international requirements, such as long-term, systematic monitoring; and assess how the ASI could contribute to the design and establishment of the area-based management approach to promote marine mammals conservation in the Mediterranean Sea and how these results could be integrated to the existing management measures already in place.

Presentation Summaries

Monitoring an entire sea: experience sharing of the ACCOBAMS Survey Initiative in the Mediterranean

Julie Belmont

The Agreement on the Conservation of cetaceans in the Black Sea, the Mediterranean Sea and contiguous Atlantic areas (ACCOBAMS) has been established in 1996 by the riparian countries from the Mediterranean and the Black Sea in order to create a legal basis for their cooperation in the view of improving the conservation status of cetacean's species in both areas. In response to the urgent need to improve knowledge on cetacean population abundance and distribution, the ACCOBAMS coordinated the first ever large-scale survey of marine megafauna in the Mediterranean Sea during the summer 2018.

In a context of uncertain effects of climate change and an increase in human activities at sea, the ACCOBAMS Survey Initiative, organized in coordination with all Mediterranean countries and a wide number of partners from the region, aims to assess the status of cetacean populations at the regional level. It provides a robust basis for their long-term conservation, contributing to global and regional environmental commitments in particular the Marine Strategy Framework Directive (MSFD-EU) and the Ecosystem Approach process (Barcelona Convention UNEP/MAP).

While representing significant organizational challenge with a variety of situations to address, from scientific issues to logistical and administrative constraints in a geopolitically complex region, and mobilizing over 100 scientists from the entire region scientists on planes and on-board research vessels, the ASI Mediterranean survey



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proved to be a unique successful example of international collaboration. It demonstrated the importance and value of large-scale surveys to bring essential knowledge and robust data on vulnerable marine species and human impacts on the marine environment, including in areas that are usually hardly accessible and for which there is little information available. The ASI results will serve as valuable baseline to monitor population trends, to facilitate place-based conservation effort and be considered in light of existing threats to cetaceans.

ACCOBAMS Survey Initiative (ASI): The Capacity Building Component

Ibrahim Ben Amer

Training has always been a strong concept that ACCOBAMS takes in consideration in order to increase the capacity of research on cetaceans in the Mediterranean basin. This is reflected in the ASI programme in which an ‘elaborated capacity building programme’ became a strong part of the initiative. In October 2017, and during the ASI Contact Group Meeting (Tunis, Tunisia), the capacity building needs of each riparian country was identified and discussed in dedicated sessions. Based on the results of that meeting, a series of workshops were organized and launched during 2018 and 2019. The first stage contained two regional workshops mainly to prepare the field teams of the ASI for the upcoming fieldwork in summer 2018. These two workshops were about airplane survey methods (conducted in Cuers, France during May 2018) and boat survey methods (conducted in Samos, Greece during June 2018). In 2019, and through a collaboration with the Ecosystem Approach Initiative, an agreement was reached to conduct four workshops to further fulfil the needs of the riparian countries. The first was a regional workshop targeting 16 participants from Algeria, Morocco and Tunisia, and was conducted in Bizerte (Tunisia) during February 2019. The Second was a national workshop targeting 20 participants from Libya and was held during April 2019 in Monastir (Tunisia). The third Regional workshop will be held in Lebanon during June 2019 targeting 15 participants from Egypt, Lebanon, Syria and Turkey. Finally, the last workshop will be held in Montenegro during September 2019 and will target a suitable number of participants from the Alboran region. By the end of these workshop, the ASI and EcAp are hoping that the relevant countries will be capable to start establishing their own monitoring programs for cetaceans.

Ibrahim Ben Amer also presented the SPA/RAC contribution entitled “Link with EcAp and potential synergies”, on behalf of Mehdi Aissi of SPA/RAC who was unable to attend. This presentation was about the progress being made in the implementation of the Ecosystem Approach (EcAp) process and its link with the main ASI objectives.

SPA/RAC introduced the EcAp process and its main steps. It underlined that the Contracting Parties to the Barcelona Convention agreed in 2008 to adopt progressively the EcAp process with the aim to reach the Good Environmental Status (GES) of the



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Mediterranean Sea and Coast. This process, developed in synergy with the EU MSFD, is built on Ecological objectives and their related common indicators belonging to three components: i) Pollution, ii) Biodiversity and iii) Coast and hydrography.

The 2016 Decision adopted by the Contracting Parties on the Integrated Monitoring and Assessment Programme and related Assessment Criteria (IMAP) was described. During the initial phase of IMAP (2016-2019), SPA/RAC is committed to assisting the Mediterranean Contracting Parties in the update of their national monitoring programme related to biodiversity component, in line with the IMAP structure, principles and common indicators. Marine mammals are among the agreed common indicators (species distributional range; population abundance; and population demography).

SPA/RAC emphasized that the important achievement during this IMAP initial phase (2016-2019) is the preparation of the 2017 Mediterranean Quality Status Report (2017 MED QSR). Following the Initial Integrated Assessment undertaken in 2011, the 2017 MED QSR is the first report assessing the status of the marine and coastal environment of the Mediterranean Sea in an integrated manner, using the IMAP Common Indicators and data reported from the Contracting Parties and other reliable sources. Despite the challenges met, given the limited availability of data and the fact that the IMAP is still at an early stage of its implementation, the 2017 MED QSR allowed for important conclusions and highlighted gaps that need to be overcome for successive future assessments.

SPA/RAC highlighted in its talk the need to consider synergies with relevant regional and international organizations and treaties in order to avoid overlapping of efforts and duplication of reporting. In light of this, it encourages regional wide efforts, such as the ACCOBAMS Survey Initiative (ASI), which could provide valuable data towards a successful 2023 MED QSR.

Large scale aerial surveys for marine megafauna

Sophie Laran, Ghislain Doremus, Olivier Van Canneyt, Vincent Ridoux, and Pierre Watremez

Two large scale aerial survey programs are funded by the French Biodiversity Agency and implemented by the Pelagis Observatory (a joint service unit of La Rochelle University and CNRS). The *Remmoa* project including most of the French tropical overseas territories over more than 4 million km² and across three oceans was launched in 2008 in the Caribbean and French Guiana, and subsequently covered the south-western Indian Ocean, French Polynesia and the south-western Pacific Ocean (New Caledonia and Wallis and Futuna). At the same time the *Samm* project takes place over the French mainland waters and is now part of the instruments that



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inform Descriptor 1 of the Marine Strategy Framework Directive (MSFD). The standardized multispecies protocol allows to estimate distribution, density and taxonomic richness for several taxa of the megafauna (marine mammals, seabirds, elasmobranchs) or marine litter and allow quantitative comparison between surveyed areas. Thanks to the second phase of *Remmoa* surveys possible changes in distribution and abundance of species can be documented for example in French Guiana at a 9 years interval. Meanwhile, observers raised awareness on marine megafauna among 2 000 children during all these surveys. After a decade of surveys the Pelagis Observatory developed a dedicated software (SAMMOA) to improve data acquisition on board and validation back to land, a global Database with mapping tools are in development, as well as a digital camera system, to assist observer for identification and counting. Data are now available on the OBIS-SEAMAP website and results of these surveys contribute to informing MSFD descriptors or designating MPA, IMMAs or IBAs in several regions.

CeNoBS Project in the Black Sea

Ayaka Amaha Ozturk and Romulus-Marian Paiu

The Black Sea is the largest anoxic water mass on the earth and has been under anthropogenic pressures such as pollution, overfishing, invasion of alien species, etc. There are three cetacean species, namely, harbor porpoise, common dolphin and bottlenose dolphins, living in the Black Sea. Intensive fisheries targeting cetaceans had been banned since 1983 but they are suffering bycatch, pollution, noise, epidemics, etc. In line with the ACCOBAMS survey initiative in the Mediterranean in summer 2018, the Black Sea will be surveyed from air in summer 2019 within the project “CeNoBS” (Support MSFD implementation in the Black Sea through establishing a regional monitoring system of cetaceans (D1) and noise monitoring (D11) for achieving GES). The project is funded by European Union, involving 11 organizations in Bulgaria, Romania, Turkey and Ukraine, as well as ACCOBAMS, and carried out from Jan 2019 to Dec 2020. The project aims to understand the abundance and distribution of cetaceans in the Black Sea as well as the threats for their survival, such as bycatch and noise impacts. A dedicated aerial survey will be conducted in summer 2019. The information to be obtained by this survey will help national/international authorities to establish marine protected areas for cetaceans through identifying hot spots of their distribution. Besides, the Project initiates the monitoring of underwater noise, which also impacts cetaceans.



Link with the EU MSFD and the French marine mammal monitoring programme

Benjamin Guichard

In France, both SCANS-III in 2016 and the ACCOBAMS Survey Initiative in 2018 were funded by the French Agency for Biodiversity. This was made possible by the inclusion of large aerial surveys in the Marine Strategy Framework Directive (MSFD) French monitoring programme for marine mammals and marine turtles as well as in the marine birds and marine debris monitoring programs.

EU Marine Strategy Framework Directive (2008/56/EC, MSFD) aims to restore the Good Ecological Status (GES) of EU's marine waters. This is done through an ecosystem approach of all biological compartments and anthropic pressures, tackled with 11 descriptors: Biological diversity (D1), Non-indigenous species (D2), Commercially exploited species (D3), Marine food webs (D4), Eutrophication (D5), Seafloor integrity (D6), Hydrographical Conditions (D7), Contaminants (D8), Health issues (D9) Marine litter (D10) and Marine noise (D11).

For MSFD, EU marine waters are divided in 10 marine sub-regions: 5 in the Atlantic, the North and Baltic Seas, 5 in the Mediterranean and Black Sea. France is the only EU country to share 4 marine sub-regions (Channel-North Sea, Celtic Seas, Bay of Biscay and Western Mediterranean), most have 2-3 and some have one.

MSFD started in 2012 and follows 6-year cycles, with several stages: GES evaluation, definition of environmental targets, adoption of monitoring programs and programs of measures. The first cycle ended in 2018 with a 2nd GES evaluation, each member state is now setting up environmental targets for the 2nd cycle, and preparing next monitoring programs that will start in 2020.

For marine mammals, the GES was evaluated in 2018 with 5 biodiversity criteria (Directive 2017/485/EU): bycatch mortality (D1C1), abundance (D1C2), demography (D1C3), distribution (D1C4), and habitat use (D1C5, not evaluated in France. 5 other pressures criteria concern marine mammals: contaminants concentrations (D8C1), contaminants adverse effects (D8C2), marine debris adverse effects (D10C4), impulsive and continuous noise adverse effects (D11C1-D11C2).

Monitoring programs have 3 goals: evaluate the ecological status of marine environment with regards to anthropogenic pressures, evaluate the efficacy of measures and evaluate if environmental targets are reached. In France 13 thematic monitoring programs were adopted for 2015-2020, each coordinated by a technic/scientific pair and one dedicated to marine mammals and marine turtles.



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For the marine mammals monitoring programme, technical coordination was entrusted to AFB and scientific coordination PELAGIS Observatory (University of La Rochelle-CNRS). This monitoring programme is divided in 5 sub-programs: coastal cetacean populations (SP1), coastal seal populations (SP2), marine mammal at sea (SP3), strandings (SP4), interactions with human activities (SP5). In the 4 sub-regions, SP3 relies on MEGASCOPE yearly campaigns on Ifremer scientific vessels and SAMM aerial surveys of all French EEZ every 6 years, in summer and winter. SAMM1 surveys took place in 2011-2012, SCANS-III in summer 2016 and ASI in summer 2018 followed by SAMM2 in winter (only in French EEZ).

