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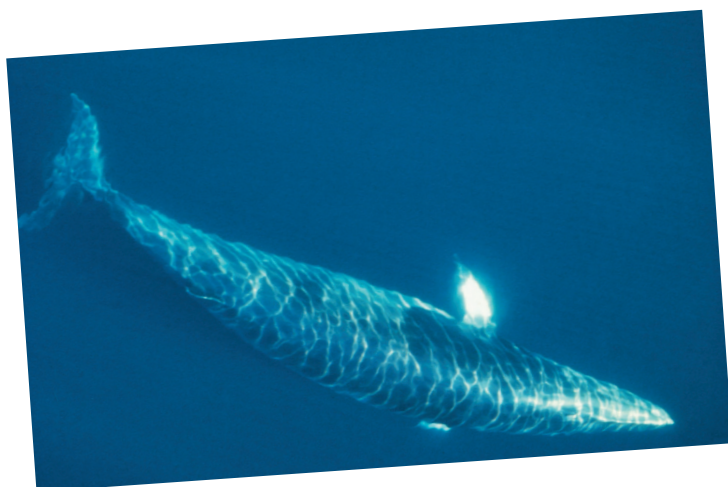
Cetaceans and the Marine Environment in Africa

This briefing aims to illustrate the importance of cetaceans – whales, dolphins and porpoises – in the oceans of Africa, why cetacean conservation is in the interests of West African governments, and the real management responses that are necessary to ensure healthy productive seas for generations to come.

“Why are cetaceans important to African people?”

Healthy cetacean populations have tremendous potential to bring economic and livelihood benefits to coastal communities through tourism. More than 10 million people now enjoy watching cetaceans each year. These activities are termed as ‘whale watching’ which here includes tourism activities relating to all cetaceans - whales, dolphins and porpoises.

- **Whale Watching in 2001 was already a US \$1 billion industry.** More than 492 communities in 87 nations and territories offer whale watching excursions and tours.
- **Whale watching is growing at a faster rate than general world tourism.** The number of people whale watching has increased by 12.1 percent each year since 1991. Direct expenditures on tickets for tours have increased from US \$77 million in 1991 to more than US \$300 million, an average annual increase of 21.4 percent.
- **Total worldwide whale watching tourism expenditures reached US \$1.049 billion in 1998.** This is the amount whale watchers spent on the tours, as well as travel, food, hotels and souvenirs. This figure has more than trebled from an estimated US \$317.9 million in 1991.
- **Whale watching has significant educational, environmental, scientific and other socio-economic benefits.** Local guides trained as naturalists impart scientific and local knowledge to whale watchers. The scientific programs of several research organizations have flourished through collaborations with local whale-watch operations. Data collection on board whale-watching platforms has been instrumental in establishing marine protected areas and sanctuaries that benefit people, whales and the environment.
- **Whale watching offers communities a sense of identity and cultural pride.** In many places, whale watching provides valuable, sometimes crucial, income to local people through the creation of new jobs and businesses. It also helps foster appreciation of the marine environment through hands-on education and research.¹



“Why are cetaceans important for the African marine environment?”

Marine ecosystems are incredibly complex and dynamic, and cetacean species have an important role in maintaining the delicate balance that holds these systems together.

As large, and in many places numerous, predators, cetaceans are ecologically significant as storers and movers of nutrients (carbon and nitrogen especially) and energy, within and between ecosystems. Most of the baleen whales which feed on plankton carry biological production directly from the bottom of the animal food-chain (the small zooplankton) to the top trophic level.² Small cetaceans and the toothed large whales on the other hand, have a diet based on much larger species and a different top predator role in ecosystem dynamics.

The reduction or elimination of cetaceans can have negative, cascading effects for the entire ecosystem. For example, changes in the abundance of many species were seen in the Southern Ocean and the Bering Sea following large-scale harvesting of whales. In extreme cases it has been hypothesised that the decline of whale populations has led to entire ecosystem collapse (eg. See box 1.)

Due to the complexities of marine systems and lack of information on many cetacean species, the true extent of the ecological role of cetaceans is yet to be fully understood. However it is clear that whales are critical components of the delicately balanced marine ecosystem, and an essential component of African seas.

Box 1

In October 2003, a paper published in the U.S. Proceedings of the National Academy of Sciences, and again in 2006 in the journal *Marine Mammal Conservation*³, hypothesized that overfishing of whales in the North Pacific Ocean led to the decimation of Alaska's kelp forest ecosystems.

The authors proposed that the decimation of great whale (baleen and sperm) populations removed a major source of food for killer whales. This may have forced some killer whales to “fish down the food web,” preying on other marine mammals which in turn were significantly reduced in number. The killer whales first turned to harbour seals (populations collapsed early 70's - early 80's) then fur seals (mid 70's - mid 80's), sea lions (late 70's - 90's), then as the seals became comparatively rare, some killer whales expanded their diet to include sea otters (90's - today).

