

# Roles for a Precautionary Approach in U.S. Marine Resources Management

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The United States has jurisdiction over the resources in ocean areas that span nearly 4.5 million square miles. Management of myriad ocean resources presents significant challenges for marine resource managers. Beyond their intrinsic value, these resources provide an important source of economic revenue to coastal states from recreational, employment, and investment opportunities associated with their use. As government managers decide how best to make decisions among the competing demands for these resources, they regularly confront the effects of overfishing, invasive species, pollution, marine debris, and habitat alteration, among other problems. Because knowledge of these complex marine ecosystems and their ability to respond to environmental stresses on them are limited, managers are often required to make decisions under conditions of scientific uncertainty.

To deal with this problem of scientific uncertainty, many coastal and ocean resource management programs within and outside the United States increasingly utilize a precautionary approach. Under a precautionary approach, resource managers are more cautious when information about the impacts of proposed new marine resource uses is uncertain, unreliable, or inadequate. This article advocates adoption of a precautionary approach on a wider scale and its use as the primary basis for making ocean resource management decisions. First, it reviews conclusions from the recently released Pew Oceans Commission report, *America's Living Oceans: Charting a Course for Sea Change*, which represents the culmination of a three-year, nationwide study of the oceans—the first of its kind to be conducted in over three decades. This report demonstrates that current and past approaches to marine resource management have led to a precipitous decline in many of the ocean's living resources. This decline provides compelling evidence of the stark need for a change to a precautionary approach. Second, the article summarizes some of the differing views on the best way to apply precaution as a legal tool for resource managers. Third, the article identifies international treaties and U.S. laws that either explicitly or implicitly utilize precautionary approaches. The article concludes with a call for even greater use of precautionary approaches in U.S. marine resources management.

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## *The Pew Oceans Commission Report*

The comprehensive Pew Oceans Commission report provides ample evidence that the current and past management regimes have failed to ensure the sustainability of the ocean's living natural resources. It documents the problems resulting from overfishing, bycatch of nontarget species, habitat alteration, introduction of invasive species, and pollution from aquaculture operations. Other activities such as nonpoint source pollution, point source pollution, nutrient runoff, coastal development, urban sprawl, and climate change are also cited as adversely impacting the sustainability of living marine resources. A few of the detrimental environmental effects caused by overfishing, bycatch, and aquaculture are highlighted below as examples of the impaired condition of living marine resources in the United States.

According to the Pew report, at least 30 percent of the fish populations assessed are overfished or being fished unsustainably. Ninety-three fish populations in United States' waters are currently overfished or fished at an unsustainable rate; we do not have an accurate assessment of another 655 populations. Bycatch in the fishing industry has contributed to the declining populations. For example, in the 1980s and early 1990s, fishermen discarded about 25 percent of what they caught, amounting to approximately sixty billion pounds each year. This depletion alters relationships among species in the food webs, which in turn negatively impacts the entire functioning of marine ecosystems.

Overfishing and bycatch issues are apparent on the West and East Coasts. For example, on the West Coast, bocaccio rockfish species (sold as Pacific red snapper) plummeted from the more than 11,000 metric tons landed per year in the 1970s to a low of 214 metric tons by 2001. The four most depleted rockfish—bocaccio rockfish, canary rockfish, dark-blotched rockfish, and yellow-eye rockfish—were at less than 10 percent of their historical numbers. In New England, the Spiny Dogfish experienced an increase in commercial fishing tenfold from 1987 to 1996, which caused the targeted female population to fall 80 percent by 2000. Twelve of the major salmon and steelhead trout runs on the Atlantic and Pacific Coasts are listed as endangered species under the Endangered Species Act. Shellfish have suffered similar impacts from human activities. For example, the oyster population in the Chesapeake Bay is only at approximately 1 percent of historic levels.

A relatively new development, aquaculture, is promising

as a means to alleviate pressure on the fisheries because it has the potential to provide an ample food supply to consumers. Yet, if not managed well, aquaculture presents significant threats to the native living marine resources. The escape of farmed species from containment is detrimental to native species as fish-farmed species dilute the gene pool of native species through interbreeding. In British Columbia, escapees of a salmon farm are successfully reproducing in rivers, resulting in the hybridization of the Pacific salmon. Escapes of farmed fish are, unfortunately, not a rare phenomenon. Over the last fifteen years, nearly one million Atlantic salmon have escaped from farm pens on the western coast of North America. If not properly managed, even one storm could have disastrous effects on a fish farm. For example, a severe storm in Maine caused the escape of approximately one hundred thousand aquaculture salmon from a single farm—a number that constituted one thousand times the number of documented wild adult salmon in Maine. Aside from breeding with native species, the nitrogen, phosphorous, and fecal matter from salmon farms of two hundred thousand fish can release an amount of nitrogen, phosphorous, and fecal matter equivalent to nutrient waste in the untreated sewage from sixty-five thousand people.