EU recommendations for 2nd cycle {COM(2017) 3 final} state that: “Member states should continue to implement, where they exist, coordinated and joint monitoring programs developed at regional or subregional level, for instance by OSPAR and United Nations Environment Programme/Mediterranean Action Plan (UNEP/MAP).” French 2nd cycle monitoring programs for marine mammals and marine turtles, marine birds and marine debris will probably recommend to have aerial surveys every six year in summer and winter, preferably at regional scale.

Discussion and Recommendations

The extended discussion that followed these presentations was focused on how best to use the findings from small scale projects across wide regions such as the Mediterranean to enhance knowledge about cetaceans and catalyze their conservation. Many concrete recommendations emerged, summarized below.

Methodological recommendations:

- use camera systems on board of the planes to check species identification and group size
- work on algorithms for automatic or semiautomatic recognition/detection (specific tools developed in Hawaii for birds)
- improve effort on satellite high definition imagery

Dissemination/outreach:

- use the ASI results to communicate/advertise the outcomes at the political level
- make the ASI data available to different directives of EU (MFSD, Habitat Directive, Water Framework Directives)
- use the IUCN congress to present the ASI and how to use the results (e.g. for the IMMA process)
- engage with other species organization (Bird Life International, etc.) and with the marine litter stakeholders



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Future work:

- use ASI results to stratify and plan future monitoring programs
- strengthen links with MFSD and EcAp frameworks
- joint strategy for cooperation, through ACCOBAMS, to approach EU or representatives at country level to work on a shared monitoring programs under the MSFD (MS are encouraged to explore new technologies and new techniques to improve monitoring)
- link and provide the data to other platforms – e.g., ODYSSEA project - Horizon 2020
- reinforce capacity building and connection with geopolitically complex Countries
- include seasonal surveys (winter/summer)
- plan to conduct large scale, regional monitoring programs every 6 years (in line with EU recommendations)

Regarding funding, participants agreed that it was important to start right away as soon as plans are made, to fundraise for the next phase. The need to try to get regular support and co-funding was emphasized, as was the need to have regular surveys written into monitoring programs by countries.



Workshop 8: Incorporating Marine Mammal Conservation Needs in MPA Management Plans

Conveners: Susan Gallon, Purificació Canals, and Gerald Mannaerts

Speakers:

Susan Gallon, MedPAN, France
Philippe LeNiliot, Parc Naturel Marin d'Iroise, France
Gerald Mannaerts, CARIMAM Network, Agoa Sanctuary, France
Harun Guclusoy, Dokuz Eylül University, Turkey
Valentina Cappanera, Portofino MPA, WWF Italia, Italy
Ben Haskell, Stellwagen Bank National Marine Sanctuary, USA
Carole Perron, Parc Naturel Marin des Estuaires Picard et de la Mer d'Opale, France
Aviad Scheinin, Morris Kahn Marine Research Station, University of Haifa, Israel
Tilen Genov, Morigenos, Slovenia
Helene Labach, Groupement d'Intérêt Scientifique des Mammifères Marins de Méditerranée (GIS3M), France
Purificació Canals, EU project "Transatlantic MPA Network", France

Introduction and Overview

Marine mammals are protected worldwide by a wide variety of marine protected areas, most of them organizing their management actions through a dedicated management plan. Speakers invited to this workshop will highlight the importance of this document and its role in the conservation of marine mammals. Through national and regional overviews and case studies we will identify strength and limitation of current status of marine mammals in existing management plan.

Session Objectives

The session objective was to identify a path forward to better incorporate marine mammals in management plans of MPAs.



Presentation Summaries

Regional overview of current status of marine mammals in management plans in Mediterranean MPA

Susan Gallon

The Mediterranean Sea is recognized as one of the world's 25 top biodiversity hotspots. Although it represents only 0.7 % of the global ocean surface, it comprises 4 to 18 % of the world known marine species, depending on the taxonomic group considered. The Mediterranean Sea marine life, however, undergoes multiple soaring pressures, mostly due to human activities, such as professional and recreational fishing, maritime traffic, water pollution, coastal development, introduction of non-indigenous species, and offshore oil and gas prospection and exploitation. In this context, Marine Protected Areas (MPAs) are key tools to mitigate human impacts in coastal environment and promoting sustainable activities to conserve Biodiversity.

Mobile and migratory species, such as marine mammals, depend on critical habitats throughout their seasonal movements, including breeding and foraging sites as well as the pathways between them. These migratory movements geographically link locations and stressors in distant ecosystems. Network of MPAs managers can thus play a key role for the conservation of mobiles species by facilitating the implementation of harmonized protocols and conservation measures at the geographical scale relevant to the ecology of these species.

In 2016, MedPAN and SPA-RAC conducted an assessment of where we stand with MPAs and Other Effective area-based Conservation Measures (OECMs) in the Mediterranean. There are 1 231 MPAs and OECMs in the Mediterranean covering 179,798 km² which places a surface of 7.14% under a legal designation. These sites present a great variety of conservation designations. For the majority of sites, little is known about the management measures in place and if they are effective at maintaining or restoring the biodiversity they aim to protect. This presentation provides an overview of current status of marine mammals in management plans in Mediterranean MPA.

Marine mammals in French marine protected area management plans

Philippe LeNiliot

French waters are home to 71 species out of approximately 120 species of marine mammals and France is the only country to be present in three of the four oceans (11 million km², the second largest maritime nation in terms of area). Given the number of species that frequent French waters, it is particularly concerned with knowledge and



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conservation issues related to marine mammals, missions that are at the heart of the French Biodiversity Agency.

Some territories play a key role in marine mammals' reproduction, feeding, resting activities, etc. In addition, the migratory nature of these species also requires knowledge and protection at different scales, hence the diversity of means of monitoring and protection on the one hand and the need to cooperate with States.

A marine natural park, which contributes to the French strategy to protect marine mammals in its water, has three main objectives:

- To better understand the marine environment;
- To protect the marine space;
- To sustain the development of activities dependent on the sea.

The Park's governance body is the management board. In the Iroise Marine Natural Park, it is composed of 49 members, it brings together local elected officials, government departments, professional fishermen, associations of recreational users (boaters, divers, etc.), nature conservation associations and scientists.

The Iroise Marine Natural Park is a protected marine area. Located at the tip of Finistère, it covers 3500 km² of the marine area between the island of Sein, Ushant and the limits of the territorial sea. The Park is home to grey seals' colonies and small resident populations of bottlenose dolphins.

These presentations provide an overview of key steps for the redaction and implementation of a management plan and lessons learned from the long experience of the Iroise Marine Natural Park which was created in 2007.

Overview of current status of marine mammals in management plans: Caribbean region

Gerald Mannaerts

Before even speaking about the conditions of management in the MPAs in the Caribbean region, a first observation that can be made is that most of them are small and very coastal. While it can be effective to protect coral reefs, mangroves or other coastal habitats, it isn't designed for marine mammals' protection beyond manatees and some coastal marine mammals.



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Following the Environment World Conservation Monitoring Centre (and World Commission on Protected Areas from the IUCN), only two territories have more than 10% of their EEZ defined as MPA apart from French national waters: Dominican Republic and Sint Eustatius & Saba. However, Bermuda, Bonaire, Sint Eustatius and Saba declared their whole EEZ as marine mammals' sanctuary and are not recognized by the EWCM for the moment. Only the French waters, designated as Agoa Sanctuary for marine mammals is an official MPA declared through the SPAW protocol of the Cartagena convention. This lack of large protection is a potential issue when dealing with large, migrating animals like marine mammals.

The main larger MPAs dedicated MPAs identified in this presentation are:

- The future Abaco MPA in the Bahamas (400 to 500km²)
- The Marine Mammal Sanctuary of Banco de la Plata y Banco de la Navidad in Dominican Republic (32 879.8 km²)
- Yarari Sanctuary in the Dutch Caribbean (25 390 km²)
- Agoa Sanctuary in the French Caribbean (143 256 km²)
- Bermuda Marine Mammal Sanctuary (464 993 km²)

Among these marine mammals' protection hot spots, only the Agoa Sanctuary and the Banco de la Plata y Banco de la Navidad MPA have a management plan but both are outdated and in the process of being reviewed. At a broad scale, this globally illustrates the margin for improvement on the subject in the Caribbean.

Actually, two international EU funded projects work conjointly to improve the situation: the CARI'MAM project, with a work package dedicated to recommendation and facilitation for the development of management plans in marine protected areas; and the Transatlantic Partnership among Marine Protected Areas with a twinning dedicated to marine mammals' protection.

Conservation activities in marine protected area management plans in Turkey

Harun Güçlüsoy and Zafer Kızılkaya

Turkey, as being a peninsula surrounded by seas, has a total coastline of 8,592 km. Despite its natural and cultural values, threats upon the marine ecosystems with various degrees comprise coastal development and sprawl, chemical contamination, eutrophication, marine litter, marine noise, invasive non-indigenous species, over exploitation of natural resources, damaged sea floor integrity and changed hydrographic conditions. Yet, Turkey has established 17 coastal PAs in the Mediterranean that may play an important management role to mitigate the effects of these threats.



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Turkish marine mammal fauna comprises 16 species. Majority of the taxa belong to order of Cetacea (13 sp.), followed by the Carnivora suborder Pinnipedia (3 sp.). Among families, Delphinidae (6 sp.) was the most common while Phocidae, Balaenopteridae, Ziphiidae represented by two, and Otoridae, Physeteridae, Monodontidae and Phocoenidae were represented by only a single species. In terms of distribution of marine mammal taxa along seas surrounding Turkey, Levant Sea had the highest diversity with 12 sp., followed by Aegean Sea (10 sp.), Sea of Marmara (6 sp.) and Black Sea (6 sp.). Many of the cetacean species were categorized either as DD (data deficient) or LC (least concern) by the IUCN Red List, except for the vulnerable *Physeter macrocephalus* and endangered *Balaenoptera physalus*. The endangered monk seal *Monachus monachus* is a top priority species. Though important hotspot for the Cetaceans, neither Black Sea nor the Sea of Marmara has a single MPA established until 2019.

To date, among 15 MPAs established (coastal Beydaglari Coastal NP & Belek SEPA were excluded from the list since they do not engulf any marine terrain), twelve of them had management plans. However, six of these plans were only prepared for the terrestrial/wetland part. Hence, the remaining six including Saros Gulf, Foça, Gökova and Kaş-Kekova SEPA's and Dilek Peninsula - Büyük Menderes Delta and Marmaris NPs had management plans for the marine environment. Among these plans, only Foça and Gökova SEPA's management plans have activities to protect and monitor monk seals. Unfortunately, the rest of them do not have any management activity for marine mammals. Though known to occur in the existing MPAs, cetacean species should also be considered at least to assess their presence, populations and threats upon this taxon so as to incorporate management/monitoring activities to the new management plans in the future. Finally, if needed, borders of the existing MPAs should be re-designed for the protection of the marine mammals.

