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4-9-2007

UNH researchers plan to launch this 20-ton prototype for a remotely operated, commercial-scale fish feeder this spring.
Courtesy photo

UNH working on offshore fish farming

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As a growing segment of the world population consumes fish on a regular basis, the United Nations predicts a 40 million ton global seafood shortage by 2030 unless something is done.

The projections have prompted a recent proposal by President Bush that would allow fish farming in federal waters for the first time. Fish farms already operate on inland and coastal waters within 3 miles of shore and are governed by state laws.

"As more and more consumers become aware of how they can improve their health by eating seafood, demand for seafood will surely keep rising," U.S. Commerce Secretary Carlos Gutierrez said recently in announcing the president's proposal. "The best way to meet that rising demand is by managing wild fisheries effectively and by expanding our seafood production through aquaculture. One of the biggest barriers to faster growth is a lack of access to suitable places to set up an open ocean farm."

However, offshore aquaculture is still three to five years away from being a cost-effective fish farming method in New England, according to Rich Langan, director of the University of New Hampshire's Atlantic Marine Aquaculture Center.

"It's a pretty challenging undertaking," Langan said. "The technology that works for near-shore aquaculture isn't as effective as soon as it's exposed to the wind and waves of the open ocean. You can creep out with some improvements, but once you get into fully exposed waters, you're talking about a new type of technology."

Langan and other researchers at UNH are working to develop the submerged system technology needed for successful offshore aquaculture.

Of the $70 billion worldwide aquaculture industry, China accounts for 70 percent of the production and the rest of Asia covers another 20 percent. The United States accounts for only 1.5 percent of the market and spends roughly $8 billion a year importing fish from other countries.

The proposal aims to close that gap.

"There aren't that many places left where you can develop fin fish cage culture in protected waters," Langan said.

Near-shore conditions are often less than ideal for aquaculture. Issues, according to Langan, can include problems with shorefront property owners, competition for space, and fluctuating water temperatures.

Researchers at the Atlantic Marine Aquaculture Center have been working for nearly a decade to develop fish cages and feeder systems at a site in state waters near the Isle of Shoals. Langan said the site provides them with ideal conditions to test offshore technology without having to travel long distances off the coast.

"It had all the characteristics we were looking for in a test site," Langan said. "It's truly representative of an exposed site in the Gulf of Maine."

The research conducted at the site, which is funded by the National Oceanic and Atmospheric Administration, is focused on four main areas: technology development, biological research, environmental impacts and economic assessment.

Langan said they've learned from near-shore aquaculture that there are some potential environmental issues regarding waste from fish and excess feed, and they are devoted to finding ways to mitigate those problems.

However, the ultimate goal is to develop a fully operational system that's easy to use.

"Companies are interested in buying turnkey systems," Langan said. "That doesn't exist right now for offshore technology, but we're working on it."

If passed, the president's proposal would allow the Commerce Department to issue 20-year permits to companies raising fish offshore. The proposal also allows for states to ban fish farming up to 12 miles off their coast.

"Our research over eight years indicates that aquaculture in exposed ocean conditions can be a clean, sustainable practice," Langan said.

"Further research and development will help build and regulate an offshore fish farming industry that relieves pressure on wild fisheries, satisfies consumer demand, and has minimal environmental impact."