'Ten Commandments' could improve fisheries management

by Bend_Weekly_News_Sources

Poorly managed marine fisheries are in trouble around the world, researchers say, while ecosystem-based management is a powerful idea that in theory could help ensure sustainable catches - but too often thereâ€™s a gap in translating broad concepts into specific action in the oceans that successfully meets these larger goals.

To address that, Mark Hixon, a professor of zoology at Oregon State University, today modified a very old set of rules and issued â€œTen Commandmentsâ€• for ecosystem-based fisheries science, in a presentation at the annual meeting of the American Association for the Advancement of Science. Co-authors on the report include Robert Francis, a professor of fisheries at the University of Washington, and three biologists in the National Marine Fisheries Service.

The first commandment â€“ what they call the basis for all the others â€“ is to keep a perspective that is holistic, precautionary and adaptive, Hixon said.

â€œWe must consider whole systems, we must fish with more caution, and we must learn by testing new approaches,â€• Hixon said. â€œInstead of talking about ecosystem management, we refer to â€˜ecosystem-basedâ€™ management, because itâ€™s misguided to think that we can totally understand or completely control entire marine ecosystems.â€•

However, a great deal is already known that could form the basis for broad actions that would greatly improve the effectiveness and efficiency of marine management, Hixon said, and itâ€™s not really even a question of funding â€“ many of the necessary steps could be done within the context of existing knowledge, approaches, and regulatory mechanisms.

â€œAs much as anything, the real challenge here is changing our world view,â€• Hixon said. â€œWe must accept the need for change in how we approach fishery science and management. There are still many people who think we can accomplish our goals in the oceans by managing one species at a time, if we just do it right. But the weight of the evidence is now showing that only consideration of entire ecosystems will succeed in the long run.â€•

Even on a single Pacific Northwest topic such as salmon management, Hixon said, the reality is that a successful approach must consider dams, terrestrial water quality, forest management, spawning habitat, marine food sources and predators, changing ocean conditions and global climate change.

â€œThis may sound overwhelming, but given the right mindset, many ecosystem-based tools are ready to go,â€• Hixon said. â€œThatâ€™s why my colleagues and I developed these action items to help get things moving in the right direction.â€•

Their â€œsecond commandmentâ€• is to question every assumption, no matter how basic it is or what the conventional wisdom suggests. For instance, Hixon considers the traditional fishery goal of â€œmaximum sustainable yield,â€• which has been in place for decades, to be a flawed concept. A better approach is careful monitoring of catch characteristics to assess whether fish stocks are being sustained.

Among the other commandments:

Maintain an â€œold growthâ€• structure in fish populations, since big, old and fat female fish have been shown to be the best spawners, but are also susceptible to overfishing. Characterize and maintain the natural spatial structure of fish stocks, so that management boundaries match natural boundaries in the sea. Monitor and maintain seafloor habitats to make sure fish have food and shelter. Maintain resilient ecosystems that are able to withstand occasional shocks. Identify and maintain critical food-web connections, including predators and forage species. Adapt to ecosystem changes through time, both short-term and on longer cycles of decades or centuries, including global climate change. Account for evolutionary changes caused by fishing, which tends to remove large, older fish. Include the actions of humans and their social and economic systems in all ecological equations. Nowhere in the world are all of these â€œcommandmentsâ€• being followed perfectly, Hixon said, although more progress has been made in the North Pacific Fishery Management Council â€“ the Alaska fisheries â€“ than in many other places. Not coincidentally, those fisheries are comparatively very healthy and hugely productive.

The Pacific Fishery Management Council, which manages Washington, Oregon and California marine fisheries, is about at the same place as the rest of the U.S. on these topics, Hixon said â€“ just getting started.

â€œIt would be nice to say that weâ€™re a lot further along, but it was just recently that the council even

adopted a definition of ecosystem-based management,â€• Hixon said. â€œBut Iâ€™m seeing a lot of positive attitudes and approaches by many people that give cause for optimism. This approach can work, and we just have to get moving with it.â€•

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