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# Science and politics in the conservation of biodiversity: The Steller sea lion case

Jerry McBeath

Department of Political Science, University of Alaska Fairbanks, Fairbanks, AK 99775, USA

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### ABSTRACT

The U.S. Endangered Species Act (ESA), adopted by the Congress with virtually no opposition in 1973, is one of the world's most comprehensive biodiversity sustainability measures, because both the listing of species as endangered and plans for their recovery by law must be based *only* on biological needs. Yet ESA has been one of the most embattled of American environmental laws; critics argue that politics routinely eclipses science in ESA decision-making. This study demonstrates the need to analyze reciprocal effects of scientific knowledge and political decision-making in the sustainability transition.

The case concerns crisis in the conservation of Steller sea lions (SSL), whose population in the Bering Sea and Aleutian Islands plummeted more than 80 percent after the 1950s. It examines three early decisions of the National Marine Fisheries Service (NMFS): (1) to list the SSL as threatened in 1990; (2) to upgrade the listing of Western SSL to endangered in 1997; and (3) in its first biological opinions in 1999–2000, to permit continued operation of the greater than \$1 billion bottomfish fishery, notwithstanding the belief of many scientists and most environmentalists that cause of depletion was nutritional stress (the fishery competed with SSL for prey).

In discussing NMFS's implementation of ESA policy, the article asks the extent to which decisions were based on scientifically determined characteristics of the species (e.g., cause and degree of endangerment and requisite critical habitat) as compared to non-scientific variables capturing aspects of the mammal's charisma and appeal or political economic value of its habitat. It finds that the boundaries of science and politics are blurred in this case, and then asks why, by briefly comparing the finding to decision-making in protection of other endangered species.

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E-mail address: [gamcbeath@alaska.edu](mailto:gamcbeath@alaska.edu)

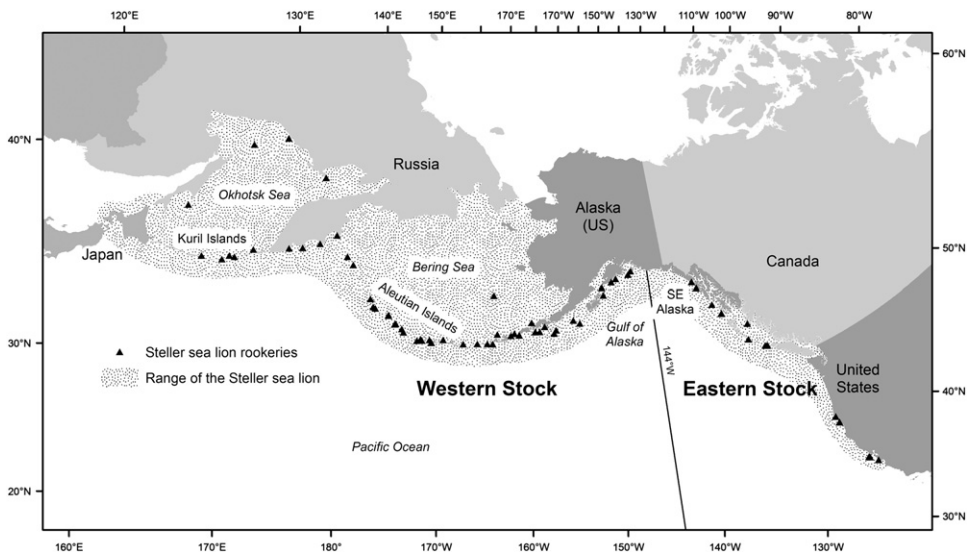
## 1. Introduction

This article concerns the basis on which government agencies, and particularly the National Marine Fisheries Service (NMFS), an agency of the U.S. Department of Commerce, make decisions concerning endangered species, which are extensively protected by federal legislation. It focuses on the extent to which agency decision-making is motivated by the evidence produced by scientists about species depletion as opposed to political considerations: responding to pressure from the industry (in this case the Alaska bottomfish fishery) affected by regulation and reacting to pressures from well-organized and highly mobilized environmental organizations.

In fact, pressure on NMFS, especially from national environmental organizations, to further restrict fisheries on several occasions has influenced NMFS to make management decisions without ascertaining their entire impact. The economic threats faced by Alaska fisheries resulting from increased regulation mobilized the fishing industry and its political allies to question the validity of any management decision made by NMFS. In a 1999 congressional oversight hearing held by the House Subcommittee on Fisheries Conservation, Wildlife, and Oceans, Chairman Jim Saxton summarized the issue when he questioned if the federal government could convince the fishing industry that the proposed changes to fisheries “will actually make a difference, or is there so much uncertainty that we really do not know what we are doing?” (U.S. Congress, 2000).

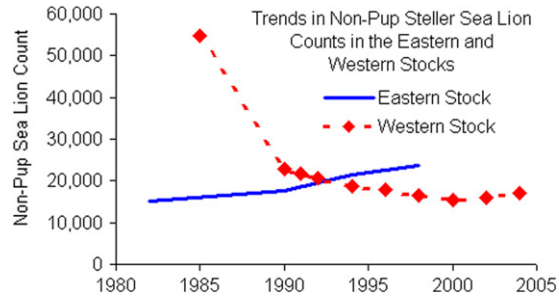
The species of interest is the Steller sea lion (SSL), as the sea lion was named after a German naturalist who introduced it to public attention in 1741. In this section we discuss four factors, which brought the contest between science and politics to issue: (1) recognition of a population crisis among the SSL, (2) adoption of legislation in the U.S. providing a framework for protection of the SSL and other marine mammal species; (3) modernization and technological improvement in the fishing industry that pitted its economic interest against conservation of the species; and (4) growth of non-governmental organizations, particularly environmental groups, which challenged both industry and public agencies.

*Decline in Species Population.* Steller sea lions (*Eumetopias jubatus*) are one of the oldest mammal species, with an origin point estimated at 4–5 million years ago. The early literature on the species,



**Fig. 1.** Map showing distribution of the Steller sea lion.

Source: National Marine Mammal Laboratory: <http://nmml.afsc.noaa.gov/AlaskaEcosystems/sslhom/distrib.htm>.



