Seabirds of Hawaii

Natural History and Conservation

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To Mom and Dad

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17 CONSERVATION AT SEA

The downy Laysan albatross had the misfortune of being fed as I passed by its nest on Green Island, Kure. It would lose its latest meal to science. As I held the wriggling bird firmly and turned it upside down, I knew that I was taking merely a single feeding. Some of my colleagues elsewhere routinely disemboweled seabirds to collect food samples. While the nestling struggled and kicked in vain, it retched to the sand a bouillabaisse of squid mantles, semidigested fish flesh, and fish eggs marinated in stomach oil. When I set the young bird upright again, it clacked its bill at me and attempted to regain its lost dignity. As I turned my head to avoid the putrid effluvia while scooping the sample into a jar, I discovered a unique item—a brown plastic buffalo the size of a kukui nut. Floating wastes of late-twentieth-century civilization such as toothpaste caps, balloons, tiny toy tyrannosaurs, and plastic fibers have been found in the stomachs of at least sixteen Hawaiian seabird species. The albatross had swallowed the symbol of the U.S. Department of the Interior, parent agency of the U.S. Fish and Wildlife Service. Hawaiian seabirds face many conservation problems in the ocean, but the U.S. Fish and Wildlife Service has little authority to help.

The ocean is the home and the larder of seabirds, and it is no surprise that they encounter conservation problems there. Because few marine biologists have considered seabirds as components of marine ecosystems and few ornithologists have also been oceanographers, our knowledge of seabirds at sea pales in comparison with what we know of their natural history ashore. Humans have not yet developed techniques to exploit the ocean's resources as efficiently as they do those of the land. Consequently, conservation principles and laws to protect the ocean environment are less developed.

Threats at Sea

Most seaward conservation problems emanate from fisheries or pollution. Seabirds can be directly injured by fishing gear and indirectly harmed by decreases in the availability of prey. A few masked boobies are hooked during trolling operations or tangled in fishing nets near the Hawaiian Islands. Black-footed and Laysan albatrosses die when they become snagged or netted in the Japanese long-line tuna fishery farther north, but such losses seem to be minor. A potentially serious problem is the high-seas drift gillnet fishery for squid operated by Japan, Taiwan, and South Korea some 2,000 kilometers north of Hawaii. The incidental effects of such oceanic strip mining on marine wildlife are poorly studied. Drift gillnets, manufactured from finely spun plastic strands, are designed to entrap any marine creature that cannot pass through their narrow mesh. Floats support the nets on the surface and weights hold down the bottom of the fifteen-meter-deep "curtains of death." The monofilament nets in use extend distances of fifteen kilometers and are not biodegradable. Lost or discarded nets lurk beneath the surface for years until they finally sink or are destroyed. Since 1981, the equivalent of 1.5 million kilometers of drift gillnet has been set for squid each year near the North Pacific subtropical convergence, a far greater length of net than at any other fishery on earth. The England-based International Council for Bird Preservation estimates that one million birds drown each year, possibly including endangered short-tailed albatrosses and dark-rumped petrels. The most vulnerable seabirds are those that feed beneath the sea by diving or pursuit plunging, but scavengers such as albatrosses become entangled when they attempt to eat entrapped organisms. Of less importance to Hawaiian seabirds, a drift gillnet fishery for tunas began in the South Pacific during the late 1980s.

Decreases in seabird populations resulting from changes in the food web have been observed the world over. Biologists have long acknowledged the relationship between the reproductive success of seabirds and the availability of food. As apex predators in the marine ecosystem, seabirds are potential competitors of certain commercial fisheries. Overfishing for anchovies off Peru by an overcapitalized fishery, combined with the effects of El Niño, has reduced the seabird population there by 90 percent since the mid-1950s. In Hawaii, unmanaged yellowfin and skipjack tuna fisheries could threaten seabirds because many species rely on tunas to drive their prey to the surface. If too many surface-feeding tunas were fished from Hawaiian waters, the number of birds that the sea could sustain would diminish. Seabirds are most vulnerable during their breeding seasons, especially from March to September. Many species migrate or feed far out to sea during fall and winter, and would be less affected then by fisheries near the islands.