By the late 1990's the number of sea otters had declined to such an extent that it allowed an explosion of sea urchins - the sea otters natural prey. The exploding population of sea urchins then decimated the kelp forests due to the sea urchins' over grazing. The destruction of kelp forests was catastrophic as the kelp formed the very basis of the entire ecosystem.

Minke Whale © WWF-Canon / Morten Lindhard.

¹ Hoyt, E. 2001. *Whale Watching 2001: Worldwide tourism numbers, expenditures, and expanding socioeconomic benefits*. International Fund for Animal Welfare, Yarmouth Port, MA, USA, pp. i-vi; 1-158.

² Bowen, W.D. 1997. *Role of marine mammals in aquatic ecosystems*. Publication: Marine Ecology Progress Series 158:267-274, 1997.

³ Springer, A.M., Estes, J.A., van Vliet, G.B., Williams, T.M., Doak, D.F., Danner, E.M., Forney, K.A., Pfister, B. 2003. *Sequential megafaunal collapse in the North Pacific Ocean: An ongoing legacy of industrial whaling?* Proceedings of the National Academy of Sciences. U.S.A. Vol. 100, no. 21. 12223-12228.

“What is the relationship between cetaceans and fisheries?”

We are all aware there is a crisis in our seas - at all levels of the food chain including cetaceans. 14 species of cetacean are now listed as threatened by IUCN, and a further 39 are listed as data deficient, highlighting the lack of critical information available for many of these animals. As well as cetaceans, important fish stocks across the globe are in decline, several to the point where their very survival is at risk.

Unfortunately the vast majority of the problems in our oceans are due to the unsustainable practices of one particular mammal – the human.

The global fishing fleet is currently 2.5 times larger than what the oceans can sustainably support - meaning that humans are taking far more fish out of the ocean than can be replaced. 77% of the world's fisheries are already fully exploited or over fished, and as many as 90% of all the ocean's large fish have been fished out.⁴

Poor fisheries management is the largest threat to ocean life and habitats, not to mention the livelihoods and food security of over a billion people.

Fisheries in the West African Marine Ecoregion (WAMER), which includes Mauritania, Senegal, Gambia, Cape Verde, Guinea Bissau and Guinea, generate some US\$400 million annually, making them the single most important source of foreign exchange in the region and a critical source of revenue for economic and social development. In Senegal alone, a country of 12 million, the jobs of over 600,000 men and women depend directly on fishing and fisheries related industries.

In Senegal, artisanal fishers land 80% of the country's yearly 400,000 tonne catch. However, in Mauritania, foreign industrial fishing fleets catch about 80% of the fish while the smaller scale, artisanal sector catches around 20%.⁵ Many foreign powers - in particular the EU, Japan, and China - have negotiated fisheries agreements to allow their boats access to waters of WAMER countries.

Now, rather than tackle the real cause of the problem – overfishing – there are those that are claiming that the world's fish stocks are in decline because of the amount of fish consumed by whales, and demanding that whales be culled in order to save the seas.

This argument is not only factually and scientifically incorrect, but could lead to far reaching, negative consequences of the world's oceans.

In fact, detailed global analyses reveal that most food consumed by marine mammals consists of prey types that fisheries do not target, and that marine mammals consume most of their food in areas where humans do not fish.⁶ For example, many whales survive entirely on plankton or fish species with no commercial value. Furthermore, several whale species actually eat species that are predators of commercially fished species, thus there is good reason to believe that reducing the number of predators such as whales may actually reduce catches of commercially valuable species.⁷

Almost all whale populations were drastically depleted during the last century and many species are still at just a fraction of their original numbers. Therefore, if reduced whale populations resulted in higher fish catches, fish stocks would now be likely to be far larger than they are believed to have been 100 years ago. In fact – as noted above – the opposite is true; almost all commercial fish stocks are much smaller now than they were a century ago.⁸

Strengthening fisheries management is the only solution to the problems of degraded marine ecosystems and declining commercial fish stocks within them. In strengthening fisheries management and implementation, Ecosystem-Based Management (EBM) has been identified as a management approach that is likely to succeed where many other initiatives have failed.⁹

EBM is a holistic, participatory and integrated approach based on the properties of the relevant ecosystem rather than on the exploitation of a single species, and focussed on the maintenance of the natural structure and functioning of the entire ecosystem. EBM makes use of important tools such as catch and gear controls and time or area fishing restrictions, and integrates them within a framework that is designed to understand the limits of marine ecosystems and conserve their long term function as well as their productive potential.