**Fig. 2.** Estimated total population of Steller sea lions.

Source: NOAA's National Marine Mammal Laboratory. See <http://www.nmfs.noaa.gov/pr/species/mammals/pinnipeds/stellerselion.htm> (retrieved, October 12, 2011).

in the 1950s and early 1960s (Scheffer, 1945, 1958; Kenyon and Wilke, 1953; Pike and Maxwell, 1958; Mathiesen and Lopp, 1963; Fiscus and Baines, 1966), estimated a population in Alaska from 250,000 to 282,000 (see also Trites and Larkin, 1996). Fig. 1 indicates the distribution of the population, ranging from the sea of Japan, along the Aleutian Islands and Gulf of Alaska, and following the Pacific northwest coast to California.

Although the methods of counting SSL have been questioned in the scientific literature, by the 1970s it became apparent that the population was unstable and declining. Surveys in the 1970s and early 1980s in the Aleutian Islands and Kodiak Island registered counts nearly 50 percent lower than those detected in the late 1950s. A host of studies by researchers in the 1980s noted the pronounced downward trend in population abundance (Braham et al., 1980; Fiscus et al., 1981; Lowry, 1982; Calkins and Pitcher, 1983; Berkson and DeMaster, 1985; Merrick et al., 1987; Loughlin and Merrick, 1989). Overall population size is estimated to have fallen more than 80 percent since the 1950s. These studies established baseline data used in decision-making concerning the SSL (Fig. 2).

*Establishment of the Management Regime.* At the time the population of SSL was noticeably in decline, the Congress was establishing a complex legal and regulatory regime for the management of marine mammals and their interaction with fisheries. The first law was the Marine Mammal Protection Act (16 USC 31), passed by the Congress in 1972. The purpose of the Marine Mammal Protection Act (MMPA) was to maintain or restore marine mammals in U.S. federal waters to health levels by prohibiting the killing, hunting, or harassment of any marine mammal, irrespective of population size.<sup>1</sup> Under MMPA, NMFS became the responsible government agency for marine mammal management, including the SSL. Its activities included development of plans to govern interactions between commercial fisheries and marine mammals, including issuance of commercial fisheries permits to allow for the incidental take of marine mammals during normal fishing operations.

The second and most significant legislation influencing management of the SSL was the Endangered Species Act (ESA), passed by the Congress with virtually no opposition in 1973 (16 USC 1531). The purposes of ESA are the following:

(T)o provide a means whereby ecosystems upon which endangered species and threatened species may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of treaties and conventions set forth in this subsection.<sup>2</sup>

<sup>1</sup> See <http://www.legislative.noaa.gov/mammal/html> for outlines of laws related to management of marine mammals in the U.S.

<sup>2</sup> The complete text of ESA is available at: <http://www.law.cornell.edu/uscode/16/1531.html>.

ESA outlines a management process to provide for listing and protection of threatened and endangered species (Fritz et al., 1995).

Implementation of ESA begins with an individual or group petition to NMFS. If, upon review of the petition the agency believes there is a significant and conclusive evidence that a species is threatened, it has 90 days to determine if the listing of the species is appropriate. If during that period, the agency finds evidence substantiating population distress, it has one year to gather further information and determine if listing the species is warranted. Having made such a determination, the agency publishes a proposal in the *Federal Register*, soliciting independent expert opinions and public comments before deciding to list the species and publish a final rule in the *Federal Register*. The process is time-consuming and may take nearly two years (and in some cases longer) to complete from the receipt of the petition.

Once a species is listed, the agency organizes a recovery team and develops a recovery plan to outline the potential causes of population decline with recommendations to promote recovery. Section 4(3) of ESA requires that “critical habitat” be designated within one year of the listing, defining it as follows:

(A) specific geographic area that is essential for the conservation of a threatened or endangered species and that may require special management and protection ... (It) may include an area that is not currently occupied by a species, but that will be needed for its recovery.

When critical habitat has been designated, more restrictive management regulations are required to reduce adverse impacts to the species.

The most powerful section of ESA is Section 7, which calls for the consultation of all federal agencies to “insure that any action authorized or carried out by such agency is not likely to jeopardize the continued existence of any endangered species—or result in the destruction or adverse modification of the habitat.” Should a proposed action, for example authorizing a groundfishery to operate in an area of SSL decline (such as the Bering Sea and Gulf of Alaska), the action must be modified, considering mitigation alternatives, or even abandoned if “jeopardy” to the species cannot be avoided. The consultation process specified in Section 7 defines the proposed actions, identifies and involves affected interests, and attempts to mitigate adverse effects to an endangered or threatened species. Significantly, such decisions must be based on the “best scientific information available” and not on commercial or other grounds.

The final result of the consultation process is a Biological Opinion (BiOp), a determination as to whether the proposed action poses a “jeopardy to the species and/or adverse modification of its critical habitat” (JAM). An agency’s finding of JAM means that it must find a “reasonable and prudent alternative” (RPA), a different way of taking the action that removes or mitigates JAM. It is the responsibility of the agency to show how the RPAs remove the effects of the action causing JAM<sup>3</sup>. The cognizant authority to issue BiOps for the SSL in the Gulf of Alaska (GOA) and Bering Sea/Aleutian Island (BSAI) fisheries is the Alaska Region of NMFS, and its Office of Protected Resources, with commenting authority<sup>4</sup> of the North Pacific Fishery Management Council (NPFMC). Moreover, the process can be challenged in federal court if a finding of “no jeopardy” is issued.<sup>5</sup>

The third part of the management regime was established by the Congress in 1976, the Magnuson Fishery Conservation and Management Act (MFCMA) (16 USC 1801–1882).<sup>6</sup> MFCMA embodied the objective of eliminating foreign competition from the 200 nautical mile coastal zone of the U.S. and to stimulate a domestic fishing industry. This Exclusive Economic Zone (EEZ) covers waters off

<sup>3</sup> Agencies consult on the effects of action, not whether “a species is in jeopardy.”

