

# RESPONSIVENESS SUMMARY

**PUBLIC COMMENTS TO THE  
DECEMBER 2000 RE-ISSUE OF THE DRAFT SUPPLEMENTAL  
ENVIRONMENTAL IMPACT STATEMENT  
THE PUGET SOUND COMMERCIAL GEODUCK FISHERY**



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**  
Doug Sutherland - Commissioner of Public Lands



Washington  
Department of  
**FISH and  
WILDLIFE**

May 23, 2001

**RESPONSIVENESS SUMMARY**  
**To Public Comments on the**  
**December 2000 Re-Issue of the Draft Supplemental Environmental Impact**  
**Statement**  
**The Puget Sound Commercial Geoduck Fishery**

The DSEIS was re-issued for public comment on January 22, 2001 and included four documents for review:

1. The Draft SEIS for the Puget Sound Commercial Geoduck Fishery
2. The Puget Sound Commercial Geoduck Fishery Management Plan
3. Responsiveness Summary to the draft SEIS
4. Appendices to the draft SEIS.

The comment deadline was February 23, 2001. The notice of the availability of the re-issued draft supplemental environmental impact statement (DSEIS) for the Puget Sound Commercial Geoduck fishery was mailed to 135 organizations, which included; 20 cities, 20 counties, ten port districts, 14 environmental organizations, 11 state and federal agencies, 6 geoduck purchasing companies, 18 Tribes, three academic programs, four shellfish industry organizations, 19 newspapers, the Seattle Daily Journal of Commerce, and The Fisherman's News. Legal notices were published in 17 newspapers throughout the area where geoduck harvest occurs. Copies of the DSEIS were initially distributed to the 92 entities or individuals. Copies of the DSEIS were sent to the Kitsap Regional Library to distribute to their regional branches. Kitsap County was given 50 additional copies for distribution (per their request). In addition, 3 copies of the DSEIS were sent out upon request. Comments were received from the Hood Canal Environmental Council, Kitsap County Department of Community Development, Applied Environmental Services, Inc., Golder Associates Inc., the Washington Department of Fish and Wildlife, six citizens, and one geoduck harvester.

We appreciate the time and effort people took to provide comments to the re-issue of the DSEIS. Staff from the Department of Natural Resources (DNR) and the Washington Department of Fish and Wildlife (WDFW) developed the following responses to the comments we received.

***1. Hood Canal Environmental Council, Seabeck, WA***

1. We agree that the estimate of the total statewide geoduck populations is a rough estimate based on very limited data. The reader should view this estimate as a “best-guess” perspective on the total distribution of geoducks, and the DSEIS has clearly stated the caveat that –systematic geoduck surveys have not been conducted on subtidal lands shoreward of the –18 ft. and seaward of the –70 ft. water depth contours. This information is not used in any way for estimating harvest levels, contributions to recruitment or for any other management decisions concerning the geoduck fishery. It is reasonable to assume that at least some larvae from geoduck populations outside the –18 to –70 foot harvest range may be available for recruitment in these harvest areas. But it is important to note that this assumption is not considered in the model-based management of the fishery.

- Fishing quotas are based on fishable quantities (surveyed commercial stocks) making these calculations extremely relevant. The reader should not assume that fishing areas are going to be extended into deeper or shallower areas. If this were to be considered, an environmental analysis, including re-calculating fishing quotas, would precede opening these areas for fishing. Also, life history and other biological studies would have to be carried out on geoducks in these depths, since the current model-based harvest rate is based on life history data from geoducks between -18 ft mean-low-low-water (MLLW) and -70 ft. uncorrected.
2. The reviewer is correct in assuming that small geoducks living next to adults are inadvertently displaced by the harvest activities. We have made assumptions as that recruits are lost during harvest, in the selectivity parameter of the equilibrium yield model. We recognize this as a major impact resulting from harvest (third paragraph on page 16 of the DSEIS). When calculating biomass, only geoduck siphon shows observed during surveys are counted to estimate the geoduck biomass. There are no additions to the biomass based on the assumption that there are immature geoducks on tract that are not observed during a survey. Recruitment may occur throughout the tract during harvest, and we cannot assume that all recruits are destroyed during harvest. Recruitment resumes in areas of the tract where harvest of adults has already occurred. However, there is no dependable way to survey juvenile populations on a tract at a given time to empirically verify juvenile mortalities and recruits. The recovery study described in section 3.4.1.1 and Appendix 2 indicates that recruitment is occurring on fished tracts subsequent to fishing.
  3. The reviewer is incorrect in assuming that up to 100% of the population of a tract could feasibly be harvested. Geoduck managers have historically limited harvest to 80% of the surveyed biomass (the Tribes and state recently agreed to harvest down to only 65%) or until a density of .04 geoducks/sq.ft is reached. Post-harvest surveys and landings data from 1985 to 1998 show an average of 72% of the harvestable-sized geoduck population is removed during one harvest cycle from the individual tracts being fished (see last paragraph on page 16 of the DSEIS). It is not feasible for the divers both physically and economically to harvest 100% of the geoducks on a tract.

Both the equilibrium model (Appendix 3) and the recovery study (Appendix 2) currently suggest that the 2.7% annual harvest rate is sustainable over the long term. The model for calculating total allowable catch does not promote over fishing nor do the management practices of the state. If there were unreported harvest, as described in recent newspaper articles, the 2.7% harvest rate could be exceeded. The state and Tribes are completing geoduck management plans that include additional management practices that deter over fishing due to unreported catch. In addition, the state has under-harvested its total allowable catch by over 2 million pounds during the last five year (which means we are actually fishing at less than a 2.7% harvest rate).

State and Tribal managers have considered alternative harvest rates both greater and lesser than 2.7%, as noted on pages 44 (Table 5) and 46 of Appendix 3 to the DSEIS. One alternative associated with a lower harvest rate was the  $F_{50\%}$  strategy, but biologists recommended the  $F_{40\%}$  strategy based on a review of the literature and the considerations specific to geoduck stock assessment.

