



# FINS

Newsletter of



Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area - Vol. 3, N. 1, August 2006



## FINS

### Editor:

Giuseppe Notarbartolo di Sciarra

### Editorial Board:

Giovanni Bearzi  
Alexei Birkun, Jr.  
Chedly Rais  
Marie-Christine Van Klaveren

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## *A breeze of change*

This issue of FINS marks the beginning of the third year of the ACCOBAMS newsletter, which also coincides with the tenth anniversary of the Agreement, and brings with it a few salient improvements.

One of these concerns the looks of the newsletter. Thanks to a new layout design crafted by Giovanni Bearzi, FINS has now a roomier and more elegant appearance. Hopefully our readers will find FINS quite more pleasant to leaf through and read.

Second, for the first time FINS is now enriched by images inserted within most of its texts. Our initial policy to keep the newsletter light, so that it could be easily sent via email even through slow dialup connections, is made less important by the day thanks to the increasing diffusion of broadband technology. While we will still strive to contain the size of future



*OO\_GIB\_33, the last entry in the Strait of Gibraltar pod or orcas, was photographed by Philippe Verborgh on 24 July 2006 and was probably born not earlier than 10 days before. The status of "Critically Endangered" is being proposed for the orcas of Gibraltar.*

issues of FINS within reasonable limits, we are confident that our readership will appreciate a newsletter which from now onwards will be richer both in colour and content.

Third, to promote and increase interactiveness with its readers, FINS will now include a *Forum* section to allow various stakeholders from the challenging arena of cetacean conservation to make their voices heard and give visibility to their different viewpoints.

Although we anticipate that it may take a while for the process to get up to speed, we hope that FINS' *Forum* will grow to encompass the most fundamental questions related to conservation. Everyone agrees in principle that whale and dolphin populations should be conserved, however things are not easy in practice because conservation often conflicts with specific human interests. Governments have committed themselves to cetacean conservation, but all parties deserve attention, and conflict solution is usually tricky, when not downright impossible.

The same dolphin which subtracts value to a small-scale fisherman by damaging his trammel net will at the same time provide enormous value to large numbers of other people with its mere existence. But how can we generate a "value-flow" from the public at large to the fisherman, to compensate him for the incurred loss?

The main challenge of cetacean conservation lies here, and only a blend of ingenuity, dedication and goodwill will help to address such challenge with success. In this effort governments badly need all the support they can get from the different stakeholders, but must reciprocate by ensuring that their commitment is followed by adequately funded actions. Mutual trust cannot indefinitely rest on words: sooner than later, it needs facts.

It is our hope that FINS, and in particular its *Forum*, will provide an increasingly useful tribune to engage and enliven such debate. 

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## **The great odyssey of international environmental regimes: a historical perspective on the ACCOBAMS Agreement**

Sarah Gotheil



As any artefact, ACCOBAMS results from a particular historical development. Its very existence, its content, its shape and language lie within the scope of a wider international system and are the product of complex historical processes.

While only 40 years ago the adoption of such an instrument would have been unthinkable, environmental agreements are nowadays so numerous, that some authors even speak about "treaty congestion". This evolution gives an interesting standpoint on the changes that have taken place in our societies, as it captures quite a dramatic transformation of our vision of nature and its fragility, calling into question our methods of production, and the very notions of "progress" and "development". As a consequence, states' roles and responsibilities – and for that matter everyone's – have also evolved in order to take account of the need to prevent further deterioration of our natural environment and improve its state.

The purpose of this article is to foster our understanding of the mechanisms that have led ACCOBAMS to become the instrument we know. In this pursuit, it examines the historical evolutions leading to the creation of international environmental regimes, it outlines the specific features of these regimes and discusses the philosophical grounding of them. Placing ACCOBAMS into its historical context will finally help us assess its functioning and put forward some hypotheses about its development.

### **Historical contextualisation of ACCOBAMS.**

ACCOBAMS results from a movement which took place in the 1970's on an international scale, widely highlighting and criticising our destructive modes of production and consumption, condemning in the wake of this general raise of awareness the slaughter perpetrated by the whaling industry in the world's oceans.

This unprecedented situation, which did not suddenly arise during the 1970's, took however a particular shape at that time. The international community was faced with new challenges, as it became widely acknowledged that technological progress and development bore a cost,

and quite a dramatic one, as it imperilled our marine and terrestrial ecosystems, and, in the long run, the very continuation of human life on earth. Environmental protection and sustainable development became two themes that gradually profoundly changed international – and national – law, and called for innovative solutions. On the interstate level, they were characterised by environmental treaties, which resulted in the birth of a new form of law, namely international environmental law.

The Seventies also coincided with a change of perception of cetaceans, whales in particular. Seen heretofore as a mere resource exploited to the point of near extinction, they were raised as respected creatures, becoming a centre of attention and a symbol of the movement of nature protection. We can go as far as end of 19<sup>th</sup> Century to observe one of the first incidents where the large-scale harvesting of an animal, which happened to be a marine mammal – the fur seal – was countered by a country. In 1886, the USA seized three British vessels hunting in international waters – under the unbreachable rule of the freedom of the sea – for the reason they considered it to be an activity *contra bonos mores* (against moral). The case was brought into court, and although the international arbitration decided in the favour of the UK, it still admitted that the exploitation of a common resource benefiting humanity's commercial prosperity should be regulated. This incident can be seen as having laid the foundations of the nowadays well established rule according to which states have to collaborate when exploiting a shared resource.

The first half of 20<sup>th</sup> Century witnessed several other episodes leading to the birth of a proper environmental law. During the 1920s, the League of Nations mandated a jurist to submit a report on existing regulations of marine biological resources. The paper presented the immense gap in that area, calling for urgent action to remedy the situation, and emphasised especially the case of whales, suffering from a dramatic, if not irreversible, population decline.

The whaling states themselves started worrying about the survival of their industry, leading them

**Sarah Gotheil**  
has recently graduated in social and political sciences at the University of Lausanne, and is now working at the Global Marine Programme of IUCN in Gland, Switzerland

[sarah.gotheil@bluewin.ch](mailto:sarah.gotheil@bluewin.ch)

to sign, in the 1930s, an agreement to manage collectively whaling resources. Having nonetheless no more effect than a declaration of intent, the states decided, just after the war in 1946, to engage in a new convention, the International Convention for the Regulation of Whaling (ICRW), which gave birth to the famous International Whaling Commission (IWC). Due to states' competitiveness and focus on national interest, however, the first 30 years of IWC were marked by failure to find a consensus and reverse the decline of whale populations.

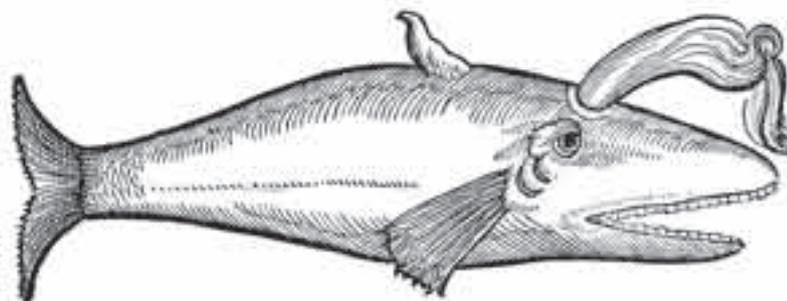
Typical of a wildlife management treaty of the "first era", the ICRW focused on the conservation of the whale resources solely through the regulation of human exploitation. However, the years following the creation of the IWC viewed increased recognition of the adverse impact of human activities on the environment and the need to protect natural habitats, which will be embodied in the next generation of conservation agreements. While more and more scientists, researchers and policy makers publicised their discontent about the inconsiderate exploitation of our environment, whales included, organisations dedicated to nature protection started burgeoning.

The publication of *Silent Spring* in 1962, by Rachel Carson, helped precipitating the wider public's awareness about the harm of pollution. Often considered as a signature event in the birth of the environmental movement, the book described the hazards of the indiscriminate pesticide DDT, how it entered the food chain, caused several species of insects and birds to disappear, and could even cause cancer, while remaining toxic in the environment. Dropping the bombshell, her writings led to a huge controversy, urging the American president himself to take action. With political and legal consequences, as DDT was banned for agricultural use in the USA, and subsequently in many countries in the 1970's, Carson's book questioned humanity's

faith in technological progress. Equally widespread in its international echo, the report by the Club of Rome, *The limits to growth*, put forward the incompatibility between endless growth and finite resources. Much less radical in its conclusion than *Silent Spring*, the report advocated a wise management of natural resources.

Although far from being an exhaustive description of the multiple factors that have led to a profound change of our societies, these events illustrate that the depletion of our natural resources and the increased pressure imposed upon our terrestrial and marine environments were recognised as the downside of development. What became global issues, as not only most states were faced with the same challenges, but also because activities within one state – and on the high seas – could have far-reaching consequences, requested concerted action by the global community and slowly paved the way for the emergence of the concept of sustainable development.

A window of opportunity was therefore created for the convening in 1972 of the United Nations Conference on the Human Environment (UNCHE), also known as the Stockholm Conference. Considered as a watershed, it has been said that "[The Stockholm Conference is the] cocoon from which the chrysalis of international environmental law emerged as a legal subject in its own right". The Conference, reuniting 113 countries for 2 weeks to discuss about environmental - and development - issues, acknowledged the legitimacy of placing these matters to high on the political agenda, and recognised that they could be properly managed under the mere condition that the entire international community undertook efforts in a collaborative and cooperating spirit, through the use of international institutions. The Stockholm conference offered hereby an inducement to initiate numerous international environmental regimes. The United Nations system itself, which hadn't anticipated



the need to regulate environmental issues at its creation in 1945, therefore set off the United Nations Environmental Programme (UNEP) in 1972.

As regards cetaceans, the importance of the Stockholm conference was twofold. First, it highlighted the fact that whales were not the only threatened marine mammals. Some species of small cetaceans, which didn't benefit from any conservation measure, were also overexploited and therefore under threat (the IWC has indeed never reached an agreement on its competency to regulate the hunting of small cetaceans). Second, the Stockholm Convention voted unanimously a 10-year moratorium on whaling (53 votes in favour and 12 abstentions). Although a non-binding declaration, it had a whacking impact on the public as well as on the IWC, suddenly thrust into the limelight. Very significantly, for the first time in IWC's history, the totality of the Commission's members assembled at the 1972 reunion that just followed UNCHE.

Subsequently, the states engaged in numerous environmental conventions, like the 1973 Convention on International Trade in Endangered Species of wild fauna and flora (CITES) – whose need had already been the subject of a resolution voted by IUCN members in 1963 – and the 1979 Convention on the conservation of Migratory Species of wild animals (CMS), both direct products of the Stockholm Conference. The discussions on the future United Nations Convention on the Law Of the Sea (CLOS), which started in 1973, also integrated those international evolutions, stressing the importance of conserving and managing marine resources, the exploited ones in particular, by means of collaboration and cooperation between states. Interestingly, CLOS treated cetaceans as a different category from all other marine species, as states were given the right to prohibit the exploitation of these creatures, independently of their conservation status.

During the 1980s two important reports were written inspired by the Stockholm principles, that would become worldwide references in terms of environmental management: (a) the World Conservation Strategy (WCS), formulated by IUCN in 1980 with the collaboration of UNEP and WWF, which laid the foundations of a new concept called "biodiversity", and (b) the World Charter for Nature, adopted by the General Assembly of the United Nations in 1982, inspired by the WCS. Recognising that marine and terrestrial ecosystems are life-support systems, life on earth depends on their conservation. Both reports advocated a sustainable use of our natural environment and encouraged international cooperation.

The United Nations Conference on Environment and Development (UNCED), also known as the Rio Conference, took place in 1992. To celebrate the 20<sup>th</sup> Anniversary of the Stockholm Conference and to build upon it, 170 nations assembled to discuss environmental issues. They gave birth to two key agreements, the Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (FCCC), as well as the famed Rio Declaration, which sanctioned the trendiest principles of international environmental law. Although some researchers see the Declaration as a step back, given its emphasis on development rights rather than on environmental duties, others viewed it as a very positive instrument transforming the international system by merging two formerly separated rights, commercial on the one hand, environmental on the other, into one single concept called sustainable development. Whatever the opinion, the Declaration crystallised numerous principles which are found in international treaties, including ACCOBAMS.

Upon the bedrock that forms international relations, namely international cooperation, good neighbourliness, equity and good faith, new values derived from the Rio Conference started to be integrated into practice, soon to become fundamental. These values are based on the principle that states not only have rights towards their natural resources, but also responsibilities, embodied in the new concepts of sustainable development and precautionary principle. While the Declaration clearly states the nations' right to develop, it also stresses the importance of considering environmental protection as an integral part of economic development. The utilisation of natural resources must be sustainable in order to meet the needs of present and future generations, and effective environmental legislation must be enacted by nations in order to reach these goals. The Declaration encourages states to engage in environmental impact assessments before undertaking activities that might harm the environment, and stresses the importance of transparency and civil participation. It calls for creativity, ideals and courage to be mobilised to forge a global partnership, and promotes incentives rather than sanctions to achieve these objectives. It specifically emphasises the need of international solidarity to strengthen capacity building and the recognition that poorer countries represent a priority, being particularly environmentally vulnerable and having little means to protect some of the world's most valuable ecosystems. In this respect, through the principle of common but differentiated responsibilities, developed countries bear special environmental obligations, as they possess the necessary means to fulfil these tasks.

