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Whales, seals and fishermen rarely take same prey

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A classic conservation dispute, fuelled by stark images and emotive arguments, may be challenged by the findings of a new study.

Fishers accuse whales and seals of eating their precious, diminishing fish stocks, leading to renewed calls that these mammals be culled to safeguard the future of a beleaguered industry.

Conservationists and animal welfare advocates retort that it is the other way round. They see the notion that whales and seals eat too much fish as unwarranted propaganda intended solely to justify archaic and inhumane whale and seal hunts.

What is more, they say, overfishing is taking food from the mouths of some of the world's most endangered animals, stifling their recovery.

Surprisingly, it now appears that for most marine animals and most fisheries there is nothing to argue about.

The first global study of its kind, released earlier in May 2004, shows that marine mammals and fishing fleets rarely prey heavily on the same fish stocks. The findings are provisional, but they suggest that scientists and policy makers should only rarely need to make a wrenching choice between the economic needs of fishers and their desire to protect threatened marine mammals.

Commercial whaling

This week, Norwegian ships set sail to resume their country's hunt of minke whales, and Canadian hunters are continuing their cull of harp seals, the largest for 50 years.

Debates over whether such animals degrade fish stocks have raged for years. Japan and Iceland, for example, continue to press the International Whaling Commission (IWC) to allow a resumption of commercial whaling, partly on the grounds that this will allow fish populations to grow, says IWC secretary Nicky Grandy.

And fishers in North America routinely claim that seals and sea lions eat so many cod and salmon that they reduce the fishers' take.

Conversely, environmental groups such as Greenpeace contend that overfishing has destroyed the food sources of whales and seals off the Atlantic coast of Canada. In Alaska, Greenpeace and other conservation groups took the US government to court to force it to curtail fishing of Alaskan pollock, an important food source for the endangered Steller sea lion.

These claims have generated enormous controversy and not a little research on particular species and ecosystems. Until now, however, no one has known how important conflicts between marine mammals and fisheries might be on a global scale.

Reported sightings

At first glance, the potential for competition seems enormous. Estimates put the amount of fish eaten by marine mammals worldwide at more than 800 million tonnes annually, or roughly 10 times the worldwide ocean fish harvest, says Kristin Kaschner, a marine biologist at the University of British Columbia (UBC) in Vancouver.

However, the picture changes dramatically when you take into account where marine mammals and fishing boats spend their time.

Kaschner scoured reported sightings of 115 species of marine mammals. For each sighting, she noted ocean depth, water temperature, and distance from the ice edge. This gave her a crude picture of where each species prefers to live with respect to these three variables.

Then she divided the world's oceans into a grid of around 180,000 approximately rectangular cells, measuring one-half a degree in each direction, and assigned to each one a relative suitability for each species.

The distributions of marine mammals predicted by this method were a fairly closely match to those observed on transect surveys taken by the IWC and other research groups.

Little overlap

Kaschner included what is known about marine mammals' food habits to derive a global picture of how much they are eating and where. She then compared this with the global distribution of fisheries harvests taken from a database maintained by the Sea Around Us Project, a research group led by Daniel Pauly, a fisheries biologist at UBC.

"Last Sunday I ran the full model for the first time, and it was like, Oh my God," Kaschner said at the World Fisheries Congress in Vancouver earlier in May, where she presented her results.

About 80 per cent of the world's fish catch comes from regions where there is very little overlap with marine mammals, she found, and 99 per cent of marine mammal feeding takes place where very little fishing occurs.

"Marine mammals are not likely to have a large impact on large fisheries," concludes Kaschner. "And the other way around large fisheries are not likely to have a large impact on wide-ranging marine mammals."

Local conflicts

Kaschner admits her analysis is fairly crude and abstract. "These are like weather maps," she says. "It's a best guess."

More to the point, she notes, a global analysis of this sort does not rule out the possibility of local conflicts.

She found substantial overlap between marine mammal consumption and fisheries in a few places, such as near Iceland, in the Bering Sea, and in the Yellow Sea west of Korea all areas where claims of conflict have been especially heated in the past. Each of these potential problem areas will need to be studied in more detail, she says.

For example, Steller sea lions on the Alaska coast may indeed be under pressure from fishing. When sea lion mothers are nursing pups, they cannot range far in search of a meal, so overfishing near their rookeries can leave them hungry, says Naomi Rose, a marine mammal scientist with the Humane Society of the US in Washington DC.

International policies

Fisheries also have other impacts. For example, trawler nets can churn up the seafloor, disrupt food chains, and linger for years entangling sea mammals, she notes.

The new results suggest that international policies will not resolve the conflicts over who is taking all the fish.

"If there are going to be problems, they are not at a global level. They are at a local level, of local fisheries affecting local populations of marine mammals," says Phil Hammond, a marine mammal biologist at the Sea Mammals Research Unit of the University of St Andrews, Scotland.

"It would be nice if this could pour water on the fervour that says we need to take measures all over the place to deal with this."

Bob Holmes

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