The Hawaii pole-and-line skipjack tuna fishery requires a reliable supply of good baitfish. Shoaling schools of small fishes such as anchovies and herrings and juvenile forms of mackerel scad, big-eyed scad, and goatfish are sometimes

used for bait. Such fish are also important components of the diets of terns, shearwaters, and boobies. Adult mackerel scad are commercially valuable and constitute a substantial proportion of the diet of boobies, tropicbirds, and frigatebirds. Squid accounts for over half the prey taken by Hawaiian seabirds, and although techniques to catch squid in Hawaiian waters are rudimentary, if such a fishery were established it could create ecological imbalances that would affect seabirds. Depletion of any major prey organism near a breeding colony would probably result in the starvation of young, abandonment of breeding, and, if shortages were severe, starvation of adults.

Oil, plastics, and agricultural pesticides escape into Hawaiian waters from ships and coastal activities. Oil enters the ocean from transfer operations, shipwrecks, and bilge discharge. In 1977 the *Irenes Challenge* broke apart some eighty kilometers north of Lisianski and spilled over five million gallons of crude oil, about half the quantity released into Prince William Sound, Alaska, by the *Exxon Valdez*. Fortunately none came ashore and Lisianski was not "exxoned." In the past two decades several fishing vessels have grounded at the Northwestern Hawaiian Islands and a Greek freighter smashed into the reef at French Frigate Shoals. Oil clogs the plumage of seabirds and destroys insulation, killing birds through chilling and stress, even in tropical waters. Michael Fry's studies of wedge-tailed shearwaters on Manana indicate that their reproductive success decreases sharply after they have ingested oil or been exposed to it externally. Sooty terns, white terns, black noddies, masked boobies, red-footed boobies, and Laysan albatrosses have been observed covered with oil in Hawaii.

The finding of plastic, styrofoam, and other flotsam in seabirds' stomachs is a relatively recent phenomenon; the first such articles appeared in the 1960s with the advent of styrofoam and longer-lived, buoyant materials made from synthetic fibers. More than eighty seabird species throughout the world are known to ingest plastic. Most such material in Hawaiian waters originates in Japan. It is hoped that the decision by Japan's Environment Agency in 1988 to ban ocean dumping of all plastic waste will eventually diminish this problem. Pumice and other floating objects were found in albatrosses' stomachs during the 1940s and 1950s, but I have located no record of their ingestion of industrial products. Paul R. Sievert has discovered that albatrosses ingest plastic more frequently than other seabirds do and that they favor tan-colored items. Terns rarely consume plastic but shearwaters, Bonin petrels, sooty storm-petrels, great frigatebirds, and red-tailed tropicbirds do so fairly commonly.

Sublethal doses of toxic chemicals can be ingested with food and build up in the body fat of seabirds. Such materials tend to be released when fat is mobilized during periods of stress. Accordingly, toxic materials may contribute to death when seabirds encounter bad weather or food shortages. The eggs of sooty terns, wedge-tailed shearwaters, and red-footed boobies in the main islands, French Frigate Shoals, Laysan, and Midway contain chlorinated hydrocarbons such as PCBs, DDE, and DDT and heavy metals such as mercury. Chlorinated hydrocar-

bons, which cause eggshells to become thin, may emanate from agricultural runoff, industrial wastes, and possibly plastics. Mercury probably enters the Hawaiian environment through volcanic activity. The visceral fat of albatrosses has appreciable residues of DDT, DDE, and PCBs, but as yet no measurable eggshell thinning has been found.

Seabirds may someday face conservation problems from industrial uses of the Pacific Ocean. Ocean thermal energy conversion (OTEC), which harnesses the energy released when warm surface water comes in contact with cold deep water, has been touted as a cheap means of generating electricity in Hawaii. A 40-megawatt closed-cycle plant planned for the waters just offshore Kahe Point, Oahu, could be the world's first large-scale plant of this kind. Upon completion, it would supply one-twentieth of Honolulu's electricity. Ocean engineers envision a day when floating plants will range over the open ocean to generate and store electricity. Such activities could bring massive changes to surface sea temperatures offshore and affect seabirds and other marine organisms in ways that cannot yet be imagined. Deep-sea mining for manganese nodules on the abyssal plain and on the cobalt-rich manganese crusts of submerged island slopes and seamounts surrounding the Hawaiian Islands is in the planning stages. The federal and state governments have jointly issued an environmental impact statement concerning exploration permits for the seabed near Hawaii. Any mining operation that hauled thousands of tons of ore through the water column to the surface could ultimately increase concentrations of heavy metals in seabirds.

