

## Global Priorities for Reduction of Cetacean Bycatch

Randall R. Reeves<sup>1</sup>, Per Berggren<sup>2</sup>, Enrique A. Crespo<sup>3</sup>, Nick Gales<sup>4</sup>, Simon P. Northridge<sup>5</sup>, Giuseppe Notarbartolo di Sciarra<sup>6</sup>, William F. Perrin<sup>7</sup>, Andrew J. Read<sup>8</sup>, Emer Rogan<sup>9</sup>, Brian D. Smith<sup>10</sup>, and Koen Van Waerebeek<sup>11</sup>

### Abstract

Progress at reducing the scale and conservation impact of cetacean bycatch has been slow, sporadic and limited to a few specific fisheries or circumstances. As a result bycatch remains perhaps *the greatest immediate and well-documented threat* to cetacean populations globally. Having recognized the critical importance of reducing bycatch levels to prevent the depletion, and in some cases extinction, of cetacean populations, World Wildlife Fund-US launched a global bycatch initiative early in 2002. Their strategy calls on governmental and non-governmental bodies to move quickly, cooperatively and thoughtfully to achieve bycatch reduction. As a supportive step a working group was established to identify priorities and provide guidance on how financial and other resources should be invested to address bycatch issues. The group will conduct a global survey of cetacean bycatch problems, classify and rank those problems according to an agreed set of criteria and provide a clear rationale for each problem assigned high priority for funding and intervention. The working group will emphasize: (1) situations that are especially critical (e.g. a species' or population's survival is immediately at risk from bycatch) and are not being addressed adequately; (2) circumstances where rapid progress could be made with a modest investment of resources; (3) situations in which bycatch is believed to pose a threat to cetaceans but a quantitative assessment is needed to verify the risk; and (4) fisheries in which a currently available solution (technical, socio-economic or a combination) appears feasible. The report of the working group will be directed at governmental decision makers, aid agencies, nongovernmental organizations and related audiences.

### Introduction

It has been well known for several decades that large numbers of cetaceans (hundreds of thousands if not millions per year) die in gillnet and purse seine fisheries around the world (e.g., Perrin 1968, 1969; Ohsumi 1975; Lear and Christensen 1975). Nonetheless, progress at reducing the scale and conservation significance of this mortality has been slow, sporadic and limited to a few specific fisheries or circumstances. For example:

---

<sup>1</sup> Okapi Wildlife Associates, 27 Chandler Lane, Hudson, Quebec J0P 1H0, Canada. E-mail: rreeves@total.net.

<sup>2</sup> Department of Zoology, Stockholm University, S-106 91 Stockholm, Sweden.

<sup>3</sup> Centro Nacional Patagónico, Puerto Madryn, Argentina.

<sup>4</sup> Australian Antarctic Division, Channel Highway, Kingston, Tasmania 7005, Australia.

<sup>5</sup> Sea Mammal Research Unit, Gatty Marine Laboratory, University of St. Andrews, St. Andrews, Fife KY16 8LB, UK.

<sup>6</sup> Tethys Research Institute, Via Benedetto Marcello 43 – 20124 Milano, Italy.

<sup>7</sup> Southwest Fisheries Science Center, 8604 La Jolla Shores Drive, 92037, La Jolla, California, USA.

<sup>8</sup> Duke University Marine Laboratory, 135 Duke Marine Lab Road, Beaufort, North Carolina 28516, USA.

<sup>9</sup> Department of Zoology, Ecology and Plant Science, University College, Lee Maltings, Prospect Row, Cork, Ireland.

<sup>10</sup> Wildlife Conservation Society, 27/16 Soi Naya, Mool, Muang, Rawai, Phuket 83130, Thailand.

<sup>11</sup> Centro Peruano de Estudios Cetológicos, Museo de los Delfines, Pucusana, Lima 20, Peru.

