DRAFT Theme session L – Marine mammals, seabirds and fisheries: ecosystem effects and advice provision

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Introduction

Fisheries can affect marine mammals, seabirds and turtles in a variety of ways. Most directly, fishing gear can entangle and kill individuals. The scale of some of these interactions has the potential to adversely affect populations. Recent research has elucidated levels of bycatch of some species, their population abundance and has modelled population effects. Indirect effects of fisheries may occur through the food chain, both by the removal of large fish competitors and through provision of discarded fisheries waste. Seabirds and marine mammals can also affect fish resources (and thereby possibly fisheries) through food consumption. Recent research in this area has generated estimates of fish consumption by non-fish predators; some of these data have previously been incorporated into ICES multi-species models and more can be done in this respect. The need for ICES to provide ecosystem advice integrated with traditional fisheries advice provides challenges for moving information on these interactions into advice provision. In particular, reductions in unwanted interactions will most likely need advice provision on a gear-by-gear and regional basis.

Report on the session

Thirteen oral and three poster papers were eventually presented at this session (a number of papers dropped out very late). Eight papers addressed marine mammals, three addressed seabirds, one used studies of both groups for advice on conservation and one (perhaps a first for ICES) considered marine turtles. The session was attended by an average of around 35-40 delegates at any one time, peaking at a maximum of over 60.

The final results of a recent abundance survey of small cetaceans off NW Europe were presented (L:04) for the first time to a scientific audience. This reveals that total numbers of harbour porpoises in these waters have not changed significantly in the past decade, but that there has been a substantial change in distribution southwards in the North Sea and possibly to the west of UK and Ireland also. The lack of measurable change in abundance has occurred despite high bycatch in some fisheries. The probable southward shift in distribution probably also accounted for a rapid increase in strandings of bycaught animals on Belgian coasts (L:03); the origin of these corpses were investigated using a drift model and were thought mostly likely to have come from relatively nearby fisheries in waters of southern Belgium and northern France. A paper on dolphin bycatch in pelagic fisheries to the west of Ireland (L:09) also used forensic investigation techniques to demonstrate that the bycatch was probably related to the night-time discharge of discards. These papers, along with a paper on state-of-the-art methods for determining limits on the bycatch of small cetaceans (L:06) all have implications in ICES role in advising the European Commission on cetacean bycatch, while discussion in the Session revealed that the concepts in the latter paper could suitably be combined with fleet-based modelling going on within the ICES community to provide more integrated advice. The pregnancy rate of common dolphins in the NE Atlantic is lower than that reported elsewhere for this species (L:13); this may be caused by density dependant factors or by the levels of contaminants recorded in these animals – separating the influence of these two factors is a scientific challenge and has implications for ICES advice.

Similar forensic techniques to those used to trace the origin of stranded harbour porpoises (L:03) were used to show that ship strike off the Belgian coast had killed a humpback whale that was healthy and had been feeding well shortly before death.

ICES is carrying out a project to provide advice on management of fisheries in marine protected areas in federal German waters (L:17). Sites have been selected for relatively mobile species in these waters (harbour porpoises and seabirds) that can be affected by fisheries bycatch and other indirect effects. The risks of selecting such fixed areas were illustrated in another paper (L:07) which showed that the distribution of harbour porpoises could vary between years and incidentally revealed that an existing protected area for harbour porpoises was now one of the apparently lesser used areas by this species. This variability in distribution, as with the larger scale variation noted above, should also affect ICES advice.

Three papers examined seal diet; two of these were largely descriptive (L:08, L:14) and aimed at describing prey and total prey consumption based on stomach and faecal contents. Discussion after these papers showed that further research, perhaps using behaviour observation techniques, might help better understand the interaction of these predators and their prey. The third paper (L:02) attempted to model future seal/cod interactions in an eastern Canadian cod stock that is the subject of a recovery programme. This modelling indicated that changes in the size of the seal population would have a relatively minor effect on the recovery of this cod stock.

An examination of the relationship between prey bought to seabird chicks and local fishing surveys of prey abundance in eastern Canada (L:05) showed a good correlation, but whether seabird prey could be used as a wider indicator of prey stock abundance was not yet certain. Three papers (L:15, L:16, L19) examined use of discards by seabirds at different scales in the North Sea or off north Spain. These both showed variation in species use of discards both spatially and temporally at different scales. Discard consumption is important for some species of seabirds and is an important ecological effect of fishing. Changing patterns of discarding were implicated in population level changes of several seabird species in the North Sea. This information could be included in future integrated advice from ICES.

The number and global distribution of turtle bycatches recorded in Spanish longline fisheries (L:12) showed that bycatch varied globally and differed between experimental and commercial fisheries. Highest bycatch rates in the Atlantic were for loggerhead turtles, but five species were recorded.

Summary

The importance of top predators in the ecosystem, in public perception and as indicators of change and human impact means that ICES should continue to support the science process and to further integrate and enhance issues relating to these animals into its advice.