Jurisdiction

A review of the boundaries of state, federal, and international waters and an appreciation of the distinctions that make the seabed and the water column separate legal jurisdictions are prerequisites for understanding the protection and management of the marine environment. The seaward limits of national jurisdiction have been in flux since the 1950s. The Law of the Sea Treaty has been signed by most of the nations of the world and should soon enter into force. Despite the fact that several important maritime nations (including the United States) are not parties to it, the treaty has already greatly changed customary international law.

The State of Hawaii has authority over the submerged land and the water column out to three nautical miles. The Submerged Lands Act in 1953 transferred such authority to the states to negate the U.S. Supreme Court's decision that the federal government owns all rights seaward of the coast.[1] Congress enacted the Outer Continental Shelf Lands Act at the same time to authorize the Department of the Interior to exercise primary control beyond three nautical miles, including leasing and management of the resources of the outer

[1] 43 U.S.C. §§ 1301–15 (1988).

continental shelf.[2] Despite Hawaii's lack of a geological continental shelf, Congress designated a legal one. Within three miles of its coastline, the state has broad authority to regulate marine activities. Hawaii's constitution authorizes the management and control of marine, seabed, and other resources located within the state's boundaries and provides that state lands are held in trust for the benefit of the people. The environmental provisions of the state plan discussed in chapter 16 apply equally to the ocean.

The seaward extent of federal jurisdiction surrounding the Hawaiian Islands is a question of international law. President Reagan proclaimed a 200-nautical-mile exclusive economic zone in 1983 around the United States of America and its overseas territories and possessions, encompassing 2.5 million square miles (Figure 16).[3] In 1988, President Reagan proclaimed a twelve-nautical-mile territorial sea, extending the prior claim of the United States by nine nautical miles.[4] The legal effects of the proclamations are somewhat uncertain and may require implementing legislation by Congress. Although the United States has not signed the Law of the Sea Treaty, claims for 200-nautical-mile exclusive economic zones and twelve-nautical-mile territorial seas surrounding coastal nations have become so widespread that they are now established principles of customary international law. President Reagan's 1988 proclamation emphasized that an extension of the territorial sea does not affect the three-mile jurisdiction of states such as Hawaii. Waters seaward of 200 nautical miles are international.

Marine Preserves

Marine preserves, like parks and sanctuaries on land, are one means to protect marine wildlife. The state conservation functional plan requires the Department of Land and Natural Resources to identify and maintain a comprehensive inventory of critical environmental areas and to establish sanctuaries when necessary to protect critical habitats of endangered species. Wildlife habitats in state waters are included in this mandate. The natural area reserves program[5] could provide protection for marine areas, but all eighteen of the current reserves are terrestrial. The seven marine life conservation districts were established primarily to regulate fishing on nearshore reefs. The Hawaii Ocean and Submerged Leasing Act provides additional protection by restricting leases in state waters where a marine life conservation management area program or a natural area reserve would suffer adverse effects.

The federal government can designate marine waters as national parks, wildlife refuges, estuarine sanctuaries, or marine sanctuaries. Although several

[2]Ibid., §§ 1331–56 (1988).

[3]Exclusive Economic Zone of the United States of America, Proc. no. 5030, 48 Fed. Reg. 10605 (1983).

[4]Territorial Sea of the United States of America, Proc. no. 5928, 54 Fed. Reg. 777 (1989).

[5]Hawaii Rev. Stat. § 195 (1985).