The conservation of marine mammals in management plans of Pelagos MPAs

Valentina Cappanera

The Pelagos Sanctuary for Mediterranean Marine Mammals is a special marine protected area extending about 90.000 km² in the north-western Mediterranean Sea. It was formed by agreement among Italy, France and Sardinia, and encompasses Corsica and the Archipelago Toscano. Created in order to protect marine mammals from all sources of disturbance caused by human activity, the Sanctuary is thus intended to enable socio-economic development while providing the habitats in the area and species living there with the protection they need. In this context Italian MPAs could represent an added tool useful to improve conservation effectiveness of the Sanctuary.



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Italian MPAs have a specific management plan adopted by the Italian Ministry of Environment in 2010.

In each management plan, specific conservation strategies adopted by the MPA are included. Since a lot of years, Italian MPAs in Pelagos have taken specific monitoring activities and actions on mammal conservation in line with each MPAs conservation objectives. Portofino MPA has tried to collect information from other MPAs of the Pelagos Sanctuary in order to show the general framework of mammal conservation.

Incorporating marine mammal conservation needs into the comprehensive management plan for the NOAA/Stellwagen Bank National Marine Sanctuary

Ben Haskell

Every national marine sanctuary in the United States has a comprehensive management plan that provides strategic direction for all management activities. The current management plan for Stellwagen Bank National Marine Sanctuary was published in 2010 and includes eleven issue-driven action plans three of which address marine mammal conservation: behavioral disturbance, vessel strike, and entanglement. Ben provided context for why marine mammal conservation is necessary in the Sanctuary. He discussed the goals and objectives of the action plans and assessed their performance, highlighting conservation achievements, and discussing emerging issues that need to be addressed in the upcoming revision of the comprehensive management plan.

Challenges associated with the co-management of seals' species in the Parc naturel marin des estuaires picards et de la mer d'Opale.

Carole Perron

Over the coast of Hauts-de-France (North of France), the main French breeding colony of harbor seals and a colony of grey seals (with some births in 2019) are to be found, in particular in the Bay of Somme. The seals can be spotted resting on sandbanks which emerge as the tide recedes. Since the 1990s, populations of these two species increases exponentially after a period of sharp decline. The presence of these individuals generates new relationships with local actors (tourism, summer oversight, group against seals proliferation, fishermen, etc.). Also, the Marine Nature Park of « Estuaires picards et mer d'Opale » has a strong stake regarding to the conservation concerns of these species.



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Management plan of the Marine Nature Park was written between 2013 and 2015. At the beginning, a group against the proliferation of seals was formed due: growth of seals populations, interactions between seals and some recreational or professional fishermen, competition to the resource. The Management council of the Marine Nature Park took up the issue and acted the creation of a working group on seals in October 2013. Then, in the management plan, three goals are defined: good conditions for marine mammals in the Park, good state of seals' populations, and activities must be done with respect for the environment. Questions include: demography, spatial utilization of the Marine Nature Park, diet, interactions with human activities. To answer, a project was developed in 2015. Scientific studies to enhance knowledge about seals and their interactions with human activities in Northeast Channel was carried out by the Centre d'Etudes Biologiques de Chizé (CNRS / Université de La Rochelle): telemetry, photo-identification, stable isotopes, etc.

The results enable a better understanding of the ecology of these species and will allow to develop new perspectives for scientists and managers on its base. Different monitoring and actions could be engaged in particular regarding the demography and ecology of seals' population, more specifically:

- Changes in their hunting areas;
- Changes in diet or competition for resources.

In addition, awareness activities targeting the different stakeholders (nature sport supervisors, nature guides, tourism offices, etc.) are needed to limit disturbance of seals colonies.

Marine mammals in Slovenian waters, how to set-up and manage monitoring activities with eco-volunteers

Tilen Genov

This contribution provides an overview of the status of marine mammals and MPAs in Slovenia. Moreover, it provides guidance on incorporating marine mammals into the management of MPAs, particularly on how to set-up and manage monitoring activities with eco-volunteers. Slovenian waters, together with the rest of the Gulf of Trieste and adjacent waters in the northern Adriatic Sea, are home to a resident population of common bottlenose dolphins (*Tursiops truncatus*). This population has been the focus of a long-term study and monitoring by Morigenos – Slovenian Marine Mammal Society since 2002, primarily through boat- and land-based surveys, photo-identification and biopsy sampling, and is now relatively well studied. Slovenian waters contain three MPAs, all of which are used by common bottlenose dolphin, but have limited efficacy due to their small size. Eco-volunteering activities are becoming increasingly popular worldwide. If carried out properly, they can provide valuable support to marine conservation, by bringing revenue to local economies, supporting (both financially and with hands-on assistance) important research and conservation,



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enabling capacity building, providing a sense of involvement, and having an education and awareness role. Nevertheless, issues such as their necessity, ethical considerations, scientific value, the ways they are conducted, animal welfare versus participant satisfaction, training and quality control should be carefully considered. This contribution addresses some of these issues, provides examples based on the work carried out by Morigenos, and attempts to provide some general guidance on good practices.

Merging science and management for the long-term conservation of bottlenose dolphins in the French Mediterranean Sea – how MPA can contribute to the conservation of marine mammals

Hélène Labach

The Mediterranean bottlenose dolphins (*Tursiops truncatus*) subpopulation is listed as vulnerable by IUCN. This species is strictly protected in France and requires the designation of Special Areas of Conservation (SAC) under the European Habitat Directive. More than 30 MPAs including 2 national Park, 2 marine natural Park and 30 Special Areas of Conservation (SAC) form an important MPAs network all along the French Mediterranean coasts. MPAs can be an effective conservation tool, but face the difficulty to address the conservation of large home range and mobile species. The GDEGeM project initiated in 2013 a long-term science-based strategy toward an integrated large scale management of bottlenose dolphins in French Mediterranean waters, capitalizing the MPAs' network. The project's outputs provided new and reference information on the population structure distribution and abundance. An evaluation of the MPAs' network relevance for the population's management highlighted the important role of some particular MPAs and supported the designation of a new SAC in the Gulf of Lion. MPAs managers were questioned and identified needs of scientific knowledge, training and regional coordination for a better monitoring and conservation of the species. Several projects were then conducted in partnership with MPAs to support the integration of cetaceans in their management plans and help them in the implementation of cetacean's monitoring and management, providing expertise, technical support and training, for example in the Gulf of Lion marine Park, in the Calanques national Park and Côte Bleue Marine Park. Beyond the support provided to MPAs, we promote a regional network management, reinforcing the collaboration between scientists, the French Biodiversity Agency, the Pelagos Sanctuary and the MPAs, through a regional coordination. We encourage an integrated regional monitoring promoting the standardization of monitoring protocols, the data centralization and the evaluation of regional population indicators.



An MPA for the endangered easternmost Mediterranean common dolphin population

Aviad Scheinin

Israeli continental shelf waters were declared as IMMAs for both bottlenose dolphins and common dolphins. The common dolphins' distribution is limited to the southern part of Israel and there is a coastal MPA which is planned by the Israeli Nature Reserves Authorities to be enlarged. Thanks to our research the common dolphins, an endangered species, were chosen as the flag species for this initiative because of the overlap in the distribution of common dolphins with the planned MPA. The enlargement of the MPA is in a huge debate since those species are highly mobile.

Work of the EU project “Transatlantic MPA Network” on the integration of marine mammals into management plans

Purificació Canals and Francis Staub

The European Commission has set up the Transatlantic MPA network project to promote cooperation between managers of MPAs in countries and territories around the Atlantic Ocean. It is designed to stimulate exchange and the sharing of best practice to improve the effective management of MPAs in coastal and offshore areas of the Atlantic; and is implemented through three thematic twinning/partnership projects:

1. Cooperation and common strategy between MPA networks of managers in the Atlantic region
2. MPAs and coastal resilience, coping with rapid changes
3. Marine mammal protection, a way to enhance transatlantic cooperation between MPAs

The marine mammal twinning project seeks better understanding of migrations and threats to species, developing the following activities towards effective conservation:

- Exchange of technical information and practical experiences about marine mammals and their respective habitats
- Identification of common challenges
- Identification of priorities for cross-border collaboration
- Identification of good practices

The project partners are currently working on the development of an “add-on” / “plug-in” for the main tools to measure management effectiveness, related to marine mammal management. The goal is to help MPA managers to track how marine mammals are integrated into the management plan and how they could be better integrated.



Discussion

The conversation emphasized that we have made great strides in incorporating marine mammal conservation needs in MPA management, but challenges remain. These include a general lack of information on distribution, threats, and what measures can be applied to these highly mobile species that regularly cross borders.

The workshop recommended that management plans should be realistic and issue driven. Management plans should solve problems and be solutions-oriented, and they should be S.M.A.R.T. (specific, measurable, attainable, realistic, timely). Specific additional conservation measures are not always necessary – a healthy MPA ecosystem should be the main aim.

For the path forward, capacity building and experience sharing activities for MPA managers should continue and be expanded. This can be facilitated by:

- Twinnings – sister sanctuaries
- Networks: such as CARIMAM, MedPAN, TransAtlantic, RAMPAN, CaMPAM, NAPPAN

MPA networks directly contribute to enhance the capacity of MPA managers, an enabling condition to ensure the success of area-based conservation measures. Whether at the national, regional, or global scale, MPA manager networks can foster the transfer of knowledge in ways, and at a depth, that other methods – reports, trainings, conferences – cannot match. MPA manager networks are a continuous and ever-growing source of guidance on effective conservation of marine mammals.



Workshop 9: Co-Management: Improving the Governance and Management Effectiveness of MMPAs by Empowering and Actively Involving Stakeholders

Conveners: Anne Walton, Yaprak Arda and Spyros Kotomatas

Speakers:

Katherina Audley, Whales of Guerrero Research Project, Oceanic Society, USA
Spyros Kotomatas, WWF Greece, Greece
Ben Haskell, Deputy Superintendent, Stellwagen Bank National Marine Sanctuary, USA

Introduction and Overview

The ICMMPAs held over the last 10 years have provided a unique forum that brings together MPA managers, decisionmakers, scientists and other stakeholders to exchange information, strengthen partnerships, and co-design the way forward to improve MPA management and marine mammal conservation. Despite efforts conducted at the international level, many challenges towards achieving effective place-based protection for marine mammals through the establishment and management of MMPA remain. A key component for improving the design, governance, and management of MPAs is the participation and active involvement of users and key stakeholders of these areas. Various initiatives have been taken around the world ranging from: participatory processes in the design of MMPAs, including the development of conservation measures; establishment of MMPA co-management governance and management structures; and active participation of key stakeholders in the implementation of area-based management measures for marine mammals. The objective of this session, which was structured as an “interactive and participatory workshop”, was to use three distinctly different case studies to highlight stakeholder engagement models used by MPAs that are managing impacts on marine mammals. The focus was on the “challenge” or “issue” the stakeholders have been assembled by the MPA management authority to address. We looked closely at the structure, the process and the types of engagement used - and how these factors contributed to the success and/or failures of the process itself. And, ultimately, we wanted to understand how this translates in terms of actually advancing protection for marine mammals.



Session Objectives

The session objective was to identify the key processes and elements necessary to successfully involve stakeholders and to assess the benefits of involving them in the design and management of MMPAs towards achieving marine mammal conservation.

