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Gear Impacts and International Cooperation in the Bering Sea

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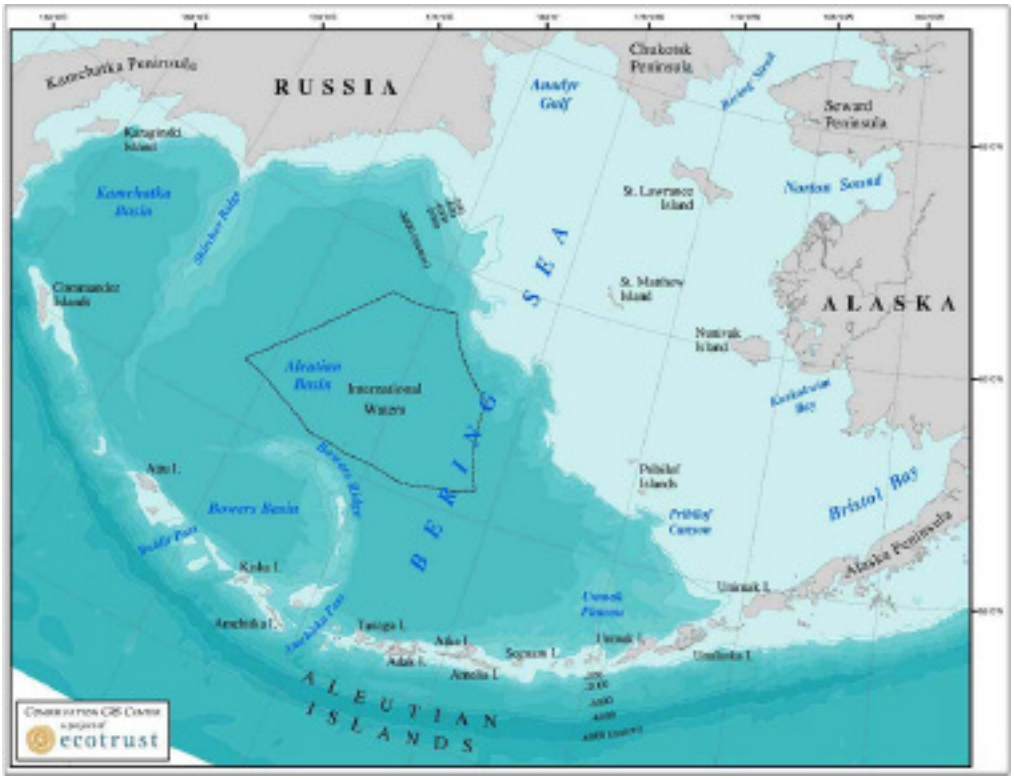

Executive Summary and Recommendations

To the average American or Russian, the Bering Sea is a little known and exotic place—perhaps it is not even clear where to pinpoint this body of water on a world map. To those who depend upon the Bering Sea for sustenance, financial security, and cultural traditions, however, it holds a much more significant place. Even those who cannot find it on a map unknowingly depend upon the Bering Sea for its bounty of fish and other seafood products. The Bering Sea is bounded on the south by the Aleutian-Komandorsky archipelago and nestled between the coasts of Alaska (United States) and Kamchatka, Koryakia, and Chukotka (Russia). The Sea provides America with 40-50% of its total annual seafood production and Russia with 2-5% of its production. Bering Sea fisheries have always been susceptible to change; commercial fisheries conducted in present times are still impacted by intensive commercial reductions of fish and marine mammal populations in the 1950s. Given the Bering Sea's ecological, cultural, and economic importance, it is imperative that this ecosystem be managed using a unified approach, toward the goal of sustainability.

The Bering Sea can be divided into three geopolitical regions: the Eastern and Western Bering, located respectively within the United States' and Russia's Exclusive Economic Zones (EEZs); and the Central Bering Sea "Donut Hole," consisting of international high seas belonging to no single country. Thus, while the Bering Sea is recognized as a single large ecosystem comprised of smaller ecosystems, its management is shared by Russia, the United States, and various international fisheries bodies. While there have been positive management measures taken to address ecosystem stress in all three regions, there is no single unified international management plan that takes into account the entire ecosystem. Instead, the Bering Sea is managed under a complex and disjointed system that focuses largely on commercial extraction. This system, although constantly evolving, is neither sufficiently integrated nor coordinated to ensure that the Bering Sea remains one of the world's most productive ecosystems.