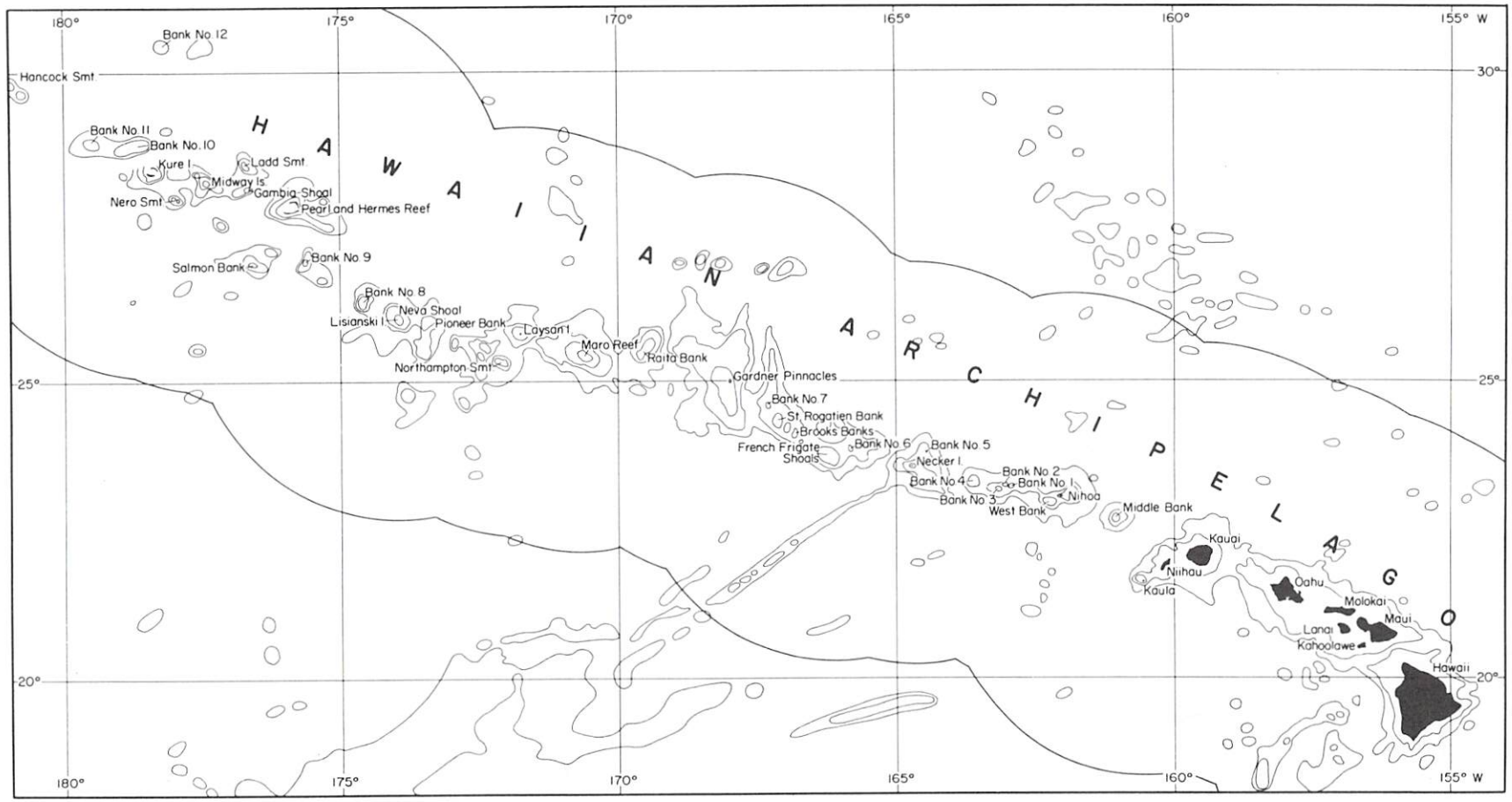

Figure 16. The exclusive economic zone around Hawaii

national parks in Hawaii border the ocean, none includes marine waters. The lagoons at French Frigate Shoals, Pearl and Hermes Reef, and Maro Reef and certain waters surrounding Laysan are within the boundaries of the Hawaiian Islands National Wildlife Refuge. The estuary at Waimanu Valley, Hawaii, has been designated an estuarine sanctuary and is administered by the state under federal guidelines.

The national marine sanctuary program is a comprehensive federal-state marine management effort that fosters multiple use and provides environmental protection that otherwise might be unavailable. Regulations prohibiting sanctuary violations can have real teeth. In 1986 the owners of the M/V *Wellwood* agreed to pay the federal government more than $6 million for damages caused when the freighter ran aground in the Key Largo National Marine Sanctuary. The National Ocean and Atmospheric Administration provides overall management of the program, but a site may be managed by a state agency. None of the nation's eleven existing marine sanctuaries or any currently proposed sanctuary is located in Hawaii. Governor George Ariyoshi exercised his veto authority over a proposed humpbacked whale sanctuary in the waters between Maui, Molokai, and Lanai in 1984 after objections by some "commercial" fishermen, many of whom cannot make a profit without generous state and federal tax subsidies. The veto decision was particularly unfortunate because the tremendous economic benefits that accrue from whale-watching tours apparently were not considered. The Marine Sanctuary Act was subsequently amended to require consultation with the affected regional fishery council and Congress when fishing regulations are proposed within a marine sanctuary.[6] No Hawaii site is included in the National Ocean and Atmospheric Administration's current site evaluation list, in part because no public meeting was held in Hawaii during the nomination process. It seems unlikely that the federal agency will expend its limited resources to propose another marine sanctuary in Hawaii unless the state initiates the proposal, as California did for its marine sanctuaries in the Channel Islands and the Gulf of Farallon.