4. (1 on reviewer letter) Most if not all of the fish populations referred to by the reviewer are managed differently, fished differently and had much more fishing pressure (both commercial and recreational). We agree with the reviewer that we lack complete knowledge of the Puget Sound marine ecosystem — this will always be the case — and therefore we put emphasis on precautionary management strategies. Just a few of the many examples mentioned in the DSEIS include spawner-based rather than yield-based harvest rates, precautionary rules regarding herring spawning grounds and eelgrass beds, consideration of bald eagle nesting, and the requirement for statistically rigorous pre-fishing biomass estimates.

## 2. *Renee Beam, Kitsap County Department of Community Development*

1. To correct the reviewer, DNR does not issue leases for geoduck harvest and have not issue harvest leases for over 25 years. DNR auctions quotas from the tracts that will be harvested. The reviewer is also incorrect in assuming that “the success of the program depends on the revenue that is generated, ...” The success of our geoduck program depends on maintaining sustainable stocks of wild geoduck for the benefit of the citizens of the state. The reviewer also assumes that the management scheme “opens the door for opportunities to manipulate the system.” The County’s comments are based on subjective opinions regarding the state’s ability to be responsible resource managers. The reviewer has revealed no information to substantiate any incidents of DNR staff “manipulating the system.” DNR and WDFW are committed to doing an effective job of managing a sustainable geoduck fishery.

The budget information the reviewer seeks varies from biennium to biennium. The reviewer can obtain the most recent budget appropriation for WDFW from the legislative web site.

2. To correct the reviewer, the geoduck fishery has been managed at a yield far below the maximum yield-per-recruit. Maximum yield-per-recruit for geoducks corresponds to a harvest rate range of 5.1 to 9.4% (Appendix 3 to the DSEIS, Bradbury and Tagart 2000). Both state and tribal managers have chosen instead a risk-adverse spawner-based strategy ( $F_{40\%}$ ), which corresponds to a 2.7% annual harvest rate. The harvest rate is then applied to commercial biomass in a region to calculate the annual regional total allowable catch (TAC). The “Warrenville” incident that the reviewer is referring to provided an estimate of previously unreported harvest. In response, this harvest was subtracted from the Hood Canal regional biomass in the 2000 Geoduck Atlas and the tribal share was reduced by

the amount of overharvest in the following year, pursuant to the state/tribal management plan. The Warrenville incident referred to by the reviewer should not be, by itself, used to extrapolate conclusions about the overall impact high grading has on the TAC.

As recent newspaper articles have described, the impacts of high grading on the fishery are of concern to geoduck managers. One important response is to continue effective on-tract enforcement and compliance monitoring during harvest.

3. We have been consulting with the National Marine Fisheries Service (NMFS) for the past several months. As stated on page 79, "... measures will be employed to avoid the "take," or an authorization for incidental take will be obtained ..."

3. ***Wayne Wright, Applied Environmental Services, Inc.***

General Comments

1. We appreciate the time and comments provided by the reviewer.
2. The first paragraph on page 9 and figure 1 on page 10 describe the area of the fishery. The description of Puget Sound that includes a broader geographic area is consistent with fishery rules, and in particular WAC 220-16-210. We will consider the reviewer suggestion regarding a more descriptive title.
3. The reviewer is correct that Environmental Assessments (EAs) are prepared for each geoduck tract. The EAs are intended to provide the best available information for a tract to supplement the State Environmental Policy Act (SEPA) EIS. The reviewer is incorrect regarding the state's requirement for developing environmental assessments through section 7 of the Endangered Species Act (ESA). Section 7 consultation is required for Federally permitted or funded activities. There is no Federal permitting or funding linkage to state geoduck harvest.
4. State and Tribal harvest generally follows the same "harvest rules," but each are constrained in harvest locations within the commercial zone. For example, the tribes may be restricted to harvest within their recognized Usual and Accustomed areas. The state may be restricted to areas outside of marine parks or 200 yards seaward of the ordinary high tide line. The State/Tribal management plan (example; appendix 8) describes the provisions, which the state and tribes have agreed upon for geoduck harvest. The exceptions (such as the 200 yards from shore requirement) are based on state law. The Tribes are not subject to all state or local government regulations. As the reviewer correctly noted in comment 2 above, the DSEIS is "about the State of Washington's Commercial Geoduck Fishery" and is not meant to cover the Tribal fishery. State/Tribal management agreements provide the consistency that the reviewer expressed concern about.
5. See last paragraph on page 70 of section 3.6.3 including comments from Dr. Simenstad. See discussion on suspension of bottom sediments in sections 3.3.2 3.3.3 on pages 27 through 32. We agree with the reviewer that it is important to know the inter-relatedness of marine habitat and the species that reside there. The

DSEIS was developed to describe this research to date. Hopefully we will be able to fund future studies on this subject.

### Specific Comments

1. The management objectives of the Rafeedie decision reference “the harvestable surplus.” “Harvestable surplus” is also a common term in fisheries stock assessment; it is based on population theory, and does not carry the negative connotation referenced by the reviewer. Under current management practices, the harvestable surplus is equivalent to the TAC. Contrary to the reviewer opinion, this is a central concept to the responsible management of this resource. The “harvestable surplus” verbiage is appropriate to the context of discussing the Rafeedie decision and will be retained.
2. The information presented in the DSEIS includes descriptions of fishery practices, statutes and rules, public comments, and tribal rights and management agreements. Scientific method is not needed to describe these elements of the DSEIS. No attempt was made to use the operational definitions for the Growth Management Act in this EIS and it serves no purpose to arbitrarily do so now. The use of the verbiage “best available science” is out of context and is inconsistent with page 3, Executive Summary.