The Declaration has also some shortcomings, as its terms are not well defined and there is ample room for interpretation of its text, to say the least. The principle according to which the polluter should bear the cost of pollution is written in a cautious language, and there is no mention of the "common heritage of mankind", which implies quite strong commitments for its maintenance. It offers however a framework to be used as a reference and has the advantage of representing a truly international consensus on core principles of law concerning sustainable development. Although human beings are expressly claimed as being the centre of concern, the text clearly embodies an ecosystem approach, recognising the "interdependent nature of the Earth". Subsequently, many states incorporated the concept of sustainable development in their national jurisdictions, which have progressively been evolving and developing since.

#### **The special case of environmental regimes.**

International organisations in their broad sense cover numerous shapes of entities, which can be instruments of hard law (binding) or soft law (non-binding), efficient or dormant, bi- or multilateral, small or big sized. The unique outline of environmental agreements shows an interesting evolution of international law, where states adapted in an innovative way to new concerns in the frame of an international system made of constraints. In a few words, those agreements share the following traits: they are (or at least are supposed to be) effective without being too restrictive, flexible and relatively low cost. Environmental regimes represent, in a way, work-in-progress, placed half-way between traditional international organisations, characterised by permanent personnel, a heavy and bureaucratic structure and a high membership, and organisations having no structure at all.

These multilateral environmental agreements (MEAs) are all constituted the same way. They are hierarchical entities dominated by the organ of decision, namely the Meeting or Conference of the parties (MOP or COP). Having no headquarters, they are light and flexible entities, sometimes electing a Bureau to take decisions between sessions on its behalf. MEAs also comprise subsidiary organs of various shapes (scientific committee, technical committee, compliance committee, etc.) depending on the subject at hand. Finally, they institute a secretariat, the only permanent body of the agreement. These treaties also share another common feature: they contain lists, usually in their appendices, of sites or species to protect, pollutants or hunting methods to forbid, etc. It is also the COP's responsibility to update these inventories.

These regimes are a recent phenomenon, the

primary embryonic model being the 1971 RAMSAR Convention on Wetlands. Lacking a COP, it introduced it in 1987, making CITES the first environmental agreement to establish a COP. As years went by, the COPs tended to play increasingly greater roles and met more and more often. Both global and regional instruments were created in parallel, states having no preference for one or the other form. While universal conventions (like CBD or FCCC) give international standards, regional agreements are adapted to the local situation. If the subject is complex or controversial, framework conventions are first written, later defined and detailed by protocols (as for example the 1976 Barcelona Convention or the 1992 Bucharest Convention, for the protection of the Mediterranean and Black seas respectively).

Why are such instruments originated? It seems that there is a tacit internationally-scaled agreement not to create heavy, bureaucratic and costly structures, often seen as inefficient. UNEP is the last global traditional international organisation having been established on the basis of an environmental treaty. While some authors view this as a blatant proof of the poor willingness of the states to commit to their environmental duties, giving therefore little power to MEAs, others think on the contrary that these entities are really meant to be effective and efficient.

In any case, this represents an evolving process, as environmental treaties tend to implement stricter rules with the passing years. The 1995 African-Eurasian Waterbird Agreement (AEWA), for instance, is the first treaty to adopt a legally binding action plan, an example which was followed by ACCOBAMS (both agreements were created within the framework of CMS). While older conservation agreements can be seen as obsolete, they are usually updated in order to implement newer international principles. The Barcelona Convention for the protection of the Mediterranean, for example, was amended in 1995 to adopt a precautionary and ecosystem approach to conservation. To fulfil the same objective, its 1982 protocol on protected areas was replaced by the 1995 protocol, known as "SPAMI Protocol" (Specially Protected Areas of Mediterranean Importance). The SPAMIs not only have the specificity to include areas located in the high seas, but their measures are also binding upon all parties to the Protocol once the protected area is put on the SPAMI List.

The SPAMI Protocol, together with ACCOBAMS and the Mediterranean PELAGOS Sanctuary (on the SPAMI list since 2002), the first one ever to have been created with the specific objective to conserve marine mammals, have been negotiated and developed at the same period and are

supposed to reinforce each other harmoniously.

**Philosophical foundations.** Philosophy distinguishes three types of environmental ethics, namely anthropocentric, biocentric and ecocentric, each giving value to different elements. Capturing different representations of human beings in their environment, they influence our manner of contemplating and regulating our actions.

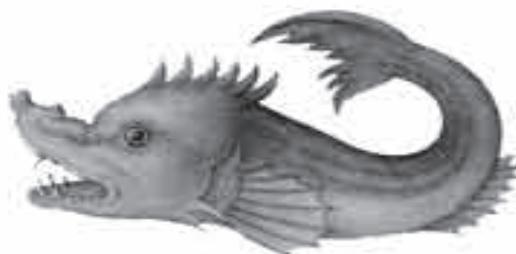
Anthropocentrism, by focusing on human beings, tends to view humans apart from nature and consider the natural world as being at our disposal. If it views exploitation of the environment as legitimate, it is incumbent upon us to use our natural resources wisely, in order to fulfil our as well as future generations' "needs". Protection is therefore motivated by utilitarian and material considerations. In terms of regulation, it is often translated into single-resource management with a view to satisfy human objectives. An Agreement like the International Convention for the Regulation of Whaling would typically fall into this category.

On the contrary, biocentrism shifts values from human beings to all living creatures, respecting therefore all types of lives. As it is however difficult in practical terms to protect each single individual, the priority is often given to certain animals or plants. However, by valuing living creatures, biocentrism cannot be applied to larger or more abstract entities, whether biotic like species or abiotic like ecosystems, the atmosphere or oceans, making it a rather irrelevant concept for environmental conservation. When considering an agreement like ACCOBAMS, these aspects are important. While animal rights movements can be seen as being based on a biocentric ethic, a wildlife conservation treaty is more concerned with the long-term

preservation of the whole species than with the short-term protection of individual animals. This is not to say that measures cannot be taken also to protect individuals, however the objective is long-term conservation of populations and species. In this respect, ACCOBAMS has actually adopted a very strict regulation, forbidding any deliberate taking, hunting, fishing, capturing, killing and even harassing of cetaceans.

Ecocentrism is a good transcription of the ecological approach, being concerned with the natural system, its living and non living elements as well as their interactions, and recognises ecosystems as dynamic entities. Human beings are considered as an integral part of them, as they both influence ecosystems and are influenced by them. On the global policy level, the "ecosystem approach" was recognised, mainly since UNCED, as the international standard for management and sustainable development. Although no internationally agreed definition exist, the primary objective of the ecosystem approach is to promote and conserve ecological integrity, based on ecosystems' health, productivity and biological diversity, while allowing human use on a sustainable basis. Social and economic goals are therefore fully integrated in management approaches, which are more holistic and integrative. Scientific information plays a key role, as the formulation of management objectives are based upon it, as well as the precautionary principle, which imposes prudence where scientific knowledge is lacking. Thus, the ecosystem approach is adaptive, as management goals and measures evolve with increased scientific knowledge.

While the ecosystem approach requires states to protect land, oceans and their inhabitants from all sources of degradation, the conservation of particularly vulnerable species and ecosystems, through protected areas amongst other tools,



is considered an integral part of the strategy. A wildlife conservation treaty therefore plays an important role in achieving this goal in a system which has, historically, addressed the various activities and uses that affect ecosystems and biodiversity separately and sectorally. The ACCOBAMS Agreement has adopted a holistic, integrative and adaptive approach to cetaceans conservation, as it requires parties to regulate all human activities that can adversely affect cetaceans and their environment, as well as adapt fisheries regulations in accordance with the marine mammals' feeding requirements. It also calls for the establishment of marine protected areas to protect sites which contain important habitats and/or provide important food resources to cetaceans. While marine mammals are primarily protected for the reason they are vulnerable species, as well as highly valued from a cultural point of view, their conservation can also be seen as strategic. As top predators, it is widely accepted that their disappearance would affect the entire ecosystem, although our scientific knowledge is not yet sufficient to inform us on how this would disrupt the whole food chain and the ecosystem equilibrium. The ACCOBAMS treaty itself states that the conservation of cetaceans and their habitats "will have ancillary benefits for other species". Therefore, although a species-specific Agreement, it is meant to support the conservation of an entire ecosystem, as measures taken towards cetaceans would benefit the entire community.

**The ACCOBAMS Agreement.** Structured like a typical environmental regime – with the COP, the Bureau, the Secretariat, the Scientific Committee and the sub-regional coordination units, a slight innovation introduced by the treaty – ACCOBAMS has really filled a gap in the existing patchwork of environmental treaties. All other conventions, closely or remotely connected with cetacean conservation in the Black Sea, Mediterranean Sea and contiguous Atlantic area are either too general or limited in their geographical or normative scope. Furthermore, ACCOBAMS can really be viewed as a child of both Rio and CBD. It implicitly recognises the principle of sustainable development, as it requires states to ensure that all activities undertaken under their jurisdiction do not harm cetaceans and their environment. To reach these goals, states are also bound to implement the precautionary principle and undertake impact assessments. The treaty furthermore stresses the need for international cooperation, collaboration and solidarity, public participation and incentives rather than sanctions for the implementation of its provisions.

Interestingly, the history of the creation of ACCOBAMS shows the will of the parties involved in its drafting to adopt a strict treaty, with the wid-

est geographical and taxonomic scope possible. First meant to cover only the small cetaceans of the Mediterranean Sea, it now encompasses all cetaceans frequenting the Agreement area accidentally or more permanently. Banning any deliberate taking, defined in strict terms as it includes harassing, the Agreement furthermore allows no exception to this rule, except in rare emergency cases for the purpose of non-lethal in-situ research. It covers the full geographical range of the Black Sea, the Mediterranean Sea and the contiguous Atlantic area, and doesn't allow general reservations to its text, except for specifically delimited part of states' internal waters. The inclusion of the Black Sea clearly demonstrated the negotiators' aspiration to implement the principles of international collaboration and solidarity.

The core conservation measures in the ACCOBAMS Agreement include the prohibition of the deliberate taking of cetaceans, and the creation and maintenance of protected areas through cooperation, with a view to achieve and maintain a favourable conservation status for those marine mammals. Regarding the main threats facing cetaceans, namely fisheries – overfishing and use of indiscriminatory fishnets – as well as habitat degradation, the Treaty contains provisions addressing those specific issues. The Agreement requires states to minimise the adverse effect of fisheries by, amongst other, preventing fishing gear to be disregarded at sea, release cetaceans accidentally caught in fishing nets and adapt fishing regulations and techniques to the food requirements of cetaceans. It also prohibits the use of drift nets longer than 2.5 kilometres, in accordance with the EU regulations at the time of the negotiation of ACCOBAMS. As these devices are now totally forbidden by the Union since 2002, it is to be hoped that the Agreement will amend its text to conform with the new European regulations. As for other activities that can negatively impact cetaceans and their habitats, like offshore exploration and exploitation, nautical sports, tourism, whale-watching and fishing, the Agreement requires states to engage in impact assessments and adopt guidelines and codes of conduct before engaging in those activities. It also calls upon states to regulate the discharge at sea of pollutants harmful to cetaceans, and establish marine protected areas within the framework of appropriate instruments.

Although most threats to cetaceans are covered by the treaty, and those missing, like anthropogenic noise and the effects of climate change on cetaceans, are still discussed by the scientific committee, it is unlikely that states will implement measures to regulate these activities on the basis of ACCOBAMS. Not so much a limita-

tion of the Agreement, this reflects more the complexity of the international system and the traditional sectoral-approach to conservation issues.

The proper limitations of the Agreement can be observed in the very few control measures introduced to ensure the states' compliance to their duties. The Agreement hasn't implemented an independent observer scheme to monitor cetacean accidental catches, which is one of the few efficient methods to control and regulate bycatch problems, nor does it require best available technology for fishing gears. Emphasising on incentives, the Treaty doesn't put too much pressure on states to implement the Agreement by threatening them with sanctions. Being all highly sensitive issues, its states are rather reluctant to give an Agreement like ACCOBAMS too much power, which would face them with their responsibilities. Especially as the Agreement has only very limited resources, it is quite dramatically restricted in its possibilities and scope of action.

Whatever its constraints and weaknesses, ACCOBAMS represents at least an ideal forum for research and sound science-based approach to conservation. Scientific information, supplemented with the precautionary approach, is the fundamental base offering a common language and a frame of knowledge, interpretation and action. ACCOBAMS has given a concrete impetus to solidarity, by focusing mainly on capacity building, sharing of information, methods and guidelines, to create common databases and references. Not so much implementing proper

conservation measures yet, the Agreement allows for discussions taking place on all aspects that concern cetacean conservation, crucial for political decision-making.

To help promote an ecosystem approach to the conservation of the Mediterranean and Black Seas, of which cetaceans are an integral part, and to encourage states to regulate activities harmful to cetaceans, ACCOBAMS can play a key role in influencing fora such as the Barcelona or Bucharest Conventions, the General Fisheries Commission for the Mediterranean or the EU, on the basis of its expertise.