<sup>4</sup> The SSL case differs from others regarding the intersection of politics, economics and science, because the Stevens Rider (discussed below) essentially required that all future ESA actions involving SSLs and the North Pacific groundfish fisheries go through the NPFMC. This gives the Council considerably more than commenting authority.

<sup>5</sup> Section 11(g)(1)(a) gives legal standing to any person who “may commence a civil suit on his own behalf—to enjoy any person, including the United States—who is alleged to be in violation” of the ESA.

<sup>6</sup> This act was amended by the Congress in 1996; because of the role of Alaska’s then-senior senator Ted Stevens in national fisheries issues, MFCMA became known as the Magnuson-Stevens Act (MSA) and also the Sustainable Fisheries Act. It was last reauthorized in 2007.

Alaska's coast—the longest coastline in the U.S.—including about 900,000 square miles, and it is operated under federal jurisdiction and the authority of NMFS. MFCMA established eight Regional Fishery Management Councils to work with NMFS to develop Fishery Management Plans (FMPs) to provide for a sustainable U.S. fishery. The FMPs establish processes enabling councils and NMFS to manage fisheries through limitations on Total Allowable Catches (TAC), Accepted Biological Catches (ABCs), time-area-gear restrictions, quotas and other methods. As such, they represent “actions” adopted by a federal agency—the NMFS—and must follow provisions of ESA. The NPFMC covers the largest area of the eight regional councils. It includes 15 members (11 have voting power [of whom 6 are from Alaska]; 7 are appointed by the Secretary of Commerce), and it has a decided pro-industry bias.

*Modernization of the Fishing Industry.* Another development in the 1970s and 1980s influencing the SSL population decline was technological change in the fishing industry. In this period, concentration of catch seasons increased sharply both spatially and temporally (Fritz et al., 1995; Alverson, 1991). The areas in which fishing vessels were catching a much larger number of fish (and more quickly) coincided with areas later designated as SSL critical habitat under the ESA. Fritz et al. (1995) among other analysts have suggested that increased catches were the product of improved vessel design and net construction materials.

That the population of SSL was declining while fishing operations became more concentrated (and significantly more productive) in the Gulf of Alaska and Bering Sea/Aleutian Islands made the fishing industry an easy target. Environmental groups focused on the fisheries as the sole cause of species decline, and framed the issue focus as the entire fishery management system of the North Pacific (see Mansfield and Haas, 2006). Environmental groups recognized that other factors also may have been relevant, but they did not believe that those other factors diminished the role of fisheries.

*Growth of Non-Governmental Organizations.* The final background factor was change in the size and political influence of non-governmental organizations (NGOs). The 1970s was a period of exponential growth in groups such as the Sierra Club and Greenpeace, which now had sufficient members and resources to lobby Congress in earnest, to initiate mass media campaigns, and to publicize environmental issues (Bryner, 2001; also see Vig and Kraft, 2010). Other environmental organizations such as the Earthjustice Legal Defense Fund had expanded resources as well and were positioned to sue federal agencies in court and seek injunctions on federally-approved projects that threatened species and the environment.

We turn now to the three initial decisions in the ongoing SSL controversy to assess what they reveal about the conflict between science and politics, and then briefly update the issue to 2011.

## 2. Listing the SSL species as threatened in 1990

By the late 1980s, NMFS had recognized an impending crisis in SSL population. In May 1989, the agency published an advance notice of listing the SSL as “depleted” under authority of the MMPA (Gerber, 1993). Also in 1989, Congress amended the MMPA, directing the NMFS to develop a conservation plan aimed at saving the species. But it was the action of an environmental NGO that prompted agency action.

On November 21, 1989, the Environmental Defense Fund, representing a coalition of 17 environmental organizations, petitioned NMFS to list the SSL as endangered under ESA. The petitioner based its request on population statistics developed and published in 1989 by Thomas Loughlin, a scientist at the National Marine Mammal Laboratory (Loughlin and Merrick, 1989; Gerber, 1993). Within a month, NMFS asked for public comment on the potential listing; in preparing a listing, NMFS also formed the Stellar Sea Lion Recovery Team (SSLRT) in March 1990. Although sufficient scientific and biological evidence of an emerging crisis warranted action by NMFS, it is apparent that pressure of environmental groups led NMFS to list the SSL as “threatened” under the emergency listing clause of ESA.

At this time, scientists had not established the precise cause of decline in SSL population (it remains unknown in 2011); nevertheless, NMFS needed to initiate protective measures in order to

comply with ESA. The final listing was registered on November 26, 1990 in a decision of the Secretary of Commerce (the parent department of NMFS). Following the listing, NMFS issued limited protective measures including:

- Establishment of a 3 nautical mile buffer zone around rookeries in the Gulf of Alaska and Aleutian Islands;
- prohibition of shooting at or near SSL; and
- reduction in the allowable level of take incidental to commercial fishing operations.

Although the agency commissioned research studies to determine factors influencing SSL population decline, it did not halt or significantly curb the fishery. Moreover, the director of the NMFS Alaska Region had the authority to grant exemptions from these prohibitions until further study had delineated areas of critical habitat. In fact, uncertainty concerning the causes of SSL decline reinforced the status quo for NMFS and for the NPFMC, which made no alterations to existing FMPs at this time (Gerber, 1993).

Indeed, the agencies *increased* opportunities for the fisheries while the official listing was in process. Both NMFS and NPFMC defined the total allowable catch (TAC) for the next year's season, allowing a nearly 80 percent increase in the harvest level for the pollock stock (Gerber, 1993). NPFMC claimed that it established the TAC using the best available science, as a product of the FMP developed for the GOA and BSAI fisheries. NMFS issued a BiOp in April 1991 stating that the fisheries would not put the SSL in jeopardy. At this juncture, Greenpeace warned NMFS of its intent to sue if the TAC levels were not lowered. Greenpeace claimed that the plan violated ESA, MFCMC, and the National Environmental Policy Act (NEPA).<sup>7</sup>

NMFS then reacted to the potential filing of a lawsuit by implementing further spatial and temporal restrictions in the Gulf of Alaska in June 1991. The new regulations included restricting fishery operations from a 10 nautical mile no-trawl buffer zone, splitting the pollock allocation between eastern and western Gulf of Alaska areas, and limiting the total harvest during any quarter of the season. NMFS' position was that these parameters protected the SSL from jeopardy.

