CONGRESSIONAL TESTIMONY OF

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on

INVASIVE SPECIES

U.S. HOUSE OF REPRESENTATIVES

COMMITTEE ON RESOURCES

OCEANS, FISHERIES, AND WILDLIFE CONSERVATION SUBCOMMITTEE &

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Chairmen Gilchrest & Radanovich, Congressman Pallone, Congresswoman Christian-Christensen, and distinguished members of the subcommittees, on behalf of the more than 700 members of the National Fisheries Institute (NFI), I want to thank you for the opportunity to testify before you on the adverse impacts of invasive marine species on commercial fisheries. I am John Connelly, President of the NFI.

The NFI is the nation's leading trade association for the diverse commercial fish and seafood industry. We are a "water to table" organization, representing fishing vessel owners, aquaculture operations, processors, importers, exporters, distributors, restaurants, and retail establishments. NFI's mission is to ensure an ample, safe, and sustainable seafood supply to consumers.

The introduction of non-native species into marine and coastal ecosystems may adversely affect commercial fisheries in a number of ways: non-native microorganisms may infect native species with new diseases or public health threats, non-native species may alter essential fish habitat, or non-native species may compete directly with or prey upon traditional commercial fish species. At a minimum these affects can force fishermen to alter traditional fishing practices in terms of gear or time/area of harvest. In its worst form, these invasions may reduce otherwise sustainable harvest opportunities. In either situation, invasions by exotic species can cause serious economic harm to the commercial fishing sector.

I would like to focus on three examples of exotic species invasions of marine or coastal ecosystems to highlight the impacts these invasions may have on commercial fisheries, including:

Ø The introduction of Vibrio cholera into Gulf of Mexico oysters via ballast water,

Ø The introduction of rapa whelk into the Chesapeake Bay, and

Ø The introduction of Chinese mitten crab into San Francisco Bay.

Vibrio cholera and Gulf of Mexico Oysters

In 1991, a new strain of Vibrio cholera 01 (V.c.), the bacteria the causes human cholera, was found in oysters and fish in Mobile Bay, Alabama1. The strain of V.c. was identical to the strain responsible for a cholera epidemic in Latin America at that time. The ballast water of ships leaving Latin America and arriving

in Mobile Bay, AL tested positive for the V.c. bacteria2.

While this infection of Mobile Bay was brought under control and no human illnesses occurred as a result, it certainly created considerable concern among both the oyster industry and consumers and highlights the potential threat of invasive microorganism introductions via ship ballast water.

It is estimated that United States ports receive more than 79 million metric tons of ballast water from overseas each year3. Chesapeake Bay alone is reported to receive 10 billion liters of foreign ballast water each year4. With the United States receiving shipments from all over the world, the potential introduction of exotic microorganisms is tremendous. In fact, scientists estimate that, given the diverse array of microorganisms present in ballast water, various animal diseases and human pathogens may be introduced into U.S. coastal waters via ballast water discharges.

The NFI appreciates the efforts of the maritime community to begin addressing this issue through open ocean ballast exchange. We look forward to working with them to further address the issue in the future.

Rapa Whelk in Chesapeake Bay

In the late 1990s, the rapa whelk was detected in the mouth of the St. James River in Chesapeake Bay. The rapa whelk is a mollusk with a heavy, short-spired shell. It is native to the Sea of Japan. Since its detection, everything that scientists at the Virginia Institute of Marine Sciences (VIMS) have learned about the whelk has them concerned that this exotic species poses a serious threat to the Chesapeake Bay seafood industry.

The rapa whelk consumes bivalve shellfish such as oysters and clams. VIMS scientists believe it has the potential to devastate Chesapeake Bay shellfish stocks. A full-grown whelk can consume two large chowder clams per week. The presence of egg masses on bridges, pilings, and commercial fishing gear indicate the rapa whelk is reproducing prolifically in the lower Bay, releasing millions of eggs. If unchecked, there is a real risk that the rapa whelk could spread throughout the Chesapeake Bay, reeking havoc on shellfish stocks such as oysters already struggling against pollution and diseases.

Interestingly, the rapa whelk has edible meat and its eradication may present a new harvest opportunity for Chesapeake Bay watermen. However, this should only be seen as a short-term development. Not only would consumers need to be educated and a market created for whelk meat but this exotic species will require the development of new fishing approaches for area watermen before it could be successfully developed into a fishery. In addition, the broader ecosystem impacts of this exotic species raise serious questions as to its desirability in the Chesapeake Bay, even if it presented a serious and potentially profitable harvest opportunity.