This report will present a brief overview of the Bering Sea ecosystem and the impacts associated with industrial fisheries. More specifically, it will focus on several themes:

- Russian and U.S. management structures
- Commercial fleet structures
- Impacts from specific commercial fishing gear

While there is no simple solution to increasing the effectiveness of fisheries management in the Bering Sea, there are important measures that can be taken immediately to increase the likelihood of preserving this ecologically unique ecosystem. Indeed, there are positive examples on both sides of the Bering from which to draw. Specific recommendations that can be implemented immediately include:

- An effective international agreement and commission to coordinate management
- Increased scientific research and coordination
- A transition to Ecosystem-Based Management across the entire Bering
- Further restrictions on harmful gear, such as bottom trawling and large-scale driftnets, throughout the Bering

The Bering Sea Ecosystem

The Bering Sea is a semi-enclosed northern extension of the North Pacific Ocean that covers nearly three million km^2 and includes unusual geographic features such as an enormous continental shelf with a gentle gradient and seven of the largest submarine canyons in the world. The Bering Sea is fed by water from the Gulf of Alaska in the south. In the north, this nutrient rich water exits the Bering Sea through the Bering Strait into the Chukchi Sea. Water also exits the Bering Sea to the southwest, along the Kamchatka Peninsula. The nutrient rich waters of the Bering support at least 450 species of fish, crustaceans, and mollusks; 50 species of seabirds; and 25 species of marine mammals.[1]

The Bering Sea consists of the Bering Sea abyssal basin, the continental slope, the continental shelf, the islands, the mixing zone along the North Pacific Ocean, and the coastal areas of the U.S. and Russian shores. Along the shelf break is a productive area known as the "Green Belt." This narrow band is thought to extend along both continental shelves (eastern and western) and into the Chukchi Sea. Interactions between upwellings formed by the steep shelf break and tidal transport, canyons, and eddies along the shelf edge create nutrient rich waters and a cascading bloom of life. The unique physical features of the Green Belt have resulted in biological hotspots including the Zhemchung and Pribilof canyons. The area around the Pribilof Islands is considered to be especially biologically rich due to the proximity of these large undersea canyons and nutrient rich waters, which support large concentrations of fish, seabirds and marine mammals.

Benthic – or seafloor – habitat in the Bering Sea consists of living and nonliving substrates. Nonliving substrates include boulders, cobbles, sand waves, and other seafloor components. Living substrates include macroalgae, bryozoans, stalked ascidians, corals, sponges, and anemones. Living substrates such as cold-water corals are extremely slow-growing, and may take over 100 years to reach maximum size. These substrates harbor rich populations of groundfish, and have been documented in association with the life stage of almost all important commercial species.

Bering Sea Fisheries and Fishery Management

Groundfish make up the majority of the catch in the Bering Sea. The major targets of U.S. fisheries are pollock, Pacific cod, flatfish (including yellowfin sole, rock sole, and arrowtooth flounder), sablefish, rockfish, Atka mackerel, halibut, and crab. There are 15 primary commercial targets in the Western Bering: pollock, cod, halibut, herring, perch, Atka mackerel, flounder, Far Eastern cod, goby, skates and sharks, squid, grenadier, salmon, shrimp, and crab. These fisheries are prosecuted with many types of fishing gear; major gear types include pelagic and bottom trawls, driftnets, set nets, Dutch seines, longlines, traps and pots, purse seines, and dredges.

Alaska is the United States' leading fishing grounds, with landings totaling 2.3 million metric tons of fish in 2002. These landings include 1.5 million metric tons of pollock, the largest single fishery in the country, with an approximate ex-vessel value of $210 million. Alaska is also responsible for 92% of the wild salmon production in the U.S. – approximately 237,000 metric tons in 2002.[2] Of the 2.3 million metric tons of total

catch, nearly 2 million metric tons comes from the Bering Sea and Aleutian Islands fisheries management areas.[3]

While there are some similarities between regulations by the Russian and U.S. governments on fishing and fishing gear usage in the Bering Sea, the two countries ultimately take very different approaches to fisheries management. Although U.S. laws include conservation mandates for fisheries and habitat, Russian laws regarding fisheries are in some ways more stringent than American laws. For example, there is a near total ban on bottom trawling in the Western Bering, while harmful bottom trawling continues legally on the U.S. side of the sea. However, Russian law has its own problems. One issue is the lack of requirements for an independent and non-corrupt observer network on Russian fishing vessels. In addition, the uncertainty and lack of transparency that characterize Russia's transition to a market economy also plague the fishing industry. Even though Russia has specific fishing regulations, direct enforcement of these regulations on open waters is often weak and inconsistent. This leads to overfishing and illegal bottom trawling, among other problems.

