

Woods Hole Oceanographic Institution

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Should Eastern Oysters Be Put on the Endangered List? Attempt to save a local population stirs national controversy

Eastern oysters in Chesapeake Bay were not as happy as clams, and neither was Wolf-Dieter Busch.

The environmental consultant from Maryland knew that overharvesting, habitat loss, poor water quality, and diseases had devastated a once-abundant wild oyster population. He was “distressed by the slow and disorganized efforts to restore the Chesapeake Bay’s ecosystem,” he said.

“Then the Maryland and Virginia governments indicated that oysters in the Chesapeake Bay were now commercially extinct,” Busch said, and they proposed what he called a “quick fix”—introducing disease-resistant, harvestable Asian oysters. Busch feared that the exotic species would compete with any remaining Eastern oysters for food and space, and maybe even cross-fertilize with them—spelling doom for the wild native species.

In January 2005, Busch filed a petition to the National Marine Fisheries Service (NMFS) to place the Eastern oyster (*Crassostrea virginica*) on the federally protected threatened and endangered species list. To the surprise of many, the uncommon, one-person petition cleared one regulatory hurdle in May. To the surprise of Busch, the petition stirred storms of protest from both environmentalists and critics of the Endangered Species Act (ESA).

'A big hammer'

“The petition was Chesapeake-centric,” said William Walton, shellfish and aquaculture researcher with the Woods Hole Sea Grant and Cape Cod Cooperative Extension programs on Cape Cod, Mass. He noted that placing the oyster on the endangered species list would outlaw commercial and recreational Eastern oyster gathering nationwide, even where they are abundant. It would also prohibit oyster aquaculture and possibly inhibit wild oyster restoration efforts by restricting the search for disease-resistant wild oyster strains to re-seed previous oyster habitats.

The controversy partly stemmed from the way the Endangered Species Act is written. Under the act, invertebrates—unlike vertebrates—can’t be considered endangered in a portion of their range; they must be listed everywhere or nowhere. Also, a petitioner cannot ask that a species be listed as “threatened,” rather than “endangered”; NMFS must make that distinction. A “threatened” designation—what Busch says he sought—would allow flexibility in managing the oyster population, including exempting aquaculture and restrictions in particular regions.

Shellfish farmers from New England to the Gulf of Mexico testified vehemently against the petition before the U.S. House Committee on Resources in July. At the same time, the committee chairman, Richard W. Pombo (R.-Calif.), author of a recently passed House bill that rolls back habitat protection provisions in the ESA, called the petition “a big hammer” and used it as evidence of problems with the act. Environmental groups, according to Busch, said the oyster petition controversy was adding ammunition to attacks on the ESA.

A new twist

“Any individual has the right to (file a petition), but it’s not an everyday occurrence,” said Teri Frady, a Fisheries spokesperson in Woods Hole, Mass. “The agency responds to all petitions,” though many never get past the initial 90-day review. Busch’s petition did, and NMFS assembled a team of state and federal fisheries experts to conduct a “full status review” of the species, using “the best available scientific and commercial information” on historic and current populations, conditions and protection efforts, habitat destruction, harvesting levels, disease,

predation, and possible subspecies.

The team's report was due before January 2006. But on Oct. 13, Busch withdrew his petition. Busch said he was "blindsided" by the barrage of negative reactions to his petition by people who did not fully understand the act or the petition process and concluded that his petition would lead to "endangered" status and the most severe restrictions for the eastern oyster.

Marta Nammack, National ESA Listing Coordinator at NMFS, said she could not remember any previous time when an ESA petition was withdrawn. Nevertheless, NMFS has decided that the already established review team will proceed with its study of the eastern oyster, including in Chesapeake Bay.

Which is precisely what Busch wanted in the first place.

— [Kate Madin](#)

Introducing...the Asian Oyster

As native oysters decline, officials seek to restore fishery with disease-resistant species

Hoping to save the economically important Chesapeake Bay oyster farming industry, Maryland and Virginia have proposed replacing declining native eastern oysters with an introduced species: Asian oysters. Larger, faster-growing, and more disease-resistant than the native species, Asian oysters sound too good to be true—and indeed they might be.