Although EBM is erroneously used by some to justify the culling of species such as cetaceans, purportedly to increase fish stocks, in truth this type of 'ecosystem engineering' approach is not scientifically supported and is entirely contrary to the rationale of Ecosystem-Based Management. In fact, a full technical and legal analysis of the term Ecosystem-Based Management concluded that the internationally-agreed and accepted definition of ecosystem based management involves the management of fisheries to avoid harm to the ecosystem, rather than the management of marine mammal populations to attempt to avoid harm to fisheries, and therefore EBM does not *de facto* involve culling of cetaceans.¹⁰

⁴ http://www.panda.org/about_wwf/where_we_work/africa/solutions_by_region/wamer/area/fisheries/index.cfm

⁵ Chavance P., Bâ M., Gascuel D., Vakily J. M. & Pauly D. (éd.), 2004 – *Pêcheries maritimes, écosystèmes & sociétés en Afrique de l'Ouest : un demi siècle de changement*. Bruxelles, Office des publications officielles des Communautés européennes, XXXII-532-XIV p., 6 pl. h.-t. coul., (coll. des rapports de recherche halieutique A.C.P.-U.E., n° 15 Vol. 1).

⁶ Kaschner, K. and Pauly, D. 2004. *Competition between marine mammals and fisheries: food for thought*.

⁷ UNEP. 1999. *Marine Mammal Action Plan; Protocol for assessing proposals for culling marine mammals*.

⁸ Myers, R.A., and Worm, B. 2003. *Rapid worldwide depletion of predatory fish communities*. Nature Vol 423 P. 280-283

⁹ Ward, T., Tarte, D., Hegerl, E., and Short, K. 2002. *Policy Proposals and Operational Guidance for Ecosystem-Based Management of Marine Capture Fisheries*. WWF International.

¹⁰ Currie, E.J, 2007 *Ecosystem-Based Management in Multilateral Environmental Agreements: Progress towards Adopting the Ecosystem Approach in the International Management of Living Marine Resources*.

The real and only solution to the problem of declining fish stocks is to rebuild overexploited stocks and ecosystems through relieving fishing pressure, improving gear selectivity and fishing exploitation patterns, protecting habitat and making a wise and generous use of protected areas and no-take zones. Although the proper implementation of Ecosystem Based Management requires a more detailed, integrated approach than has perhaps been employed in the past, is already being implemented with success in many areas of the world.¹¹

Conclusion

Cetaceans are an essential, stabilising part of marine ecosystems, and healthy cetacean populations generate substantial economic and livelihood benefits for coastal communities.

The argument put forward by pro-whaling countries that cetaceans need to be killed to increase fish stocks is factually and scientifically incorrect, and this approach could have far reaching negative effects on all parts of the marine ecosystem. Human overfishing is the overwhelming factor in the decline of global fish stocks, and is threatening the livelihoods of millions of Africans.

As such, it is in the interest of African nations to employ sound precautionary ecosystem-based management of the marine environment, which includes the appropriate conservation of cetaceans, recognising their critical role in the marine ecosystem, and their potential for bringing economic and livelihood benefits to coastal communities.

Additional resources available:

Ecosystem-Based Management of Marine Capture Fisheries

This document provides a conceptual framework for the development of best operational practice for effective Ecosystem-Based Management.

http://www.panda.org/news_facts/publications/index.cfm?uNewsID=71920

Implementation of Ecosystem-Based Management in Marine Capture Fisheries

This document presents a series of case studies of Ecosystem-Based Management in implementation, demonstrating that EBM for the oceans can be, and has been, implemented and is making significant gains.

http://www.panda.org/about_wwf/where_we_work/europe/what_we_do/mediterranean/publications/index.cfm?uNewsID=94920

How is “Ecosystem-Based Management” Defined in Global Environmental Agreements?

This paper is a technical and legal analysis of Ecosystem Based Management and concludes that internationally-agreed and accepted definition of ecosystem based management involves the management of fisheries to avoid harm to the ecosystem, rather than the management of marine mammal populations to attempt to avoid harm to fisheries, and therefore does not *de facto* involve culling of predator species such as cetaceans.

http://www.panda.org/news_facts/publications/index.cfm?uNewsID=95720

Competition Between Marine Mammals and Fisheries: Food for Thought

This study presents results from modelling the degree of ecological food resource overlap on a global scale between marine mammals and fisheries; the model considers the types of food taken by each group, as well as the geographic areas where the food is taken. The analysis clearly shows there is no evidence that food competition between the two is a global problem.

English: http://www.hsus.org/web-files/PDF/FoodForThought_v2.pdf

French: http://www.hsus.org/web-files/PDF/French_Food_for_thought.pdf



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¹¹ Grieve, C. and Short, K. 2007. *Implementation of Ecosystem-Based Management in Marine Capture Fisheries. Case Studies from WWF's Marine Ecoregions.* WWF

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