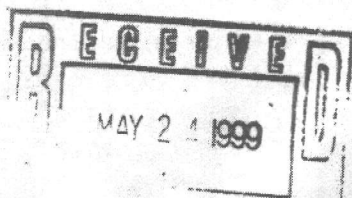


8 May 1999



Dr. Ron Teissere
Assistant Division Manager, Aquatic Resources
Washington State Department of Natural Resources
1111 Washington Street SE
PO Box 47027
Olympia, WA 98504-7027
Subject: Review of Draft Supplemental EIS on geoduck harvesting

Dear Ron:

Thank you for the opportunity to sit down with you, your staff, and WDFW staff on April 9 to discuss the preliminary interpretations and conclusions in the Draft Supplemental EIS on geoduck harvesting relative to issues of impact on juvenile salmon (specifically of ESA concerns). Since then, I have had the opportunity to examine the background information that you provided at the April 9 meeting and sent subsequently (April 12); these sources are listed at the bottom of this letter.

You have obviously taken considerable time, effort and thought to evaluate the potential impacts from all aspects of geoduck harvesting, and I believe have incorporated this information into best management practices regulating leasing and harvesting criteria. Most of your considerations encompass mechanisms of impact to juvenile salmon during their initial stages of estuarine residence. Depending upon the methods, practices, and extent of geoduck harvesting, juvenile salmon migrating along Puget Sound and associated shorelines are potentially vulnerable to a variety of effects that could be associated with geoduck harvesting, including: (a) direct impact to salmon exposed to sediment plume, (b) alteration of migratory behavior when encountering the sediment plume generated by water jet removal of the clams, (c) sedimentation of intertidal habitat (e.g., eelgrass, *Zostera marina*) important to juvenile salmon, (d) cumulative loss of primary production due to turbidity shading by sediment plume, and (e) attraction or aggregation of potential predators on juvenile salmon. We discussed all but the latter during our April 9 meeting.

I am restricting my evaluation of impacts to juveniles of ocean-type salmon (e.g., chum, chinook and to some degree pink, *O. keta*, *O. tshawytscha*, and *O. gorbuscha*, respectively) because during their early marine life history when migrating as fry (30-80 mm FL) they are confined to estuarine and nearshore shallow-water

habitats. As such, they are susceptible to nearshore impacts that alter this behavioral mandate or reduce critical habitat attributes such as the composition and production of their prey resources and refugia from predation (e.g., vegetative structure provided by eelgrass, etc.). Some of this assessment may also apply to larger fish (fingerlings and smolts >50-80 mm FL) that occupy open-water habitat but to a lesser degree and through fewer mechanisms (e.g., a and e, above).

If, as portrayed in our meeting and in the material provided me, the management of geoduck leasing and harvesting by WDNR and WDFW adheres to the requisite criteria and monitoring thresholds, I consider the impact to juvenile ocean-type salmon to be comparatively minimal or non-existent. The exclusionary principle of not allowing leasing/harvesting in shallower water than -18 ft MLLW or 200 ft distance from shore (MHW), 2 ft vertically from elevation of lower eelgrass margin, and within any region of documented herring or forage fish spawning should under most conditions remove the influences of harvest-induced sediment plumes from migrating salmon. As the available information indicates that sediment plumes do not (or are not allowed to?) enter the

add to SEI



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