The Intergovernmental Maritime Organization, an agency of the United Nations, has declared a 50-mile radius surrounding the islands and atolls between Nihoa and Pearl and Hermes Reef as an "area to be avoided." The designation is merely advisory and applies only to ships of 1,000 gross tons carrying oil or hazardous chemicals.

Industrial Uses of the Ocean

OTEC Plants

The Ocean Thermal Energy Conversion Act of 1980 established one-stop licensing for ocean thermal energy conversion (OTEC) plants and effectively

[6] 16 U.S.C. §§ 1431–45 (1988).

provides for federal rather than state regulation for any such plant under United States control, wherever it may be located.[7] No such plant may be operated without a permit. The intent of the act is to protect the marine and coastal environment and to prevent or minimize any adverse effects from OTEC plants. The National Ocean and Atmospheric Administration is the lead agency that coordinates with interested federal, state, and county agencies through an environmental impact statement process. A governor can effectively veto any proposed license for an OTEC plant in state waters. The federal Environmental Protection Agency must certify compliance with laws over which it has authority, including the thermal discharge provisions of the Clean Water Act. A licensee of an operating plant must monitor the environmental effects of its facility and submit its data to the National Ocean and Atmospheric Administration, which is empowered to terminate operations if the plant poses an imminent and substantial threat to the environment. The environmental effects of this new technology have been extensively investigated and a programmatic environmental impact statement has been issued. Baseline studies continue, including efforts to determine the cumulative effects of the operation of such plants.

Floating OTEC plants that are not subject to stringent environmental controls could be operated 200 or more nautical miles offshore Hawaii by citizens of countries other than the United States. Although the law is somewhat unclear, the Law of the Sea Treaty and customary international law seem to require the equivalent of an environmental impact statement for the operation of such plants.

Deep-Sea Mining

Deep-sea mining within the United States' exclusive economic zone is regulated by the Department of the Interior pursuant to the Outer Continental Shelf Lands Act. Mining more than 200 nautical miles offshore is authorized by the National Ocean and Atmospheric Administration pursuant to the Deep Seabed Hard Mineral Resources Act.[8] The latter was passed in 1980 in response to frustration over the progress of the negotiations over the Law of the Sea Treaty. A permit under either statute is considered to be a major federal action under the National Environmental Policy Act, which requires an environmental impact statement based on baseline and monitoring studies. Both statutes allow citizens' suits to compel compliance with the provisions of a mining lease or federal regulations. Under the Outer Continental Shelf Lands Act, each of three major stages—leasing, exploration, and development and production—requires a separate environmental impact statement. The secretary of the interior is responsible for conserving marine life and must coordinate and consult with

[7] 42 U.S.C. §§ 9101–68 (1988).
[8] 30 U.S.C. §§ 1401–73 (1988).

state and local governments and any affected fishery management council. The secretary is required to consider available relevant environmental information in developing regulations and conditions for permits.

The Deep Seabed Hard Mineral Resources Act raises a stiff barrier to the issuance of a permit: no permit may be issued for exploration or commercial recovery unless the National Ocean and Atmospheric Administration determines that the activity cannot reasonably be expected to have a significant adverse effect on the quality of the environment. Once a license or permit is granted, it must be modifed by the agency if new information indicates that changes are necessary to protect the environment. Each license and permit authorizes federal observers and requires environmental monitoring of the mine site. A permit can be suspended or revoked to prevent significant adverse effects or for noncompliance with its terms and conditions.

