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HABITAT ENCHANCEMENT TO INCREASE CLAM PRODUCTION

BACKGROUND

Oregon's estuaries are small totaling only 41,500 acres of which 18,300 acres are tidelands. Over the years man has filled nearly 1,900 acres (10%) of our esturaries.

Of the 16 major estuaries in Oregon 11 contain clams and of these, 7 provide most of the recreational clamming. Several surveys since the 1960's reveal an alarming trend in the amount of pressure put on our clam stocks. In 1960, an estimated 10,000 digger trips were expended in Yaquina Bay. In 1971, 11 years later, we estimated over 24,000 digger trips were expended to harvest clams. A similar increase was observed in Garibaldi Flat in Tillamook Bay. In 1963, an estimated 171,000 clams were harvested and in 1971 over 390,000 clams were removed from the same clam bed. A coastwide survey of the recreational use of our estuaries in 1971 revealed an estimated 103,400 clam diggers expended nearly 152,000 hours of effort to harvest 1.8 million clams.

In 1977, due to a concern about the status of our clam stocks in several major clam beds, the Commission reduced the bag limit from 36 to 20 bay clams per person. Our

surveys since 1977 shows clamming activity and production has remained relatively stable with no apparent trends.

Over the years clam stocks in Oregon have been severely impacted by estuarine habitat alterations. Our data show this to be the case. An example is Sally's Bend in Yaquina Bay. In 1960, this tideflat supported a recreational and commercial clam fishery and produced an estimated 88,000 clams. In the late 1960's, a major landfill was placed on the downbay portion of this tideflat. This fill apparently changed the current patterns because today extensive beds of mud shrimp inhabit the tideflat and few clams remain. The construction of the South Beach Marina also had a significant impact on clam digging in Yaquina Bay. These habitat alterations are not unique to Yaquina Bay. Other factors including poor or sporadic recruitment for the gaper clam and limited digger access to popular clam beds have also restricted the continued expansion in the recreational clam fishery.

It should be pointed out that not all estuarine alterations have had a negative impact on the production of clams in our estuaries. An example being the dredge spoil islands that have been created by the U.S. Army Corp of Engineers during channel dredging or maintainance. Our records shows some of the most productive and popular clam digging areas in the state are on these spoil islands.

Another positive aspect to the future of bay clams has been the recent progress made in mariculture and hatchery production of clam seed. Today, commercial shellfish hatcheries are capable of producing several species of clams for clam enhancement programs.

To complete this background statement, I should point out during the 1970's we conducted a comprehensive survey of the distribution and abundance of both the intertidal and subtidal clam stocks in each of our clam producing esturaries. We also collected data on vegetation and substrate types. These factors help provide background support for this proposal.

OBJECTIVES

1. To determine the feasibility of creation of tideflats to provide habitat for native clams.
2. To determine the feasibility of releasing Manila littleneck clams or other native species to improve recreational clamming.

RESULTS AND BENEFITS EXPECTED

Technology is presently available to produce large numbers of Manila clams in shellfish hatcheries. These clams are available through commercial outlets. Lee Hanson, owner of Whiskey Creek Oyster Hatchery, has donated several

million seed clams to our Department during the past several years. We have field tested various methods of releasing these clams and have realized survival rates as high as 85% 3 years after release. The Washington Department of Fisheries and the University of Washington have also conducted similar field tests with the Manila clam with promising results. As a result of our releases, today we have evidence of natural recruitment from Manila clams in Netarts Bay.

To proceed with our enhancement studies we would like to examine the feasibility of creating an entirely new clam bed. We propose to modify a tideflat in front of the Hatfield Marine Science Center (HMSC), commonly called the OSU boat basin, into a clam bed. We selected this site because of the good water quality (high salinity and protection from severe wave action) and its proximity to the HMSC and our office. The tideflat is several acres in size and is currently covered with soft sand. Ghost shrimp inhabit portions of the tideflat. The removal of about six feet of sand and the placement of several feet of dredge spoils over the tideflat should provide excellent habitat for natural clam recruitment. The tideflat would also be of sufficient size to provide continued field testing of planting Manila clams. The project also lends itself well to the educational aspects of the HMSC. Volunteer help

should also be available from local high school biology students wanting hands on experiences. With proven successes, this program could very easily be expanded to other bays.

Another benefit might be the use of this concept as mitigation for estuary alteration. The Department is constantly being asked by the various ports as to where they can dispose of dredge spoils.

A final point should be made of the potential value of this type of enhancement. In several areas of Hood Canal on Puget Sound, Washington, habitat alteration has produced nearly a 30% increase in Manila clam production on commercial grounds. As a result, production in excess of \$100,000/acre/year are being realized. These successes have prompted the WDF to redirect a portion of their clam hatchery production from geoducks to Manila clams.