We disagree with two points made by the reviewer. Geoduck tracts represent only a small area (about 1.3% (page 70 in DSEIS)) within the marine environment and only a small number of these tracts are actually being harvested at any one time. The species referred to in Mr. Palsson’s talk utilize nearshore rocky reef habitat. Geoducks, on the other hand, live in substrate ranging from soft silt to coarse gravel in mostly flat or gently sloping topography (section 3.1.1, page 21 of DSEIS). Rocky reef habitat is extremely uncommon on commercial geoduck tracts. Indeed, the presence of numerous rocks in an area generally excludes it from consideration as a commercial tract. In all WDFW geoduck surveys on commercial tracts since 1996 (32 tracts, a total of 2,886 transects), only 119 transects (4.1%) contained boulders, and only 72 transects (2.5%) contained cobble; none contained the solid rock substrate usually associated with rocky reefs. Consequently, commercial geoduck tracts rarely contain the groundfish species mentioned by the reviewer. In all WDFW geoduck surveys on commercial tracts since 1996 (32 tracts, including a total of 2,886 transects, each 900 ft<sup>2</sup>), no copper, quillback, or brown rockfish were observed, and no Pacific cod were observed. Black rockfish and other rockfish species were observed on or near only 7 transects (0.2%). Lingcod were observed on or near only three transects (0.1%). In addition, the NMFS, in a November 22, 2000 press release, announced that they would consider only four of the six groundfish species (it was actually 7) in the petition under ESA,

- quillback rockfish (*Sebastes maliger*)
- brown rockfish (*Sebastes auriculatus*)
- copper rockfish (*Sebastes caurinus*)
- Puget Sound Pacific herring (*Clupea harengus pallasii*)

The conservation measures identified in the press release included the following harvest management schemes;

- Restrictions on harvest techniques
- Reduction in bag limits
- Designation of marine protected areas

James West, in his publication Protection and Restoration of Marine Life in the Inland Waters of Washington State identified three distinct habitat types for the different life history phases of the demersal rockfish listed above:

- pelagic waters,
- nearshore vegetated substrate, and
- rocky-reefs

As noted above, this habitat is not common where geoducks are commercially harvested. In addition, in the Federal Register/Vol. 66, No. 64/Tuesday, April 3, 2001/ Proposed Rules the NMFS determined that the four species referenced by the reviewer do not warrant listing as threatened or endangered. We will however, continue to manage the geoduck fishery to protect these species.

The reviewer states that “Cumulative impacts of all marine activities are likely to play a role in the decline of groundfish resources.” There is no substantive basis for such a broad claim. On the contrary, West listed simple overharvest by fishers as the major factor contributing to the decline of demersal rockfish (quillback, brown, and copper rockfish). For Pacific herring, West lists the major stressors as increased sea temperatures and increased predation by pinnipeds, spiny dogfish, and salmon.

West identified eelgrass and a variety of other marine vegetation as critical habitat for Pacific herring to spawn. We do not conduct commercial geoduck harvest in these critical habitats. We maintain buffers between harvest areas and eelgrass (see section 3.9.1.3 on page 83 of the DSEIS) and restrict harvest depths and times in areas where herring spawn. In addition, state and Tribal geoduck managers have worked cooperatively with the North Puget Sound Herring Technical Committee to ensure that we are providing adequate protection of herring stocks and spawning areas. The Technical Committee has recommended the following mitigation measures:

- For tracts in documented herring spawning grounds – shoreward boundaries of minus 25 feet (MLLW), or where the extent of marine algae coverage is determined by survey, a protection boundary of two vertical feet beyond the deepest occurrence of preferred marine algae within the tract.
- For all tracts - where eelgrass extends deeper than –16 feet (MLLW), a protection boundary of two vertical feet deeper than the deepest occurrence of eelgrass on the tract (or the alternate 180 foot buffer zone around eelgrass beds).
- For tracts in documented herring spawning grounds - having the tract either closed to harvest, or harvest restricted to deeper than –35 feet during the timing window of the herring-spawning season. This additional guideline

should provide adequate protection in most areas for the marine algae (including eelgrass) that are important and commonly used herring spawning substrates (e.g., *Gracilariopsis*, *Sarcodiotheca (Neoagardhiella)*, *Botryoglossum*, *Prionitis*, *Sargassum*, *Desmerestia*, *Callophyllis*, *Gelidium*, *Nereocystis*, *Gigartina*, *Laminaria*). These algal species are often found deeper than –18 feet (MLLW) in many areas, and would not be protected under the rules currently in place. A slightly deeper shoreward boundary, as described above, should provide adequate protection for these species.

Section 1.0 (page 4) and section 2.2 (page 15) describe mitigation measures used to reduce the impact of geoduck harvest on groundfish and other species. Mitigation measures include dive surveys and the development of environmental assessments of individual tracts before fishing occurs. WDFW fisheries biologists and managers are consulted to assess any possible disturbance to critical life stage habitat for aquatic species, including groundfish species. In addition, we are presently consulting with NMFS under section 10 of ESA for coverage for the state commercial geoduck fishery.

See general comment #3 above regarding preparing biological assessments (BA). We will expand the bullet on restricted fishing seasons to include those defined on page 15. Sea cucumbers are discussed in the section 3.5.1 (page 64). The impact assessment on epifaunal animal is discussed in section 3.5.2 (page 64). This discussion is not specific to sea cucumbers. WDFW and tribal fisheries managers are consulted to assess any possible disturbance to aquatic species, including sea cucumbers. Appendix 6 to the DSEIS notes that although sea cucumbers are commonly encountered on geoduck tracts, the extensive commercial fishery for sea cucumbers is likely to confound any analysis of geoduck-fishing effects. Commercial sea cucumber fishing occurs on many geoduck tracts, the fishery began the same year as the commercial geoduck fishery, and commercial sea cucumber catch rates have been relatively stable for the last five years, according to WDFW biologists. We will, however, consider this species when prioritizing future research needs on the impact of geoduck harvest on epifaunal animals.

3. The last sentence in section 3.6.4, page 78 covers this recommendation.
4. See general comment #3 above regarding preparing BA's.
5. The estimate of "total" biomass was based on the admittedly limited information available outside surveyed, commercial tracts, and is presented only to provide readers with some perspective on the total geoduck population in Washington. It is extremely important to note that these calculations have never been used to "provide the number of total geoduck biomass which is commercially fishable." Total commercial biomass in each management region is estimated from unbiased, statistically defensible, discrete tract surveys as described in Appendix 3 to the DSEIS. We entirely agree with the reviewer that "seven tracts is not sufficient information upon which to base an entire fishery management program." The fishery management program for geoducks is based not on these rough calculations of the "total biomass," but instead on the surveyed commercial biomass (calculated annually based on the annual Geoduck Atlas, Appendix 1 to