Presentation Summaries

When the whales win, everyone wins: Employing participatory research to create a culture of environmental stewardship in Guerrero, Mexico

Katherina Audley, Arturo Mellin, Andrea Jacqueline Garcia Chavez, Abel Cortez, Avimael Cadena, Terra Hanks, Raul Ramirez

Guerrero, one of the most biologically diverse and understudied states in México, hosts 15+ marine mammal species and a once thriving fishery. Poverty, corruption, pollution and a lack of education and opportunities are leading to environmental destruction. As of 2013, awareness of and protection measures concerning marine mammals were non-existent, despite the predominance of marine-based tourism and commercial fishing methods known to be deleterious to marine mammals.

Between 2014-2019, we collaborated with Guerrero communities to identify the potential for marine mammal-based ecotourism activities through a first-ever participatory humpback whale survey. It was our goal to cultivate a shift toward marine conservation through this survey in tandem with capacity building; education; outreach; ecotourism market development; and fishermen's learning exchange programs.

Advances included: a 75% increase in awareness and investment in marine mammals; a community-supported safe whale watch program (75 guides trained); development of ecotourism market and activities to alleviate pressure on the fishery and motivate environmental stewardship; a voluntary 30-member stranding network; a 100+ fishermen marine mammal spotting network; and groundbreaking humpback whale survey results.

The fishery continues to decline and we now know that marine mammals are threatened in Guerrero; many species present with pollution-borne diseases, emaciation and anthropogenic scarring and some species sighting rates have declined by more than 75% since 2014.

However, because of our transparent and inclusive approach, the community has



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developed an interest in restoring their marine environment and the potential for conflicts between stakeholders has been reduced.

Community-requested next steps now underway include: year-round immersive nature programs; strengthening ecotourism market supply and demand; student-run dolphin studies; and a community-developed marine management plan, including marine mammal monitoring.

We presented our guiding philosophy and lessons learned during this workshop, and also discussed how we will address the new threats we are facing as a direct result of our success.

Conserving *Monachus monachus* in the Aegean Sea: designing a new MMPA together with local communities and stakeholders establishing the first co-management scheme in Greece

Spyros Kotomatas

Despite the high levels of marine biodiversity found in Greek waters, a very small number of marine protected areas (MPAs) has been established in the last 25 years. Moreover, in spite of the fact that about half of the world population of the Mediterranean monk seal, *Monachus monachus*, one of the most emblematic species in the Mediterranean, is found in the Greek archipelago, Greek society has still not embraced marine conservation nor widely accepts the creation of MPAs, as a tool for protecting and managing its marine resources. In fact, the traditional “top-down” MPA design and designation process has quite often been hampered by long delays and local community or negative reactions by stakeholders and area users.

We present the recent case study of the Gyaros MPA that aimed to develop a new and model MPA designation process, while in parallel conserve one of the largest monk seal populations in the Mediterranean. We focus on the process of engaging local stakeholders in the design and management of MPAs, presenting the key tools utilized to achieve consensus in the development of the MPA conservation measures. This is the first co-management MPA governance scheme in the country, requiring the development of necessary partnerships for the effective management of the MPA. Lastly, we focus on the lessons learned (achievements and pitfalls) that can be used in the future design of MPAs and how such approaches can be used towards developing a broader understanding of marine conservation needs and fostering a greater environmental stewardship.



Incorporating marine mammal conservation needs into the comprehensive management plan for the NOAA/Stellwagen Bank National Marine Sanctuary

Benjamin Haskell

Every national marine sanctuary in the United States has a comprehensive management plan that provides strategic direction for all management activities. The current management plan for Stellwagen Bank National Marine Sanctuary was published in 2010 and includes eleven issue-driven action plans three of which address marine mammal conservation: behavioral disturbance, vessel strike, and entanglement. Ben will provide context for why marine mammal conservation is necessary in the Sanctuary. He will discuss the goals and objectives of the action plans and assess their performance, highlighting conservation achievements, and discuss emerging issues that need to be addressed in the upcoming revision of the comprehensive management plan.

Discussion

This workshop required preregistration and was designed for maximum dialogue between participants. Challenges and opportunities for stakeholder engagement to allow new MMPAs and to foster stewardship in existing MMPAs were discussed.

Workshop participants agreed that engaging stakeholders takes time and must be done with care. Ten principles were presented as lessons learned:

1. Prioritize human connections over stated objectives
2. Focus on the right people
3. Always have coffee and colder beer in your fridge
4. Work hard to integrate yourself into the community
5. Strive for compassion and humility
6. Be inclusive
7. Be collaborative and generous with credit
8. Be honest, transparent and accessible
9. Be on time and consistent
10. Assume noble intent

At the end of the discussion, Mr. Ilias Mavroeidis, Programme Management Officer – Governance from UN Environment/Mediterranean Action Plan Coordinating Unit presented a number of regional initiatives having relevance to stakeholder participation in marine conservation throughout the Mediterranean.



Workshop 10: Marine Mammals and MSP in the Context of Blue Growth

Supported by the National Center for the Environment and Sustainable Development



Conveners: Tundi Agardy, Catherine Piante and Panagiota Maragou

Speakers:

Tundi Agardy, Sound Seas, USA

Vedran Nikolić, European Commission, DG Environment, Belgium

Helene Labach, Groupement d'Intérêt Scientifique des Mammifères Marins de Méditerranée (GIS3M), France

Duncan Vaughn, Natural England, UK

Catarina Frazao Santo, MARE, University of Lisbon, Portugal

Elena Gissi, University Iuav of Venice, Italy

Jon C. Day, James Cook University, Australia



Introduction and Overview

The founding of ICMMPA as a way to bring the marine mammal and the marine protected area communities together has helped advance spatial management as a means to reduce harmful impacts on whales, dolphins, seals, and sirenians. Scientists and practitioners have united around a common agenda, harnessing the best available tools for designing, implementing, and learning from protected areas and protected area networks. In addition, participants ever since the first ICMMPA have discussed how marine spatial planning (MSP) can catalyze effective MPAs for marine mammal conservation.

Recent developments in MSP are cause for concern, however. In the rush to unlock the development potential of the oceans, the ‘blue growth’ movement has harnessed MSP to allow access for industrial users to new areas of the oceans, or to allow as many users as possible in any given ocean space. In the European Union, blue growth is fueling interest in energy development, fisheries expansion, tourism, and other uses that have the potential to harm marine mammals. And despite a commitment to the ‘Blue Economy’, in which economic development of the oceans is tied to environmental and social sustainability, conservation concerns often get pushed aside. In participatory meetings with stakeholders, marine planning sometimes takes place without strong involvement from conservation scientists. When this happens, conservation can be marginalized – with long-term impacts on marine species including marine mammals.

This deliberately provocative session explored how to reverse the trend of unsustainable blue growth, by using marine mammal information to create marine spatial plans that allow development while preserving the habitat and food needed to sustain marine mammal populations. We focused on the European MSP initiatives, with special attention to the Mediterranean, however guidance around the world provided a foundation for these discussions.

A plenary panel addressed the current trajectory of MSP in EU waters, and the extent to which conservation concerns are being addressed. The participants then heard presentations by experts from various parts of northern Europe, Atlantic, and Mediterranean, as well as perspectives from outside Europe. Following these short presentations, an outcome-oriented workshop was held to develop specific recommendations on how to promote the uptake of marine mammal information into planning and the management that results, including the need to involve the right audience from both the scientific community and the different levels of administration. The outputs/ recommendations provide a basis for a strategy and an action plan to specifically influence MSP processes unfolding in the European Seas, as well as those MSP processes that look to the EU as a model for MSP for sustainable development.



Session Objectives

The objectives of this session were to advance the discussion on how marine mammal conservation can be accommodated in marine spatial plans, in light of MSP processes that are driven by a Blue Growth agenda and to ensure that future MSP processes put conservation front and center, not as a special interest. A discussion about the EU Maritime Spatial Planning Directive was meant to result in recommendations for how future MSP could improve prospects for Mediterranean marine mammals.

Presentation Summaries

MSP and Blue Growth: The positives and negatives for marine mammals

Tundi Agardy

This introductory presentation posed and then began to answer three questions: “Why discuss MSP?” “Why discuss Blue Growth?”, and “What specific ways can we ensure that conservation is the foundation for sustainable use through MSP?”. Regarding ‘Why MSP?’, participants were reminded that the focus of ICMMPA conferences has been on using spatial tools such as MPAs as ways to conserve marine mammals, and that MSP can affect MMPAs in many ways. These include: by identifying new sites to be protected or influencing the effectiveness of MPAs within a wider spatial plan, and – on the negative side – by increasing pressures on marine protected areas and the species they aim to protect. Previous ICMMPAs have all had sessions on the link between MSP and MMPAs, including a targeted set of sessions on using MSP to site renewable energy in such a way as not to compromise marine mammal species. This session, in contrast, both broadens the discussion by looking at all uses being accommodated in marine spatial plans, and hones the focus to MSP’s direction in European waters as Blue Growth drives the planning agenda. Regarding ‘Why Blue Growth is being introduced into the debate about marine planning and MMPAs?’, participants were alerted to the flurry of activity happening in marine areas where governments have recognized the potential of economic development of the marine environment. In many cases, the rush to unlock this potential has led to conservation taking a back seat, to the detriment of marine mammal and other species. Even in the EU where the MSP Directive pushes for environmental concerns alongside economic and social ones, conservation is sometimes treated as a special interest, and a weak one at that.

This path to economic development at the cost of biodiversity decline is not inevitable. We can harness MSP to protect ecosystems and enrich humans simultaneously, by recognizing that biodiversity is the foundation for all life on earth, by recognizing the



important role that oceans and marine species play in human well-being, and by recognizing that the cost of putting further pressures on marine species are high – not just for marine life but also for our own. The session was presented as a rallying cry for marine conservationists to make the case for protecting habitat in marine plans, and for demanding continued involvement in decisions being made about marine resource use and access to marine areas that flow from MSP.

Marine spatial planning in the European Union and the ecosystem-based approach

Vedran Nikolić and Juan Ronco Zapatero

EU Maritime Spatial Planning Directive (MSPD) is a common legal framework for 23 EU countries which sets an obligation to deliver maritime spatial plans by 2021. Driven by this law, currently 46% of all MSP initiatives worldwide take place in the EU waters. One of the key requirements of the MSPD is to apply the ecosystem-based approach. This approach is mentioned in the EU Marine Strategy Framework Directive (MSFD) with the aim of ensuring that the collective pressure of all activities is kept within levels compatible with the achievement of good environmental status (GES) under the MSFD, and that the capacity of marine ecosystems to respond to human-induced changes is not compromised, while contributing to the sustainable use of marine goods and services by present and future generations. Challenges in the application of the ecosystem-based approach in the EU include institutional complexity and multi-layer governance regimes, the lack of standardized application framework and of interdisciplinary science to support this process.

The assessment of environmental effects of maritime spatial plans must be carried out in accordance with the provisions of the SEA Directive - the process by which environmental considerations must be fully integrated into the preparation of plans and programs and prior to their final adoption. Such a strategic environmental assessment ensures a holistic consideration of the impacts, including cumulative ones, from the various human activities at an early stage and therefore facilitate the implementation of the ecosystem-based approach and integrating the assessment of impacts on marine mammals. The maritime spatial plans also need to be subject to a specific assessment of their effects, including cumulative ones, on the conservation objectives of special areas of conservation (Natura 2000 sites), protected areas under EU Habitats Directive. This offers a strong protection for marine mammals for which these sites were designated because maritime spatial plans cannot be adopted if they have an adverse effect on the integrity of the sites.