In response to these problems, the Pew Oceans Commission recommended that United States marine resources be managed on an ecosystem basis utilizing a precautionary approach to scientific uncertainty.

### *Summary of Different Views*

Like other natural resources management processes, the marine resource decision-making process often involves an analysis of the risks and benefits of a proposed activity. The process is comprised of risk assessment and risk management phases. First, an assessment of the risks associated with a proposed activity is conducted. Next, the agency develops management measures that take into account the degree and type of risks identified during the risk assessment with a goal of minimizing the risks and increasing the benefits. Risk assessments, however, are not without their problems. Reliance on risk assessments places faith in the ability of science to foresee harm of a proposed activity to the complex environment, even in the face of scientific uncertainty and differing assumptions about complex marine ecosystems. If harm is not foreseen by a particular risk assessment, then it is often assumed that no risk exists.

Given the depleted status of many living resources in our oceans, precautionary approaches may offer a more sustain-

able approach to resource managers. However, no consensus exists yet on the application of precaution. One version of the precautionary approach imposes the burden of proof on proponents of change. Under this version, decision-makers shift the burden of proof to the resource user who is seeking permission to use natural resources (e.g., commercially valuable fish). Traditionally those concerned about adverse impacts have had to present fairly convincing evidence that unacceptable harms will result (e.g., overfishing or severe habitat damage); otherwise the activity is allowed to proceed. Shifting the burden creates an incentive for users to help government decision-makers fill information gaps concerning the proposed activity and thus can shorten the time period between the recognition of a threat and the development of a response by management. Shifting the burden places some of the information-gathering costs on those who would benefit from the proposed marine resource use in question. This is consistent with the well established “polluter pays” principle of international environmental law requiring resource users and polluters to internalize the costs of their activities.

With the burden shifted, the exact standard of proof also must be determined. Familiar alternatives from the U.S. legal system include preponderance of the evidence, clear and convincing evidence, and beyond a reasonable doubt. Given that precaution is a means of addressing scientific uncertainty, the beyond reasonable doubt and clear and convincing standards may impose too high a threshold on resource users. On the other hand, preponderance of the evidence may be insufficient. Thus, consideration should be given to new intermediate standards such as the “reasonable scientific probability” standard under which “the scientific community must largely agree that the available data” weigh against a proposed resource use. Sonia Boutillon,

Note, *The Precautionary Principle: Development as an International Standard*, 23 MICH. J. INT’L L. 429, 450 (2002).

Others prefer a more limited precautionary approach that imposes a duty on decision-makers to adopt proactive management schemes in the face of scientific uncertainties by assessing all alternatives and to err on the side of caution when warranted. It operates on the understanding that complete certainty as to risks will never exist. Once the decision-maker acquires all of the scientific evidence, which includes any incomplete, inadequate, or conflicting data, then she determines what options fulfill the long-term goals, as well as other relevant factors. The result could be foregoing the proposed activity, but mitigation of potential harm is also possible. Precautionary approaches also include a duty to actively seek out and evaluate alter-

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natives to proposed activities, which include foregoing the proposed activities when necessary to maintain ecosystem function. Precautionary approaches to marine resources management are a shift away from the historic presumption of development to a presumption in favor of resource protection where uncertainties exist.

### *Use of Precautionary Approaches*

Such precautionary approaches can already be found in both international and domestic laws regarding marine resources management. With respect to fisheries management, precautionary approaches are included in the 1995 U.N. Straddling and Highly Migratory Fish Stocks Agreement and the 2000 tuna treaty for the western and central Pacific Ocean. The 1995 U.N. agreement, which the U.S. has ratified and which was effective on December 11, 2001, in Article 6.2 instructs the nation signatories to "be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures."