- the DSEIS). Thus, the information in question has never been used to estimate regional biomass, estimate model parameters, determine regional TACs, or make any management decisions.
6. The intent of Figure 5 is to clarify the annual state commercial harvest. We will clarify in the discussion section that Figure 5 represents approximately one-half of the annual commercial harvest.
  7. It is not the intent of DNR or WDFW to increase the geoduck harvest.
  8. Figures 2 and 4 in Appendix 2 to the DSEIS are graphs showing predicted declines over time in commercial biomass expected with two different harvest rates (2.7% and 5.7%), based on the recovery study results to date. Figure 4 represents the trajectory, which corresponds with the *F*40% fishing strategy. Note, however, that based on an average recovery time of 39 yr, the 40% level is achieved with a 5.7% annual harvest rate, not the 2.7% predicted by the equilibrium yield model. Thus, the equilibrium yield model suggests a lower harvest rate than the recovery study results to date. Because the recovery study is on going and results are thus preliminary, and because the yield model output is more conservative, the 2.7% harvest rate is currently used for management.
  9. At this time it is premature to assume that this research would be a high priority for estimating fishery related mortalities. We are presently evaluating the utility of using post-harvest survey data to estimate unreported mortalities. The survey information will be used to update the tract and regional biomass. The state enforcement/harvest monitoring program checks for partially dug geoducks as a deterrent to this practice and to improve catch accounting.
  10. Section 3.5.2 describes possible impacts to epifaunal animals, including *Parastichopus californicus*. WDFW and tribal fisheries managers are consulted to assess any possible disturbance to aquatic species, including sea cucumbers. Appendix 6 to the DSEIS notes that although sea cucumbers are commonly encountered on geoduck tracts, the extensive commercial fishery for sea cucumbers is likely to confound any analysis of geoduck-fishing effects. Commercial sea cucumber fishing occurs on many geoduck tracts, the fishery began the same year as the commercial geoduck fishery, and commercial sea cucumber catch rates have been relatively stable for the last five years, according to WDFW biologists.

#### 4. *Michael Kyte, Golder Associates Inc.*

##### General Comments

1. The SEIS is written for the state fishery. References to Tribal practices are given to provide context to the discussion. It is not the intention to explain and specify differences between the state and Tribal fisheries in the DSEIS.
2. Specific geoduck tract information is available to resource managers upon request. This process provides the requester with the most recent information available for a given tract. This process seems to be favored by most shoreline planners, biologists, regulators, and tribal biologists. The Geoduck Atlas is intended to provide annual summary information and vicinity maps. The

shoreline inventory is not issued as annual data. In addition, the nearshore data is for the intertidal zone. The geoduck atlas contains subtidal data.

3. The DSEIS was reviewed by at least 12 people before its release. We will seek thorough editing by the technical editor in DNR prior to releasing the final SEIS.
4. The reviewer is correct in his statement that we place emphasis on the environmental assessments (EA) as part of the fishery. The purpose of the EAs is to provide a description of the geoduck biomass proposed for harvest and assesses the impacts to other biota on the tract. The protocol for conducting surveys is described in the Stock Assessment of Subtidal Geoduck Clam (*Panopea abrupta*) in Washington. Page 32 describes the purpose and methods for developing the EAs. Portions of the EA reflect existing physical and biological conditions as stated in the fishery EIS to contextualize the EA comments. Tract specific information such as the substrates and plants and animals observed, for example, are unique and are not “cut and pasted.” Any variability in the physical and biological conditions that may be impacted by geoduck harvest is emphasized. In many cases the sediment and species on a tract do not vary significantly. Again, any significant variability is emphasized.

We don't agree with the reviewer that EAs should list relative abundances of species. In many instances, the species associated with a geoduck tract are noted outside of a survey transect. It is a noteworthy observation for the EA, but cannot be quantified on a number per unit area basis. We are concerned with identifying the possible occurrence of species, in order to evaluate the potential impact from harvest, and to determine mitigation necessary to minimize impacts.

We disagree with the reviewer that EAs are not the best available science or statistically sound. We agree that EAs may not report tract-specific research or controlled studies for all species observed on a tract. That is not the intent of the tract survey or the EA. The intent of the geoduck surveys is to provide geoduck stock assessment information and information about existing physical and biological conditions. For geoduck stock assessment in Washington, there are no better methods or information available. The statistical methods to determine geoduck biomass estimates and the precision of those estimates are sound and well recognized.

Though geoduck surveys do not attempt to assess the density of each species observed, they can be used to assess impacts to species other than geoduck populations by comparing species occurrence and diversity in pre and post-harvest surveys. This information is discussed in sections 3.4, 3.5 and 3.6 of the DSEIS. WDFW also offers a class for anyone interested in conducting geoduck surveys (which the reviewer probably attended). WDFW staff will contact the reviewer to determine the feasibility of conducting field tests for percent fines. The reviewer states “In fact, some of the species listed [in EAs ] do not normally occur in the basins or habitats for which they were listed.” The reviewer does not cite any specific examples, but we would be glad to meet with the reviewer regarding specific surveys to rectify any possible errors. We note, however, that it

is not at all uncommon for marine fish and invertebrates to be observed outside their “normal” basins or habitats. Indeed, the purpose of EAs is to provide site-specific information based on actual underwater observations, rather than merely cite the broad-brush information on species distribution available in most taxonomic keys, field guides and textbooks.

EAs note the plants and animals *actually observed* during pre-fishing surveys. It is obvious that not all species inhabiting a tract will be present and/or observed by biologists during the conduct of any individual survey. However, we do not believe it would be appropriate to add species to the list of those observed on a tract merely because they are “typically” found with species actually observed, any more than we would eliminate observed species because they are not “typically” found there.

Regarding sea pens specifically, WDFW biologists conducting geoduck surveys are well aware of their “known suite of predators.” As we remark above, there is no guarantee that these predators will be observed near *every* transect containing sea pens (just as they are sometimes observed near transects which do *not* contain sea pens). We note, however, that in all surveys from 1995 to present (a total of 55 geoduck tracts and 2,624 transects), WDFW biologists observed sea pens on or near 710 transects (27%). Nudibranchs (including *Armina californica*) were observed on or near 325 of these transects (46%). Another predator, *Mediaster aequalis*, was observed on 26 of these transects (4%). It is therefore incorrect to state that sea pen predators are not noted.

