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The Tillamook Bay basin includes five major tributaries (Miami, Kilchis, Wilson, Trask, and Tillamook rivers) all of which provide fall/spring Chinook, coho, chum, winter steelhead, and coastal cutthroat trout to saltwater and/or freshwater sport and commercial fisheries. Contribution of these fish to sport and commercial saltwater fisheries occur from along the Oregon Coast northward to Alaska. Freshwater fisheries occur in Tillamook Bay upstream into each of the 5 major tributaries. Populations of wild Chinook and coho salmon vary widely in Tillamook Bay, but most recent preharvest estimates are approximately 28,000 for fall Chinook and approximately 18,000 for coho salmon (Chris Knutsen, Oregon Department of Fish and Wildlife, Personal Communication).

These sport and commercial fisheries constitute an economic engine for coastal communities such as those located in Tillamook County. Tillamook County freshwater and saltwater, sport and commercial fisheries are estimated to generate $35 million dollars in travel generated expenditures annually and local expenditures of $2 million dollars (Dean Runyon and Associates, 2009) Freshwater angling occurs among 3 major basins that occur predominately in Tillamook County (Nehalem, Tillamook, and Nestucca), as well as widely distributed freshwater lakes. Most of the saltwater angling in the county occurs out of Tillamook Bay via the Port of Garibaldi, the busiest Port on the North Coast outside of the Columbia River.

More so than any other salmonid species that occurs in the Tillamook Bay basin, Chinook salmon (both fall and spring races) depend on estuarine habitat for juvenile rearing prior to entering the ocean. Increased body growth from estuarine rearing has been directly correlated with smolt-adult-survival (Riemers, 1978) in Oregon coastal estuaries. It is believed that estuarine rearing habitat for juvenile Chinook salmon in Tillamook Bay is at carrying capacity (Nicholas and Hankin 1988). This density-dependent bottle neck (or limiting factor) stems from the extensive loss of marsh and other wetland habitats utilized by juvenile Chinook for foraging and cover. The Tillamook Estuaries Partnership (part of the EPA's National Estuary Program) has estimated that over 85% of these wetland rearing habitats have been lost as a result of the extensive diking, dredging, and filling that occurred since the beginning of Euro-American settlement in the 1850's.

Part of the substantial economic benefit derived from the proposed Oregon Solution's project comes in the form of reducing the juvenile Chinook salmon production bottleneck driven by the historic loss of estuarine rearing habitat. Said another way, increases in juvenile Chinook rearing habitat in Tillamook Bay will result in increased production of

adult spring and fall Chinook. Increased adult Chinook abundance will make more fish available for sport and commercial harvest and provide a net economic benefit to the county and elsewhere. Increased production would not necessarily be limited to Chinook salmon alone. Coho salmon, chum salmon, and coastal cutthroat trout populations would all likely receive some benefit to improved quality and quantity of rearing habitat; however, habitat-related density-dependant effects have not been demonstrated as clearly for those species.

A simplistic model for very conservatively estimating a portion of the fishery-related economic benefits of implementing the Oregon Solutions Project is to first develop an estimate of the additional adult fall Chinook produced by creating an additional 500 acres of rearing habitat that expands the capacity for wild juvenile production in Tillamook Bay. Under current conditions, National Wetland Inventory maps indicate that there are approximately 1,800 acres of wetland habitats available to rearing juvenile fall Chinook salmon. These include salt marsh, freshwater marsh, tidal channel, and stream associated wetland fringe and shallow water habitats. The 500-acre Oregon Solutions Project would bring the total to 2,300 acres, a 28% increase in potential rearing fall Chinook occupancy for Tillamook Bay. Assuming that (1) habitat utilization is non-selective and juveniles distribute equally among newly created habitats; (2) other density-dependent factors remain static, and (3) there is direct 1:1 relationship among juvenile habitat quantity and adult production, then it is likely that a 28% increase in habitat could produce an equivalent percentage of additional adults. In this case, 28% more adult Chinook (on average) corresponds to approximately 7,800 more adult fall Chinook available for potential harvest.

Estimating the economic value of 7,800 additional adult fall Chinook for freshwater sport fisheries can be derived by applying the observed average 40% harvest rate (determined by ODFW creel surveys, and supported by punch card returns and spawning escapement data) to the additional production. This produces 3,120 additional adult fall Chinook in the Tillamook Bay Basin freshwater sport harvest. In the 2010 Hatchery Reform Report (ODFW 2010) it was estimated that each sport caught adult fall Chinook in Tillamook Bay provided a net economic value of $95.00 per fish. This brings the net economic value of the additional adult fall Chinook production to $296,400 annually.

Estimating the value of commercial and sport harvest in saltwater fisheries is more problematic given that most of the harvest occurs to the north of the Oregon Coast. Certainly, factoring in additional saltwater harvest of fall Chinook, as well as other salmon (i.e. spring Chinook and coho) harvest that benefit from the Oregon solutions project would provide substantial additional economic benefit to the Tillamook Bay basin area.

Please contact me if you have additional questions.

Sincerely,
Rick Klumph
North Coast Watershed District Manager

References

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