The European Commission is supporting EU Member States to implement the Directive through its MSP platform which serves as a gateway and exchange forum for all stakeholders involved, drawing together experience and expertise from across Europe



and making it available in a readily-accessible, implementation-oriented format; through many EU funded projects; and by launching in 2019 a study on integrating ecosystem-based approach into MSP.

Marine Planning and Harbor Porpoise conservation in England

Duncan Vaughan and Rebecca Walker

The recent publication of the 25 Year Environment Plan for England calls for an approach that puts the environment first with a greener, healthier, more sustainable future for the next generation. The desire to achieve this in the marine environment will be extremely challenging when set against a blue growth agenda with significant increases in the demand for marine space and the utilization of those resources within that space. The UK through its Marine Strategy is committed to delivering Good Environmental Status for marine mammals throughout its waters thereby requiring a comprehensive approach to managing impacts on these species and the habitats and species (i.e. prey) that they depend upon. Marine planning, marine licensing and marine protected areas are three key tools that have been identified that can enable both the desired blue growth agenda and the requisite environmental protection. Marine planning in England is still in its infancy with four out of eleven marine plans being adopted with the remainder to be in place by 2021. When integrated with licensing, marine plans offer the potential to regulate the activities of most marine sectors (i.e. offshore renewables and oil and gas). The development of an ecologically coherent marine protected area network is much more advanced and substantially complete with two MPAs being designated to protect harbor porpoise in English waters. The importance of drawing together the different strands of planning/protection policy and strategy to deliver protection for harbor porpoise in England will be discussed.

Main messages / recommendations:

- 1) Create strong cascading policy threads that stress the importance of marine mammal protection
- 2) Use MPA conservation objectives and marine plan policy objectives to secure the delivery of improvements in marine mammal populations
- 3) Consider MSP, MPAs, marine licensing and marine environmental assessments as a package of regulatory tools to deliver environmental outcomes for marine mammals.



The practice of marine mammal conservation in the context of EU policies in French Mediterranean

Hélène Labach

The European Maritime Spatial Planning directive (MSP) for the sustainable growth of Europe's blue economy is implemented in France through a sub-regional strategy integrating the elements of the objectives of the European Marine Strategy Framework Directive (MSFD). The first steps of the process: a diagnosis of the state of the marine coastal environment, current uses and land-sea interactions, the definition of strategic environmental and socio-economic objectives and the Elaboration of a vocation map, are under public consultation. Three environmental objectives have been identified for marine mammals: limiting anthropogenic disturbance, limiting bycatch and reducing ship strikes. GIS3M is involved since the beginning in the elaboration of the strategic documents for the MSFD and MSP implementation the French Mediterranean EZE. Our contribution supported, for example, the elaboration of potential maps for Windfarms development excluding the proximity of continental slope. However, despite our important involvement into an important consultation process, our impact to ensure marine mammal conservation despite or thanks to the maritime spatial planning faces the difficulty of understanding the process, a separated take into account of socio-economic and environmental objectives and the lack of data on populations.

Marine spatial planning, conservation and blue growth in the European Atlantic, and the challenge of a changing climate

Catarina Frazão-Santos

Marine spatial planning (MSP) has spread globally over the past three decades being a topic of increasing importance in scientific and policy realms. It is already under development in about 70 countries (45% of all coastal states) and the recent MSP global initiative by IOC-UNESCO set the intention to triple the area with MSP effectively implemented by 2030. However, developing and implementing MSP still face several key political, social, economic and environmental challenges. Among these challenges, we can find (1) global climate change, and (2) the need to properly ensure ocean conservation.

Climate-induced changes in ocean conditions and marine ecosystem services will affect the distribution and intensity of ocean uses related to the blue economy (e.g. fisheries, aquaculture, tourism). Climate change will also affect marine conservation, and the effectiveness of marine protected areas – including for marine mammals. As new potential use-use conflicts, new use-environment conflicts, and new legal issues arise,



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MSP will need to be able to adapt to them to foster sustainability under a changing climate. Understanding how to properly consider and respond to this evolving challenge, and how to incorporate it when developing specific spatial management measures, is key not only for marine mammals' protection, but to the wider conservation of ocean ecosystems and resources.

Properly balancing the need for socioeconomic development with ocean protection is a key challenge in MSP initiatives around the world. The Portuguese MSP initiative is no exception. With a marine area of about 4 million km² (marine waters of the exclusive economic zone, plus seabed and subsoil of the continental shelf beyond 200 nm), Portugal has a large maritime space that covers a significant percentage of the European Atlantic. MSP in Portugal began a decade ago, in 2008, with the development of a first marine spatial plan, the POEM. Following a government change, however, the plan was published as a study (with no legal strength). Afterwards, a new plan, the Situation Plan, started being developed, and in early 2019 it was pending government approval. Both the POEM and the Situation Plan encompassed marine conservation areas (e.g. Natura 2000 sites, national MPAs) as well as important species and habitats – including marine mammals. However, this was not enough to ensure the development of a true ecosystem-based MSP. Indeed, both plans followed an integrated-use approach, where marine conservation is considered as just one of the pillars (rather than the foundation) on which the planning process builds. While interviewing key-actors involved in the Portuguese MSP process and analyzing their perceptions, the majority identified that ecosystem conservation was poorly considered in both the POEM and the MSP regulations that preceded the Situation Plan. The key message is that although sound scientific information is needed to support the planning process (e.g. IMMAs, IBAs, coral reefs, seagrass meadows), having information is not enough. Communication on how to use such information is key. It is how such information is perceived and integrated in the planning process – not by scientists but by managers, planners and decision makers – that will allow us to make the transition to MSP where conservation does not take “a back seat”, instead being the foundation on which to build a sustainable future.

Testing MSP in Italy. Lessons learnt: knowledge, threats, action

Elena Gissi

The contribution discusses the lessons learnt derived from testing Marine Spatial Planning in Italy. The author draws from the experience acquired in implementing and testing the MSP process in the Mediterranean in a series of collaborative projects financed by the European Commission, namely ADRIPLAN “ADRIatic Ionian maritime spatial PLANning”, SUPREME “SUPporting maritime spatial Planning in the Eastern Mediterranean”, and SIMWESTMED “Supporting Implementation of Maritime Spatial



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Planning in the Western Mediterranean region”. In the case of Italy, MSP processes will be launched in three marine regions (Adriatic, Ionian, Tirrenian Seas), according to the Legislative Decree 201/2016 that transposed the EU MSP Directive 2014/89/EC. The MSP testing cases in the three case study areas (Northern Adriatic, Strait of Sicily, Tuscan Archipelago), developed in collaboration with the Ministry of Transport and Infrastructure, responsible authority for MSP in Italy, were approached with a similar methodology, answering to similar and overarching goal (to support sustainable blue growth). However, the planning process took very different paths because of different socio-economic assets and maritime economies. The stakeholders and public authorities who took part to the engagement process, brought very different stakes and concerns in the planning processes, orienting the future trends. Moreover, the planning process developed in very different paths because of the environmental concerns and problems, conservation features, and different scales of analysis needed to answer to the concerns in the three case study areas.

Given the complexity of the cases, the problem scoping brought the planning to different solutions, resulting in three very different Marine Spatial Plans. Though the state of knowledge was different, this fact did not hamper the achievement of a planning proposal which answered to the capacity of engaging stakeholders and mobilizing knowledge and resources. It is indeed crucial to acknowledge that problem scoping is essential to understand the different needs and different planning scales, and guide the planning process. Though conservation was not the driver of MSP, incorporating conservation concerns and knowledge in MSP is essential for effective action within marine spatial plans. Finally, best available knowledge is not a limit, but an opportunity to collect meaningful information to understand planning problems, and not only the readily available data.

Marine Mammals and MSP in the context of blue growth: Some suggestions based on Australia’s experience

Jon C. Day

This presentation outlines some key requirements for effective MSP based on many decades of experience in Australia. The first requirement discussed is the need for clear and prioritized objectives; such a prioritization clearly indicates the highest priorities within an MPA or a zone within a protected area. Without such a prioritization, critics can easily reprioritize any listed objectives to suit their interests. The second requirement is using the best available data for management rather than waiting for ideal or perfect data; equally, managers should be prepared to bring in new data if it becomes available during planning but also be wary of those who might want to delay planning claiming they only want to obtain better data. The third requirement is the advantage of seeking to ensure all actions comply with the SMART principles (that is, Specific, Measurable, Achievable, Realistic (or Resourced) and Timely). The fourth



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requirement is to prioritize the key threats; to do this a simple assessment of both likelihood and consequence is shown. The fourth requirement is an understanding that effective MSP is rarely, if ever, achieved using a singular spatial management tool like zoning. Many spatial and temporal management tools are available for the manager, and it is the application of a range of these complementary tools that usually is the most appropriate way to ensure effective MSP. The final requirement discussed is the need to be prepared to compromise when planning and managing – it is of little use having a perfect approach to management if it takes decades to plan and then implement (*‘Perfect is the enemy of the good’*).

Discussion

A recap of the day’s discussions by Jon Day stressed the importance of prioritization, stakeholder engagement, using best available science to understand threats, and being flexible in utilizing MSP to achieve economic and conservation goals.

A summary of the recommendations from the morning sessions include:

- 1) Casting light on the tension between blue growth and the maintenance of marine values, including biodiversity
- 2) Dealing with and mapping uncertainty
- 3) Evaluating effectiveness of MSP; undertaking monitoring
- 4) Focusing on special considerations when doing MSP in IMMAs (or CCHs)
- 5) Engaging with MSP processes!

Participants recognized that new MMPAs can result from MSP, and existent MMPAs are influenced by it. Previous ICMMPAs introduced the link between MSP and MPAs and discussed renewable energy siting as an example of MSP with bearing on marine mammals. This session focused on MSP in the EU, and the opportunities for MM conservation in the shadow of a heavily economic blue growth agenda.

Blue Growth can lead to a significant expansion of human activities in the oceans, with increased pressures in already utilized areas and new pressures in previously underutilized or inaccessible areas. The three principles meant to underpin Blue Growth are sustainability, social equitability and economic development, however, such fast expansion of human ocean occupancy raises concerns about potential cumulative and synergic anthropogenic impacts on top predators and sensitive species such as marine mammals. This is relevant as there have been already two extinctions of marine mammal species in historical times, and some species are highly endangered due to human pressure.

The European Union has produced four directives that directly affect the planning and licensing of Blue Growth activities: the Marine Strategy Framework Directive (MSFD);



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the Strategic Environmental Assessment Directive (SEA); the Habitats Directive; and the Marine Spatial Planning Directive (MSP). In the European Union as well as elsewhere around the globe, MSP is recognized by numerous bodies, including national governments as well as environmental agreements, as essential to achieve harmonic development of human activities in a sustainable manner considering all stakeholders. We in the marine mammal community, as well as the wider conservation community, have the opportunity to influence MSP processes as they unfold, to ensure ecological sustainability and equity goes hand-in-hand with economic development.