ACCOBAMS has only a few years of existence and has already undertaken a remarkable work, considering its modest budget. It has great potential for evolving and strengthening. It is to be hoped that states will provide ACCOBAMS with the means to reach its ambitious objectives, not only to protect cetaceans, but also the region's entire marine ecosystem. 🇫🇷

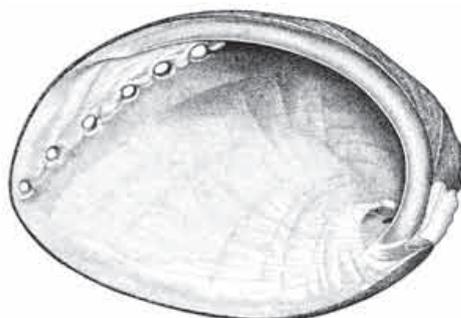
#### Further readings:

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This article is a synthesis of a thesis written in 2004 on the ACCOBAMS Agreement

Anyone interested in receiving a copy of the full original version (available in French only), please contact:

[sarah.gotheil@bluewin.ch](mailto:sarah.gotheil@bluewin.ch)



## Forum

Opinions and letters are welcome and should be addressed to the Editor at [disciara@tin.it](mailto:disciara@tin.it)

### Dolphin-Assisted Therapy

In FINS 2(2) "Dolphin-Assisted Therapy (DAT): why not?" Giuseppe Notarbartolo di Sciarra commented that "animal-assisted therapy (AAT) can provide significant help to overcome a number of human psychological disorders." This is medically documented for AAT using many animals, but has any reputable study documented that DAT "overcomes" disorders, that is, provides medically substantiated, long term rehabilitation and healing? Until there is proof, DAT remains a faith-based medical treatment. Even if DAT finally is proved to have long-term therapeutic value, because it uses dolphins it will always have extraordinary conservation implications. DAT has become a political and social force that must be viewed from a worldwide perspective. DAT facilities are appearing everywhere; a true growth industry. No one knows how many there are, what "standards" they use, how many people have been injured, or how many dolphins have died because of them. ACCOBAMS should be aware that the boundless promotion of DAT has enabled the capture and associated slaughter of dolphins from vulnerable or unstudied populations, caused governments to permit inadequate facilities or fail to enforce laws, and rendered CITES Non Detriment Findings impotent. DAT facilities range from sophisticated and shiny to plastic-lined holes in jungle ground: I have tracked portable displays that trucked dolphins into remote regions, fleeced poor families with exorbitant "therapy" fees, and vanished before authorities arrived to shut them down. Dolphins have been abandoned as well; where did their replacements come from? Even if we can ignore the gross exploitation by DAT facilities of desperate people seeking cures for loved ones, isn't it time we ensured the conservation of targeted dolphin populations?

WILLIAM ROSSITER  
President, Cetacean Society International  
[rossiter@csiwhalesalive.org](mailto:rossiter@csiwhalesalive.org)

whale", an old fashioned name with an obvious negative message. It has not been easy to make room for ourselves in a world ruled by the hard laws of nature. Actually, we are still at war against pathogens that kill millions of people each year. But now at last we have understood that we have to care for all living beings on earth. To succeed in that enterprise we have to introduce changes in our behaviour. And also in our language, because words are not neutral and the long struggle has left its imprint in the way we name species or describe their behaviour, particularly those that have been our competitors. Maybe the most influential book ever written in support of the new language and the new vision associated to it was the marvellous "Innocent Killers" by Hugo van Lawick and Jane Goodall. Since then, African predators are not the cruel beasts always thirsty of blood that the hunter's culture had presented to us, but marvellous creatures that "kill in order to eat and to live in the only way for which evolution has fitted them". No less inspiring was Aldo Leopold when he recommended us to think like a mountain because "only the mountain has lived enough to listen objectively to the howl of a wolf". I do not know of an equivalent of Jane Goodall or Aldo Leopold for marine predators. Until he or she appears, shall *Orcinus orca* have to wait for a better name than killer whale, which conveys a meaning according to the old culture? ACCOBAMS plays a leading role in the Mediterranean and Black Seas. Its newsletter FINS reaches a wide audience and could contribute to the cultural change we need to preserve cetaceans. Calling them with their name should be, in my opinion, the first step.

COSME MORILLO  
Área de Estrategias y Planes de Conservación  
Dirección General para la Biodiversidad  
Ministerio de Medio Ambiente, Madrid  
[CMorillo@mma.es](mailto:CMorillo@mma.es) 

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### The names of cetaceans

I have been reading FINS and I find it is an excellent source of information about whales in the Mediterranean, and the authors and editors deserve to be congratulated. My only point is that each time there is a picture or a news item about *Orcinus orca*, the species is named "killer

## ***Ziphius* specimen material from the Mediterranean wanted**

Dr. Merel Dalebout, a postdoctoral fellow at University of New South Wales, in Sydney, Australia, is conducting research on the genetic population structure of *Ziphius cavirostris* (Cuvier's beaked whale) worldwide. *Ziphius* is found in most of the world's oceans, including the Mediterranean. This species is currently the focus of widespread concern due to its susceptibility to the adverse effects of sound generated by navy sonar and seismic surveys. *Ziphius* is extremely difficult to study at sea due to its preference for pelagic and deep slope waters and its elusive habits. There are numerous stranding records from the Mediterranean, but observations of live animals are rare. Using mainly specimens and samples obtained from strandings and fisheries bycatch held in museum collections and other institutions, this study aims to: 1) determine the nature and extent of population structuring among *Ziphius* worldwide based on mitochondrial (mt) DNA sequences; 2) estimate rates of gene flow between regional populations; and, 3) identify units for conservation.

As a largely-isolated sea where both *Ziphius* and naval manoeuvres are known to occur, it will be important to obtain good representative sampling for the Mediterranean. Only 12 specimens from this region were available for a previous study (10 from Greece, 2 from Croatia) but the mtDNA lineages represented by these animals were unique and highly distinct from those in the greater North Atlantic (Dalebout *et al.* 2005 Molecular Ecology; PDF available on request). For the current study, Merel aims to sample 10 – 20 specimens from each of several locations in the Mediterranean to quantify population structuring at this finer regional scale and enable robust comparison to other parts of the North Atlantic.

Would you have any material from this species (tissue or bone/teeth) that you might consider making available for this project? The methods used by Merel to sample osteological material are largely non-destructive and have been used successfully in other genetic studies (e.g., Dalebout *et al.* 2002; Dalebout *et al.* 2003). Further details are available on request. This study will identify appropriate units for conservation for this species, and will result in peer-reviewed scientific publications and other reports. All contributions will be fully acknowledged, and coauthorship on the resulting paper may be considered for provision of substantial numbers of samples.

*Ziphius* is listed as CITES Appendix II. As such, a valid export permit will be required. The University of New South Wales is a CITES-registered institution (AU069). Although an import permit is not required for Appendix II material, this may facilitate applications for export permits.

Anyone interested in supporting this effort please contact Merel at:  
[m.dalebout@unsw.edu.au](mailto:m.dalebout@unsw.edu.au) 

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## *SPECIAL - SHIP STRIKES*

### ***Ship strikes in the Mediterranean Sea and the ACCOBAMS activities***

*Simone Panigada*

**Simone Panigada**  
is with the Tethys  
Research Institute,  
Milan, Italy

[panigada@inwind.it](mailto:panigada@inwind.it)

Collisions between ships and whales, both odontocetes and mysticetes, are regularly reported from all the world's oceans. To date, there is evidence of ship collisions with 11 species of large whales. Of these, the fin whale is most commonly recorded as being hit by ships worldwide.

Every year, 220,000 ships greater than 100 tons cross the Mediterranean basin. Furthermore, a total of 2,000 vessels, including ferries, fast ferries and hydrofoils, as well as military, fishing, pleasure and whale-watching boats, navigate these waters daily. Whales often aggregate in areas during the summer months in areas where vessel traffic is highest. One such aggregation area for fin whales is the Pelagos Sanctuary for Marine Mammals, where particular oceanographic features support high levels of prey and consequently a large number of cetaceans.

The relatively small and largely isolated Mediterranean fin whale population faces several potential threats. In addition to collisions with vessels, we should keep into account noise, presence of noxious manmade pollutants in the marine food web, increasing disturbance, interactions with fisheries, and depletion of prey.

To provide a complete picture of the ship strike issue within the ACCOBAMS area, my colleagues and I reviewed all the available records - both from dead and photo-identified free-ranging individuals - of fin whale collisions. The objective of this work was to determine the types of vessels that hit cetaceans, to assess the extent of this threat for fin whales, to propose and discuss necessary conservation measures, and to suggest further research necessary to reduce the potential for vessel collisions and to minimize mortality rates for the Mediterranean population.

Data regarding deceased individuals were initially extracted from existing stranding network databases (Centro Studi Cetacei (CSC) in Italy, Groupe d'Etudes des Cétacés en Méditerranée (GECEM) and Centre for Research on Marine Mammals (CRMM) both in France) as well as historical and anecdotal records, such as early stranding reports, newspaper articles, ferry companies' archives, coast guard reports, and

records provided by marine biologists and ship captains.

Records concerning 287 fin whales stranded along the Mediterranean coasts, caught on the bow of a ship or found floating at sea, were examined. Of these, 46 (16.0%) were confirmed to have died because of a ship strike. The first fatal ship strike reported is dated 1897, and only two more records - in 1967 and 1971 - are available until 1972. Between 1972 and 2001, 43 whales were killed, yielding a mean fatal strike rate of 1.43 animals per year. While no significant differences were found in the number of fatal ship strikes among months (perhaps due to the low sample sizes), we did find seasonal differences, with spring and summer, pooled, having significantly more collisions than autumn and winter. This matches the presumed Mediterranean fin whale feeding season (April-September) versus the assumed breeding months (October-March), with the majority of the accidents (76.7%, 33 versus 10) occurring within the feeding season.

In 24 cases where it was possible to ascertain the vessel type involved in a strike, ferries were most frequently implicated (15, 62.5%), followed by merchant ships (4, 16.7%), fast ferries (3, 12.5%) and yachts. High-speed ferries were introduced into the area in 1996. In the six years following that period they accounted for almost 50% of the total collisions ( $n = 7$ ; three caused by high speed ferries, three by traditional ferries, and one by a merchant ship). However, the difference found in the annual number of fatal ship strikes before and after this period was not significant.

The majority of strikes (82.2%) were recorded in the Pelagos Sanctuary and the Gulf of Lions or in adjacent waters - suggesting that these waters are high-risk areas for whale collisions - while the remaining 11.8% was reported in Spanish waters and in the South of Italy. Based on approximately 900 fin whales assessed in this area, the estimated minimum fatal collision mortality rate would be 0.0013, three times higher than for the whole Western basin (0.0004). However, this may be confounded with increased observer

effort and more efficient stranding networks in those areas.

Data on live fin whales presenting evidence of collision was gathered by contacting different institutes involved in photo-identification projects and by examining photographs collected opportunistically. The majority of the data derived from the photo-identification catalogue compiled by the Tethys Research Institute during a long-term study in the offshore waters of the western Ligurian Sea, Sardinian Sea and Ionian Sea, including the Pelagos Sanctuary. The French identification catalogues compiled by the Groupe de Recherche sur les Cétacés (GREC, Antibes), and by the École Pratique des Hautes Etudes (EPHE, Montpellier), which also include a portion of the Sanctuary, have been similarly reviewed.

Nine out of 383 photo-identified whales (2.4%) had wounds positively attributed to a ship strike. No information on the year or the location of the incident was available in any case, as no animal was seen before and after the collision. Body scars and marks were divided into three categories: a) healed-over lesions (depressed scars from old wounds) were present on six whales (66.7%); b) propeller scars (multiple, parallel and evenly spaced slashes) were found on two whales (22.2%); c) non-cicatrizated wounds

- one whale (11.1%) showed dorsal muscles and cicatricial or fatty tissue covering the injury. Six whales had a cut dorsal fin or fluke, four animals had a "humpbacked" body, and 11 whales presented large wrinkled spots (28.6%). No variations in the scar appearance were evident in two re-sighted animals.

The differences in scarring could be attributed either to the boat size or speed, or to the part of the boat that hit the animal. It is likely that the vessels involved were of small enough size and weight to allow the whale to survive the consequences of the collision. The low number of live whales presenting evidence of collisions may indicate that few animals survive a ship strike or that collisions with small boats are less frequent.

All these data tell us that in the Mediterranean Sea since 1972 a minimum of 43 fin whales (16 % of the total number of specimens found dead) were killed by a ship strike and nine whales survived after a collision event occurred. However, some biases are implicit when dealing with this type of information. Occurrence and frequency of collisions can be either underestimated (unnoticed or unreported events, incomplete or lacking necropsies, masking of fatal ship strikes by advanced carcass decomposition, inadequate data collection techniques) or overestimated



A fin whale photographed in the Pelagos Sanctuary, likely scarred by a collision with a ship (photograph by the Tethys Research Institute)

(e.g. animals who died from other causes, but whose floating carcasses were struck after death). Considering all the biases possibly affecting the Mediterranean data set, we believe that these numbers are more likely to be an underestimate rather than an overestimate. This was also suggested by Kraus *et al.* (2005), who analyzed North Atlantic right whale strandings and related them to estimated mortality rates, implying high values of underestimation for human-caused mortalities.