- After a protracted period of scientific research, technology development, non-governmental lobbying and legal challenges, the problem of dolphin mortality in the eastern tropical Pacific tuna purse seine fishery has been addressed effectively (Hall 1998; Gosliner 1999).
- The high mortality of cetaceans (and other marine species) in large-scale drift gillnet fisheries on the high seas has been largely eliminated, at least in some ocean regions, through decisive action by the United Nations General Assembly, which declared a global ban beginning in 1993 (Northridge and Hofman 1999). However, the reach of this driftnet ban did not extend to several key areas, notably the Baltic Sea (ASCOBANS 2002), the Mediterranean Sea (Tudela et al. 2003) and Exclusive Economic Zones (EEZs) where cetacean bycatch can be significant (e.g. for Dall's porpoises, *Phocoenoides dalli*; IWC 2002:328), and it is uncertain whether the ban has been fully implemented outside EEZs in parts of the South Atlantic and South Pacific.
- In New Zealand a sanctuary was created in 1988 explicitly to reduce bycatches of Hector's dolphin (*Cephalorhynchus hectori*) (Dawson and Slooten 1993) and since then further measures have been taken to address the bycatch threat to this endangered species (Reeves et al. 2003, pp. 87-88). Again, though, such measures may not have gone far enough, especially in the case of the critically endangered North Island subspecies (Dawson et al. 2001; Baker et al. 2002).
- In the United States, amendments to the Marine Mammal Protection Act in 1994 established a process in which maximum allowable annual removal limits are set for each marine mammal stock based on the potential biological removal level, or PBR, and fishing activities are subject to monitoring and regulation to assure that those limits are not exceeded (Wade 1998; Read 2003). This approach has substantially improved fishery management in the United States in terms of mitigating cetacean bycatch (through gillnet closures in some coastal areas and mandatory pinger use in others). Nevertheless, one of the most serious bycatch problems in U.S. waters (involving North Atlantic right whales, *Eubalaena glacialis*) continues to fester (e.g. Knowlton and Kraus 2001).
- In European Union (EU) waters closure of the albacore driftnet fishery in the Bay of Biscay, Celtic Sea and west of Ireland, prohibition of driftnets longer than 2.5km (except in the Baltic Sea) and prohibition of tuna purse-seine fishing on dolphins represented important measures taken to reduce bycatch (Kaschner 2003). Denmark implemented a mandatory pinger program in certain North Sea bottom-set gillnet fisheries after undertaking rigorous studies of harbour porpoise (*Phocoena phocoena*) bycatch levels and conducting pinger trials (Vinther 1999; Larsen et al. 2002). The recent Council Regulation (EC) No. 812/2004 goes further, requiring pinger use with all gillnets deployed in EU waters from boats more than 12m in length, phasing out the use of driftnets in the Baltic by 2008 and imposing a requirement for on-board observers programmes to monitor cetacean bycatch in certain fisheries.

In spite of the positive examples noted above (none of which is without ongoing problems), bycatch remains one of the greatest threats, and perhaps *the greatest immediate and well-documented threat*, to the survival of cetacean species and

populations globally (Northridge and Hofman 1999; Reeves et al. 2003; Read et al. 2003). While bycatches in set and drift gillnets remain a principal concern, incidental mortality in trawl nets, purse seines and longline gear is also worrisome, as are entanglement in 'ghost' gear and the ingestion of marine debris (much of it originating from the fishing industry). Importantly, the International Whaling Commission's (IWC's) management procedure for baleen whale populations explicitly requires that mortality from bycatch in fisheries (and ship strikes) be taken into account when setting allowable catch levels for whaling. As a consequence in 2001 the IWC Scientific Committee established a Working Group on Estimation of Bycatch and Other Human-Induced Mortality (under terms set forth in the report of the 52<sup>nd</sup> annual meeting; IWC 2000:32). This working group provides an international forum for collating and analysing data on bycatch, with emphasis on baleen whales.

Having recognized the importance of reducing bycatch levels to prevent the depletion, and in some cases extinction, of cetacean populations, World Wildlife Fund-US (hereafter WWF) launched a global bycatch initiative in early 2002. The strategy behind this initiative (Read and Rosenberg 2002) calls upon governmental and non-governmental bodies to move quickly, cooperatively and thoughtfully to achieve bycatch reduction. It also specifically refers to the IWC Scientific Committee and the IUCN (World Conservation Union) Species Survival Commission's Cetacean Specialist Group (CSG) as key sources of guidance in establishing priorities and assessing the effectiveness of measures taken to reduce bycatch.

WWF asked the CSG chairman (Reeves) to lead a working group to rank cetacean bycatch problems (i.e. assign priorities) and provide guidance on how to direct resources for addressing them. The group's report is expected to be useful to governmental decision makers, aid agencies, nongovernmental organizations and related audiences. Rather than asking the working group simply to identify the species or populations at greatest risk or the geographical locations where the bycatch problem is most severe, WWF asked that an emphasis be placed upon *opportunities*, i.e. situations where the prospects for successful intervention appear especially good.

### **Scope and approach**

The working group consists of a coordinator (Reeves) and several experts chosen from the CSG and the WWF Cetacean Bycatch Task Force. Their remit is to conduct a global survey of cetacean bycatch problems, to classify and rank those problems according to an agreed set of criteria, and to provide a clear rationale for each problem assigned high priority for funding and intervention. The emphasis will be on: (1) situations that are especially critical (e.g. a species' or population's survival is immediately at risk from bycatch); (2) circumstances where rapid progress could be made with a modest investment of resources; (3) situations in which bycatch is believed to pose a threat to cetaceans but a quantitative assessment is needed to verify the risk; and (4) fisheries in which a currently available solution (technical, socio-economic or a combination) appears feasible. Each problem description will include the species involved, abundance estimate and population status (declining, stable, increasing etc.) where possible, type of

fishery (gear, target species) and latest recommendations regarding mitigation (i.e. what needs to be done to solve the problem, based on existing action plans, meeting/workshop reports and expert opinions within the working group).