In this context, workshop participants recommended:

- Promoting investment on activities valuing the economic, social and environmental benefits of preserving the ecosystem functioning of the marine environment. Blue Growth includes a range of economic activities from artisanal small-scale to industrial large-scale activities. An Ecosystem Based Approach (EBA) including the environmental and social costs and benefits, present and future, of competing economic activities, should guide priorities for smart development.
- Applying transparent Environmental Impact Assessment (EIA) that takes into consideration marine mammals in all Blue Growth activities. This includes the development of international law for activities proposed for *The Area*, i.e. waters outside national jurisdiction. The latter is particularly applicable to deep sea mining and potential fisheries exploitation of the deep scattering layer, both with high potential to impact marine mammals by affecting their habitat and food web.
- Integrating the objectives of MSFD, SEA, MSP and Habitat Directives within EU (and when possible outside EU), to achieve harmonized and effective planning.
- Legislating in the MSP process of all Blue Growth activities the requirement of applying Best Practice, i.e., the best available procedures and technologies with proven effects in mitigating environmental impact.
- Recognizing the importance of marine areas identified as of importance to marine mammal species, such as Marine Protected Areas, Marine Mammal Important Areas, ACCOBAMS Critical Areas, etc. In all these areas, the precautionary principle should be applied in MSP, *sensu* the provision of the EU Habitats Directive regarding Special Areas of Conservation, where projects are required to prove that no negative environmental impacts will occur before licensing.
- Including long-term data to determine trends on species and activities, to improve EIA and MSP processes. Within IMMAs and other important areas for marine mammals, using early warning systems to track threats to enable effective management responses. Also, developing monitoring procedures to evaluate the



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effectiveness of the MSP process in local areas for marine mammals, as well as the compliance of Blue Growth activities with the Blue Growth principle of sustainability. Acquired knowledge is to be applied in dynamic management.

- Initiating or promoting international processes and agreements when needed to reduce the impacts on marine mammals of Blue Growth activities, thus facilitating MSP by reducing synergistic effects. This includes the following non-exclusive actions concerning Blue Growth activities:
 - i) Energy: in the context of climate change, favor projects that reduce carbon emissions, and discourage seismic surveys in key areas for marine mammals;
 - ii) Shipping: encourage the International Maritime Organization to regulate thresholds for the emissions of acoustic pollution from ships, as well as the application of technologies and other measures to reduce the impact of ship strikes on marine mammals;
 - iii) Fisheries and aquaculture: protect foraging resources of marine mammals and other top-predators by promoting sustainable aquaculture and fisheries, including the prosecution of Illegal, Unregulated and Unreported fishing, and ecosystem-based management, applying the precautionary principle;
 - iv) Mining: consider marine mammals in EIA of deep sea mining, given the dependency of many marine mammals on resources at the seafloor and the potential of mining-related releases of pollutants into food webs;
 - v) Tourism: promote eco-tourism with best environmental practices and apply MPA to harmonize tourism and marine mammal wellbeing.

- Developing and utilizing a roster of marine mammal experts, upon whom planner can call to receive information about marine mammal distribution, population status, ecology, and behavior for use in developing marine spatial plans.

- Casting light on marine spatial plans as they evolve, to ensure that accelerated economic development and the promotion of large-scale commercial interests does not eclipse the social and environmental dimensions of Blue Growth.





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ROUNDTABLE SESSIONS

Roundtable 1: IUCN MMPA Task Force Regional Groups First Informal Summit

Conveners: Giuseppe Notarbartolo di Sciara and Erich Hoyt

Session Objective:

This informal summit recognized the opportunity provided by the presence of the many IMMA regional group representatives attending ICMMPA5, to share experiences across the 5 regions where IMMA processes have been completed.

Summary

This informal summit allowed exchange of information amongst Task Force Regional Coordinators on the challenges surrounding IMMA designation, as well as allowing everyone from the five regions where IMMAs have been identified to date to take stock of the significant progress made since the IMMA initiative was launched. There are currently 120 existing IMMAs, and likely to be more than 300 soon.

It was recognized that voluntary contributions of time and information from the regional experts form the strong base of IMMA work. Participants discussed a number of ideas for making the IMMA processes more efficient and effective, and to facilitate collaboration between regions and Task Force Secretariat, and amongst regions. Through a Skype call with Michael Tetley, IMMA Coordinator, participants discussed ways to transform fact sheets into a form that could synch with the Red List, since there is a tight connection between the two.



Roundtable 2: Sustainable financing of MMPAs – Tackling Interrelated environmental threats with a mix of strategic funding initiatives

Convener: Mark J. Spalding, The Ocean Foundation

Speakers:

Mark J. Spalding, The Ocean Foundation, USA

Brad Barr, International Committee on Marine Mammal Protected Areas, USA

Naomi McIntosh, International Committee on Marine Mammal Protected Areas, USA

Tundi Agardy, SoundSeas, USA

Guillaume Le Port, Vertigo Lab, France

Session Objectives:

There is a need for lively discussion about the missing element for nearly all MMPAs: sustainable finance. We know why the money is missing. The objective of this session is to discuss what is wrong and why, and how to fix government appropriations and priorities, as well as how to meet the needs of MMPAs via creative models for sustainable financing.

Session Overview

This roundtable session began with a comprehensive and provocative presentation by Mark Spalding, abstracted below.

The Need for Sustainable Financing

Mark J. Spalding

In MMPAs, as with fisheries, we manage human actions in relationship to ecosystems (and ecosystem services); we protect species and spaces (or not), we do NOT and CANNOT manage nature or natural processes. We have seen an increase in success in designating MPAs, and yet, it appears there is not enough momentum to be able to meet the various protected area targets in a timely fashion, and many MPAs do not have management plans nor effective enforcement. We need to move MPAs through



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the stages from announcement and all the way to fully protected (effectiveness). This requires political will to create MPAs, and then to fund MPA management and enforcement over time.

Marine Protected Areas are ocean places that belong to all and are held in the hands of our governments as a public trust so that common spaces and common resources are protected for all, and for future generations. Do we have this legal doctrine of the public trust in mind when we create MPAs? Are we thinking of all people? Remembering that these places are common heritage of all mankind? Are we thinking of future generations? Are we thinking about whether these MPAs are being fairly shared?

There is insufficient funding for science and management much less to create good governance, political will, and to thwart corruption. How do we ensure that there is sufficient state capacity, political will, surveillance technologies and financial resources available to enforce MPA restrictions? Subsidizing MPAs would not only be more legal (than fishing subsidies), it would be a better return for each country and improve food security. Jobs are created in the monitoring, enforcement, and restoration of MPA ecosystems. As public waters, our MPAs should be sufficiently funded with public funds to accomplish what they were established to do.

At the end of the day, those of us who feel responsible to future generations have to see our global ocean as proximate and protectable. We have to recognize that supporting the long-term health of MPA networks in our EEZs is supporting the long-term health of our national interests. And, we have to recognize that the global ocean is changing faster than we know, in ways we can only partially understand, and as such, protecting the high seas and the biodiversity beyond national jurisdictions is also paramount. We know that the most vulnerable communities and poorest nations stand to benefit most from shared, precautionary management of our natural resources. We know that we share a responsibility to maintain the ocean's capacity to absorb our bad behaviors and produce our oxygen, as well as our food. And that includes well-framed, well-enforced, and well-funded marine protected areas around the world.

Summary

After Mark Spalding's thoughtful and provocative introduction, short presentations were made by Brad Barr, Naomi McIntosh, Pauline Gauffier, Tundi Agardy, and Guillaume Le Port. Mark planted the seed that MPAs are assets, and should be vehicles for generating the financing needed to maintain them. The group discussed the fact that there are systemic reasons why MPA budgets fall short nonetheless: 1)



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philanthropies that step in can give the impression that the financing burden and responsibility are lifted off government agencies; 2) philanthropic and public institutions rarely work together; and 3) there are more and more MPAs (imagine what will happen when MPAs are designated in ABNJ – who will then pay?). The animated discussion that followed each presentation and intervention led to some very creative ideas on how to make MMPA financing more sustainable. One idea that got a lot of traction was use ICMMPA conferences as a vehicle to enhance the collective search for funding for common needs – utilizing shared experience to kickstart sustained funding flows. It was agreed that ICMMPA should take advantage of the existing sustainable finance expertise in the MMPA community, and bring new expertise in. Another idea was to link debt relief to SDG implementation (including the use of MPAs to achieve SDG 14). However, the group discussion also veered back to the dangers of raising unrealistic expectations, and recognized that going after funding outside of public monies can be a two-edged sword. The participants made a commitment to furthering these discussions in their own spheres of influence, and to having more sustainable financing sessions, including training sessions, at future ICMMPA conferences.



Knowledge Café 1: Next Steps for the Managing of Whale Watching Activities – How to Move from Voluntary Commitment to Effective Regulation?

Organized and supported by the French Biodiversity Agency

Conveners: Benjamin Guichard, French Biodiversity Agency (AFB) and Alain Barcelo, Port-Cros National Park, France

Speakers:

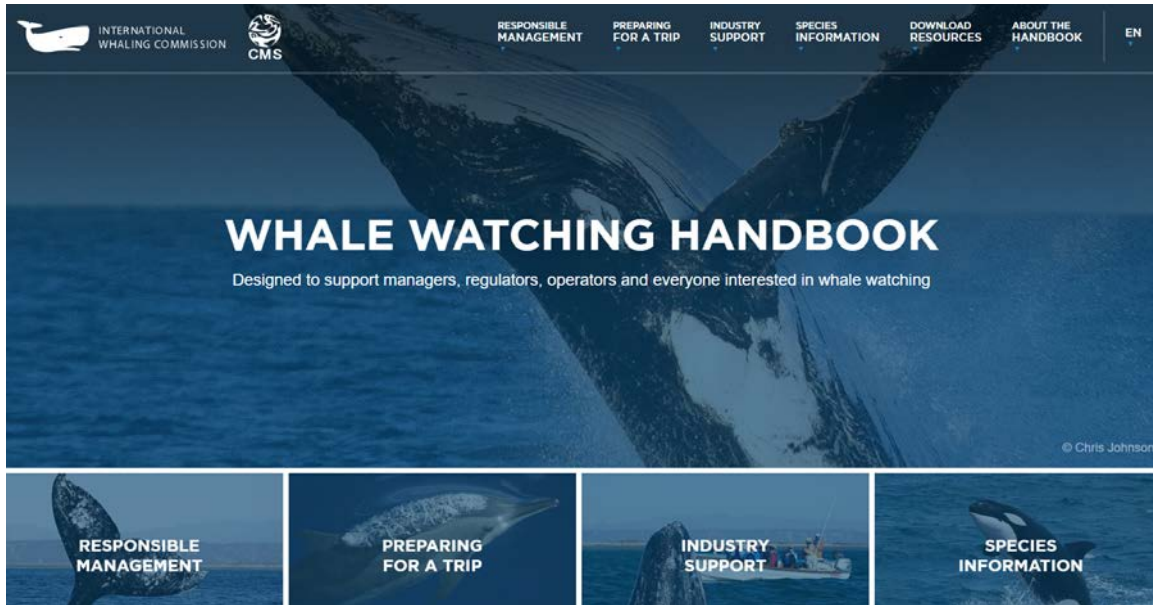
Gianna Minton and David Mattila, International Whaling Commission, UK
Lorenzo Rojas-Bracho, Instituto Nacional de Ecología y Cambio Climático, Mexico
Jorge Urban, Autonomous University of Baja California Sur, Mexico
Alain Barcelo and Marion Peirache, Port-Cros National Park, France
Gérald Mannaert, Agoa Sanctuary, France
Philippe Le Niliot, Iroise Marine Nature Park, France
Erich Hoyt, IUCN Marine Mammal Protected Areas Task Force and WDC, UK
Lauren McWhinnie and Molly Fraser, University of Victoria, Canada
Naomi McIntosh, International Committee on Marine Mammal Protected Areas, USA

Session Objectives:

This session was designed to present the new IWC WW Handbook that has been developed to help ensure that government or industry decision makers have access to the information they need to support them in the sustainable management of whale watching. Participants presented MMPAs case studies that could have an additional value to the IWC WW handbook, and worked to produce a short synthesis on barriers/information and capacity needs in different regions to ensure best practice (from voluntary to regulation).