In the absence of a JAM finding, Greenpeace, represented by the Sierra Club Legal Defense Fund, sued the Department of Commerce in the western district of the federal District Court (Seattle) for violations of ESA, MFCMA, and even NEPA (for failing to complete an EIS addressing the cumulative impacts of all Alaska fisheries on threatened and endangered species in the BSAI and GOA fisheries). Greenpeace also challenged the adequacy of the NMFS BiOp and sought an injunction to close the GOA fishery until a suitable alternative plan had been developed. However, the court ruled in favor of NMFS, supporting its scientific expertise and ability to manage the fisheries (Gerber, 1993). The court also denied an appeal from Greenpeace.

Action of environmental organizations did have the effect of increasing the scrutiny that NMFS and NPFMC paid to FMPs and BiOps. After the lawsuit, NMFS started to analyze the balance of commercial fishing and environmental protection measures (Gerber, 1993). The agency presented a draft plan of amendments to restrict fisheries and promote SSL recovery and by January 1992 had begun implementation of more restrictive measures. The Steller Sea Lion Recovery Team developed a recovery plan for SSL by the end of 1992, issued by the Office of Protected Resources of NMFS (National Marine Fisheries Service, 1992). It called for further research and suggested that "management agencies—should not preclude more immediate conservation measures." But it did not provide specific measures to limit activity in the fisheries because of the agency's belief that there was an insufficient scientific basis for such decisions.

NMFS continued to implement regulations in the GOA and BSAI, including increased buffer zones around select rookeries (areas for birthing/raising young SSL), seasonal fishing closures, and further spatial and temporal allocation of specific fish species. Its most significant protective action was the final designation of critical habitats for SSL, issued in August 1993 (58 FR 17181). The designation

<sup>7</sup> NEPA does not specifically pertain to threatened and endangered species and their interaction with fisheries. However, environmental groups have taken advantage of its general stipulation that an Environmental Impact Statement (EIS) must be prepared to analyze the potential impacts of federal actions on the environment, by convincing courts that FMPs are "federal actions" clearly affecting the environment.

appeared to comply with ESA; it protected over 100 haulouts (rest areas) and 40 rookeries and ocean areas thought to be essential for foraging, reproduction, and sustainability of the SSL.

The agency's actions in listing the species and implementing the listing through a series of protective measures largely were a response to pressure of environmental organizations when, in the agency's judgment, the scientific basis for action was uncertain<sup>8</sup>.

### 3. Upgrading the SSL listing to endangered in 1997

By the early 1990s, scientists had begun to recognize that the western population of SSL (those in the BSAI fishery) was declining more rapidly than the eastern (GOA) population, and the agencies extended the buffer zones accordingly. Designation of areas as critical habitat heightened tensions between the fishing industry and environmentalists because the protected areas in places overlapped with some of the most productive fishing grounds in the BSAI region.

A change in the management regime occurred in 1994 when Congress amended the Marine Mammal Protection Act (Buck, 1994). The interim exemption for commercial fisheries was replaced with a requirement that a long-range strategy be developed to govern interactions between marine mammals and fisheries (Sections 117 and 118). Amendments also modified regulations on the taking of marine mammals listed under ESA (Section 101(a)(5)). Section 118 amendments required that the fisheries approach a "zero mortality rate goal" in incidental kills, to be attained in 7 years (Fritz et al., 1995). The amendments also required NMFS to organize more research teams to develop plans to reduce the level of incidental kills of marine mammals including the SSL (comprehending marine mammal stock assessments, registration and monitoring programs for certain commercial fisheries, and an incidental injury and mortality self-reporting requirement for all fisheries). The effect of the amendments was to strengthen MMPA and spur research into SSL interactions with fisheries, while increasing scrutiny of all Alaska fisheries.

Increasingly sophisticated scientific studies, including analysis of mitochondrial DNA and phylogeographical analysis, differentiated between the eastern and western populations of SSL. They divided east and west of 144° west longitude, by Cape Suckling, Alaska (see Fig. 1). Population surveys and NMFS population status reviews indicated continual decline in the western population. Particularly convincing were population viability analyses conducted by the SSLRT, which took into account previous population trends on which they projected models of future SSL populations (see Winship and Trites, 2006). Based on these modeling scenarios, SSLRT reported that if current trends continued, chances of SSL extinction within 100 years ranged from 65 to 100 percent. SSLRT then recommended to the Assistant Administrator of Fisheries that the western SSL population be upgraded to endangered. Based on these scientific studies and recommendations, NMFS proposed the official listing of the western distinct population segment (DPS) of SSL as endangered on October 4, 1995 (60 FR 51968).

It is noteworthy that from the designation of critical habitats for the SSL in 1993 to the proposed upgrading of their ESA status as endangered (1995), the fisheries continued operating on a status quo basis with no significant alteration of the FMPs for the BSAI or GOA regions (National Marine Fisheries Service, 1995). Moreover, following NMFS' proposal that the species be listed as endangered, the BiOp it issued in 1996 concluded that the current FMP did not jeopardize the species.

Also, little urgency seemed to characterize the agency's action in upgrading the ESA listing. It took NMFS two years to complete the studies needed to change the listing. Only in June 1997 did NMFS officials divide the SSL population into two distinct stocks, western and eastern, and upgrade the ESA listing of the western stock to endangered (62 FR 24345). While the agency contended that the upgraded listing (and the time needed to establish it) reflected the best scientific information available, it seems apparent that agency action and timing reflected pressures of the commercial fishing industry as well.<sup>9</sup>

<sup>8</sup> A NMFS employee said off-the-record: "This is not the first time that NMFS (or USFWS for that matter) needed to be prodded to follow the law.... Listing the SSL under the ESA provided the means to put in place the single biggest change that began arresting the decline: prohibition of shooting at or near a SSL".