5. The reviewer suggests that there should be coordinated regulatory efforts in British Columbia and Washington, because geoduck populations in both areas are “closely connected.” This assumption, while reasonable, has its detractors in the scientific community. In any case, it is an untested assumption. WDFW, DNR and the University of Washington are currently involved in genetic studies of geoducks, which may shed light on genetic similarities and differences among distant and close populations of geoducks within Washington. Study sites are located throughout Washington’s marine basins, and the results may therefore be reasonably extrapolated across political boundaries, at least to some extent. Until such work is completed, however, the assumption of “mutual stocks” remains speculative. Geoduck biologists at WDFW and Canada’s Department of Fish and Oceans have maintained frequent communications since the inception of their respective commercial fisheries on both research and management levels. Thus, while there is no regulatory coordination on the order of B.C and Washington salmon fisheries, there is constant regulatory and research communication. In both the published and “gray” literature by Canada’s Department of Fish and Oceans and WDFW, the reviewer will find frequent cross-references to research done across the border. As a result, there are numerous similarities in the two fisheries, including similar annual harvest rates. Unlike many migratory fish species, we do not see a need to co-manage geoduck stocks with Canada.

### Specific Comments

1. We will add, "...to the areas where harvest has occurred other than the reduction of the local geoduck population on harvested tracts" to the end of the sentence on page 3. The reviewer finds it contradictory that the harvest impacts on geoduck populations can be both temporary and permanent. On page 4, we explain that biomass *on individual tracts* will be reduced temporarily, but that *total harvestable biomass* will be permanently reduced. Individual tracts are allowed to recover to pre-fishing density before again being fished, so that the harvest effect on a tract is temporary (relative to the life history of geoducks). This does not, however, preclude a permanent reduction in the total harvestable biomass (which is the expected long-term result of *any* sustained fishery).

The reviewer is correct that there have been no studies on the direct linkage of the geoduck population and the benthic ecosystem. However, the DSEIS does describe studies on the disruption and recovery of the benthic environment and infaunal and epifaunal organisms. These discussions provide some conclusions about the linkage of geoduck to the benthic ecosystem. The reviewer should be reminded that geoduck harvest occurs in a very small area (about 1.3% of the of the marine environment, page 70), which means that disruptions are very small localized and temporal. We do not mean to discount this point. It is stated in conclusion 6.d of page 5 of the Executive Summary as additional fieldwork needed for the fishery.

2. We agree with the reviewer that geoduck harvest is conducted in nearshore habitat as defined by the King County State of the Nearshore Ecosystem report. We also recognize that the geoduck fishery will have an impact to the nearshore area where harvest occurs. However, we do not agree with the reviewer's discounting the small area of total habitat (relative or not) where geoduck harvest occurs. For example, Table 1 of the King County report identified that there are 535.3 km of shoreline in the Central Basin (the entire study area). During the last two years of geoduck harvest in the Central Basin, the length of shoreline where both state and Tribal harvest occurred in the study area was approximately 5 km in 1999-00 and 2 km in 200-01. That is 0.9% and 0.3% respectively of the total shoreline/nearshore in the study area. Geoduck managers minimize the area where harvest occurs in order to mitigate for the fishery. We fully consider impacts to critical habitat, but we integrate mitigation to minimize those impacts. Other mitigation measures preclude any harvest from occurring in eelgrass and restrict harvest to subtidal areas deeper than -18 ft. corrected to MLLW. These management practices keep us well buffered from critical (salmonid) habitat in the nearshore area (see Dr. Simenstad's comments on page 71). In addition, we are presently working with the NMFS to ensure we are in full compliance with the ESA.

**Section 2.0** - See response to reviewer's general comment

**Section 2.3** – We will correct this error in the final.

**Section 3.0 - Page 27** – The Department of Ecology does not check geoduck harvest tracts for contaminated sediment before each harvest. If there is good reason to suspect that State Sediment Management Standards may be exceeded at a proposed tract we would be required to determine the presence of any contaminants. Where contamination is known, and poses a threat to human health, the tract is removed from the list of commercial harvest areas. A recent example of this is the Port Blakely tract (#07700), which was removed from the commercial list in 1997 when chemical contamination was suspected at the northern portion of the tract.

**Page 34** –WDFW’s restriction on using video for surveys is in reference to the protocol required for scientifically and statistically valid geoduck surveys. The information on page 34 is meant to provide a perspective on the geoduck population in Washington, and the range of vertical distribution of geoducks, and is not used to make any management decisions regarding the geoduck fishery.

The SEIS is not attempting to qualify a “reserve biomass” of geoduck. The reviewer is incorrect to assume that we consider any biomass to be a “reserve biomass.” There is no reference to a “reserve biomass” for managing the commercial fishery in the DSEIS. Statewide estimates are to provide the reader with a perspective on the possible statewide biomass in relation to the surveyed biomass of the commercial fishery

**Page 34 to 35** – See above page 34 responses. The reviewer’s suggestion to utilize his shallow-water survey data at Kingston and Des Moines would be subject to the same questions the reviewer has raised pertaining to a small and non-randomly chosen sample.

**Page 40** – We are aware of the geoduck aged by Mr. Strom (who currently works for WDFW at the Point Whitney Shellfish Laboratory), but chose to cite a published source. However, we will also note Mr. Strom’s geoduck (which, following cross-dating subsequent to his talk in Olympia, he has now corrected to 163 yr old). We may also cite a more recent 168-yr old individual just aged by Canada’s Department of Fish and Oceans.

**Page 41** – The only data we are aware of relating market quality to depth is from Goodwin and Pease (1991). These authors found that geoduck quality was inversely related to water depth, at least within the 6-18 m depth range. One possible explanation advanced by the authors was that as water depth increases, it is more likely that the substrate will be composed of mud. The authors correlated muddy substrates with lower market quality, and sandy substrates with higher market quality.

**Page 42** – The critical difference is that the fifth option for a bait fishery is the only one not for human consumption. Aquaculture would not be an expansion of the wild fishery.