Researchers in both states are raising sterile Asian oysters (*Crassostrea ariakensis*) and placing them in parts of the bay in highly controlled experiments, to find out how they grow, compete with native oysters, and whether they avoid disease and predation.

That, along with long-standing pollution concerns about the bay itself, spurred Wolf-Dieter Busch, to file a petition asking the National Marine Fisheries Service (NMFS) to designate the eastern oyster (*Crassostrea virginica*) as a federally protected threatened or endangered species. That triggered the formation of a team of fisheries experts to assess the status of the eastern oyster species and, if necessary, propose ways to protect them.

Fears about a takeover

Busch, owner of Environmental Initiatives Advisory Services in Maryland, believes that introducing Asian oysters to Chesapeake Bay is unwise because "it will cause stress on the remaining eastern oysters through competition for limited habitats," and because it is not clear that the Asian oyster, once released, will remain sterile. Introducing Asian oysters, Busch says, "may also result in hybridization between the species. And how long would it take for the Asian oyster to be transported out of the Chesapeake to other eastern oyster habitat sites along the Atlantic and Gulf coasts?" Some scientists agree with that assessment.

"Oyster larvae spend two to three weeks drifting on currents before they settle," said William Walton, shellfish and aquaculture researcher with Woods Hole Sea Grant and Cape Cod Cooperative Extension. "What are the implications of two states making that decision potentially for an entire coastal range?"

The once legendary abundance of eastern oysters fell precipitously in the late 19th through the 20th centuries, and Atlantic coast harvests of wild oysters are now 2 percent of historic high levels. Within Chesapeake Bay, harvests are less than 0.2 percent of historic levels.

Generations of overharvesting have driven down native populations. On top of this, the oyster has been dealt

*"O Oysters," said the Carpenter,
"You've had a pleasant run!
Shall we be trotting home again?"
But answer came there none..."*

—from "The Walrus and the Carpenter" by Lewis Carroll

severe blows by two introduced protozoan diseases, known as Dermo and MSX, which kill nearly all eastern oysters in saltier areas of the Chesapeake before they grow to harvestable size. Because of disease, attempts to restore commercially viable populations of native oysters in the Chesapeake have been mostly unsuccessful.

Cleaning the water as they eat

As wild oysters have steadily disappeared, oyster harvesters have increasingly turned to aquaculture for a reliable yield. Oyster farming is now a successful part of all shellfish aquaculture from Maine to the Gulf of Mexico.

In Massachusetts, "the income from oysters is about 50 percent of all aquaculture," Walton said. "Oysters command a higher price than clams, and they are flexible to being grown in different areas. They can be grown on various bottoms or suspended in the water, shallow or deep, and in bays."

In Chesapeake Bay, culturing native oysters—by interested citizens and commercial growers—is also an essential part of future plans to maintain the species and clean the bay's water, since oysters are filter-feeding animals that remove large amounts of algae from the water. However, disease kills farmed oysters as well as wild, and that is why there is strong interest in bringing in Asian oysters for aquaculture.

"Growers will select for disease-resistant [native] animals and breed them," Walton said, "but that takes longer."

Asian oysters could also contribute substantially to cleaning the bay, if enough of the sterile ones can be grown in hatcheries and controlled once they're in the environment. But "introductions of exotic species have generally caused more problems than benefits," Busch warned, "and usually cannot be reversed."

Researchers are also investigating whether genetic differences they see in oysters are enough to consider the Chesapeake region's native oysters a distinct "subspecies" that could then be regulated by NMFS separately from other regions. But research to determine this takes time, and by law, NMFS had to rule on Busch's petition by January 2006. On Oct. 13, Busch withdrew his petition. NMFS now has the option to continue the eastern oyster species status review without deadlines.

— [Kate Madin](#)