<sup>9</sup> For example, note coverage in the *Seattle Times*, August 28, 1997; August 16, 1998; December 16, 1998; and August 10, 1999, and the *Anchorage Daily News*, May 1, 1997; April 16, 1998; and October 29, 2000.

#### 4. Changing biological opinions on the SSL

The SSL's endangered status did not result in the immediate adoption of increased conservation measures by NMFS. In December 1997 the agency accepted NPFMC's planned increase of 60 percent in the groundfish quota for the GOA and only minor reductions in the TAC for the BSAI region (Greenpeace, 2000). This plan spurred environmental organizations to file another suit against NMFS in April 1998. Earthjustice Legal Defense Fund (ELDF) and Trustees for Alaska represented Greenpeace, American Oceans Campaign, and the Sierra Club in claiming that the continued action of NMFS (by approving FMPs) violated ESA requirements for protecting endangered species. The suit also suggested that NMFS had not met the NEPA regulations by failing to prepare an EIS covering the potential impacts of the Alaska groundfisheries on the SSL.

Legal pressures from environmental organizations as well as increased public awareness of the SSL issue prompted NMFS to shift its position. On December 3, 1998, the Office of Protected Resources of NMFS issued BiOp #1 stating that the pollock fisheries did jeopardize the recovery of the SSL in the BSAI and GOA fisheries.<sup>10</sup> ESA requires that the agency outline specific reasonable and prudent alternatives (RPA) to avoid adverse impacts on a listed species, but BiOp #1 did not spell out any RPAs. However, it did provide a general framework for avoiding the likelihood of adversely impacting the Steller sea lion or modifying its critical habitat, consisting of three principles: (1) temporal dispersion of fishing effort; (2) spatial dispersion of fishing effort; and (3) protection from fisheries competition for SSL prey in waters adjacent to important rookeries and haulouts.

Following NMFS' briefing, the NPFMC prepared alternative management measures, which were incorporated in the BiOp as part of the RPAs for all Alaska pollock fisheries and put into effect in an emergency listing in the *Federal Register*, to remain in effect until the end of December 1999.

Greenpeace, the American Oceans Campaign, and the Sierra Club challenged BiOp #1 in U.S. District Court (*Greenpeace vs. NMFS*, Civ. No. C98-0492A (W.D. Wash)). The environmental organizations maintained that the RPAs still fell short of protecting the SSL and that proposed 1999 RPAs did not move towards a more rigorous conservation program for SSL (Greenpeace, 2000). In an order of the court issued July 9, 1999 Judge Thomas Zilly upheld the jeopardy finding for the pollock fisheries and found the RPAs developed to mitigate the jeopardy were arbitrary, capricious, and not likely to be effective (67 FR 957). In other words, the court ruled that agency action lacked a good scientific basis. By August 1999 the court had remanded the RPAs to NMFS for further modification. In response, NMFS completed revised final RPAs, which outlined management measures to avoid jeopardizing SSL for the 2000 groundfisheries season.

BiOp #1 had covered the Atka mackerel and pollock fisheries. A second BiOp (#2) issued on December 22, 1998 covered the harvest specification for all the Alaska groundfish fisheries. This became the target of environmental groups early in 2000. On January 25, 2000, Judge Zilly ruled that BiOp #2 was too narrow in scope (*Greenpeace vs. NMFS*, 80 F. Suppl. 2d 1137 (W.D. Wash, 2000)). The judge asked litigants to reach an out-of-court settlement, but this did not materialize. Then, Judge Zilly ruled in favor of the environmental organizations and issued an injunction prohibiting fishing for groundfish with trawl gear within SSL critical habitat until NMFS issued a comprehensive biological opinion that analyzed the full scope of FMPs on all Alaska fisheries (*Greenpeace vs. NMFS*, 106 F. Suppl. 2d 1066 (W.D. Wash, 2000)). Zilly's decision sparked a Seattle reporter to opine that the injunction represented "one of the most important rulings ever under the Endangered Species Act, but fisheries warned it could cost their industry billions of dollars" (*Environmental News Service (ENS)*, 2001). Fishing industry representatives claimed that the injunction would cost nearly \$93 million through the remainder of the 2000 fishing season, and a total of \$173 million if the injunction were to continue through the first six months of the 2001 season (*Environmental News Service*, 2001).

Under the pressure of adverse court rulings and pressure from the fishing industry to continue fishing, NMFS quickly released another biological opinion addressing the cumulative effects of all

<sup>10</sup> Although several Biological Opinions had been issued before 1998, this was the first issued after the 1997 reclassification of SSL from threatened to endangered.



groundfisheries on SSL. The agency issued its comprehensive BiOp #3 on November 30, 2000, whereupon Judge Zilly lifted the ban on groundfishing (at which point most of the season had passed). This BiOp was part of a Supplemental EIS (SEIS), prepared to meet the demands of the court in fulfilling the agency's NEPA responsibility, and addressing the impacts of all Alaska fisheries on the Steller sea lions ([National Marine Fisheries Service, 2001](#)).

BiOp #3 concluded that the Atka mackerel, Pacific Cod, and pollock fisheries as then managed did jeopardize SSL and adversely impacted their critical habitat. It marked a major shift in position of the NMFS by finding that all fisheries jeopardized SSL recovery; previously, only the pollock fishery had been specified.<sup>11</sup> The comprehensive BiOp concluded that food competition between fisheries and sea lions would lead to localized depletion of SSL prey and cause nutritional stress. BiOp #3 outlined a series of RPAs and alternatives to help mitigate these impacts. In response, the fishing industry contended that the RPAs were too restrictive and threatened the economic viability of the industry.

The economic threats expanded regulation would have on Alaska's fishing industry prompted the involvement of Alaska Senator Ted Stevens. Siding with the industry and its representative body, the NPFMC, Stevens sought to avoid the imposition of new regulations that might harm fisheries and also sought to suspend the application of existing environmental laws such as ESA and MMPA, which he charged were negatively impacting the economic success of the nation's largest and most productive fishery ([Environmental News Service \(ENS\), 2001](#); [Meadows, 2001](#)). Stevens then was the chair of the Senate Appropriations Committee, and used that position to attach a rider to a budget bill that would have effectively terminated any regulations on fishing in GOA and BSAI regions pending the determination of the exact cause of the SSL decline.<sup>12</sup> Then President Clinton threatened to veto the budget bill if the rider were not removed, and the contest between Congress and the White House threatened to shut down the federal government.