Two documents provide benchmarks, and templates, for the present exercise. At its inaugural meeting in 1974 to review the global status of small cetaceans the IWC Scientific Committee's Subcommittee on Small Cetaceans (IWC 1975) presented the state of knowledge in two principal ways: first, through a systematic, species-by-species overview and second, through a series of regional accounts. Sixteen years later, an IWC workshop on mortality of cetaceans in passive fishing nets and traps took a similar approach (IWC 1994). It began by reviewing world fisheries on a geographical basis and then reviewed the impacts of these fisheries species-by-species (or in many cases population-by-population). Additionally the workshop reviewed information on causes of incidental mortality and attempted to identify solutions.

For the present exercise, we have adopted a systematic approach by first, conducting a species-by-species (and where appropriate, population-by-population) review of all cetacean species worldwide, and second, reviewing bycatch problems region-by-region. Among the criteria for determining priorities are the following:

- Problems situated in the European Union, the United States, Australia and New Zealand have been included in the problem identification and assessment processes, but they have been downgraded as priorities because it is assumed that such problems are being, or will be, addressed by relevant governmental agencies and nongovernmental organizations within those jurisdictions.
- Problems that are already being addressed effectively through bilateral or multilateral agreements or conventions have been similarly downgraded to minimize duplication of effort and avoid sub-optimal allocation of conservation resources.
- Feasibility of intervention has been evaluated based on factors such as political stability in the country or region, institutional capacity within the country or region to assure effective implementation and follow-through (including long-term evaluation of effectiveness) and availability within the region of individuals or groups who can and will carry out the needed work.
- Seriousness of the bycatch threat to the affected population(s) or species has been taken into account.
- Consideration has been given to whether a successful outcome is likely to provide a model for solving other similar cases.

## **Issues**

Issues to be borne in mind during this type of priority-setting exercise include the following:

- Legislation making bycatch illegal has caused serious problems in some regions where fishermen deny that they catch cetaceans and dispose of carcasses clandestinely.
- In a number of regions with high demand for fishery products, bycaught cetaceans have market value and are therefore brought ashore and sold. This occurs even in places where such practices are illegal.
- Outside North America, western Europe and Oceania, onboard observer programs to monitor bycatch have been small-scale and short-lived. With a few exceptions, the evidence for bycatch tends to be anecdotal and non-quantitative, consisting of stranding reports, interviews and opportunistic observations by scientists and fishery observers.
- Dependence on interview data or official reports often leads to the erroneous conclusion that bycatch is rare or non-existent in a given area. Apart from strategic response bias on the part of fishermen and the general lack of rigor with which national fishery statistics are compiled, the situation can be confounded by three factors: (a) Bycatch can be a rare event in the experience of a given fisherman, leading him to conclude (rightly or wrongly) that the fishery-wide scale of the problem is small or negligible. (b) As cetacean populations become increasingly depleted (regardless of the causes), the incidence of bycatch is likely to decline regardless of the trend in fishing effort. In extreme cases the cetacean population may have been locally extirpated, effectively reducing the bycatch rate to zero and rendering moot the question of whether there is any longer a 'bycatch problem'. (c) Reporting of a significant cetacean bycatch may be a low priority, or politically unacceptable, in countries where fishery development is considered vital for food security or maintaining the balance of trade.
- In some areas with intensive gillnet fishing, where even such basic information as which cetacean species occur there is not known, bycatch levels are assumed to be significant, yet the lack of quantitative data makes it difficult to assign levels of priority. Moreover, the fisheries in these areas are often small-scale and decentralized, making it difficult to estimate or monitor cetacean bycatch rigorously (e.g. through an appropriately designed on-board observer programme).

### **Timetable**

The final report of the working group is expected to be available by October 2004.

### **Acknowledgements**

This project was conceived by Karen Baragona of WWF-US and financial support has been provided through the WWF-US Bycatch Initiative.