Almost half of the fin whales that were reported as fatally struck were lodged on the bow of the colliding ship. In the majority of these collisions the whale was discovered only once the vessel was in port, suggesting that in cases where the carcass did not become lodged, or fell off prior to arrival at the ship's destination, the strike would have gone unnoticed. Many of these carcasses showed no noticeable external wounds, confirming that such fatalities might be missed unless thorough necropsies are performed regularly. Such complete necropsies can also ascertain whether the collision occurred *pre-* or *post-mortem*.

The reason why fin whales do not avoid being struck by ships is baffling. In contrast to other baleen whales, fin whales are fast swimmers, with sprints up to 55.5 km/h; their speed suggests that they should be able to avoid boats by moving away from the ship's trajectory if

they detect them in time. However, particular behaviours, like feeding or resting, may reduce fin whales alertness to surrounding sounds. Mediterranean fin whales also perform unusually deep foraging dives (Panigada *et al.* 1999) and they may not be able to detect sounds originating from surface vessels until they have reached the end of their ascent, in the path of the vessel.

In order to reduce the risk of collisions, many different solutions have been proposed, ranging from instruments to detect whales mounted on-board ships (e.g., sonar, or night vision devices), to acoustic alerting devices to warn whales of approaching boats, bottom-anchored passive sonar systems designed to detect whales locations, and specially trained observers onboard ferries. None of these solutions alone seem to be effective or suitable for a significant reduction of ship strikes, since each of them either has undesired side-effects (such as interfering with the whales' communication or being too unreliable) or is only effective in particular situations (e.g., during day time, only when the whales vocalize, only at short distances or within certain angles from the ship's bow).

In the absence of a better understanding of why fin whales are struck by ships, more effective and realistic mitigation measures may focus on:

- 1) reducing ship speed when crossing whale high density areas, both to give cetaceans suf-

A fin whale photographed in the Pelagos Sanctuary, with healed propeller marks cutting through its dorsal fin and back (photograph by the Tethys Research Institute)



ficient time to avoid the oncoming vessel and to give the operator increased time to react to the whale's presence. This solution may be unpalatable to operators, since it counters the current trend of increasing speed; however, the United States recently proposed a drastic reduction in ship speed to protect North Atlantic right whales.

2) yearly monitoring of whale presence and distribution to suggest dynamically moving ferry routes from areas of particular concentration of fin whales to areas of lower density.

This second approach has been applied by the Canadian authorities in the Bay of Fundy to protect right whales. In the Ligurian Sea this solution will probably be very difficult to adopt since, as already stressed, the great majority of ferries connecting the islands with the Italian and the French mainland cross the region where fin whales are most concentrated. Nevertheless, the Pelagos Sanctuary for Marine Mammals - with its inclusion, in November 2001, by the Parties to the Barcelona Convention in the List of Specially Protected Areas of Mediterranean Importance (SPAMIs) - would represent an ideal place to apply similar regulations. Such measures could be limited to particularly risky vessel types or possible sub-areas characterized by high concentration of fin whales. In addition, it may eventually be possible to forecast areas of high fin whale densities from remote sensing data using habitat selection models.

In order to address this issue, to discuss the available information and to place them in a conservation context, on 14-15 November 2005 a Joint ACCOBAMS/Pelagos Workshop on Large Whale Ship Strikes in the Mediterranean Sea, funded by the Italian Ministry of the Environment, was held in Monaco on the premises of the Oceanographic Museum.

The objectives of the workshop were to synthesize the knowledge of ship strikes of fin, sperm, and other large whales in the Mediterranean Sea, with particular emphasis on the Pelagos Sanctuary for Mediterranean Marine Mammals, and to place them in a global and local context; to determine data gaps vital to a more comprehensive assessment of the issue; to discuss whether mitigation and management measures were necessary; and to discuss what mitigation and management measures might effectively be employed to address the issue.

The workshop started with a review of the present knowledge on strikes and mortality worldwide, underlining how general reporting both from vessels directly involved in the accidents and from carcass inspection was crucial to correctly estimate strikes and mortality rates.

Secondly it discussed on the identification of information gaps that at present prevent proper evaluation of the situation, suggesting methods to address such gaps and possible mitigation measures that have been applied with success elsewhere in the world.

Several recommendations, related to estimating the number of ship strikes, were discussed, prioritized and suggested, including among others:

- (a) undertaking thorough necropsies of carcasses to determine whether a collision was the cause of death;
- (b) interviewing captains and crews to obtain all information on known ship strikes;
- (c) conducting a feasibility study to assess the efficiency of dedicated observers to detect ship strikes; and
- (d) undertaking a feasibility study to examine whether information from cases where carcasses are lodged on bulbous bows can be used to model the likelihood that struck whales become lodged and if this can be used to obtain estimates of true strikes.

In addition, some of the recommendations from the workshop included projects that may benefit from collaboration between the IWC Scientific and Conservation Committees, and the Secretariats of the abovementioned Agreements. Developing an international database of vessel strikes would be extremely important and it should be linked to sighting databases. The Workshop also recommended that: (1) ACCOBAMS should liaise with the IWC on issues related to ship strikes, and (2) the ACCOBAMS Secretariat should encourage all countries within the ACCOBAMS region to report all strikes, and the circumstances surrounding those strikes, whenever possible. The workshop further recommended that the ACCOBAMS Secretariat should investigate the most appropriate way in which it can bring cetacean issues to the International Maritime Organisation (IMO) and obtain relevant information from them.

Mitigation measures to reduce the risk of fatal ship collisions to whales were also discussed and proposed. These included the importance of education for captains and crews on the vessels involved, the possibility of real-time reporting of whale positions by local operating whale watching boats, the creation of shipping lanes, encouraging daytime transit for high speed and fast ferries.

In conclusion, strong similarities, in terms of ship collision problems and long-term management philosophy, were observed between the Stellwagen Bank National Marine Sanctuary (SB-NMS) in the U.S. and the Pelagos Sanctuary. It

was therefore discussed and proposed to adopt similar management and research strategies in the two areas, which could lead to an effective reduction of the risk of vessel strikes to large whales. 🐋

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## ***Risks of collision for fin whales in the north-western Mediterranean Sea in Summer***

*Léa David*

**Léa David**

is a marine ecologist working, since her Ph.D. in 2000, on thematic like cetacean spatio-temporal distribution, collisions and bycatches for several institutions, organisms or NGOs. She believes that to better understand cetaceans which have no frontiers, researchers (and all people working at sea: fishermen, Navy, etc.) should work more together at the scale of the Mediterranean Sea. Léa is co-founder of the French NGO "écoOcéan" for the conservation of marine vertebrates through research and education actions

[lea.david2@wanadoo.fr](mailto:lea.david2@wanadoo.fr)  
<http://ecocean.free.fr>

The current state of knowledge concerning the genetic differentiation of the fin whales of the north-western Mediterranean Sea compared to those of the Atlantic Ocean on one hand, and the summer concentration of a great number of individuals for trophic reasons in the Ligurian-Provençal basin on the other hand, make this area one of the most important for this species in the Mediterranean. In parallel the Mediterranean coast, French or Italian, is intensely visited by tourists through summer. A great amount of people spend their holidays there, also travelling to Corsica and Sardinia. To answer this demand, an intense traffic of ferries and high-speed craft (HSC) takes place between the continent and these islands. We can also add the ceaseless ballet of merchant ships between the large European harbours like Barcelona, Marseilles and Genoa and Africa.

Several attested cases of collisions between fin whales and large ships are known from the Ligurian-Provençal area, while studies on the causes of cetacean's strandings and the scars present on live animals photo-identified at sea prove that the strikes between ships and cetaceans are far from infrequent. This information constitutes the emerged part of the iceberg, because it is

certain that the majority of the collisions remain unnoticed.

This is an important issue, and one which rests among the objectives and conservation measures of ACCOBAMS and of the Pelagos Sanctuary, which have the mandate to study and manage the human-cetacean interactions. At the same time, the problem of collisions between ships and cetacean is of concern for the scientific community, and therefore was the subject of two dedicated workshops (European Cetacean Society, May 2001, and ACCOBAMS and PELAGOS joint workshop, November 2005).

In the case of the "Mediterranean" fin whale in the Ligurian-Provençal area, collisions are thought to be an important threat for the species, which is protected by the national and international Agreements and Conventions. However, as stated in both workshops, the real impact of ship strikes on cetaceans remains unknown.

A study jointly conducted by CEBC-CNRS, EPHE (École Pratique d'Hautes Études, Montpellier) and WWF-France aimed at bringing some new knowledge in order to propose mitigating solu-

tions. Our objectives were:

- to measure the distribution and intensity of large vessels traffic;
- to calculate the size of the affected areas and estimate the degree of collision's risks;
- to propose risk-mitigating solutions.

We thus evaluated the areas and the degree of collision's risk between large ships and fin whales in July and August in the whole of the north-western Mediterranean Sea. We gathered data from various agencies and institutions and took into account observations of fin whales weighed by effort based on a standardised line-transect protocol. These data were mainly collected by EPHE, the Swiss Cetacean Society and WWF-France from 1993 to 2001. Through a total survey effort of 380,000 km 520 sightings of fin whales in good weather conditions were made. We calculated the relative abundance of fin whales for the summer (July and August) expressed in number of animals seen per hour of effort in  $0.1^\circ \times 0.1^\circ$  cells of a regular grid. The results show that fin whales frequent each year the same areas with recurrent hotspots and also intermittent hotspots (see Figure below).

The databases for ferries and HSC have been built based on timetables of departure and arrivals for 11,000 passages. Concerning the data for merchant vessels, we undertook a collaboration with the French Ministry of Transportation to get access to their database for 2001, and recorded 5002 passages. We thus calculated the levels of traffic intensity and expressed it as a number of km of ship routes occurred in a  $0.1^\circ \times 0.1^\circ$  grid.

This allowed us to compare the distribution of the encounter rates of fin whales with the distribution of maritime traffic, to emphasize where collision risk is greatest. The risk appears very high in the centre of the Ligurian Sea, half-way between the mainland and Corsica. This risk is due to an important frequentation of the area by the animals (rate of contact: 0.5 to 0.7 animals/hour) and a strong intensity of traffic of ferries and high speed crafts (500 to 800 passages

during the summer). The risk is also high off the Provençal shore, between Marseilles and the Hyères Islands, where fin whales are also highly frequent, and many ships leave the nearby harbours bound for Corsica (ferries and trading vessels) and for Spain (cargo vessels). By contrast, the risks are relatively low in the Gulf of Lions, mostly over continental shelf; and in the south of our study area, although this may be likely due to low observation effort.

In terms of frequency of collisions ("Trégenza model"), we estimated that an average of three fin whales are likely to find themselves in front of the bow of a ship each Summer day within the Pelagos Sanctuary.

In order to reduce these risks, we propose some solutions, each associated with various levels of implementation and various costs:

- Two solutions are easy and fast to implement by the maritime companies and inexpensive. The first is to embark a specialized observer, or train embarked staff on cetaceans observation techniques, engaged in continuous observation. The second is an investment in instruments assisting in the detection of cetaceans: infrared night vision and radar are some of the tools developed and tested.
- Two other solutions appear more radical and difficult to implement, and their cost still remains to be estimated. The first is a reduction of the vessel speed to a less dangerous level (<13 knots) for all ships travelling in the sectors of maximum concentration of fin whales. The second is a delimitation of a "fin whale highly-frequented area" to be circumnavigated by the ships during the summer, in order to minimize the zone of contact between large ships and fin whales.

Before implementing any of the above measures, a similar study should be performed of the collision's risks for sperm whales. This is the second most collided cetacean, which presents a distribution clearly distinct from that of fin whales. Collaboration between researchers



Collision risk between fin whales and large ships (ferries+HSC+cargos) in summer in the northwestern Mediterranean Sea

would greatly help in such study.

Secondly, we recommend that, just as in terrestrial environments, any innovation concerning regular human activities (e.g., new routes or new vessels) be preceded by an environmental impact study.

Finally, our study shows the importance of knowing the temporal and spatial distribution of the traffic in order to properly assess the risk to cetaceans. Only with such knowledge can we help administrators to find suitable mitigation solutions in terms of management and conservation.

All cetacean species are potentially concerned with impacts due to boat traffic, from fin whales to bottlenose dolphins, and from pelagic to coastal species. However, if on the one hand the effects of large ships or whale-watching boats are better known, on the other hand insufficient information is available concerning pleasure boats and the overall effects of coastal navigation on cetaceans. Moreover, beyond the impact generated by single vessels, it is important to take into account the cumulative effects of the frequency of passages and boat density present at the same time in a particular area. Therefore, we must go forward in collecting and mapping data on all kinds of traffic. The French NGO "écoOcéan" is currently in the process of gathering such data year-round, concerning all types of coastal maritime traffic, during a three-year scientific programme implemented in collaboration with the French Navy. It is our hope that we will also collaborate with other countries in order to better understand the spatio-temporal characteristics of the human activities at sea and

to better take into account the Mediterranean as a whole: just like cetaceans do. 