The conflict was resolved on December 15, 2000. Compromise legislation permitted NMFS to implement its RPAs to appease environmental groups. For the fisheries, Congress provided that the NMFS could not reduce the TAC levels by more than 10 percent, and it directed \$30 million in payments to some 35 affected fishing communities and businesses ([Environmental News Service, 2001](#)). Although the Stevens rider was removed from the appropriations bill, he was able to increase the amount of federal money spent on SSL research, an amount now exceeding \$120 million. (See [National Research Council \(2002\)](#) for a recounting of the "Zilly Quartet," the four decisions of the federal district court in response to environmental NGO challenges up to 2003, see [McBeath \(2004\)](#).)

## 5. Status of the SSL controversy in 2011

The SSL saga continues to the present, without any basic changes to pressures on the agency as it issues FMPs, revises RPAs and engages in Section 7 consultations to develop its biological opinions. The federal court system still is involved as aggrieved parties—environmental NGOs, the fishing industry, and states such as Alaska—seek the best venue in which to argue their cases.

Scientific research has had a marginal impact on reduction in conflict. Among the several hypotheses advanced to explain the species' decline, direct causes—e.g., illegal shooting, entanglement, incidental take and subsistence use—have been substantially reduced, and this likely contributed to the rebound in juvenile and adult survival rates since 1990. Killer whale predation is the remaining direct cause, but the policymaking community is divided on its impact as a contributing factor (personal interview with NMFS scientist, August 1, 2011).

Research on the potential indirect causes of SSL decline and instability continues. One hypothesis focuses on climate change and argues that declining populations were a consequence of physical oceanographic change due to the 1976–77 climate shift in the North Pacific (see [Trites et al., 2007](#); [Marzban et al., 2005](#); [Mordy et al., 2006](#)). Climate induced changes potentially explain alteration of species composition and distribution as well as the poor nutritional quality ("junk food") of recent

<sup>11</sup> For an explanation of the change in agency behavior, see McBeath, Jerry, November 2004. Management of the commons for biodiversity: lessons from the North Pacific. *Marine Policy* 28, 523–39.

<sup>12</sup> See Morella Meadows, "The Senator, The President, and the Sea Lion."

SSL prey. Second, fishery-induced changes in localized or overall prey abundance and quality remains a plausible cause, particularly because fishing plans allow for a substantial removal (in some areas, nearly 60 percent) of biomass. Nevertheless, there is no scientific consensus on the primary factor or clear leading hypothesis to explain species decline. Because the ESA is precautionary legislation, giving the benefit of the doubt to the species, and because fisheries activities are so obvious, they must be considered in management plans.<sup>13</sup>

The agency responded predictably by fortifying its relationship with the NPFMC, the Council. Indeed, one participant remarked “We now have to run everything through the Council, even draft work” (personal interview, NFMS manager, August 2, 2011). The first biological opinion and environmental assessment/regulatory impact review since 2003 occurred in 2006, based on changes in the BSAI and GOA fisheries and information gained since then. In 2008, the agency revised its SSL recovery plan, by concluding that to achieve recovery no two adjacent regions (of seven) would be allowed to have “*significantly declining non-pup population trends*”<sup>14</sup> The agency also revised its RPAs in this year. It reiterated two old principles and crafted a third: (1) continue population monitoring and research on the key threats potentially impeding sea lion recovery; (2) maintain current or equivalent level of fishery conservation measures; and (3) design and implement an adaptive management program to evaluate fishery conservation.<sup>15</sup> The first two principles required no change in direction and were followed. However, the adaptive management plan was not, doubtless because its requirement of manipulation of the ecosystem through an approximation to controlled experiments would have required several decades to product results (personal interview, marine mammal scientist, August 1, 2011).

The agency identified JAM to the SSL in the western DPS and implemented RPAs in three sub-regions, which became the basis for its most recent BiOp in late 2010. It proposed closure of the Atka mackerel and Pacific cod fishery in area 543 of the western Aleutians and restrictions on the fisheries in adjacent units of the central Aleutians. This action, again predictably, occasioned suits in federal court by the industry and states of Alaska and Washington (with environmental NGO petitions to be included in support of the agency). In addition to questioning the scientific basis of the decision, the plaintiffs complained that the closure and restrictions would cost losses of \$83 million and 750 jobs, at a time of economic downturn.<sup>16</sup>

Overall, recent events in the SSL controversy mirror the past record. As we point out, this often is the nature of endangered species issues in the context of the American political system.

## 6. Comparative observations

Uncertainty about the cause of species depletion and the optimal strategy to recover endangered species fuels challenges to laws such as the U.S. Endangered Species Act and to its implementing agencies—NMFS, and for terrestrial species, the Fish and Wildlife Service (FWS). Our analysis of several NMFS decisions concerning the listing and recovery plans for the endangered Steller sea lion suggests parallels to other endangered species cases in the U.S. We examine five areas of controversy: (1) opportunities for expanded conflict provided through the listing process; (2) agency funding constraints, which encourage pressure on agencies; (3) provisions of legislation such as those concerning critical habitat designation, which challenge the status quo and enrage economic interests; (4) automatic entry of the courts in response to scientific uncertainty; and (5) ultimate

<sup>13</sup> The National Research Council report states: “Although most evidence indicates that groundfish fisheries are not depleting the food resources necessary to sustain the current western population of sea lions, there is insufficient evidence to fully exclude fisheries as a contributing factor to the decline”. Sea lions may get ensnared in fishing gear because of the ample food available around fishing operations. Attraction of killer whales to these same vessels could increase the vulnerability of sea lions to predation. **Investigation of top-down sources of Steller sea lion mortality should be increased to evaluate the proportionate impact of these factors on population decline** (The National Research Council, 2002, p. 1).