Marine Debris

In 1987 Congress enacted the Marine Plastic Pollution Research and Control Act to address the problems that marine debris causes wildlife.[9] It prohibits the dumping of "garbage"—presumably including paper, glass, and metal in addition to plastic—within the 200-mile exclusive economic zone. U.S. ports must provide disposal sites for garbage, ships must keep records concerning their garbage, and the U.S. Coast Guard is empowered to inspect ships at sea. The federal government is instituting an education program for fishermen, recreational boaters, and industries about the effects of plastics and other debris in the ocean. Ultimately education and improved technology are the keys to this problem's solution. Until shipping companies, fishermen, weekend sailors, commercial operators, and especially the U.S. Navy understand the hazards of marine debris, little genuine progress seems likely. Japan's Ministry of International Trade and Industry and its Fisheries Agency are attempting to develop bioplastic substances that will decompose naturally in seawater.

Fisheries

All state waters (out to three nautical miles) are designated marine life conservation areas and subject to the Department of Land and Natural Resources' rules concerning the conservation of marine life. Commercial fishing requires a permit, and a special permit is needed for the Northwestern Hawaiian Islands, where rules can be adopted to ensure that fishery resources there will not be depleted. The state relies on the methods typically used by any fish and game agency to regulate the take of fish: gear regulation, open and closed seasons, catch and bag limits. In response to concerns about gillnets, the state

[9] 33 U.S.C. §§ 1901–12 (1988).

has banned their use in state waters and will confiscate such equipment. State statutes that regulate the take of wildlife, including the Hawaii Endangered Species Act, apply to wildlife in the ocean, but as a practical matter they are difficult to enforce at sea.

The Fishery Conservation and Management Act authorizes the federal government to regulate marine fisheries and establishes eight regional fishery councils to administer its programs.[10] The statute generally preserves state regulation in state waters and authorizes federal regulation out to 200 nautical miles. The Western Pacific Fisheries Management Council is made up of representatives of the State of Hawaii, American Samoa, Northern Marianas, Guam, and the National Marine Fisheries Service, and several appointed members who are usually associated with the commercial or recreational fishing industry. The council develops a management plan for each major fishery within its region which requires conservation and management. No plan can be approved without an environmental impact statement, a requirement that ensures input from agencies and the public. Plans for precious corals, lobsters, billfish, bottomfish, and seamount groundfish have been developed and approved by the federal Department of Commerce.

The Fishery Conservation and Management Act establishes national standards for fishery management plans. Fisheries must be managed to avoid long-term adverse effects on the marine environment and to avoid overfishing while achieving an "optimum yield." The councils are required to use the best scientific information available to establish their plans. Congress recognized that annual catches fluctuate widely, and the legislative history of the act indicates an intent to provide a margin of error as a buffer in favor of marine resource conservation. Though no court has ever directly addressed the subject, the national standards seem to require that fisheries be managed to provide sufficient food to maintain seabird populations.

The Fishery Conservation and Management Act gives the Western Pacific Fisheries Management Council exclusive management over fish and other marine life in the exclusive economic zone around Hawaii, but specifically exempts marine mammals, birds, and tunas. The exclusion of seabirds poses a problem. In the opinion of the solicitor of the Department of the Interior, the Migratory Bird Treaty Act cannot be enforced beyond the territorial sea. Because the status of the federal Endangered Species Act in the exclusive economic zone is similarly uncertain, Hawaiian seabirds seem to lack statutory protection throughout much of their feeding ranges. Even worse, the catch of skipjack tunas by foreigners is unregulated beyond the twelve-mile territorial sea. The United States asserts that its fishermen have the right to fish for tunas in the exclusive economic zones of South Pacific and Latin American nations because tunas are an international migratory resource and catches cannot be regulated by any single nation. A corollary of this policy allows foreigners to fish for tunas in the exclusive economic zone around Hawaii. The fishery

[10] 16 U.S.C. §§ 1801–61 (1988).

management plan for billfish and associated species prohibits all drift gillnet fishing by foreign vessels within the exclusive economic zone.

Fishing in international waters beyond 200 nautical miles has been considered a freedom of the high seas for centuries. However, nations must comply with the environmental provisions of the Law of the Sea Treaty either as signatories or because those provisions have become customary international law. The Law of the Sea Treaty establishes a duty to protect and preserve the habitats of endangered species and requires fishing nations to consider the effects of fishing on species associated with or dependent on harvested species. As signatories to the treaty, Japan and the Republic of Korea should comply with its environmental impact statement and reporting requirements with respect to their high seas drift gillnet fisheries for squid. They should monitor and assess the effects of their fisheries on birds, mammals, and turtles caught in their gillnets and should make reports available to interested nations. The uncertainty of Taiwan's status as a nation increases the difficulties of forcing the Taiwanese to comply with customary international law.