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Striped dolphin killed by propeller in the waters of Ischia, Italy (photograph by Barbara Mussi)



## Vessels and dolphins: scars that tell stories

Daniela S. Pace, Angelo Miragliuolo and Barbara Mussi

Collisions between ships and cetaceans are relatively common. Vessels strikes are a known cause of mortality for both odontocetes and mysticetes worldwide and for some species are an important source of added mortality. However, the scarcity of existing information both on frequency and, generally, place of collisions makes it quite difficult to evaluate their impact and repercussion on different species as well as on specific populations.

While ship strikes are a well-known cause of mortality for larger cetaceans, such as fin and sperm whales, not much is known about the impact of this phenomenon on the smaller dolphins. Our direct experience seems to confirm that an impact may also exist for the smaller cetaceans. In Summer 2000 a small individual of *Stenella coeruleoalba* was found dead around Ischia island (Southern Tyrrhenian Sea, Italy). At first inspection, the possible cause of decease appeared clear, since the animal presented an enormous lesion on the head (see photograph on previous page). However, only the detailed vet examination definitely confirmed the initial assumption. This meticulous procedure was not possible in another case. In the summer 1999, an adult individual of *Tursiops truncatus* was found dead near an aquaculture cage placed in a small bay of Lampedusa island (Mediterranean Sea, Italy). The carcass' external examination (see photograph below) revealed that the animal presented evident lesions on the head and near

rostrum, suggesting a possible collision with a boat. The constant presence of bottlenose dolphins near the fish farm, in fact, attracted a large number of tourist vessels in the area, often producing dangerous conditions for the animals' safety. However, an unquestionable confirmation of the collision hypothesis was not provided.

We don't know what proportion of collisions are fatal or just result in minor injuries. Photo-identification can be a good way of determining the rate of live animals displaying scars from contact with a boat, and actually several photo-identified individuals presented wounds positively or potentially attributed to a vessel strike. For example, many dolphins and whales show scars that appear to have been caused by propellers. Around the island of Ischia, where collisions are an increasing threat to the cetacean species due to the large number of vessels that regularly visit or transit across the area, some animals exhibit propeller scars or gashes indicative of a ship strike. The involved species are not only the larger ones like fin and sperm whales, but also smaller species like bottlenose (see photograph on following page), striped and perhaps common dolphins. In particular, among the latter, which are very gregarious, photo-identification techniques are obviously less powerful than in the case of *Tursiops truncatus*, since large aggregation of animals reduce the probability of capture for each individual. So, it is very difficult to evaluate the real impact at the individual level,

**Daniela Silvia Pace**

is contract professor of Marine ethology at the University of Naples "Federico II", and President of Oceanomare, via Gino Marinuzzi 74, Rome, Italy

[www.oceanomare.info](http://www.oceanomare.info)  
[info@oceanomare.info](mailto:info@oceanomare.info)

**Barbara Mussi**

and **Angelo Miragliuolo** are with Delphis MDC, via Zaro 22, Forio d'Ischia, Naples, Italy

[www.delphismdc.org](http://www.delphismdc.org)  
[barbara@delphismdc.org](mailto:barbara@delphismdc.org)



Bottlenose dolphin found dead near Lampedusa, Italy (photograph by Marina Pulcini)

where the long-term effect of a minor collision on the rate of survival is not known, or at the level of population, where threats depend on the number, age and sex of the animals involved, and the population's conservation status. Obviously, some individuals/populations are more vulnerable than others: the young, females with newborns, or individual with weaknesses are reported to be principally involved in collisions as well as populations concentrated in high-traffic area for feeding/reproduction reasons and/or belonging to slow, large species. Both levels – individual and population – seems to be impacted around the island of Ischia, where the effects of a very intense boat traffic is a source of worry. Much of the concern regarding disturbance of cetaceans has focused on isolated incidents, where vessels have caused the death of one or more animals, or an evident change in their behaviour, or a serious harassment. Although these incidents capture public attention, it is likely that the more severe consequences of vessel disturbance is potentially the cumulative effects of many vessels. In fact, disturbance from vessels may be considered from a number of different aspects. Examples of stimuli from vessels which may be disturbing to some species of cetaceans include: a vessel that is too close or in danger of striking an animal, active pursuit or circling of animals, interfering with feeding or other vital activities, and vessel noise.

Disregard and ignorance by recreational boaters and ferries owners remains a serious problem in our area, especially during peak summer periods. The increasing boat traffic may imply the existence of ship-related threats and may underline significant conservation issues for certain individuals and population where appropriate mitigation measures are not an easy task. In order to reduce the probability and severity of vessel collisions, the implementation of speed restriction zones is needed, considering that

the Italian Ministry of Environment is currently working to designate around Ischia's coastal and pelagic waters an MPA (including the submarine canyon of Cuma, NW off Ischia island, as a preferred habitat for several cetacean species). Limiting high speed traffic through regions of high dolphin and whale density could have the dual benefit of decreased total strikes (given the additional time to react) and a lower probability that a given strike would be fatal. 

#### Further readings:

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Laist D.W., Knowlton A.R., Mead J.G., Collett A.S., Podestà M. 2001. Collisions between ships and whales. *Marine Mammal Science* 17(1):35-75.

Miragliuolo A., Mussi B., Bearzi G. 2002. Risso's dolphin harassment by pleasure boaters off the island of Ischia, central Mediterranean Sea. *European Research on Cetaceans* 15:168-171.

Pace D.S., Pulcini M. & Triossi F. In press. Interactions with fisheries: modalities of opportunistic feeding for bottlenose dolphins at Lampedusa Island (Italy). *European Research on Cetaceans* 16.

Wells R.S. & Scott M. 1997. Seasonal incidence of boat strikes on bottlenose dolphins near Sarasota, Florida. *Marine Mammal Science* 13(3):475-480.

Bottlenose dolphin with propeller scars near Ischia, Italy. The wounds are well visible in spite of the low quality of the image (photograph by Barbara Mussi)



## News from the Scientific Committee

Considerable work is being carried out in preparation of the fourth meeting of the Scientific Committee, which will take place in Monaco from 5 to 8 November 2006. Shortly before, the Secretariat will convene a meeting of experts to draft guidelines on cetacean rescuing (live strandings, net-entrapments, entrapments in bays and harbours, etc.).

Among the many issues to be examined and debated by the Committee, a few stand out for their complexity. For this reason, such issues were addressed in *ad hoc* meetings recently organised in Monaco. These include:

- a workshop on ship strikes, which was held on 14 and 15 November 2005;
- a workshop on fin whale conservation, which was held back-to-back with the ship strike workshop, on 12 and 14 November 2005;
- a joint ACCOBAMS – IUCN workshop for the Red List Assessment of cetacean populations known to be regular in the Mediterranean and Black Seas, held from 4 to 7 March 2006.

Many other items will enrich the agenda of the meeting, and will consist, among others, of a re-

view of cetacean Conservation status in the Sub-regions and discussions on the implementation of the ACCOBAMS work plan. This will include: comprehensive cetacean population estimates and distribution in the ACCOBAMS Area; the conservation plans of Mediterranean common dolphins, Mediterranean bottlenose dolphins, Black Sea cetaceans, and fin whales; strandings; tissue banks; interactions between cetaceans and fisheries; anthropogenic noise; whale-watching; specially protected areas; emergency task force for special mortality and stranding events; databases and directories; sighting database and photo-identification programme; granting of exceptions for the purpose of non-lethal in situ research; release of cetaceans into the wild; and the conservation problems raised by Dolphin Assisted Therapy). Finally, the Committee will decide on set of Recommendations to be forwarded to the Third Meeting of the Contracting Parties to ACCOBAMS, which will take place in Croatia towards the end of 2007.

A report of the fourth meeting of the Scientific Committee, together with all the relevant information and documents, will be posted, as usual, on the ACCOBAMS website. 

### Referencing the information contained in FINS

FINS is a newsletter, not a peer-reviewed journal, and for this reason citing uncritically articles appeared on FINS may be discouraged by the editors of scientific journals. However, to cite factual information reported on FINS, which has not appeared elsewhere (e.g., documented strandings or sightings of unusual species), it may be useful, sometimes, to make reference to a news item appeared on FINS. In such cases the following format, which is applied for exemplification purposes to an article from a previous issue, may be adopted:

de Stephanis R. 2004. Interactions between killer whales and the bluefin tuna fishery in the Strait of Gibraltar. FINS, the Newsletter of ACCOBAMS 1(2):6-7.

(available from <http://www.accobams.org/2006.php/newsletter/all>).

## News from Range States

### Croatia

#### ***The Lošinj Dolphin Reserve: two decades of work for a conservation success story?***

*Draško Holcer, Caterina Fortuna and Peter Mackelworth*

**Draško Holcer,**  
**Caterina Fortuna**  
and **Peter Mackelworth**  
are with the  
Blue World Institute  
of Marine Research  
and Conservation  
Kaštel 24,  
HR-51551 Veli Lošinj,  
Croatia

[www.blue-world.org](http://www.blue-world.org)  
[info@blue-world.org](mailto:info@blue-world.org)

During the late 1980s research and conservation of cetaceans was still a mystery in many places around the coasts of the Mediterranean Sea. This was the time when the Adriatic Dolphin Project (ADP) was started in the sheltered waters of the islands of Lošinj and Cres in the Northern Adriatic, Croatia. Not to stray into too many details, as far as we are aware, the project was started by an enthusiastic young man and his mentor (i.e., Giovanni Bearzi and Giuseppe Notarbartolo di Sciarra) with the intention of providing enough data to complete a B.Sc. thesis. When we look at that time, we can see that the idea of few years of research developed into something much greater. The ADP, initiated in 1987, was run by the Tethys Research Institute, an Italian NGO, until the late 1990s. At that time it became obvious that the project outgrew its original idea and a local organization was needed. So, in 1999 the Blue World Institute of Marine Research and Conservation, a Croatian NGO, was founded to take over the ADP and develop it further together with new projects and activities that were urgently needed in the wider Adriatic area.

Since its inception, the ADP was scientific research with the intention of understanding the biology and ecology of the bottlenose dolphins inhabiting the area. The main research method used was (and still is) photo-identification. It remains the best tool to gather information on population structure and dynamics, including data on abundance, vital rates and social structure. During later years the project advanced into many new fields of research including genetics, behaviour, acoustics, habitat selection, impact of anthropogenic activities on population dynamics, toxicology, feeding habits, to name just a few.

The results of the analyses highlighted the need for conservation actions to maintain the resident population. When the protected area was first proposed, the size of the population was estimated at around 120 animals. Although these

data did not point to a dramatic decline in the numbers of individuals, the population size and the fact that it was unique in the Adriatic created the impetus to prepare a preliminary proposal for the establishment of a protected area.

The initial proposal was short and deliberately vague acting as a concept document, and leaving the definition of protection to decision-makers. But it did, however, create the base on which further discussions and proposals have developed. In 2002 Blue World formulated a revised proposal for the establishment of the protected area and named it "Lošinj Dolphin Reserve". Following the proposal, Blue World carried out a project funded by the Principality of Monaco through bilateral cooperation with the Croatian Ministry of the environment, entitled "The identification of critical habitats and the analysis of the management procedures for the future Lošinj-Cres marine protected area". This project clearly identified the area of Lošinj as critical habitat for this bottlenose dolphin population and provided further necessary data for the elaboration of the conservation needs.

So, what is it that makes this area so unique and important that it needs such care and attention? The proposed reserve is located in the eastern side of the northern Adriatic Sea. This geographical region, known as Kvarnerić, is punctuated by channels, islands and islets, submerged reefs and characterised by rocky shores that abruptly drop to depths of up to about 100 m (see map on page 24). Waters are oligotrophic and pollution is very localised and low. The proposed area of the reserve covers approximately 530 km<sup>2</sup> (with 154.5 km of coastline) encompassing a wide range of marine habitats, including rocky shores, submerged reefs, *Posidonia oceanica* meadows and mud seabed. Five of eight benthic biocenosis of the Lošinj Archipelago are classified according to MAP (Mediterranean Action Plan) as particularly valuable. Also, a number of protected and endangered animal species inhabit the area: molluscs, crustaceans, birds, marine

turtles and even recently a visiting monk seal.

The wider Kvarner region is affected by many anthropogenic activities that detrimentally influence its marine and terrestrial ecosystems. These include industrial maritime transport, shipbuilding, oil refineries, oil terminals, power stations, cement industry, tourism and fisheries.

Within the Lošinj and Cres Archipelago bottlenose dolphins (*Tursiops truncatus*) are the only regular cetacean species. In recent times, three other species have been recorded in the area. Common dolphins (*Delphinus delphis*) historically were fairly abundant and is now almost absent. Records of stranded animals also confirm that this species is to be considered extremely rare in the area. There are also a few records of stranded striped dolphins (*Stenella coeruleoalba*) and several documented encounters within the archipelago showing that the striped dolphin is possibly taking the niche left free by common dolphins. Finally, the first report of fin whales (*Balaenoptera physalus*) concerned a specimen stranded in Silba Island in 1990. Sightings of strayed fin whales have been recorded yearly around Pag Island between 1998 and 2002. Most of the observed individuals left the area within few days.

In Spring 2005 a lone female monk seal (*Monachus monachus*) was sighted regularly in the area. It was the first recorded sightings in several decades as the species is considered geographically extinct in most of the Adriatic Sea. Although vagrant animals have been recorded in the southern part of the Adriatic, this specimen still remains in the area potentially indicating its even greater importance.