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<https://wwhandbook.iwc.int>

Session Overview:

Whale watching has been developing rapidly in the last ten years, and many attempts have been made to better manage this activity and control its impacts on marine mammal populations. It has been thoroughly discussed at every ICMMPA since its second edition in 2011, and ICMMPA4 whale watching workshop concluded that both guidelines & regulation approach and MMPAs approach were necessary. The knowledge café presented advances on both approaches and participants discussed how they can be combined for better management.

Session Summary:

Participants heard numerous case studies from around the world and were able to make recommendations on how to achieve effective regulation of whale-watching:

Pre-requisite:

- *Define carrying capacity*
- *Set up quiet areas (1/3 space of the total area), with clear limits*

Establishing regulation:

- *Distance approach, not harassment approach*
- *Aim at licensing system*
- *Guidelines not sufficient, needs enforcement*

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- *No more than 3 boats 300m around animals*
- *Simple and clear regulation for efficient enforcement*
- *Involve the wardens in the process*

In addition, the group made recommendations regarding the IWC handbook:

- *Promote it next to the MPAs community*
- *Feed and update IWC WW online handbook with more case studies, guidelines & regulation,*
- *Include not only positive case studies as exist in the IWC handbook, but also examples of poor practices from which to learn; set up a review of common unsatisfactory situations, with recommendations*
- *Add missing scientific articles*

There remain many unanswered questions about sustainable whale-watching, and MPA managers need more information to craft regulations and outreach to achieve this. Therefore, sustainable whale-watching needs to be addressed again at the next ICMMPA meeting.



Whale watching in Iroise marine nature park (Benjamin Guichard/French agency for biodiversity)



Mini-Colloquium: The mysterious language that bridges species with spaces

Conveners: Claudio Campagna, Wildlife Conservation Society, Argentina and Daniel Guevara, University of California Santa Cruz, USA

Session Overview:

In his keynote entitled “The mysterious language that bridges species with spaces”, Claudio Campagna explored the pros and cons of “bridging” languages. In this follow-on mini-colloquium, he presented his thoughts on the number of ways of conserving species and spaces can be integrated under the same value language. Today, species conservation is predominantly about the intrinsic and instrumental values of life forms; spaces are about processes and ecosystem services. Species go extinct, spaces are degraded. Species inspired “Save the Whales,” spaces “Save the ‘ecology.’” Would two “conservations”, or many, help or weaken the final cause? The ICMMPA sits at the interphase of two conceptual universes. The mini-colloquium was designed to be highly interactive, with a rich exchange between participants and the showcases of new ideas and perspectives.

Session Objectives:

The purpose of this session was to further engage with ICMMPA5 participants, having an informal discussion to explore the philosophical/conservation implications and to expand on some of the issues stemming from the keynote presentation given by Claudio Campagna.



SIDE EVENTS

Side Event 1: Supporting cetacean conservation in the Mediterranean (by invitation)

Sponsored by the Captain Vassilis and Carmen Constantakopoulos Foundation

Organizer: WWF Greece

Overview:

In this event, WWF Greece presented to key bodies its new initiative to build, as part of WWF Mediterranean Marine Initiative, a new strategic plan of actions that aims to significantly improve cetacean conservation in Greece, a cetacean hotspot in the eastern Mediterranean Sea, through 3 key pillars of work:

- Filling the key gaps in scientific knowledge through a coordinated approach with concrete conservation outputs
- Designing management measures to address marine environmental impacts of multi- sectoral human activities and actively promoting their adoption by the competent authorities
- Developing and implementing specific and targeted conservation actions through engagement of key stakeholders utilizing all available means, including policy, advocacy, in-situ conservation, capacity building, awareness and education.



Side Event 2: REMMOA Large Scale Aerial Surveys

(by registration)

Organized and sponsored by the French Biodiversity Agency



Overview:

The REMMOA aerial observations project aims in identifying the distribution of marine mammals and other marine megafauna and developing a monitoring strategy for tropical pelagic ecosystems. Cycle 2 of the REMMOA project is one of the flagship actions of the French Biodiversity Agency implemented with the Pelagis Observatory, a joint research unit of La Rochelle University and CNRS. The REMMOA project covers a decade of surveys across three oceans accounting for as much as four million Km². It is a study area of unprecedented scale for a nature observation project, including most of the French tropical overseas territories and waters of countries belonging to the Indian Ocean Commission. The results provide major discoveries for science and precious information to guide marine biodiversity preservation strategies and change regulations. Repeating these surveys therefore appears essential for learning more about the patterns of these species over time and understanding how environmental factors affect these animals, especially in the current context of climate change and growing anthropogenic pressure. Beyond the scientific and technical results, REMMOA is also a wonderful human adventure including participation of local organizations, the development of a global network of observers, involvement of locals and awareness-raising with school children.



Luncheon Talk

WWF's Global Cetacean Initiative: Enabling WWF and partners to do more for cetaceans

Gianna Minton, Coordinator of WWF's Global Cetacean Initiative, with Aimee Leslie, WWF International

WWF has launched an exciting new initiative to promote the conservation of whales and dolphins around the globe. The global Cetacean Initiative focuses on whales and dolphins in marine environments, and will include three main pillars of activities: 1) improved monitoring and mitigation of cetacean bycatch in fishing gear; 2) reduction of underwater noise and collision risks from shipping; and 3) improved protection critical cetacean habitats used for feeding, breeding, resting or migration.

For each pillar, the Cetacean Initiative aims to:

- collaborate at an international level to determine where WWF can add the most value to efforts of other international NGOs and IGOs;
- provide evidence and tools that WWF offices and other conservation partners can use to convince governments and industries of the need to tackle threats and provide alternatives to harmful practices; and
- engage in advocacy through targeted awareness raising and communication campaigns with governments and industries.

By harnessing the collective experience of WWF offices around the world, and collaborating with other conservation partners we feel certain that we can make a difference. WWF is seeking collaborations for the initiative, and as such, the brief presentation and follow-up discussion will provide an opportunity to learn more about the strategy and actions planned under the initiative, and to explore areas of cooperation with other relevant partners and stakeholders.

Video Projections during the ICMMPA5

Video Projection 1: Creating a model Marine Protected Area in Gyaros, Greece (WWF Greece)

Video Projection 2: Sea of Shadows (National Geographic Documentary Films)



Pre-Conference Workshop (by invitation)

Joint IWC-IUCN-ACCOBAMS workshop to evaluate how the data and processes used to identify Important Marine Mammal Areas (IMMAs) can assist the IWC to identify areas of high risk for ship strike

Saturday April 6 and Sunday 7, 08:30 - 18:30

The Scientific Committee (SC) of the International Whaling Commission (IWC) agreed that the identification of “high risk areas” for ship strikes is a key step in developing mitigation actions (IWC/SC/67a 2017, p. 71). The Ship Strike Standing Working Group (SSSWG) of the Conservation Committee also recognized the importance of identifying “high risk areas” in their Five-Year Strategic Plan (IWC strategic plan to mitigate ship strikes, 2017, item 2.3). They have also recognized that the IUCN Task Force on Marine Mammal Protected Areas has undertaken an initiative to identify Important Marine Mammal Areas (IMMAs) around the World, and that the identification of these IMMAs would likely assist the IWC effort. The SC and the SSSWG have encouraged cooperation with the IUCN Task Force on this (IWC/SC/67a 2017 p. 71). The IUCN Task Force has completed three regional IMMA workshops, including the Mediterranean Sea (October 2016), the South Pacific Islands (March 2017) and the North East Indian Ocean and South East Asian Seas (March 2018).

This preconference workshop focused on reviewing the IMMAs identified in the Mediterranean for their utility in identifying high risk areas for ship strikes, and as such ACCOBAMS has joined as a partner. In reviewing IMMAs in the Mediterranean, the workshop succeeded in developing criteria that could be applied to IMMAs in other Oceans, and perhaps any spatially identified significant marine mammal habitat as well (e.g. MMPAs, Critical Cetacean Habitats, PSSAs, EBSAs, etc.)



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The workshop sought to bring experts together from the IWC SC, IUCN, ACCOBAMS, CMS, IMO, Pelagos Sanctuary and shipping industry, in order to:

- Develop criteria for categorization and prioritization of an IMMA, or other spatially explicit area, as a “high risk area” for ship strikes
- Evaluate the IMMAs now identified in the Mediterranean Sea, in order to determine the utility of this approach
- Test the utility of the regional approach suggested by the SSSWG
- Enhance engagement with other International partners with similar goals (e.g. identifying high risk areas and mitigating ship strikes there).

As time and participant expertise allows, and as determined by the Steering Committee for the workshop, the agenda also included:

- Reviewing appropriate mitigation strategies that might arise out of the determination of each high-risk area identified, and the best avenue to accomplish those
- Exploring the feasibility of using some of the criteria developed to evaluate other types of spatially explicit marine protected areas for marine mammals.

The key outcomes and recommendations of the workshop were also summarized for the ICMMPA5 session on shipping and MMPAs. The report of the workshop will also be submitted for discussion to IWC SC 68a and possibly the CC in Spring 2019. It will also be provided to the WCPA and SSC of IUCN, the MMPA TF being a joint tool under the WCPA and SSC. Results of the workshop will also be disseminated to other IGOs (e.g. CMS, ACCOBAMS, IMO) as appropriate.

The final workshop report is posted on the Task Force website and can be downloaded from here: <https://www.marinemammalhabitat.org/download/report-of-the-joint-iwc-iucn-accobams-workshop-to-evaluate-how-the-data-and-process-used-to-identify-immas-can-assiste-the-iwc-to-identify-areas-of-high-risk-for-ship-strike/> .