Bottom trawling has extensively impacted fisheries habitat in the U.S. side of the Bering Sea. Research has shown negative impacts particularly to old-growth corals and other rocky areas that are critical to fisheries habitat. Recent developments on the U.S. side indicate a willingness to begin addressing these issues. The North Pacific Fishery Management Council (NPFMC), a federal commercial fisheries advisory body, reached a unanimous decision in early 2005 to recommend the closure of 375,000 square miles – or 60 percent – of the Bering Sea's Aleutian Island management sub-area. Efforts are still needed to implement this decision, which will help reduce coral bycatch and protect deep water corals near the Aleutian Islands. The decision applies a needed precautionary approach and provides a step toward the ecosystem-based management needed in the North Pacific to reverse the declines of its marine mammals, seabirds, and other plants and animals. Following this important first step, U.S. management agencies should review whether the closure area should be expanded to other areas in the Bering Sea.

Regulatory and management regimes on both sides of the Bering have several shared limitations. One of the most serious issues relates to conflicts of interest between commercial fishing entities and government policy-making and regulation. For example, the NPFMC (as well as all other U.S. federal fisheries management councils) lacks a clause to prevent conflicts of interest, unlike most other federal U.S. regulatory bodies. As a result, commercial fishing representatives are overly influential in allocating quotas and opening areas to fishing. In Russia, it is common for successful entrepreneurs, businesses, and commercial fishermen to promote their own interests into political and regulatory positions in federal regional and local governments. In practice, Russian fishing quotas, total allowable catch levels, and enforcement efforts are highly influenced and manipulated by commercial fishing companies.

International cooperation in management of the Bering Sea ecosystem is complicated by what Russian fishing interests perceive as an ongoing border dispute with the United States. The current observed maritime boundary, known colloquially in Russian as the "Baker-Shevardnadze Line," was agreed to in 1990. However, the Supreme Soviet failed to ratify the border before the collapse of the Soviet Union. The Russian Duma has refused to ratify the agreement, arguing that the boundary deprives the Russian fishing industry of significant pollock stocks. The U.S. Coast Guard and Russian government officially observe the "Baker-Shevardnadze Line," although Russian fishing vessels sometimes cross the line, resulting in vessel seizures and deepened distrust.

Impacts from Fishing Gear

Different fishing gear types have different impacts upon the marine environment. These impacts include both indirect effects, such as reductions of biomass and ecosystem-wide changes in productivity, and direct effects including increased mortality of benthic species, increased food for scavenging species, and habitat loss.

Experts generally agree that bottom trawling has the most extensive impacts on the marine environment. Direct effects include smoothing of sediments, dragging rocks and boulders, resuspension and mixing of sediments, removal of seagrass, damage to corals, and damage or removal of epibenthic organisms.[4]

Studies in Alaska demonstrate that highly trawled areas in the Bering Sea are significantly different than untrawled areas, with the overall diversity of sedentary taxa reduced in highly trawled areas.[5] A survey of various studies both inside and outside Bering Sea waters led the U.S. National Marine Fisheries Service (NMFS) to conclude that bottom trawls cause both short-term changes in infauna, epifauna, megafauna, and substrates as well as persistent changes in megafauna communities.[6] The Fisheries Service also noted that dredges, longlines, pots, and pelagic trawls also cause damage to habitat, but not at the same intensity as bottom trawls. Although bottom trawling is highly restricted in Russia, it is fairly common practice to rig pelagic trawls for use as bottom trawls. Pelagic trawls used as bottom trawls wreak even more destruction on seafloor habitat than traditional bottom trawling.