Distribution of bottlenose dolphins in the Kvarnerić area was assessed through boat-based surveys and photo-identification techniques. Analysis of the data collected shows that the area is now inhabited by approximately 100 bottlenose dolphins. Between 1995 and 2003 a significant 39% decline of their abundance was observed, which aroused great concern. This observation was worsened by a dramatic change in habitat use caused by the increasing number of pleasure boats within the proposed MPA. Adult apparent survival rate was estimated to be significantly lower than for any other bottlenose dolphin population in the world and first year calf survival was also estimated to be low. A decreasing trend in fecundity rate was observed. In addition, a population viability analysis indicated that the current rate of human-induced mortality is unsustainable. The chance of local extinction risk within three generations was estimated to be high (35%). Applying the IUCN Red List Criteria, the Kvarnerić population should be listed

as Endangered under Criterion C and E.

This area presents identified critical habitat for the species and as such requires conservation measures to be taken. Although the proposed MPA does not encompass the entire home range of the dolphins present, data comparison with other contiguous sites in Croatia (i.e., the Kornati Archipelago to the south, and Istria to the north) found only one match. This may suggest that the wider Lošinj area is a home to a defined and semi-closed population of dolphins. Genetic studies have indicated the existence of gene flow within an Adriatic metapopulation, however the precautionary principle should be applied in order to avoid potential local geographical extinctions. Continual monitoring of the population size and trend is therefore necessary to ensure the survival of this population.

The analysis of habitat preference or avoidance, based on nine years of data, showed that areas with high anthropogenic disturbance (such as maritime petrol stations, marine traffic routes etc.) present an important factor negatively affecting the distribution. This is particularly significant during the tourist season, when the number of people visiting the island increases 20-30 times compared to the number of winter residents. The main factors causing disturbance have been identified as man-made noise connected with an increase in boat traffic, and physical presence of fast-moving boats. Man-made noise has the potential of interfering with animal signalling, resulting in a variety of effects. Dolphin distribution throughout the years of 2004 and 2005 was related to the local sea ambient noise (S.A.N.) during both the tourist and non-tourist seasons at 10 fixed locations within the area of proposed MPA. Results showed a clear negative impact of man-made noise and an almost complete avoidance of the areas with high noise levels. Results also indicated that the decrease in the abundance of the Kvarnerić bottlenose dolphin population (or sub-population) over longer period and increase of the home-range are likely to be due to changes in the use of the archipelago by unregulated boat tourism.

Not surprisingly, the Kvarnerić bottlenose population distribution showed a strong overlap with trawling areas. The analysis of stomach contents of stranded animals collected prior to 2001 showed a clear preference for demersal fish. However, there are indications that during the last years the bottlenose dolphins' diet has changed. This can be explained considering that demersal species have been heavily exploited by local fishing industry and recently pelagic fish stocks have been increasing providing a new potential food source.

The Blue World Institute was founded in 1999 to carry out scientific research, conservation and education projects and promote environmental awareness in the Adriatic region. Initially, Blue World was formed with the direct intention to take over the research and public awareness actions of the Adriatic Dolphin Project (ADP), started and managed by the Tethys Research Institute since 1987

*Dolphin Day*, the main public awareness event organized to celebrate the dolphins and the sea, has become a traditional event every first weekend of August

Blue World cooperates with a number of organisations and institutions in Croatia and abroad.

Since 2004 Blue World is a Partner of ACCOBAMS

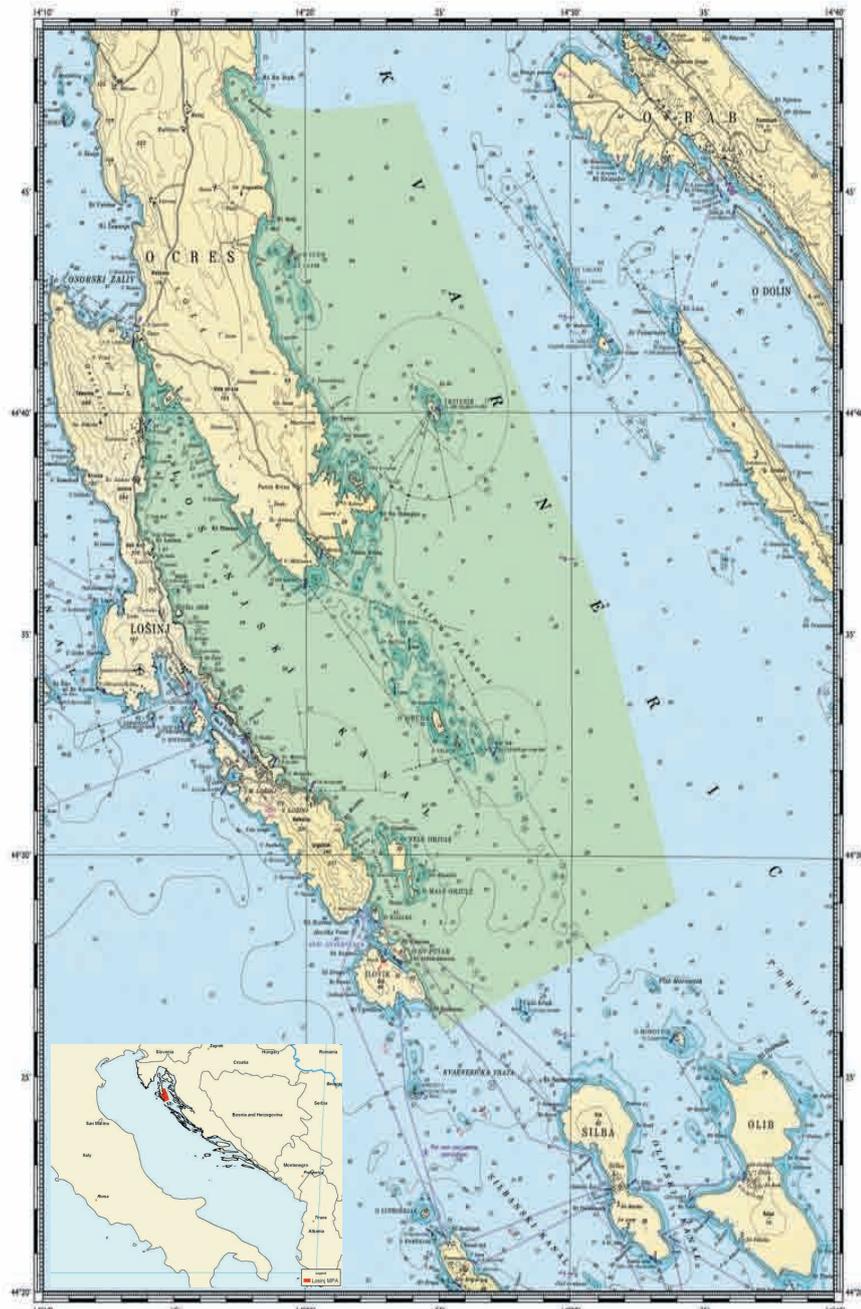
[www.blue-world.org](http://www.blue-world.org)

It seems that due to the nature of marine ecosystems, fluid and difficult to study, the use of indicator species and in particular of the flagship species concept may be better suited for the conservation of the habitats of charismatic species. As a result of flagship species protection and conservation actions taken, the entire ecosystem becomes protected. And what better flagship species than bottlenose dolphins?

The Lošinj population of bottlenose dolphins remains small and vulnerable. Statistical model-

ling and data analysis show that this population needs urgent protection against the numerous threats which it is facing. These threats range from direct killing and overfishing to anthropogenic disturbance. In order to protect this population a set of measures need to be taken which will try to mitigate these negative influences. Our proposal is to establish a marine protected area that would integrate conservation with sustainable development of the local, insular community.

The Lošinj  
Dolphin Reserve  
(in green)  
(map courtesy  
of Blue World)



COOPERATION ACROSS BORDERS ANTE LITTERAM

## ***The early days of the Adriatic Dolphin Project***

*Giovanni Bearzi reports on his experience in Croatia*

I first went to Lošinj in 1987 with my father's inflatable boat, living in a camping. I was told that dolphins around Lošinj and Cres were easy to find, and could be approached from small boats. That sounded very interesting to me, as I was looking for ways to carry out a dolphin study for my Biological Sciences thesis at the University of Padua, Italy. By that time I had been surveying portions of the Mediterranean from oceanographic vessels, recording cetacean sightings. However, I was hoping to get a little closer to the animals, rather than just identifying the species and counting them while passing by. I soon realised that Lošinj offered amazing opportunities. Bottlenose dolphins were easy to find, they could be photographed individually (which later allowed the identification of most community members) and they could be followed at close quarters during their daily movements, thus allowing to collect information on their behaviour. The first time I came back home after two weeks in Lošinj I knew for sure that my life had changed - I finally had found what I was looking for. I completed my thesis on northern Adriatic dolphins, and then Giuseppe Notarbartolo di Sciarra and myself decided that it was worth to continue, under the umbrella of the young Tethys Research Institute. Our aim was to start a long-term study to replicate in the Mediterranean what the likes of Randy Wells and Bernd Würsig had done in other parts of the world.

In 1990 Giuseppe and I crossed the border between Italy and former Yugoslavia with a busload of enthusiasm and hope. With us there was Laura Bonomi, one of the finest field workers I ever met. We managed to find a sponsor for the boat, an outboard engine, basic research equipment (a reflex camera, a tape recorder and the first GPS model available on the market), plus a little money for the renting of a house and for the gasoline. Nobody cared much about earning a salary, or turning the project into some sort of business (which it never became). All we wanted was to find the dolphins and get to know them better. And that's what we did, eventually, facing all sort of difficulties, dealing with damaged boats, broken engines, political trouble, much frustration, cold winters, lack of money, countless hours writing proposals and entering data, personal difficulties and the whole set of problems that come with a field project. But also hundreds of unforgettable hours spent with the animals, known one by one as good friends. The joy of being at sea, alone or with some of the many extraordinary people who joined me in that adventure. Observing dolphins, and eventually understanding at least in part what was going on, what they were doing, what they were likely to do next, and who was there socialising with Taba and Pinna Vibrante.

Although research was our main activity, the Adriatic Dolphin Project developed into something more than just a dolphin study. It soon attracted interest from enthusiastic local supporters such as Arlen Abramic, and then Nena Nosalj and many others. Nena, in particular, was instrumental in enhancing the public awareness potential of the project and allowing us to share whatever we learned about the local dolphins with the general public and the media. The Dolphin Day was one of her many brilliant ideas. She and Arlen also "forced" me to make dozens of presentations in front of a public that ranged from tourists to fishermen, from refugee children to commando soldiers. Today, I'm so glad I did all that, contributing to the development of what is now one of the most successful and long-lasting dolphin projects in the Mediterranean, and setting the stage for the next round of fine people, Drasko, Pete, Caterina and all the others, to whom we eventually passed the baton. After almost two decades, it is nice to see that the Adriatic Dolphin Project has managed to overcome many apparently insurmountable problems, and that Blue World is now doing such an excellent work, with about the same spirit and motivation we had in the early days. I wish that all will continue to produce outstanding conservation results, shining as a testimony that commitment by enthusiastic individuals can make a difference in this world. 

Giovanni Bearzi  
is with the  
Tethys Research Institute,  
Milan, Italy

[bearzi@inwind.it](mailto:bearzi@inwind.it)  
[www.tethys.org](http://www.tethys.org)

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The Croatian Law on Nature Protection provides different categories of protection being granted to species, biocenoses, ecosystems or landscapes. Based on the review of the Law, Blue World has proposed the creation of the "Special Zoological Reserve for Bottlenose Dolphins". Special zoological reserves are a very strict category of protection granted by the Government and based on a formal proposal prepared by the relevant ministry. What we found of particular importance, apart from the very high and strict category of protection, was the fact that: a) some type of activities that do not jeopardise the protection goals are allowed, and b) management of such reserve can be given to a local public institution. The knowledge we have gathered assures us that these two facts will be crucial for the creation of an effective protected area.

Based on many years of integration into the local community and thousands of hours of interviews, discussions, lectures and debates, we realised that the hearts and minds of the people on the island have changed. Dolphins have changed from being a blight in the sea to become the symbol of Lošinj and the most recognizable feature the island has to offer – a real flagship species. The local community is aware of the strain that the environment is feeling: fish stocks are depleted and the island is overcrowded during the 2-3 summer months. Change needs to be done urgently. Blue World in cooperation with the local community is convinced that appropriate protection of bottlenose dolphins as a flagship species can help to conserve the entire ecosystem. Lošinj is now known as 'the island of dolphins', so it now seems right that protection be managed locally. Initially, we need a clear equitable set of measures to stop further degradation. Together we have proposed a mandatory speed limit for all boats passing through the area, the closing of certain areas for fishing, the banning of some types of fisheries and fishing licences issued only to local fishermen. Of course, after the initial measures, a clear management plan should take into consideration nature conservation, the local economy and different social issues, and be adapted accordingly.