<sup>14</sup> This is one of several criteria that would need to be met to de-list or down-list the species.

<sup>15</sup> See summary of NMFS, Endangered Species Act—Section 7 Consultation, Biological Opinion, 11/24/10, xxi–xxvi.

<sup>16</sup> State of Alaska vs. Jane Lubchenco (Case 3:10-cv-00271-TMB, filed 12/14/10).

reference to the political process to balance competing interests and pressures. (For general analyses, see Harrison and Bryner (2004) and Tickner (2003).)

*Listing Opportunities.* It was a scientist, Thomas Loughlin (once an employee of NMFS) who brought the SSL decline to the attention of the agency, urging its listing as a threatened species in the late 1980s. However, environmental organizations, particularly Greenpeace and the American Oceans Campaign, also pressured NMFS to list the species. To these environmental organizations the issue extended beyond the fate of one species to the status of the marine ecosystem, including overfishing. In other words, environmental organizations took advantage of initial scientific evidence and threatened litigation in order to achieve environmental goals extending beyond species protection.

An analogous case was the listing of the pygmy-owl of Arizona as endangered. The U.S. FWS listed the species as a category 2 candidate species throughout its range in 1989, but its status as endangered was a product of pressure by the Southwest Center for Biological Diversity (renamed the Center for Biological Diversity in 1999). According to Klyza and Sousa (2001), the Center was interested in blocking development in environmentally sensitive areas in general, not just for the pygmy-owl.

In a second case, depletion of Pacific salmon stocks, the first proposal originated with the Endangered Species Committee of the American Fisheries Society. Shortly thereafter, a newly empowered tribe of Idaho (the Shoshone-Bannock) petitioned for an ESA listing of Snake River sockeye salmon, followed by a coalition of environmental groups led by Oregon Trout (Wilkinson, 1992; Lichatowich, 1999).

Not only listing opportunities but also the duration of time before species are listed is subjected to the pressure of interest groups. Studies of the FWS Category 1 listing indicate that species wait from 1 day to 6 years for the agency to propose them for listing or drop them back in the process. Ando observes: "Interest groups with strong preferences in the species-protection debate do seem to affect the rate at which the Fish and Wildlife Service lists species local to them (Ando, 2001)."

Liberal listing opportunities increase protection for threatened/endangered species, but at the cost of increased pressure on management agencies in a pluralistic political environment.

*Agency Funding Constraints.* Both the U.S. agencies that implement ESA rules are relatively small and underfunded. In the late 1990s, for example, NMFS had a budget of approximately \$350 million with which it was charged to list and protect all U.S. marine species threatened or endangered.<sup>17</sup> Insufficient funding was a factor in the slow SSL listing process of the agency, which was an invitation for action to environmental organizations seeking to have species listed to challenge the agency.

In the case of the pygmy-owl, the FWS moved the species to its category 1 status, meaning that the agency had sufficient valid evidence to list it as threatened or endangered but did not list it because FWS had focused its limited resources on other listing activities. This was explicit recognition by FWS that it lacked the capacity to implement the ESA (Nicholopoulos, 1999).<sup>18</sup> Thereupon several conservation groups led by the Center petitioned the agency to list the pygmy-owl as endangered and to designate critical habitat for it as well.

Clearly, budgetary limitations reduce the work that agencies can perform to protect threatened and endangered species.

*Habitat Provisions of ESA.* Determining the habitat critical to recovery of a species requires exhaustive research. It also places any economic activities in that area at risk of closure. Perhaps the most criticized aspect of the ESA in the SSL instance is that it establishes a bias against commercial uses of publically held resources (groundfish stocks) in federally managed regions of the ocean. In the case of the western SSL DPS, whose habitat was the Gulf of Alaska and Bering Sea/Aleutian Islands, the bottomfish fishery with an annual economic value of greater than \$1 billion was

<sup>17</sup> In federal fiscal year 2011 the agency's budget was \$993 million. Most of this increase beyond inflation adjustments went to increased fisheries operations and not to species preservation efforts. However, counting all costs (including SSL research) over the last decade, approximately \$200 million has benefitted SSL protection (personal interview, NMFS budget analyst, August 3, 2011).

<sup>18</sup> See <http://ecos.fws.gov/tess/frdocs/1994/94-30468.html>.

threatened. This prompted counter-suits at each stage of the litigation inspired by Greenpeace, and ultimately involved the district court as arbiter. Economic costs continue to figure in the SSL controversy.

In the case of the pygmy-owl, the FWS was slow to designate critical habitat, because of potential adverse impacts on Tucson area developers as well as lack of sufficient scientific information. The Center filed a lawsuit over the failure of the agency to designate critical habitat, and within a year a federal judge ordered FWS to propose critical habitat within 30 days and issue final rules within six months.<sup>19</sup> The only Arizona ornithologist who reviewed the proposed critical habitat objected to the lack of adequate scientific data and also “because it detracts from the path of gathering good data by wasting public resources and needless, time-consuming actions related to bureaucratic process, not species conservation” (Klyza and Sousa, 2001).

A far more controversial action was the decision of then-U.S. Interior Secretary Richard Kempthorne to list the polar bear as a threatened species in 2008. This followed a suit by the Center for Biological Diversity against the federal FWS to list the species as endangered because of the effects of climate change in thinning sea ice on which the bears live. Because the area designated as critical habitat was 187,157 square miles (larger than the land area of California) in which oil and gas development activities are ongoing, the Alaska (and national) oil industry pressured the state of Alaska, which sued to have the decision overturned in federal court. Recently, U.S. District Judge Sullivan upheld the agency’s determination, saying that:

(Opponents) failed to demonstrate that the agency’s listing determination rises to the level of irrationality... Plaintiffs challenges amount to nothing more than competing views about policy and science.<sup>20</sup>

Nevertheless, habitat provisions such as these exacerbate controversy over ESA listing and protection efforts.