Chinese Mitten Crab in San Francisco Bay

The Chinese mitten crab was first detected in Southern San Francisco Bay by shrimp trawlers in 1992. Since that time, the Chinese mitten crab population in San Francisco Bay has rapidly expanded and it appears likely that the distribution of this exotic crab will involve most of the state of California, according to the Chinese mitten crab control committee as reported to the Aquatic Nuisance Species Task Force.

The introduction of the Chinese mitten crab in Germany in the 1930s caused serious negative impacts on fisheries. The crab proliferated and spread so successfully that fisheries suffered significant losses due to damaged catch and gear.

In California, the Chinese mitten crabs are already adversely affecting salmon and other fish by interacting with and damaging and/or eating juvenile fish being collected to bypass water diversions. The economic impact incurred to the salvage operations amounted to over $1 million. In addition, commercial bay shrimp and crawfish fishermen reported large numbers of the crabs in nets and traps in 1998 and 1999, decreasing catch efficiency and increasing operational costs. In fact, it has been anecdotally reported that these fishermen had to shift their time and area of harvests to avoid Chinese mitten crab and some fishermen reportedly simply stopped fishing in response to unavoidable crab aggregations.

In addition to exotic species invasions of US marine and coastal ecosystems such as those just described, there are other invasive species issues I would like to address including the intentional introduction of an exotic species to restore a fishery or ecosystem function and the accidental release into the wild of a non-

native aquaculture species.

Intentional Introduction of Non-Native Species

In some cases, fishery or regional ecosystem managers may wish to intentionally introduce a non-native species in order to reestablish a key fishery or ecosystem function. The most notable example, of course, is the intentional introduction of Chinese oysters into the Chesapeake Bay. Native Chesapeake Bay oysters have been decimated by historic overharvest and exposure to lethal pollution-based diseases. With the persistent presence of these diseases in the Chesapeake Bay for the foreseeable future, it will not be possible for the native oyster population to restore itself. In the absence of an oyster population, the Chesapeake Bay loses not only an important commercial fishery but also a critical ecosystem function of water purification by these filter-feeding organisms. It has therefore been suggested that managers allow the introduction of a Chinese oyster that is immune to the pollution-based diseases that plague the Chesapeake Bay to restore oyster benefits to the Bay. The current experiment in this regard involves sterile individuals and could be considered an aquaculture operation more than a restocking of the wild population.

That said, this could present a powerful new tool for improving the health of the Chesapeake Bay and restoring an important fishery. For these reasons, the introduction of the Chesapeake oyster seems to make sense for the Chesapeake Bay. It may be necessary, however to continue to ensure a lack of reproductive capability in these introduced oysters, even in the long term. There are concerns that if established in the Chesapeake Bay as a reproducing population, this non-native species could expand into other US coastal waters and compete with or displace other healthy native oyster populations. The benefits as well as the costs, therefore, need to be carefully analyzed before a full-blown stocking effort is implemented.

Non-Native Species Aquaculture

The NFI strongly supports the development of marine aquaculture as an important mechanism to sustainably and affordably increase seafood production. The NFI also believes marine aquaculture operations must be conducted in a manner that minimizes to the greatest degree practicable the potential establishment of a non-native species in a natural ecosystem. This should be done by focusing aquaculture projects on native species or, where non-native species are used, instituting management practices that minimize the chances of an accidental release (e.g. net structure & location) as well as the probability of the release resulting in the establishment of a viable, reproducing wild population of the non-native species (e.g. single gender crops, nutrition deficiencies, triploid genes) .

In conclusion, Mr. Chairman, the NFI is concerned that the introduction of non-native species into US marine and coastal ecosystems presents real challenges that need to be addressed both practically and effectively. We welcome the consideration of this important issue by these subcommittees. Thank you.

Citations

DePaulo A, Capers GM, Motes ML, Olsvik O, Fields PI, Wells J et al. (1992) Isolation of Latin American epidemic strain of Vibrio cholera O1 from US Gulf Coast. Lancet 339:624.
McCarthy SA, McPhearson RM, Guarino AM and Gaines JL (1992) Toxigenic Vibrio cholera O1 and cargo ships entering Gulf of Mexico. Lancet 339: 624-625.
Carlton JT, Reid D and van Leewen H (1995) The Role of Shipping in the Introduction of Nonindigenous Aquatic Organisms to the Coastal Waters of the United States (other than the Great Lakes) and an Analysis of Control Options. Technical Report No. CG-D11-95, U.S. Coast Guard, Washington, DC.
Ruiz GM, Rawlings TK, Dobbs FC, Drake LA, Mullady T, Huq A, and Colwell RR. (2000) Global Spread of Microorganisms by Ships. Nature 408: 49-50.