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Preconference Workshop

(by invitation only)

08:30-10:30	<p>Pre-conference Workshop (by invitation only) A Joint IWC-IUCN-ACCOBAMS workshop to evaluate how the data and process used to identify Important Marine Mammal Areas (IMMAs) can assist the IWC to identify areas of high risk for ship strike <i>Location: History</i></p>
10:30-11:00	Coffee break
11:00-13:00	<p>Pre-conference Workshop (by invitation only) A Joint IWC-IUCN-ACCOBAMS workshop to evaluate how the data and process used to identify Important Marine Mammal Areas (IMMAs) can assist the IWC to identify areas of high risk for ship strike (Continues) <i>Location: History</i></p>
13:00-14:15	Lunch
14:15-16:00	<p>Pre-conference Workshop (by invitation only) A Joint IWC-IUCN-ACCOBAMS workshop to evaluate how the data and process used to identify Important Marine Mammal Areas (IMMAs) can assist the IWC to identify areas of high risk for ship strike (Continues) <i>Location: History</i></p>
16:00-16:30	Coffee break
16:30-18:30	<p>Pre-conference Workshop (by invitation only) A Joint IWC-IUCN-ACCOBAMS workshop to evaluate how the data and process used to identify Important Marine Mammal Areas (IMMAs) can assist the IWC to identify areas of high risk for ship strike (Continues) <i>Location: History</i></p>





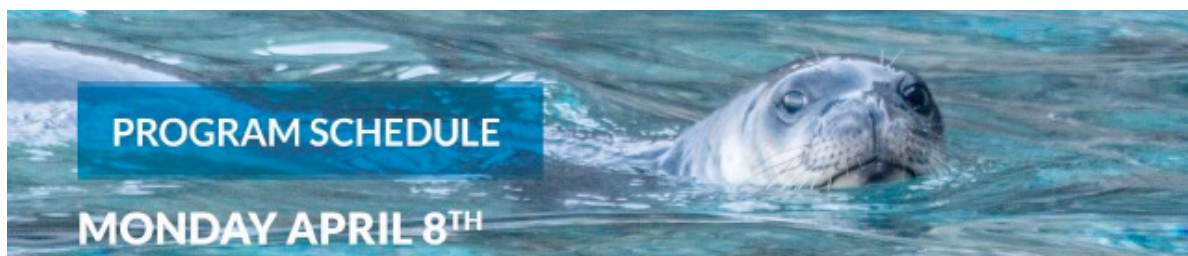
PROGRAM SCHEDULE

SUNDAY APRIL 7TH

08:30-10:30	<p>Pre-conference Workshop (by invitation only) A Joint IWC-IUCN-ACCOBAMS workshop to evaluate how the data and process used to identify Important Marine Mammal Areas (IMMAs) can assist the IWC to identify areas of high risk for ship strike Location: History</p>
10:30-11:00	<p>Coffee break</p>
11:00-13:00	<p>Pre-conference Workshop (by invitation only) A Joint IWC-IUCN-ACCOBAMS workshop to evaluate how the data and process used to identify Important Marine Mammal Areas (IMMAs) can assist the IWC to identify areas of high risk for ship strike (Continues) Location: History</p>
13:00-14:15	<p>Lunch</p>
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16:00-16:30	<p>Coffee break</p>
16:30-18:30	<p>Pre-conference Workshop (by invitation only) A Joint IWC-IUCN-ACCOBAMS workshop to evaluate how the data and process used to identify Important Marine Mammal Areas (IMMAs) can assist the IWC to identify areas of high risk for ship strike (Continues) Location: History</p>
18:30 - 20:00	<p>Registration</p>
20:00 - 22:00	<p>Opening event Location: Anax</p>



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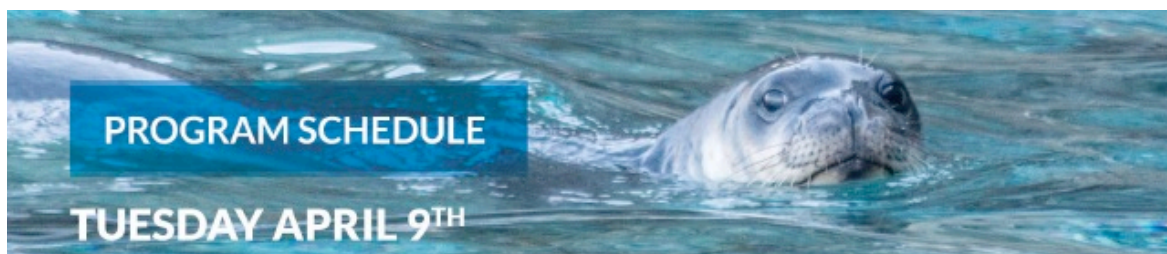


Main Conference

08:00-08:30	Registration
08:30-09:35	<p>Opening speeches: HSH Prince Albert II of Monaco, Founder and President of Prince Albert II of Monaco Foundation Karmenu Vella (video message), Commissioner for the Environment, Maritime Affairs and Fisheries, European Commission Fani Tseliou, Secretary General's cabinet, Ministry of Maritime Affairs and Insular Policy, Greece Marco Lambertini, Director General of WWF International <i>Location: Orion</i></p>
09:45-10:30	<p>Keynote speech 1 Naomi McIntosh & Brad Barr. "Celebrating a Decade of MMPA Collaboration: identifying a path forward" <i>Location: Orion</i></p>
10:30-11:00	Coffee break
11:00-13:00	<p>Workshop 1 The Inspiring Story of the Monk Seal – a critical assessment for the future in view of new challenges from increasing/expanding populations <i>Location: Orion</i></p> <p>Workshop 2 Towards building a global networking mechanism of MPA managers & practitioners: Promoting ecological solidarity <i>Location: History</i></p>
13:00-14:15	Lunch <i>(Offered by the National Operational Programme for Fisheries and Maritime of the Hellenic Ministry of Rural Development and Food)</i>
14:15-16:00	<p>Workshop 1 The Inspiring Story of the Monk Seal – a critical assessment for the future in view of new challenges from increasing/expanding populations (Continues) <i>Location: Orion</i></p> <p>Workshop 2 Towards building a global networking mechanism of MPA managers & practitioners: Promoting ecological solidarity (Continues) <i>Location: History</i></p> <p>Workshop 3 Mitigating the impact of shipping on cetaceans in the Mediterranean Sea: Opening the dialog in search of feasible solutions <i>Location: Astronomy / Synergy</i></p>
16:00-16:30	Coffee break
16:30-18:30	<p>Workshop 3 Mitigating the impact of shipping on cetaceans in the Mediterranean Sea: Opening the dialog in search of feasible solutions (Continues) <i>Location: Astronomy / Synergy</i></p>
19:30-21:00	<p>Side event 1 Supporting cetacean conservation in Greece (by invitation only) <i>Location: History</i></p>
20:30-21:15	<p>Video Projection 1 Creating a model Marine Protected Area in Gyaros, Greece (WWF Greece) <i>Location: Orion</i></p>



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08:00	Registration
08:30-09:00	Keynote speech 2 Amalia Alberini & Giuseppe Notarbartolo di Sciara "Striving to conserve the seas and their life in a changing world: a dialogue across generations" <i>Location: Orion</i>
9:00-10:30	Panel 1 Important Marine Mammal Areas (IMMAs): Transiting from Science to Management <i>Location: Orion</i>
10:30-11:00	Coffee break
11:00-13:00	Panel 2 Oil and gas exploration in key marine mammal habitats: emerging challenges <i>Location: Orion</i>
13:00-14:15	Lunch
13:00-13:15	Lunch Short talk The WWF Global Cetacean Initiative: Enabling WWF and partners to do more for cetaceans. <i>Location: Orion</i>
14:15-16:00	Workshop 4 The identification of new ACCOBAMS Critical Cetacean Habitats (CCH): a collaborative threat-based management approach <i>Location: History</i>
	Workshop 5 Conflict resolution in coastal MMPAs: focus on interactions between marine mammals and small-scale fisheries <i>Location: Astronomy</i>
16:00-16:30	Coffee break
16:30-18:30	Workshop 4 The identification of new ACCOBAMS Critical Cetacean Habitats (CCH): a collaborative threat-based management approach (Continues) <i>Location: History</i>
	Workshop 5 Conflict resolution in coastal MMPAs: focus on interactions between marine mammals and small-scale fisheries (Continues) <i>Location: Astronomy</i>
19:00-20:00	Side event 2 REMMOA large scale aerial surveys <i>Location: Astronomy</i>

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08:00	Registration
08:30-09:00	Keynote speech 3 Demetres Karavellas "Valuing marine mammals through the centuries: a feasible goal or a Herculean feat?" <i>Location: Orion</i>
09:00-10:30	Panel 3 Conservation, controversy and courage in the Upper Gulf of California: fighting the vaquita vortex <i>Location: Orion</i>
10:30-11:00	Coffee break
11:00-13:00	Panel 4 Beaked whale strandings: effect of underwater noise to marine mammals and the role of Protected Areas <i>Location: History</i>
	Workshop 6 Improve enforcement and compliance within MMPAs - Can new technologies support effective management? <i>Location: Astronomy</i>
13:00-14:15	Lunch
14:15-16:00	Workshop 7 The ACCOBAMS Survey Initiative (ASI): lessons learnt and future plans <i>Location: Astronomy</i>
	Workshop 8 Incorporating marine mammal conservation needs in MPA management plans <i>Location: History</i>
16:00-16:30	Coffee break
16:30-18:30	Workshop 7 The ACCOBAMS Survey Initiative (ASI): lessons learnt and future plans (Continues) <i>Location: Astronomy</i>
	Workshop 8 Incorporating marine mammal conservation needs in MPA management plans (Continues) <i>Location: History</i>
20:00-22:00	Video Projection 2 Sea of Shadows (National Geographic Documentary Films) <i>Location: Orion</i>



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08:00	Registration
08:30-09:00	Keynote speech 4 Claudio Campagna "The mysterious language that bridges species with spaces" <i>Location: Orion</i>
09:00-10:30	Panel 5 MMPAs in the Polar Regions: Habitat identification and protection in the presence of emerging threats and transformative change <i>Location: Orion</i>
10:30-11:00	Coffee break
11:00-13:00	Workshop 9 Co-Management: Improving the governance and management effectiveness of MMPAs by empowering and actively involving stakeholders (with pre-registration) <i>Location: History</i>
	Workshop 10 Marine Mammals and MSP in the Context of Blue Growth <i>Location: Astronomy</i>
13:00-14:15	Lunch (offered by the National Center for Environment and Sustainable Development)
14:15-16:00	Workshop 9 Co-Management: Improving the governance and management effectiveness of MMPAs by empowering and actively involving stakeholders (with pre-registration) (Continued) <i>Location: History</i>
	Workshop 10 Marine Mammals and MSP in the Context of Blue Growth (Continues) <i>Location: Astronomy</i>
	Knowledge Café 1 Next step for the managing of whale watching activities... How to move from a voluntary commitment to an effective regulation? <i>Location: Logic</i>
16:00-16:30	Coffee break
16:30-18:30	Round Table 1 IUCN MMPA Task Force Regional Groups First Informal Summit <i>Location: Logic</i>
	Round Table 2 Creative models for sustainable financing of MMPAs <i>Location: History</i>
18:30-19:15	Knowledge Café 2 Mini-Colloquium: The mysterious language that bridges species with spaces <i>Location: Logic</i>
20:30-23:30	Closing event





8:30-10:30 **Panel 6**
Presentation of sessions' key outputs
Location: Orion

10:30-11:00 Coffee break

11:00-13:00 **IUCN MMPA Task Force Meeting**
Closed meeting
Location: Logic



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Participant List 2019

LAST NAME	FIRST NAME	AFFILIATION (&TITLE)
Adamantopoulou	Styliani	MOm/Hellenic Society for the Study and Protection of the Monk Seal, Greece
Agardy	Tundi	Sound Seas, USA, and ICMMPA Steering Committee
Aguilar	Natacha	Universidad de La Laguna, Canary Islands, Spain
Akkaya Bas	Aylin	WWF Turkey, Turkey
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