**Page 44** – The critical piece of information follows later in the paragraph, “...geoduck density has increased from the post-fishing level on all study tracts following commercial harvesting.” We agree with the reviewer that more explicit information on the cited recruitment Goodwin and Shaul (1984) study would be helpful for readers of the DSEIS, and will add language to this effect: The authors

took random venturi dredge samples within six different tracts, with roughly half the samples taken in portions of the tracts which had been commercially fished, and the other half taken in portions of the same tracts which had not been fished. The average density of recruits (ages 0-4 yr) was 0.78 recruits/m<sup>2</sup> in the unfished portions, and 0.54 recruits/m<sup>2</sup> in the fished portions. The authors speculated that the decreased number of juveniles in the fished portions was probably due to an adverse effect of fishing on recruitment. The implications of lower recruitment on fished tracts and its possible relationship to the results of the recovery study are discussed on page 7 of Appendix 2. We speculate that lowered recruitment on fished tracts may account for the difference between empirically-based harvest rates reliant on recovery time and model-based harvest rates predicted to maximize yield-per-recruit (i.e., reliant on the assumption of constant recruitment at all stock levels). We can add that this difference in recruitment in fished and unfished areas may result in a change in the “harvest down” strategy. Geoduck managers recently decided to not target “harvest down” of a tract to 80%, but to 65% or .04 geoducks per square foot to allow for greater recruitment opportunity.

**Page 46** – The 28% discard rate is derived from an intensive survey of shell on a specific tract. Discard rates will vary depending on the intensity of on tract enforcement, the skill level of the harvesters and how the geoducks are sold (contracts, individual divers, centrally controlled fishery where divers receive a flat rate, etc). In some cases this may be representative of a larger problem. We are presently evaluating the utility of using post-harvest survey data for providing some perspective on estimating unreported mortalities. It has recently been determined that due to the State’s under-harvest of our total allowable catch over the last five years, the TAC has not been exceeded. The Tribes and state are developing management plans that will improve on tract compliance and enforcement to minimize future opportunities for wastage and discarding.

**Page 49** – We will change “dramatic” to significant in this section. The significance however, is very localized (see discussion in #2 above). In addition, the recovery estimate of 11 to 73 years is for geoduck recovery on an individual tract and not for “removal of a major portion of the benthic biomass.” Only a small portion of the benthic biomass is harvested (up to 2.7% of commercial geoduck stocks; which is a subset of the geoduck population, which is a subset of the benthic biomass).

We will remove the word “commercially.”

In recent years the TAC has not been fully utilized due to PSP closures and other constraints faced by the state. This has tended to off-set mortalities discussed in section 3.4.1.2. The reviewer is correct that if the TAC is fully utilized, then illegal harvest on surveyed tracts could result in over-harvest of the TAC. Improved monitoring provisions in state/tribal management plans and the use of post-harvest surveys on all fished down tracts is intended to assure that the TAC is not exceeded.

We did not intend to imply in sentence 4 that the eventual magnitude of the expected decline in commercial biomass relative to unfished biomass is “indefinite.” We will remove the second comma in sentence 4 of section 3.4.1.3.

We will add “until equilibrium is reached” at the end of sentence 4 in section 3.4.1.3 to characterize modeled geoduck biomass over time.

We find no contradiction in noting that fishing mortality within the average commercially-fished tract is considerably higher than the annual fishing mortality in a given management region (i.e., *all* the tracts in a region, where the target fishing mortality rate is 2.7% annually).

**5. *Robert Burkle, Washington Department of Fish and Wildlife***

We agree with the reviewer’s recommendations about expanding protection for herring spawning substrate other than eelgrass. State and Tribal geoduck managers have recently consulted with the North Puget Sound Herring Technical Committee to ensure that we are providing adequate protection of herring stocks and spawning substrate. The technical committee provided the recommendations for mitigation measures described in response 3.3 (Applied Environmental Services, Inc.) above.

These mitigation measures were developed to ensure that geoduck-harvesting activities (including impacts from siltation) do not cause mortality of herring eggs.

Section 1.0 (page 4) and Section 2.2 (page 15) describes mitigation measures used to reduce the impact of geoduck harvest on groundfish and other species. Mitigation measures include dive surveys and the development of environmental assessments of individual tracts before fishing occurs. WDFW fisheries biologists and managers are consulted to assess any possible disturbance to critical life stage habitat for aquatic species, including rockfish and lingcod. In addition, we are presently consulting with NMFS under section 10 of ESA for coverage for the state commercial geoduck fishery.

**6. *Gay Davis, Ph.D, Hansville, WA***

1. The reviewer is correct in stating that DNR and WDFW do not have information on the geoduck fishery to support “an absolute and authoritative position.” I would be very skeptical of any resource manager (or professional) who might make such a statement regarding their respective charge. We are however, using the best available science to manage the commercial geoduck fishery. We do have accurate information on the geoduck population that is available for harvest. The entire commercial biomass has been surveyed. Any tract that will be fished must have a recent (within 8 years) survey (see State Biological Management Policies section starting on page 11 of The Puget Sound Commercial Geoduck fishery Management Plan). We also feel that 30 years of experience does provide valuable insight into the management of the fishery. The reviewer does not

acknowledge the 83 citations that are referenced throughout the DSEIS. These documents are used to develop the management practices of the geoduck fishery.

The reviewer states that “ It may be true that harvesting has been done for 30 years, but monitoring and evaluation of the geoduck population has been a much more recent undertaking.” This is incorrect. In fact, subtidal geoduck surveys and related geoduck research by WDFW biologists began in 1968 — two years before the advent of the commercial fishery — and have continued every year since then. Thus, the subtidal commercial geoduck fishery in Washington has the distinction of being one of the very few important commercial fisheries in the world where biomass estimates and fisheries-related research data were available prior to any commercial harvest.

The fact that, after 30 years of fishing, research, and surveys, state and Tribal managers are still pursuing research provides evidence that we never consider our current information “absolute and authoritative.”

2. The reviewer provides no citation of authority for the statement that “some beds do not recover at all.” Page 44 of the DSEIS states, “Harvestable geoduck density has increased from post-fishing levels on all study tracts following commercial harvesting.” Other tracts have recovered completely, to average pre-fishing density. Recovery data cannot, by definition, be obtained overnight. We are continuing post-harvest surveys on recovery tracts, and all fished-down tracts, when fishing is completed.