The creation of the reserve provides the impetus to start the real work on conservation issues in this region. The same enthusiasm that has brought us to this point, where creation of the reserve is only a matter of days, will help us develop the area that will become a conservation model for similar places along the Mediterranean coast. To achieve such result there is a long list of provisions. The first and most important is a steady funding for the management of the reserve. At this point it is not important who will manage the area, but whether there will be sufficient resources to elevate it from paper to reality. This funding will need to be ensured, at least at the beginning, by state and local authorities. The second issue will be the elaboration of clear, concise and equitable management objectives and an appropriate management plan. During the plan's development it will be of the utmost importance to ensure transparency of the procedure within the local community and to include all potential stakeholders in its development. Case studies tell us that the effectiveness of the reserve can only be achieved with local support. The challenge is to make the local community feel like it is a part of the reserve, and to let the local people understand the benefits brought by the conservation of marine biodiversity and by sustainable management of resources. The creation of the Lošinj Marine Education Centre (LMEC) in 2003 represents a high profile first step in what is hoped to be a long and fruitful cooperation between Blue World and the local authorities. The centre aims to promote sustainable development and promote the protected area. Information displays, interactive programmes, lectures, specialised workshops, coastal walks and boat tours all offered by LMEC are an effective way to promote the local natural heritage and to increase the environmental awareness as a whole.

Finally, the continuation of the long-term monitoring programme is the only way to verify if the future MPA will meet its objectives and the conservation status of the bottlenose dolphin population. To that, Blue World will ensure its contribution by maintaining and improving the work carried out in the project that started this entire story – the Adriatic Dolphin Project. 

## BREAKING NEWS

### **PRESS COMMUNIQUE' - DOLPHIN PROTECTION IN ADRIATIC SEA: AN EXAMPLE OF HOW APPLIED RESEARCH HELPS EFFECTIVE CONSERVATION OF MEDITERRANEAN BIODIVERSITY**

On Sunday 6th August, during the celebration of the 14th Dolphin Day, held regularly since 1993 on the island of Lošinj, the State Secretary of the Ministry of Culture of the Republic of Croatia, Dr. Jadran Antolovic, declared the establishment of the Lošinj Dolphin Reserve (Ministry of Culture, Republic of Croatia, UP/I-612-07/06-33/676, 532-08-02-1/5-06-1, July 26, 2006). With him to celebrate this occasion were the Executive Secretary of the Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS), Dr. Marie-Christine Van Klaveren and the Assistant Minister for Nature Protection, Mr. Zoran Sikic. The celebration was hosted at the Lošinj Marine Education Centre the base for the activities of the Blue World Marine Institute for Research and Conservation. This achievement was also marked with congratulations sent by the President of the Republic of Croatia, Mr. Stjepan Mesic for the successful fruition of research work undertaken by Blue World and concerted cooperation with representatives from the State Institute for Nature Protection, the Croatian Natural History Museum and the ACCOBAMS Secretariat.

The area (<http://www.blue-world.org/MPA/>) is protected under the Croatian Law on nature protection as Special Zoological Reserve for bottlenose dolphins (*Tursiops truncatus*) and as such is subject to the strictest type of protection regime. Initially, the area receives "preventive protection" with protection from the development of any new human activities, for a maximum of three years. This will allow the establishment of a management body and the preparation of a management plan for the permanent Reserve. After this period the designation will become permanent through a Decree of the Government. The Lošinj Dolphin Reserve represents the first MPA dedicated specifically for the protection of one dolphin population in the Mediterranean. It is the biggest marine protected area in the entire Adriatic, totaling 526 square kilometres.

Together with bottlenose dolphins, this Reserve will help conserve a number of other endangered and protected species of flora and fauna and their critical habitats found within the designated area. For example, wintering sites of loggerhead turtle (*Caretta caretta*), sea grass (*Posidonia oceanica*) beds, coral biocenoses and nesting sites of the common European Shag (*Phalacrocorax aristotelis*). Moreover, recent research identified 152 species of marine flora, 303 species of marine invertebrates (7 strictly protected, 9 protected) and 112 species of fish (19 endangered species in Croatia) within the area. This area is known also for its important underwater archaeological sites particularly the site where the Greek bronze statue, a priceless replica of Lizip's Apoksymenos, was discovered.

The designation of this Reserve was based on the findings of a set of focused research projects carried out by Blue World Institute on critical factors affecting distribution and abundance of bottlenose dolphins in this area over the last 12 years, and the local socio-economic impact of this designation. These studies are contained in two PhD thesis carried out in cooperation with the Sea Mammal Research Unit, University of St Andrews (UK), University College London (UK) and Tethys (Italy). These academic theses represent a growing trend in combining academia with policy implementation and were fundamental in stimulating the development of the reserve. This designation represents one of the few examples of how policy makers and researchers can effectively work together toward a common goal.

For more details, please contact:

Drasko Holcer, president  
Blue World Institute of Marine Research and Conservation,  
Kastel 24, HR-51551 Veli Losinj, Croatia  
[Drasko.Holcer@blue-world.org](mailto:Drasko.Holcer@blue-world.org)  
[www.blue-world.org](http://www.blue-world.org) 

## *News from the Secretariat*

### **Current state of signatures, ratifications and accessions**

In the frame of the accessions to ACCOBAMS and following the meeting between the Executive Secretary and the Minister of the environment of Slovenia in November, Slovenia recently concluded its process of accession to the Agreement. This brings the Parties to ACCOBAMS to a total of 20.

In mid March the Executive Secretary met S.E.M. Smail Mimoun, the Algerian Minister of Fisheries and Aquatic Resources, to present the Agreement. The exchanges were very profitable and the Minister expressed his deep interest in ACCOBAMS objectives.

The Executive Secretary also met the Minister of Environment of Montenegro who renewed his interest in acceding to ACCOBAMS.

### **Loris Capirossi joins ACCOBAMS**

World-famous motorbike racer Loris Capirossi has recently joined ACCOBAMS, supporting the U.N. Agreement by promoting its work. Sensitive, helpful and humble notwithstanding his three world titles, thanks to his charisma, he appeared to be the ideal candidate for a partnership with ACCOBAMS. The Secretariat heartily welcomes Loris and thanks him for his kind and helpful dedication.

### **Workshop on cetacean conservation in the Southern and Eastern Mediterranean Countries**

The Workshop for the Southern and Eastern Mediterranean Countries, organized thanks to the collaboration of INSTM and ISPA and with the financial and scientific support of RAC/SPA (Regional Activity Service for Specially Protected Areas) of the Barcelona Convention was held from 9 to 11 March 2006 in Bizerte, Tunisia. The meeting was attended by experts from Algeria, Egypt, Lebanon, Libya, Morocco, Syria and Tunisia. The aim was to summarize all available data, identifying the top priorities to put ACCOBAMS resources into action and to assess interactions between cetaceans and fisheries.

During the meeting, the threats connected with fishing activities and the decreasing number of prey were highlighted. Common bottlenose dolphin were believed to be the most concerned

species at this regard. Some attenuation techniques of the impact of gill nets, pingers and metal tube deterrents were discussed. Other threats were considered as well, including pollution, collisions with vessels, acoustic pollution, and degradation and loss of natural habitats.

Participants showed great interest and their countries' commitment to the issue of cetacean conservation, presenting national reports summarising the existing knowledge and their countries' needs to reach the ACCOBAMS objectives. The need for capacity building was emphasised, especially through the allocation of structures and resources for research, monitoring and conservation.

### **10<sup>th</sup> ACCOBAMS Anniversary**

In the frame of the celebrations for the 10<sup>th</sup> Anniversary of ACCOBAMS, the Secretariat organised a cycle of conferences for the Clubs of the Principality of Monaco. The cycle was opened on 5 April with a conference about "Knowing and recognising the cetaceans of the Mediterranean Sea and the Black Sea in their own environment", intended for members of the Yacht Club. On 9 May, members of the Monaco Rotary Club learnt about threats faced by cetaceans, and about the initiatives of ACCOBAMS aiming to protect them. During the dinner that followed the conference, invitees could test their knowledge on cetaceans by participating to a quiz developed by the Secretariat. The winners enjoyed an unforgettable guided whale-and-dolphin-watching tour sponsored by Imperia's Blue West. The cycle will be continued during the remainder of 2006 at the Lions, Zonta's and Franco-Libanais' Clubs.

On 24 May the ACCOBAMS Secretariat supported the so-called "Operation Poséidon" which took place in Monaco. World-famous Monegasque free-diver Pierre Frola returned the chequered flag for the 64<sup>o</sup> F1 Monaco Grand Prix which was previously placed at a depth of about 60 meters. H.R.H. Prince Albert II also attended the event. Autographed by many personalities, the flag was auctioned to support AMADE Monaco (Association nationale Monégasque des Amis de l'Enfance, a Monegasque Association protecting children). The staff from the ACCOBAMS Secretariat participated to the event on a sailboat kindly provided by Mr. Guy Baria.

From 22 to 26 June the ACCOBAMS Secretariat took part in the festival organised in Rome by

Marevivo, an Italian environmental NGO committed to the conservation of biodiversity in the Mediterranean Sea. The 10<sup>th</sup> anniversary of ACCOBAMS was celebrated on Friday 23 June, with a round-table on "Political strategies for cetacean conservation in the Mediterranean Sea" - which was attended by the Executive Secretary of the Agreement - and with a series of short films intended to awaken public concerns on the issue of conservation. Throughout the whole event the ACCOBAMS Secretariat manned a booth presenting the Agreement's activities and distributing information material.

**ACCOBAMS awarded the Prize "Marevivo – Città di Camogli"**

Marevivo Liguria, an Italian NGO, awarded ACCOBAMS the Prize "Marevivo – Città di Camogli: un premio ad un amico dei cetacei" ("a prize to a friend of cetaceans"), thanks to the Agreement's 10-year commitment to cetacean conservation. The award was handed to Mrs. Marie-Christine Van Klaveren. 

*Short news*

***First dedicated cetacean surveys in the easternmost Mediterranean Sea***

*Aviad Scheinin, Rafi Kent, Dan Kerem and Vasilis Podiadis*

Oceanographically, the Eastern Levantine Basin (ELB) is on the lowest point of the primary productivity range in the Mediterranean, demonstrating extreme oligotrophicity. It is thus rather surprising that representatives of all but two cetacean species known to be resident in the Mediterranean have been sighted off or have stranded in seemingly good nutritional state on the Israeli shoreline. The ELB also holds special interest in being in the position to host potential Lessepsian migrants from the Red Sea through the Suez Canal, including cetacean species.

Yet, the cetacean populations of the ELB have hardly been studied systematically. Most of the knowledge has been gathered in the last decade by IMMRAC. Information is based on stranded animals and opportunistic sightings collected since 1993, and on dedicated near-shore half-day coastal surveys being performed since 1999. The latter involved considerable survey effort, but did not follow a predefined course, being mainly confined to a water strip off the centre of the country's coastline, six miles wide and 30 miles long. A comprehensive coastal and off-shore cetacean survey, following standard line-transect procedures, has never been attempted in the region.

In 2005 we also managed to conduct the first cetacean acoustical survey in the ELB. The survey took place from 22 to 29 June aboard the sailing vessel *Princes Lia* (a "Hunter" 46.6ft long). Use of the yacht and air fare for the foreign experts and their acoustic research equip-

ment were donated by the yacht owner. Project aims included: (a) searching for the presence of sperm whales in the ELB, (b) surveying the offshore cetacean populations in the ELB, and (c) gaining expertise in acoustical surveying methods.

The survey area was confined to a rectangle,



**Aviad Scheinin, Rafi Kent and Dan Kerem**

are with IMMRAC (Israeli Marine Mammal Research and Assistance Center) and the Recanati Institute for Maritime Studies, Department of Maritime Civilization, University of Haifa, Israel

[scheinin@013.net](mailto:scheinin@013.net)

**Vasilis Podiadis** is with the

School of Agricultural Sciences, Department of Agriculture, Animal Production and Aquatic Environment, University of Thessaly, Greece

Bottlenose dolphins  
off the Mediterranean  
coast of Israel  
(*photograph by  
Aviad Scheinin*)



its eastern and western sides being 12 and 55 nautical miles parallel to the shoreline and its other pair being the northern and southern sea borders of Israel. Water depth in the area is comprised between 1000 and 1800 meters. Cruising speed was 4-6 knots, preferably using the sails to reduce engine noise disturbance. The route was chosen randomly in the survey area. Visual observations were performed during daylight hours, in Beaufort sea states  $\leq 3$ , by 2-3h shifts of two observers each. The observers, equipped with binoculars, scanned  $90^\circ$  to port and starboard, respectively. The acoustic survey was continuous, and was performed with a towed stereo hydrophone (HP30-ST Magrec Underwater Monitoring Equipment) connected to dedicated IFAW Rainbow-Click v.3 software. Sampling of one minute every 15 was carried on throughout the survey.

Cetaceans were detected both visually and acoustically. Visual sightings included a group of two bottlenose dolphins seen three n.m. offshore, and two groups of Risso's dolphins, one of five and the other of 18 animals, seen between 12 and 25 n.m. off the coast.

Six acoustical detections were also made during the survey. Five involved unidentified delphinids, and one, 27 n.m. offshore, was of sperm whales. The sperm whale acoustical signal was weak and we lost it after 15 minute without a visual detection (having to start the engine due to lack of wind).

From 11 to 29 September 2005 the first of six

planned biannual multi-day cetacean surveys over the Israeli continental shelf took place aboard EcoOcean's R/V Med Explorer ([www.ecoocean.com](http://www.ecoocean.com)). Use of the ship for the first survey was graciously approved for the cost of fuel only, in the hope that funding would be secured for successive ones.