Large-scale driftnetting also causes significant impacts to the Bering Sea. Although banned for more than a decade in international waters due to a U.N. Convention, large-scale driftnetting continues to be allowed in Russia's EEZ under a bilateral agreement between Russia and Japan. Driftnet impacts include large catches of immature fish and the resultant impact to target species' population structures; the unintended bycatch and mortality of whales, dolphins, pinnipeds, sea birds, turtles, and

sharks; and "ghost fishing," where nets lost at sea continue to entrap marine life.

Although all gear causes impacts to the environment, it is generally agreed that large-scale driftnets in the Western Bering and bottom trawls in the Eastern Bering are causing disproportionate harm.

Recommendations

The negative impacts associated with gear usage in the Bering Sea are only one of many challenges to managing fisheries. Recommendations for specific protections from large-scale driftnets and bottom trawls are simply a piece of the overall puzzle. While calling for an end to these destructive practices is simple enough, complex issues linger over managing an international ecosystem that provides a large yield of economic, cultural, and ecological returns. Larger solutions must therefore be considered.

Specific recommendations on how to achieve a sustainable Bering Sea include:

- *An international agreement and commission to coordinate management of bioresources.* Currently, there is a great deal of disparity and a lack of comprehensive multi-level coordination between Russian and United States regulations on fishing gear and fisheries, rules regarding onboard observers, and enforcement. Only by taking a long-term view on resources management and international cooperation based on an integrated and unified standard for all resource users, can we ensure sustainable Bering Sea fisheries protected in part by habitat and species conservation.

- *Increased scientific research and coordination.* There is a need for more specific data on fisheries and the impacts of gear use, particularly in the Western Bering. Without further studies, it is difficult, for example, to quantify the impacts of legal and illegal bottom trawling on habitat in the Bering Sea. Coordination should be improved between Russian and American scientific communities working in the Bering. This coordination could be accomplished through the establishment of a Scientific Advisory Board as a part of an international agreement on Bering Sea management.

- *Shifting to Ecosystem-Based Management.* An ecosystem-based transboundary management regime must be negotiated and put into place, carefully designed to address the needs of ecosystems, rather than political and business interests.

- *Further restrictions on harmful gear such as bottom trawling and large-scale driftnets.* Restrictions should include both spatial restrictions and conversion to cleaner gear, with the assurance that commercial bottom trawling regulations and fisheries are managed with the parallel goals of minimizing benthic habitat impacts and developing and implementing consistent and ecologically-sustainable transboundary Russian-American agreements. In the Western Bering, driftnets larger than 2.5 kilometers in length should be totally banned in order to bring Russia up to international and U.S. standards, while the Eastern Bering is in need of further research and restrictions on bottom-trawling.

- *Improved enforcement, monitoring of commercial fishing, and observer programs.* Inconsistency and a lack of coordination are the primary issue here. In the United States, current rules on observers require only partial coverage depending on the size of the vessel. In Russia, mainly international fishing vessels are required to have observers on board. Enforcement, while both politically and financially better supported in the United States' EEZ, requires additional technical resources, funding, legislation, and political will in Russia. One of the biggest problems of enforcement in Russia involves illegal bottom trawling; illegally modified pelagic trawls must be stopped and restrictions on traditional bottom trawls should continue to be strictly enforced. Satellite and GPS monitoring are both excellent new technologies that must be better and more broadly utilized in this process. Other countries, such as Korea and Japan must increase their efforts in helping Russia and the United States enforce existing international and regional agreements on fish landings and gear enforcement.

- *Increased collaboration between all Bering Sea stakeholders, resulting in industry outreach to the larger community, especially the indigenous community.* The issue here is not a struggle between conservationists, scientists, and commercial fishing companies, rather an ongoing effort to sustainably manage the Bering Sea's resources for the benefit of all community members as well as the rich life in the sea itself.

- *Creation of an adaptively managed network of marine protected areas, including no-take marine reserves.* Perhaps no recommendation has more potential to protect the Bering Sea than the creation of marine protected areas.

The health and biodiversity of the Bering Sea ecosystem are essential to the livelihoods of people in both the U.S. and Russia. The fish of the Bering Sea provide sustenance to people throughout each nation, and the communities that live along the shores of the Sea - in Alaska, Chukotka, Koryakia, and Kamchatka - depend on its bounty. By implementing these recommendations, we have a vital opportunity to reduce the negative impacts of fishing gear in the Bering Sea and to adopt an ecosystem-based approach that will allow for sustainable and productive management of the Sea.