*Scientific Uncertainty and the Courts.* ESA provisions allow any party to initiate proceedings in federal court to force agency compliance. Decisions in the SSL case were dominated by the Western District U.S. District Court (Seattle) from 1998 to 2003, notwithstanding intervention from the U.S. Congress. Now they appear in the U.S. District Court for the District of Alaska. Not only court intervention but the nature of decision-making, including the court’s insistence on data that were unambiguous and certain, influenced agency action.

In their review of the pygmy-owl case, Klyza and Sousa (2001) illustrate the ways in which environmental organizations could use the courts to force agency action:

If the agency stalled or failed to act (in listing the species as endangered or threatened), the (Center) could appeal to the courts, which could force the FWS to act... If the agency was unresponsive (to designation of critical habitat), the (Center) could turn to the courts to force action.

In a second case concerning Pacific salmon the federal court intervened in a manner nearly identical to the Alaska SSL case. Judge Janice Stewart ruled:

The wait-and-see stance of the NMFS has no support in the ESA or case law. Instead of placing the risk on the future and voluntary conservation measures proposed by the (Oregon plan), the NMFS unlawfully placed the risk of failure squarely on the species. Thus, this court finds the NMFS’s final rule regarding the Oregon Coast ESU was arbitrary and capricious.<sup>21</sup>

Court decisions are idiosyncratic, as they focus on individual cases with varying contexts. Regarding the early SSL cases, Judge Zilly gave discretion to the agency on scientific matters, when

<sup>19</sup> U.S. Fish and Wildlife Service, 1998, “Proposed Determination of Critical Habitat for the Cactus Ferruginous Pygmy-Owl.”

<sup>20</sup> Bloomberg Businessweek, June 30, 2011. Also see: <http://alaska.fws.gov/fisheries/mmm/polarbear/criticalhabitat.htm>.

<sup>21</sup> Oregon Natural Resources Council, et al. vs. William Daley, Secretary of Commerce and Rollen Schmitten, Director, National Marine Fisheries Service. 1998 U.S. Dist. LEXIS 13511.

the agency made reasoned decisions, but did not hesitate to fault the agency for illogical positions, tardy actions and inconsistent applications of the data and methods it possessed. Yet federal courts are not an ideal venue for the resolution of issues concerning regulation of the commons. The proceedings are adversarial and do not foster compromise and accommodation.

*Scientific Uncertainty and the Political Process.* Attempts to weaken or repeal the ESA in the Congress have been unremitting but unsuccessful. Because the legislation (and the marine mammal regulatory regime) requires the best available scientific evidence, it forces adversely affected economic interests to enter the available political process (see Tobin, 1991).<sup>22</sup> The SSL case demonstrates this in the politicized nature of the NPFMC and relatively frequent intervention by the congressional delegation. In Alaska, the same pattern is unfolding now with respect to the listing of the polar bear as a threatened species.

Opposition to pigmy-owl protection in Arizona involved the governor, who criticized the FWS for limiting state activity on trust lands and the state game and fish department, which disapproved of the critical habitat designation. Development forces filed a lawsuit to delist the pigmy-owl as well as revoke the designation of critical habitat.

Similar controversy affected elaborate (and extended) negotiations over depletion of Pacific salmon. Klyza and Sousa (2001) note:

The complexity of the life history of salmon exposes them to multiple hazards and untangling the effects of the myriad sources of mortality has been daunting for scientists and policymakers alike ... (S)cientific uncertainty, contradictory research findings, and year-to-year variation in fish runs have stiffened the backs of hydropower interests and redoubled the commitment of environmentalists, fishers, and tribes to radical changes to the hydropower systems.

Uncertainty clearly is a major factor accounting for the shifting and fuzzy boundary between science and policy in ESA cases. Notwithstanding amendments to ESA in 1982 attempting to demarcate the boundary between science and policies and avoid listing decisions guided by non-scientific values, recent studies indicate that political decisions about funding recovery efforts “strongly influence what science is undertaken, what species are studied, and thus what species are afforded attention” (Cash, 2001).

As discussed, the 2008 RPAs included a provision for adaptive management. Had the agency used this principle in the early 1990s, some data likely would have been available to confirm or disconfirm the fisheries-induced change hypothesis, and in turn this would have influenced the regulatory environment (see Bryant, 2009; Morrone and Lohner, 2002).

Finally, the most recent ESA case shows that in situations of extreme conflict, invariably politics trumps science. This case concerned Northern Rockies gray wolves, which had recovered in Montana, Idaho and Wyoming, and were rebounding in the Pacific Northwest, yet remained a listed species managed by the U.S. FWS (USFWS, 2011). Conflict among ranchers, property owners and wildlife advocates led Congress to side with the political-economic interest. In 2011 western state members of Congress inserted a Northern Rockies wolf de-listing measure into a last-minute budget package funding the federal government through the rest of the fiscal year. This was the first time that the Congress had taken a species off the endangered species list by fiat.

## 7. Conclusions

This account of decision-making in the SSL controversy has focused on the listing of the species as threatened and then endangered, and the subsequent biological opinions of NMFS regarding critical habitat and species recovery. The observable pattern of agency activity has not been consistent, as

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<sup>22</sup> The U.S. Supreme Court ruled in *Tennessee Valley Authority vs. Hill* that “it is clear from the ESA’s legislative history that Congress intended to halt and reverse the trend toward species extinction—whatever the cost.” Quoted in Hayward et al. (2001) p. 3.

NMFS has been buffeted by economic interests threatened by agency action and challenged by environmental organizations seeking species as well as ecosystem protection.

The legal and management regime for marine mammals in the United States is complex and allows competing interests to penetrate the policy system. In addition, because the U.S. has a separation of powers system including an independent judiciary, the regime affords easy access to the courts, whose judgments may overrule agencies (and legislatures). This demonstrates the importance of context in endangered species cases. Above all, the policy system lacks certain knowledge (to the present) of the cause behind SSL decline and the optimal conditions for recovery.

In this environment, the boundaries of science and politics have blurred, and this condition has had the effect of increasing conflict among competing interests. Because the ESA better embodies the precautionary principle than any other U.S. environmental law, it may be the case that the political process, founded on a rule of law, may benefit endangered species as much as natural science, when that science is uncertain.

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