### **References Cited**

- ASCOBANS. 2002. Recovery plan for Baltic harbour porpoises (Jastarnia Plan). Secretariat, Agreement for Small Cetacean Conservation in the Baltic and North Seas, Bonn.
- Baker, A.N., Smith, A.N.H. and Pichler, F.B. 2002. Geographical variation in Hector's dolphin: recognition of a new subspecies of *Cephalorhynchus hectori*. *Journal of the Royal Society of New Zealand* 32:713-727.
- Dawson, S., Pichler, F., Slooten, E., Russell, K. and Baker, C.S. 2001. The North Island Hector's dolphin is vulnerable to extinction. *Marine Mammal Science* 17:366-71.
- Dawson, S.M. and Slooten, E. 1993. Conservation of Hector's dolphins: the case and process which led to establishment of the Banks Peninsula Marine Mammal Sanctuary. *Aquatic Conservation: Marine and Freshwater Ecosystems* 3:207-221.
- Gosliner, M.L. The tuna-dolphin controversy. Pp. 120-155 in J.R. Twiss, Jr. and R.R. Reeves (eds.), *Conservation and management of marine mammals*. Smithsonian Institution Press, Washington, D.C.
- Hall, M.A. 1998. An ecological view of the tuna-dolphin problem: impacts and trade-offs. *Reviews in Fish Biology and Fisheries* 8:1-34.
- IWC. 1975. Report of the meeting on smaller cetaceans, Montreal, April 1-11, 1974. *Journal of the Fisheries Research Board of Canada* 32:889-983.
- IWC. 1994. Report of the workshop on mortality of cetaceans in passive fishing nets and traps. Report of the International Whaling Commission (Special Issue) 15:1-71.
- IWC. 2000. Chairman's report of the fifty-second annual meeting. *Annual Report of the International Whaling Commission* 2000:11-63.
- IWC. 2002. Report of the standing sub-committee on small cetaceans. *Journal of Cetacean Research and Management* 4(Suppl.):325-38.
- Kaschner, K. 2003. Review of small cetacean bycatch in the ASCOBANS area and adjacent waters – current status and suggested future actions. ASCOBANS (Agreement on the Conservation of Small Cetaceans in the Baltic and North Seas) Secretariat, Bonn, Germany. Document MOP4/Doc. 21(S), 1 August 2003.
- Knowlton, A.R. and Kraus, S.D. 2001. Mortality and serious injury of northern right whales (*Eubalaena glacialis*) in the western North Atlantic Ocean. *Journal of Cetacean Research and Management (Special Issue)* 2:193-208.
- Larsen, F., Vinther, M. and Krog, C. 2002. Use of pingers in the Danish North Sea wreck net fishery. International Whaling Commission, Cambridge, UK. Scientific Committee Document SC/54/SM32.

- Lear, W.H. and Christensen, O. 1975. By-catches of harbour porpoises (*Phocoena phocoena*) in salmon driftnets at West Greenland in 1972. *Journal of the Fisheries Research Board of Canada* 32:1223-1228.
- Northridge, S.P. and Hofman, R.J. 1999. Marine mammal interactions with fisheries. Pp. 99-119 in J.R. Twiss, Jr. and R.R. Reeves (eds.), *Conservation and management of marine mammals*. Smithsonian Institution Press, Washington, D.C.
- Ohsumi, S. 1975. Incidental catch of cetaceans with salmon gillnet. *Journal of the Fisheries Research Board of Canada* 32:12299-1235.
- Perrin, W.F. 1968. The porpoise and the tuna. *Sea Frontiers* 14:166-174.
- Perrin, W.F. 1969. Using porpoise to catch tuna. *World Fishing* 18(6):42-45.
- Read, A.J. 2003. Direct interactions between marine mammals and fisheries. Paper prepared for Consultation on Future Directions in Marine Mammal Research, U.S. Marine Mammal Commission, Bethesda, Maryland.
- Read, A.J., Drinker, P. and Northridge, S. 2003. By-catches of marine mammals in U.S. fisheries and a first attempt to estimate the magnitude of global marine mammal by-catch. International Whaling Commission, Cambridge, UK. Scientific Committee Document SC/55/BC5.
- Read, A.J. and Rosenberg, A.A. 2002. Draft international strategy for reducing incidental mortality of cetaceans in fisheries. Available from: [www.cetaceanbycatch.org](http://www.cetaceanbycatch.org)
- Reeves, R.R., Smith, B.D., Crespo, E.A. and Notarbartolo di Sciara, N. (Compilers). 2003. *Dolphins, whales and porpoises: 2002-2010 conservation action plan for the world's cetaceans*. International Union for the Conservation of Nature and Natural Resources, Gland, Switzerland.
- Tudela, S., Guglielmi, P., El Andalossi, M., Kai Kai, A. and Francesc Maynou, A.H. 2003. Biodiversity impact of the Moroccan driftnet fleet operating in the Alboran Sea (SW Mediterranean). WWF Mediterranean Programme Office, Rome.
- Vinther, M. 1999. Bycatches of harbour porpoises (*Phocoena phocoena* L.) in Danish set-net fisheries. *Journal of Cetacean Research and Management* 1:123-135.
- Wade, P.R. 1998. Calculating limits to the allowable human-caused mortality of cetaceans and pinnipeds. *Marine Mammal Science* 14:1-37.