The United Nations Tribunal for the Law of the Sea (ITLOS) addressed the application of precaution in living marine resource management in the *Southern Bluefin Tuna* case. In that case, New Zealand and Australia argued that the precautionary principle is a binding norm that Japan violated when it failed to implement the requisite precaution while Japanese fishermen engaged in unilateral experimental fishing of the Southern Bluefin Tuna pursuant to the United Nations Conference on the Law of the Sea, Article 290(5). Both countries requested that Japan be enjoined from further illegal fishing and ordered to comply with fishing quotas defined in previously existing agreements between the parties. In relation to new fisheries, New Zealand and Australia requested that Japan act in a manner consistent with the precautionary principle. In its decision, ITLOS characterized the Japanese experimental fishing activities as ones requiring precautionary action and enjoined Japan from further illegal fishing.

Several other international treaties incorporate precautionary approaches, evidencing a trend toward increased use of precautionary approaches to a wide variety of international environmental law issues, including marine resource management. The 1987 Second North Sea Ministerial Conference, the 1989 Nordic Council International Conference on the Pollution of the Sea, the Convention on the Conservation and

Management of Pollack Resources in the Central Bering Sea, the 1989 Montreal Protocol on Substances that Deplete the Ozone Layer, the 1992 Rio Declaration on Environment and Development, the 1992 Convention on Biological Diversity, the 1992 Framework Convention on Climate Change, the 1992 North American Free Trade Agreement, the 1997 draft Convention on the Protection and Use of Transboundary Watercourses and International Lakes, and the Treaty Establishing the European Community explicitly mandate precautionary approaches.

Domestically, the 1996 U.S. Sustainable Fisheries Act, Pub. L. No. 104-297, codified at 16 U.S.C. § 1801, includes a precautionary approach to fisheries management in the U.S. Exclusive Economic Zone extending from two to three hundred miles offshore. Overfishing is prohibited and restoration of previously overfished species is required.

Richard G. Hildreth, *U.S. and International Fisheries Law: The Role of Sustainability, Biodiversity, Protection, Externality Internalization, and Precaution*, in *MANAGING MARINE FISHERIES IN THE UNITED STATES* (Pew Oceans Comm'n, 2003).

Federal courts have mandated precautionary approaches where fishing in waters off Hawai'i was suspected to be adversely affecting marine species protected under the federal Endangered Species Act, such as the monk seal and leatherback sea turtle. Fishing activity was reduced or relocated to protect the species in *Greenpeace Foundation v. Mineta*, 122 F. Supp. 2d 1123 (D. Haw. 2000) and *Leatherback Sea Turtle v. National Marine Fisheries Service*, No. 99-00152 DAE (D. Haw. Oct. 18, 1999). Precaution also is required in protecting habitat critical to the endangered species' survival.

*Palila v. Hawai'i Dep't of Land & Natural Res.*, 73 F. Supp. 2d 1181 (D. Haw. 1999).

The National Marine Sanctuaries Act, 16 U.S.C. §§ 1431 *et seq.*, offers a viable framework for managing multiple uses of ocean waters through an ecosystem-based precautionary approach. Sanctuaries are designated for their ecosystem values yet managed for multiple uses rather than strictly for ecosystem protection. Under the Sanctuaries Act, federal courts have supported precautionary actions by sanctuary managers intended to avoid adverse impacts on protected sanctuary resources from potentially conflicting uses. *Personal Watercraft Indus. Ass'n v. Dep't of Commerce*, 48 F.3d 540 (D.C. Cir. 1995) (upholding stringent sanctuary regulations of jet skis). For example, under the Act, Congress designated the Hawaiian Islands Humpback Whale National Marine Sanctuary and started the process for designation of waters surround-

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ing the northwestern Hawaiian Islands as a sanctuary by October 1, 2005. Pub. L. No. 106-513. President Clinton followed up the congressional action with two executive orders establishing the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve and mandating that a precautionary approach be used in managing the Reserve. Exec. Order No. 13,178, 65 Fed. Reg. 76,903 (Dec. 4, 2000); Exec. Order No. 13,196, 66 Fed. Reg. 7,395 (Jan. 18, 2001). The Reserve was then declared an "Active Candidate" for sanctuary designation. 66 Fed. Reg. 5,509 (Jan. 17, 2001). The Reserve includes "Reserve Preservation Areas" around various atolls, islands, and banks where most extractive uses are prohibited but certain fisheries are allowed to continue at their preexisting levels.