Congress amended the Fishery Conservation and Management Act in 1987 to require the secretary of state to negotiate with nations that conduct drift gillnet fishing in international waters of the North Pacific. In mid-1989 the United States entered into agreements with Japan, Taiwan, and South Korea which allow U.S. biologists to assess the effects of such fisheries on U.S. marine resources, including seabirds. Japan has also agreed to reduce its gillnet fishery substantially. In December 1989 the United Nations General Assembly adopted a resolution calling for an end to drift gillnet fishing in international waters by mid-1992 unless fishing nations can prove the practice is not harmful.

Efficacy

The ocean is subject to little comprehensive regulation, management, or planning because it remains a relatively unexploited frontier. As most industrial uses of Hawaii's marine waters are speculative and may never be economically feasible, we have decades if not centuries to struggle with innovative means to protect the marine environment from industrial development. Most statutes that should protect marine resources are weakly enforced. The state is notorious for lax enforcement of environmental laws in its waters. Any efforts by the state to extend its jurisdiction from three to twelve nautical miles to conform with the federal expansion of the territorial sea must be accompanied by a major commitment of resources to monitor and protect those waters. Federal enforcement in the waters of the Northwestern Hawaiian Islands is limited to occasional Coast Guard patrols. Such surveillance no doubt deters some unauthorized activities, but the enforcement situation brings to mind the old Russian saying "Heaven is too high and the tsar is too far away."

Although the United States' tuna policy hamstrings the Western Pacific Fisheries Management Council, the council has made insufficient efforts to use the tools available to it to meet the conservation goals of the Fishery Conserva-

tion and Management Act. The council should develop a fishery management plan for tunas in the exclusive economic zone surrounding Hawaii to regulate U.S. fishermen. If fisheries for coastal pelagics, baitfish, or squid should be developed in the Northwestern Hawaiian Islands, their management plans should include mechanisms for emergency closure when substantial evidence indicates adverse effects on seabird colonies.

The council should improve its internal procedures, some of which might not withstand judicial review. It keeps few records, often does not identify the source of the information on which it bases its decisions, and relies on a scientific committee that includes members who lack scientific credentials. Some biologists refuse to participate in the council's activities because its decision making has appeared to be politicized if not arbitrary and capricious.

The state has insufficiently explored the use of marine sanctuaries as a means to manage and protect state waters. It has adopted a defensive state's-rights approach to this federal-state program, which it seems to view as an intrusion by the federal government. Instead, the state should set its own agenda and propose sanctuaries for which the Department of Land and Natural Resources could function as site manager. Marine sanctuaries in Hawaii could enhance resource management, protect seabirds and other wildlife, improve enforcement in protected waters, and garner federal funds for marine education and research. The waters offshore Kilauea Point and Crater Hill, Kauai, in addition to those of the Northwestern Hawaiian Islands, seem ideal for a marine sanctuary.

Federal enforcement of the Migratory Bird Act and Endangered Species Act in the exclusive economic zone requires express congressional authorization. Seabird management at sea is hampered by turf battles among federal agencies. The U.S. Fish and Wildlife Service theoretically has such authority, but as a terrestrial agency without oceangoing vessels it has minimal ability to conduct research and manage seabirds at sea. Amendment of the Fishery Conservation and Management Act to authorize the National Ocean and Atmospheric Administration to manage and conserve seabirds at sea, as it now does with regard to marine turtles, would be a great improvement.

Information is needed about the by-catch of seabirds, marine turtles, and marine mammals in the drift gillnet fisheries for squid in international waters. Fortunately, the U.S. State Department's negotiations with Japan, the Republic of Korea, and Taiwan were successful in 1989 and we will soon have the information necessary to assess these fisheries. Australia and the U.S. Congress are urging an international treaty to eliminate the use of high-seas drift nets throughout the world. Japan already prohibits such techniques in its own waters; we may hope that the international community will act before the devastation reaches a critical point. As S. Dillon Ripley of the Smithsonian Institution suggested a decade ago, an international commission on seabirds, similar to the International Whaling Commission, would be useful in efforts to deal with the problems of fisheries and seabirds on a global scale.