Project aims included: (a) estimating the population abundance of cetacean species along the Israeli shoreline, as representing the ELB, (b) ascertaining whether there is a stable population of sperm whales in the ELB, and if so (c) modeling sperm whales' regional distribution together with that of common bottlenose dolphins and striped dolphins, relative to environmental variables, in order to predict their distribution in un-surveyed areas. This information would contribute to a comprehensive plan for the conservation of these cetaceans in the ELB and in the Mediterranean as a whole.

The line-transect survey followed a 10-segment zigzag line confined in a rectangle, its borders being the shoreline, the northern and southern Israeli sea borders and a line 30 n.m. from shore, roughly overlying the 1200 m isobath. Cruising speed was  $\sim 8$  knots, a good compromise between optimal fuel consumption and good survey speed. To estimate population abundance, line-transect and distance sampling techniques were used to determine detectability functions for the species. The survey was designed to provide a representative coverage of the study area. The zigzag line, approximately perpendicular to the shore, was devised to maxi-

mize depth and slope gradients, considered to be important determinants of distribution. Sperm whales were also searched for acoustically throughout daylight hours by towing a single element hydrophone connected to IFAW Rainbow-Click. As the expected sperm whale density in the survey area is low, the "passing" transect mode would be broken into a "closing" approach mode whenever sperm whales are sighted or acoustically detected. This would allow the collection of photo-ID data. For other species, photo-ID would be only attempted on individuals approaching the ship to bow-ride.

During the surveys, standard cetacean sighting data are related to environmental variables measured on predetermined stations, three on each zigzag segment. These included zooplankton density (from samples collected with a 300  $\mu$ m mesh size towed plankton net) and depth-profiles of temperature, chlorophyll-a concentration, salinity and light intensity down to 200 m or to the bottom, if shallower (by deploying a CTD).

At the end of each of the planned surveys, all sighting and environmental variable data will be inserted as separate layers into a GIS grid-cell map with 7.5x7.5 n.m. cell size. Depth and slope (from bathymetric maps) as well as sea surface temperature and chlorophyll-a concentration (from satellite images) will also be included. The resulting map will then be incorporated into the ENFA (Ecological Niche Factor Analysis) model software, in order to create a habitat suitability map for these species in this area and in un-surveyed areas of the Mediterranean Sea.

During the first survey a total of 14 cetacean sightings were made, concentrated in five survey days and totalling 53 animals. These included

the first sighting by IMMRAC staff of striped dolphins in Israeli waters, the first sightings of off-shore bottlenose dolphins (18.5 – 55.5 km from shore, at depths of 170 to >1200 m) and an apparent reencounter with a group of 25 Risso's dolphins sighted in June 2005, suggesting a long-term residence of this species in the area. The low overall sighting rate (0.088 animals per n.m.) is in line with the well-known extreme oligotrophicity of the area and stresses the need for an extensive effort to collect sufficient data for reliable estimates. 

#### Further readings:

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Yacobi Y., Zohari T., Kress N., Hecht A., Robarts R.D., Wood A.M., Li W.K.W. 1995. Chlorophyll distribution throughout the southeastern Mediterranean in relation to the physical structure of the water mass. *Journal of Marine Systems* 6:179-190.

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<http://immrac.haifa.ac.il/>



Risso's dolphin off the Mediterranean coast of Israel (photograph by Aviad Scheinin)

## ***Cetacean mass-stranding in Bulgaria caused by fishing ...***

**Gheorghe Radu**

[gpr@alpha.rmri.ro](mailto:gpr@alpha.rmri.ro)

**Kristio Popov**

[kpopov@moew.government.bg](mailto:kpopov@moew.government.bg)

**Konstantin Mikhailov**

[konstantinmikhailov@yahoo.com](mailto:konstantinmikhailov@yahoo.com)

In April 2006 the ACCOBAMS Secretariat was informed that an unusual small cetacean stranding event had occurred along the coasts of Bulgaria. The information was kindly provided by Kristio Popov, from the Bulgarian Ministry of the Environment, and by Konstantin Mikhailov under request by Gheorghe Radu, Regional Representative for the Black Sea of the ACCOBAMS Scientific Committee. All of them are gratefully acknowledged for their efforts.

A total of 25-26 dolphins and porpoises were found dead along a stretch of the Bulgarian coastline between the northern border with Romania and the town of Shabla. Seven carcasses were found in the region of Durankulak, 11 near the village of Krapetz, and seven near Shabla. Species determination was made for a subset of 14 carcasses, found in workable conditions,

by the experts from the regional Inspectorate of the environment, the regional structures of the Fisheries Agency, and by the Varna Institute of aquaculture and fisheries. Of the inspected animals, four were common dolphins, and 10 harbour porpoises. All of them had clear marks of nets on their bodies, and in some the fins were missing. Supposedly, dolphins and porpoises were caught in nets set for turbot (*Psetta maotica*).

As a result of this event, the regional Inspectorate of the environment and the Fisheries Agency are planning to increase the frequency of inspections along the northern coast of the country in the near future, and a seasonal closure (from May to June) of turbot fisheries is envisaged as well. 🇵🇵

## ***... however other mortality causes are at work in the wider Black Sea***

**Alexei Birkun, Jr.**

[alexeibirkun@home.cris.net](mailto:alexeibirkun@home.cris.net)

This year a cetacean mass mortality event started in the Black Sea in the late March and continued till the first week of July (at present the event is finished). At least four Black Sea countries were involved in the event: Bulgaria, Georgia (I received factual information from Irakli Goradze and local media), Romania and Ukraine (where over 200 strandings were recorded during this period). Unfortunately, nobody studied strandings during this period in Russia (I contacted some people but they know nothing), and no relevant information is available from Turkey. However, the wide geography of known strandings (western, northern and south-eastern Black Sea) is indicative of the regional scope of the event. A special survey along the entire western Azov Sea coast (June, Brema Laboratory) did not reveal mass strandings in this satellite basin.

All three species of Black Sea cetaceans were involved in the stranding event, but most were

harbour porpoises. It is indeed true that the event concurred with the traditional turbot fishing season - many harbour porpoises die annually due to the entanglement in bottom-set gillnets (see FINS 2(1):10). It is also true that some stranded porpoises had indications of having been by-caught. At the same time, many animals had no such signs and some of them stranded alive. In Ukraine we recorded 14 live strandings of harbour porpoises and common dolphins. Live strandings were confirmed also in Bulgaria (including one bottlenose dolphin; Konstantin Mikhailov, pers. comm.) and Georgia (Irakli Goradze, pers. comm.). According to these facts, fishery is not a single cause of the Black Sea cetacean die-off this year. Morbillivirus infection is a second suspected factor. The Brema Lab stored frozen samples collected from some individuals which stranded alive and later died on the shore. 🇵🇵

## Book review

*Giuseppe Notarbartolo di Sciara*

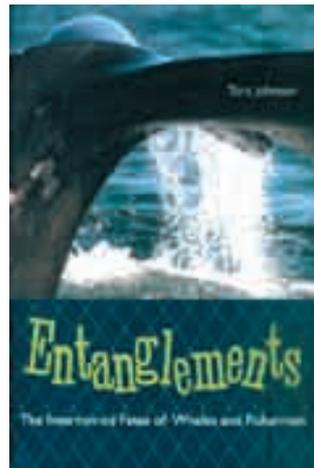
**Entanglements: the intertwined fates of whales and fishermen.** Tora Johnson. 2005. University Press of Florida, Gainesville, 290 pp. ISBN 0-8130-2797-7

This book tells the story of a battle that started over 20 years ago along the US and Canadian shores of the north-western Atlantic, and that, at the time of writing, is neither won nor has its end in sight. The battle is about trying to prevent whales from becoming entangled in fishing gear. Entanglements of whales in nets and fish traps in that region have been known to occur for a long time. However it is only during the last couple of decades that the problem has become particularly critical, in large part because many of the entangled whales are North Atlantic right whales, which are among the world's most endangered mammals.

On a superficial reading of the story, one could be led to think that the battle the book recounts is one between the fishing communities, who understandably want to get on with their business, and conservationists, who – equally understandably – would like to see the problem of whale entanglements just dissolving, with all its burden of risk and needless suffering. Not so. As the author eloquently tells to her readers, this battle pits a quite diverse crowd of human beings, all more or less coherently motivated to get rid of the problem, against a most intractable circumstance. While it is true that during the years the different stakeholders – fishermen, environmentalists, government officials, scientists, and the public at large, each of them being animated by different motivations – have often found themselves engaged in rather nasty arguments and hopeless impasses, clearly all the stakeholders are brought together by the same strong sentiment: they want the problem of whale entanglements to go away. Rather interestingly, by reading the book one gets the feeling that, with minor exceptions, all the players participate in the effort basically in good faith, in stark contrast with the fraudulent and malicious tones that similar situations have acquired, for instance, in the Mediterranean driftnet controversy or in the Japanese “whales-eat-our-fish” fabrication.

The issue described by this book seems very specific to the waters of New England and East-

ern Canada, and indeed the whales involved – mostly northwest Atlantic populations of right and humpback whales – happen to solely run into the gear of Massachusetts, Maine, Nova Scotia and Newfoundland fishermen.



However, you can change the names of the characters in the play, and find yourself confronted with any of the several instances pitting human activities against the conservation of habitats and species. All the canonical elements are there: a community of people living from the sea, one or more species of endangered wildlife facing unsustainable levels of mortality due to the activities of the human community, groups of other people taking the sides of the endangered wildlife, and decision makers and law enforcers scrambling desperately to find solutions and to appease conflicts. So the story intertwining the fates of New England whales and fishermen significantly transcends regional relevance and becomes a quite fascinating and instructive precedent to enlighten in similar predicaments elsewhere.

All these things considered, I found that Tora Johnson has produced quite a good book, written with great personal involvement, and even illustrated by her. Her views are so balanced that one doesn't quite understand whether she has stronger feelings for the whales or for the fishermen. The answer, I think, is for both. “She takes us to sea with fishermen who struggle to stay in business, setting traps and gillnets in the whales' habitats, and with members of the rescue teams who attempt to cut away deadly rope and nets from whales in the wild.” In decades of efforts, substantial mistakes were made on all sides, most notably by regulators, and the book pitilessly exposes and examines them one by one.

However, on one account the plight of New England whales and fishermen seems to be standing

out from the rest: never there was any openness in the mind of the US regulators, with no solution still in sight, to the possibility that society could bear the cost of losing an endangered species. This constitutes a very important and

uplifting precedent in a world where the environmental cost of human activities is still largely outside of the great equation. 

## Calendar of events

August - December 2006

### AUGUST

1-10 Mediterranean Action Plan, Training session on marine turtle conservation techniques, Lara Station, Cyprus

### SEPTEMBER

4-6 EUROBATS: 5<sup>th</sup> Session of the Meeting of the Parties Ljubljana, Slovenia

4-6 8<sup>th</sup> International Conference on Modelling, Monitoring and Management of Water Pollution, Bologna, Italy

4-8 41<sup>st</sup> European Marine Biology Symposium, Cork, Ireland

5 Meeting on the establishment of a joint ACCOBAMS - CIESM - PELAGOS cetacean sighting database, Principality of Monaco

7-8 Black Sea Commission, Workshop on Marine Protected Areas, Istanbul, Turkey

11-14 GFCM Scientific Advisory Committee – Sub-Committee on Marine Environment and Ecosystems (SCMEE) including the workshop on interactions between cetaceans and fishing activities, Rome, Italy

17 ACCOBAMS, Operation MIMO and launch of the CMS *Year of the Dolphin*, Principality of Monaco

18-22 ASCOBANS: 5<sup>th</sup> Meeting of the Parties, Egmond aan Zee, Netherlands

19-21 IUCN Meeting on Biodiversity in European

Development Cooperation, Paris, France

26-28 Conference on implementing the ecosystem approach to fisheries, Bergen, Norway

### OCTOBER

2-6 54<sup>th</sup> Meeting of the CITES Standing Committee, Geneva, Switzerland

16-20 2<sup>nd</sup> Intergovernmental Review Meeting of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, Beijing, China

### NOVEMBER

3-4 ACCOBAMS-WDCS live stranding and cetacean rescue workshop, Principality of Monaco

5-8 ACCOBAMS 4<sup>th</sup> Meeting of the Scientific Committee (SC4), Principality of Monaco

20-21 15<sup>th</sup> Meeting of the Commission on the Protection of the Black Sea Against Pollution

20-26 ACCOBAMS Week, Principality of Monaco

### DECEMBER

8-11 2006 Pew Fellows in Marine Conservation Annual Meeting, Punta Cana, Dominican Republic

12-14 East Asian Seas Congress, Haikou, China

### FINS

can be found online on the website of ACCOBAMS: [www.accobams.org/2006.php/newsletter/all](http://www.accobams.org/2006.php/newsletter/all)

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Correspondence to **FINS** can be directed to:

**FINS**,  
ACCOBAMS Secretariat,  
Jardin de l'UNESCO,  
Les Terrasses de  
Fontvieille,  
98000 Monaco  
[accobams@accobams.net](mailto:accobams@accobams.net)

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