Fish Health Assessment of Oregon Coastal Coho Salmon Stocks

The susceptibility of coho salmon to pathogens is varied and highly dependent on environmental and physical factors that may affect both natural and hatchery populations. Health information of naturally reared coastal coho salmon stocks is sparse due to limited sampling and thus it is difficult to ascertain the true impact of disease agents in the overall health status of these populations. Nevertheless, some inferences can be made from the limited naturally reared fish health data and the abundant hatchery reared health data.

Due to its presence in salmonids in all coastal systems, *Renibacterium salmoninarum* (the causative agent of Bacterial Kidney Disease) has the highest potential for impacting these stocks. The pathogen has been detected from naturally reared juvenile coho salmon from the Umpqua, Alsea, Yaquina and Siletz rivers and Bales, Bentilla and Fourth of July creeks but sampling has not occurred in the majority of the watersheds. Other bacterial pathogens may have an impact but only under severe, specific conditions such as high water temperatures and low water flows. Barring major environmental problems (high water temperatures, low water levels), external parasites will most likely have low impacts on naturally reared coastal coho salmon populations. Culturable viruses have not been detected and EIBS virus is of low concern in coastal populations.

When fish are present in high densities, in either hatchery or natural environments, transmission of disease agents among fish in a population increases. This is especially the case under extreme environmental or rearing conditions. When pathogens such as *R. salmoninarum*, *Flavobacterium psychrophilum* (causative agent of Bacterial Coldwater Disease), *Flavobacterium columnare* (causative agent of columnaris disease) and a variety of external parasites and fungi become established in a population, disease and increased pathogen transmission can occur. In natural environments little beyond water flow increases can be done to ameliorate disease events. In hatchery populations steps can be taken to control disease agents to either reduce the likelihood of disease occurring or by applying therapies to control disease outbreaks and thus reduce pathogen numbers.

To ensure that disease agents can be controlled and to reduce the amplification of these agents, the Department adopted two policies in 2003 that will help reduce the levels of pathogens entering natural waters from hatcheries. This will reduce the impact that hatcheries could have on naturally reared stocks. Continued adherence to hatchery practices as adopted in the Fish Hatchery Management Policy will reduce stress in fish populations and thus enhance their resistance to pathogens. Under the Fish Health Management Policy the introduction, amplification, and dissemination of disease agents is to be restricted in hatchery-produced coho salmon (hatchery-produced stock or naturally-produced native stock) and in natural environments by controlling egg and fish movements and by prescribing a variety of preventative, therapeutic, and disinfection strategies to limit the spread of disease agents in fish populations of the state. This is achieved by conducting fish inspections to detect disease agents

in hatchery facilities and natural environments and by containing or treating these agents to minimize impacts on fish populations.

Application of the rules in the above policies will produce healthier fish populations and thus greatly reduce the impact disease agents may have on naturally reared fish in coastal streams. Our current knowledge of the impacts of disease agents on naturally produced coho salmon suggests the risks to the ESU are minimal. Barring significant changes in environmental conditions, current policies should protect both hatchery and naturally-produced populations from the disease agents that can potentially impact coho salmon.