The reviewer is correct in the conclusion that there is an expected decline in total harvestable biomass after 30 years of fishing. This permanent reduction in total biomass — an expected consequence of any sustained fishery — is noted on page 4 of the SEIS as a significant impact. There is, however, a difference between the expected long-term reduction in harvestable biomass from a fishery and the “permanent loss of geoduck beds” suggested by the reviewer. The primary purpose of on-going life history research, population modeling, and empirical studies (including the on-going recovery study) is to recommend annual harvest rates that result in a long-term sustainable fishery. The reviewer’s statement that “... little harvesting was done until the 1980's...” is incorrect. Annual harvest levels exceeding 2 million pounds began in 1975, and the mean annual harvest from 1975-79 was actually higher than for the succeeding five years 1980-84. Also, the mean annual harvest for the 1970s was higher than for the 1990s. We therefore believe that the past 30 years of fishing provides a relevant data pool from which to assess the impacts of fishing to date.

3. The reviewer is incorrect in assuming that WDFW is lumping all geoducks into a population model. The fishery model and the biomass estimate to which the harvest rate is applied are based only on surveyed geoduck tracts between the depths of -18 ft. MLLW to -70 (see appendix 3). The research on geoduck genetics, which is a cooperative project between WDFW, DNR, treaty tribes, UW, and Washington Sea Grant, is not yet complete. However, preliminary



- results suggest that the Washington geoduck population is genetically homogenous. There is no research that we are aware of which indicates wild geoduck stocks are genetically isolated or that “varieties” exist within the commercial harvest zone, although a more definitive analysis will have to wait until the current genetics work is completed.
4. The 40% level is now widely used in federally managed fisheries as a risk-averse strategy, and there is considerable published literature on the subject cited in Appendix 3 to the SEIS and in Bradbury and Tagart (2000). Note further that the  $F_{40\%}$  strategy is not applied to the entire geoduck population in Washington, but only to those surveyed, commercial tracts in -18 ft MLLW to -70 ft. The reviewer incorrectly implies that the modeled harvest rate is applied to all geoduck biomass, including “almost 25% of the geoduck biomass which may be unfit to harvest because of septic contamination.” In fact, surveyed biomass on fecally polluted tracts is specifically excluded from the commercial biomass to which the harvest rate is applied.
  5. The statistical rationale for excluding certain tracts from the current analysis of the recovery study is explained on page 5 of Appendix 2. Five of the six excluded tracts remain in the study and their recovery rates can readily be included in the future when the differences in survey-to-survey densities become statistically significant. However, we note on page 6 of Appendix 2 (top paragraph) that if we *were* to include these five tracts in the current analysis, the mean recovery time would change very little (from 39.39 to 41.56 yr). Substituting 42 yr for 39 yr in the subsequent modeling makes no significant change in the analysis or conclusions. Dr. Robert Conrad, biometrician with the Northwest Indian Fisheries Commission, recently completed an independent review of the recovery study. Dr. Conrad included all tracts in his analysis, as the reviewer suggests, including the five excluded in our analysis, and used a nonparametric bootstrap method to estimate both recovery time and statistical confidence intervals. Dr. Conrad recommended that the median recovery time be used as the best estimate of recovery time for commercially harvested tracts. He estimated a median recovery time of 23.1 yr (the mean recovery was 43.2 yr, again similar to the 15-tract mean cited above). Finally, we note that state and Tribes have agreed in the 2001-2000 harvest plans to conduct post-harvest surveys on all fished tracts. This will make it possible to increase the number of tracts in the recovery study in the future.
  6. The DSEIS never makes the claim that the water-jet harvest method is “environmentally benign.” Sections 3.1, 3.3, 3.4, 3.5 describe the impacts from the harvest. All the research cited in these sections maintains that there are few long-term adverse environmental effects that result from geoduck harvest (other than the removal of the geoduck biomass). The reviewer’s *ad hoc* estimate of a two-foot berm-and-hole diameter more than doubles the average area of a hole (noted in the DSEIS and documented in Goodwin 1978). The reviewer, however, does not provide any substantive basis for this estimate. As noted on page 29 of the SEIS, the berm erodes back into the hole due to current, wave, and animal activity, and this refilling usually occurs quickly (roughly half the initial hole depth is refilled within four days, see Figure 3 and pages 22-23 in the DSEIS).

The reviewer uses an estimate of 10,000 holes per acre which was calculated at high-density tracts fished in the late 1970s and early 1980s, whereas it is noted on page 22 of the DSEIS that this is roughly twice as high as the average value for all Washington tracts. It is also noted on page 22 that this liberal estimate is only used when forecasting the impacts of turbidity and sedimentation, which are cumulative effects. A much more realistic estimate of the number of holes per acre for estimating *area impacted* — and the one actually used in the DSEIS — is based on average pre-fishing geoduck densities, see page 59 of the DSEIS. The average density throughout Washington is 1.7 geoducks/m<sup>2</sup>, and 1.9 geoducks/m<sup>2</sup> in central and southern portions of Puget Sound and Hood Canal. Using the higher average density estimate and an average hole size of 1.18 ft<sup>2</sup>, the SEIS demonstrates on page 59 that digging would affect 21% of the area if all the geoducks were removed. Even if the reviewer's undocumented hole-plus-berm diameter estimate of two feet is substituted into this calculation, digging still would only affect 55% of the area, not 75% as the reviewer suggests. And again, this estimate assumes *all* geoducks are removed. On average, only 72% of the geoducks are removed from a tract, meaning that 15% of the tract area would be affected (or 40% of the tract area, if using the reviewer's hole-and-berm estimate). Finally, the reviewer does not take into account two important factors. Geoducks are not uniformly or randomly distributed within a tract. Instead, they are clumped (contagiously distributed, in statistical parlance). Figure 6 in Goodwin and Pease (1991) shows that large areas of commercial geoduck tracts contain no geoducks. This published research, based on an extremely large sample throughout Puget Sound, indicates that about 42% of the surveyed transects on commercial tracts contains no geoducks, and therefore would not be affected by digging. The same graph shows that there is also a substantial percentage of the area within commercial tracts, which does not contain commercial densities of geoducks, and these portions would be avoided by divers as unprofitable. Likewise, in the areas of high density within a tract, dig holes will necessarily overlap, reducing to some degree the total area impacted. The second factor ignored by the reviewer is that tracts are not harvested instantaneously, but over the course of months or even years. This means that even if all geoducks were eventually harvested on a tract, there would be far less than 21% of the area affected by digging *at any one time* during the harvest. Finally, the reviewer should be reminded that geoduck harvest occurs in a very small area (about 1.3% of the of the marine environment, page 70) that limits environmental disturbance to very small and localized areas.

