Developing Fish Resources Can Offset U.S. Trade Deficits

Eight major fisheries resources scheduled to be developed in the U.S. 200-mile fishery conservation zone during the next 10 years could reduce the United States' annual trade deficit by $1.7 billion, according to Terry L. Leitzell, (former) NOAA assistant administrator for fisheries. Leitzell told the House subcommittee on Fisheries and Wildlife Conservation and the Environment in early June that the fisheries trade deficit currently runs $2.5 billion yearly. The subcommittee was hearing testimony on amending provisions of the Merchant Marine Act of 1936 establishing a capital construction fund that is used by the fishing industry to develop shoreside facilities.

Under the present law, U.S. merchant and fishing vessels may defer payment of Federal taxes on income set aside annually in special accounts for the future purchase of a vessel. All deferred taxes eventually are regained by offsetting reductions in the depreciation allowances for the property acquired.

"We estimate that the development of the Pacific mackerel, Atlantic mackerel, Pacific whiting, Atlantic whiting, Atlantic squid, Gulf of Mexico groundfish, Atlantic groundfish, and Hawaiian fisheries will increase domestic landings by 2.5 million metric tons a year," Leitzell said. That will bring an additional $782 million annually in vessel revenues, create more than 43,000 permanent jobs and add $1.2 billion yearly to the gross national product, he noted.

Leitzell told the lawmakers that most of the fishery resources involved in the eight major developments have been heavily fished for years by foreign nations whose fishing vessels and processing motherships come across two oceans each year to do so. He noted to the subcommittee that the Magnuson Fishery Conservation and Management Act gives the United States the ability to restrict foreign fishing operations within 200 miles of its coastlines and provides it with a mandate to develop resources currently underutilized by the domestic industry.

Hormone Research Aids Pacific Salmon Culture

Aquaculture companies engaged in commercial production of coho salmon, *Oncorhynchus kisutch*, in the Pacific Northwest see new hope for cutting their economic losses, thanks to a hormone control research project being conducted jointly by Washington Sea Grant (WSG) and the National Marine Fisheries Service (NMFS). "Companies that grow young salmon in freshwater hatcheries and then transfer them to seawater net pens or release them into the ocean have found that sometimes as many as 80-90 percent of the fish will either die or they will simply not grow after being transferred," says Walton Dickhoff, one of the researchers at the University of Washington, adding, "This is obviously a financial blow to aquaculture companies."

Workers in the WSG/NMFS project, however, have discovered that thyroid hormones play a critical role in readying the young salmon for entry into seawater. "If changes in the levels of thyroid hormones in the blood of juvenile coho salmon are measured, it is possible to predict the correct time for transferring the salmon from fresh to salt water," says Dickhoff. Knowledge of the blood concentration of thyroid hormones can reduce the economic loss that results from too early or too late transfer of the fish. This technique of hormone measurement is presently being tested by several sea-ranching companies in the Pacific Northwest and, according to Dickhoff, it looks very promising.

Another area in which the use of hormones appears fruitful concerns the artificial acceleration of spawning of adult salmon. "The supply of eggs for salmon aquaculture operations in state hatcheries is a continual problem," says Stacia Sower, another WSG researcher. "Unfortunately, when adult salmon return to freshwater hatcheries, they often do not spawn before they die." Sometimes, the early death is due to outbreaks of disease, and in other cases, the reproductive organs do not fully mature. According to Sower, research has shown that if the fish are injected with a combination of a brain hormone (luteinizing hormone-releasing hormone or LHRH) and a pituitary gland hormone (gonadotropin), the adult salmon will spawn earlier than normal and release all of their eggs before they die.

"This hormone treatment allows aquaculture companies to take a larger number of eggs and thus reduces their dependence on public hatcheries for their supply," says Dickhoff. Furthermore, obtaining eggs at an earlier date allows an earlier start for the freshwater growth of young salmon and since juveniles can be released at a larger size, a greater number of fish may return.