Under the Sanctuaries Act, the Western Pacific Fishery Management Council will have an opportunity to develop draft fishery regulations as part of the sanctuary designation process. In the meantime, the Council issued a Coral Reef Ecosystem Fishery Management Plan (FMP) and revised regulations under its existing FMP for Precious Corals. 67 Fed. Reg. 11,941 (Mar. 18, 2002). However, provisions of the plan and regulations that conflicted with the Reserve executive orders and the Reserve Operations Plan developed to guide Reserve management pending its designation as a sanctuary were disapproved by the National Marine Fisheries Service because they provided less protection to sanctuary living resources.

Focused on protecting humpback whales in Hawaiian waters, the Hawaiian Islands National Marine Sanctuary Act, Pub. L. No. 102-587, implementing regulations (including emergency regulations to prohibit activities posing imminent risks to sanctuary resources) 15 C.F.R. 922.185, and the 2002 revised sanctuary management plan support precautionary approaches to sanctuary resource management issues. 67 Fed. Reg. 61,598 (Oct. 1, 2002). Sanctuary managers are addressing collisions between boats and humpback whales and sonar and seismic impacts on whales, including ways to avoid or mitigate those impacts in Hawaiian waters while more research on sonar impacts is conducted.

While no new regulations or boundary changes are included, the revised plan does envision the possibility of extending sanctuary protection to additional species such as monk seals and sea turtles within the next five years. The federal Marine Mammal Protection Act (MMPA) also incorporates precautionary principles. The purposes of the MMPA are themselves precautionary: to prevent the "danger of extinction or depletion of marine mammal stocks as a result of man's activities" and "to maintain the health and stability of the marine ecosystem." 16 U.S.C. § 1361(1), (6). The Act directs the government to see that marine mammal stocks do not fall below their "optimum sustainable population keeping in mind the carrying capacity of the environment." 16 U.S.C. § 1361(6). To ensure this goal is met, the MMPA places a moratorium on the taking and importation of marine mammals and their by-products. 16 U.S.C. § 1371(a). The term "taking" is broadly defined to include not only physical harm to the animals, but also "harassment," which includes the potential to injure or disturb ma-

rine mammals. 16 U.S.C. § 1362(18). Under certain specified circumstances, a person can get a permit to "take" marine mammals; however, these are limited and cannot be permitted if the taking results in more than a negligible impact on the species. 16 U.S.C. § 1371(a)(5)(A). Decisions to waive the moratorium for a particular activity must be based on the "best scientific evidence available." 16 U.S.C. § 1371(a). As can be seen, the default position in the MMPA is precaution: a moratorium on the taking of marine mammals with only limited exceptions. A person seeking an exception to the nontaking requirement bears the burden of establishing that the taking will not have a significant adverse impact on the species or a particular stock.

Closer to shore, state coastal resource managers confront issues of sustainable management as well. Hawai'i is an example of the use of the public trust doctrine to impose a precautionary approach to natural resource management. Under the Hawai'i Constitution, Hawai'i's coastal and ocean resources are viewed as public trust resources to be managed by the state for the benefit of the people. HAW. CONST. art. XI, §§ 1, 7. In its 2000 decision about Waiahole Ditch, the Hawai'i Supreme Court mandated a precautionary approach to state management of public trust resources, including the watersheds of the islands. *In re Water Use Permit Applications*, 9 P.3d 409 (Haw. 2000). The court's focus was on the integrated management of island ground and surface freshwater resources, but the court also recognized the importance of adequate in-stream flows to the Kaneohe Bay ecosystem. The court ruled that the burden of proof is on those seeking state approval to use public trust resources to demonstrate that their proposed use will not conflict with public resource use or injure ecosystems of which the resource is a part. According to the court, where there are present or potential threats of serious damage, lack of full scientific certainty should not be a basis for postponing effective management measures to prevent environmental degradation. Furthermore, Fifth Amendment "takings" compensation generally is not required to be paid to Hawai'i water users affected by such management measures. The court's opinion is the most explicit U.S. appellate court endorsement of a precautionary approach to date.

Many significant economic, scientific, social, and cultural activities depend upon the quality of the marine environment. Given the convincing evidence that past management strategies have failed to result in the maintenance of strong, healthy, sustainable marine ecosystems, policymakers and resource managers need to explicitly increase the use of the precautionary approach in marine resource management decision-making. More extensive use of the precautionary approach to marine resource management decisions is necessary if we are to meet the goal of sustainability. To better ensure this goal, policymakers should provide clear mandates to federal and state agencies to utilize precautionary principles in their roles as trustees of our precious ocean resources. Resource managers, in turn, should use the precautionary approach whenever it is not specifically precluded by legislation. 