7. The DSEIS provides the most up-to-date information that exists regarding the environmental impacts of the geoduck fishery. DNR funded an in-depth study on the effects of the sediment plume (appendix 4). We provided three opportunities for the public to providing additional information on the impacts of the fishery through the SEPA process. We have integrated what empirical information we received into the DSEIS. The reviewer should understand that the DSEIS is based on available scientific research. The reviewer states that the analyses of harvest impacts is "... highly optimistic and self-serving." On the contrary, every effort has been made to analyze data on the effects of fishing in a precautionary and

frequently “worst-case” manner. For example, sedimentation and turbidity analyses in the DSEIS have been made assuming an estimate of the number of harvest holes per acre that is roughly double the actual surveyed average, and we have also assumed total harvest of *all* geoducks on a tract, something which never actually occurs. As another example, we note that seasonal fishing closures are always required near herring spawning areas, despite the fact that there is no empirical evidence demonstrating any effects of harvest on these areas.

8. Employment and any resulting economic benefits in the geoduck industry are within the Puget Sound basin, not state wide. If Tribal fishers are included, employment in the region is easily double the 50-60 the reviewer references. This does not include employment of deck hands, purchasers, field managers or the harvest boat owners. The president of the Washington Geoduck Harvesters Association acknowledged that a geoduck diver working on a state harvest earns between \$40,000 and \$60,000 per year. Assuming there are 100 state and Tribal divers, this “negligible” number of jobs generates \$4 to \$6 million dollars in annually salaries in the Puget Sound region. We feel that this is a fairly significant benefit to the regional economy.
9. We disagree with the reviewer’s discounting the benefits Kitsap County enjoys from geoduck revenue. The following lists several projects in Kitsap County that were funded through the Aquatic Lands Enhancement Account (ALEA) over the past four years. A significant portion of ALEA funding is derived from revenue generated from geoduck harvest:
  - a. City of Bainbridge Island, Blakely Harbor Acquisition and Public Access: \$796,756
  - b. Port of Brownsville, Burke Bay Overlook and Access, \$75,000
  - c. Port of Bremerton, Port Orchard Waterfront Access: \$252,284
  - d. City of Poulsbo, Dogfish Creek Property Acquisition, \$488,125,
  - e. Kitsap County, Old Mill Site, \$598,604,
  - f. City of Poulsbo, Nelson Property Acquisition, \$219,404

The citizens of Kitsap County have benefited from \$2.4 million dollars of geoduck revenue generated over the last four years. In addition, the citizens of Kitsap County benefit from intertidal shellfish enhancement of the following public shellfish beds in Kitsap County and the surrounding area:

- Fay Bainbridge State Park
- East Indianola (north shore of Port Madison)
- Illahee State Park
- Brownsville (West shore of Port Orchard)
- Colby (West shore of Yukon harbor)
- Kitsap Memorial State Park
- Scenic Beach State Park

The management and enhancement of these beaches is paid in part by revenue generated by the state commercial geoduck fishery.

The reviewer should clarify the considerable loss the geoduck fishery creates for the citizens of Kitsap County. DNR only received four comment letters from

- Kitsap County residents. Three of these comment letters were from residents of Hansville. The other comment letter supported the fishery. None of the comments, including the reviewer's, provided any evidence of "considerable loss" resulting from the fishery. We fail to see how the view of three citizens from Hansville can represent the "citizens of Kitsap County." To the contrary, we feel the above referenced projects (funded directly from revenue generated from geoduck harvest) and available public access to public beaches and intertidal shellfish resources demonstrate a direct benefit to the citizens of Kitsap County.
10. Section 4.1 of the DSEIS is dedicated to the issue of noise. The state geoduck fishery has adjusted its harvest practices significantly to mitigate for noise. Both DNR and WDFW geoduck managers are putting every effort into sustaining the geoduck population in the Puget Sound. Contrary to what the reviewer states, conservation and sustainability is a priority for our agencies. We feel that the management practices developed for the geoduck fishery embrace these principles. We will continue to use the best available science to manage our natural resources. DNR and WDFW are committed to manage the geoduck fishery to ensure conservation. This is described throughout the DSEIS. We are very concerned about the documented impact of land use practices throughout the Puget Sound on water quality and marine resources. We see this as the greatest threat to the health of the state's geoduck resources. The reviewer suggests a moratorium on geoduck harvest for "several years" in order to evaluate conservation measures. We note that research on geoducks is an on-going and vital component of past and current management. Current research efforts include collaborative work by the University of Washington, WDFW, DNR and certain Tribes. This research is taking place in unfished areas (for example, experiments designed to "fine-tune" the estimates of natural mortality, age distribution, and recruitment) and also in commercially fished tracts (the recovery study, for example). Indeed, one of the most reliable ways to evaluate the effects of fishing is to allow fishing under controlled circumstances and follow the resulting changes in population levels and other parameters. The geoduck fishery as practiced in Washington is particularly amenable to the scientific methods of spatial replication and control, because fishing is only allowed for a limited time, and only in discrete tracts, which have been surveyed prior to fishing. Research is specifically designed to evaluate the long-term sustainability of the geoduck resource. A complete moratorium on fishing would only preclude this research and would not affect tribal harvest.
  11. See response 2.1 (Kitsap County Department of Community Development) above.

7. ***David Mascarenas, Everett, Washington***

1. We are not sure how the changes will affect the geoduck fishery. That will be up to the individual counties that administer the program.
2. The commercial geoduck fishery will be in full compliance with the Endangered Species Act. We are presently working with the National Marine Fisheries Service.

3. We recognize this ever-increasing problem. The Washington Department of Health (DOH) certifies the commercial harvest areas. Regular water samples are taken to test for bacterial (fecal coliform) contamination. In addition, we must submit geoduck samples weekly or every two weeks (depending on the area) to the DOH lab to test for paralytic shellfish poisoning. Page 7 of the Management Plan describes the role of DOH.

Response to Mascarenas letter of 2/27/01

We understand your concern about the DSEIS after reading the article in the Everett Herald on 2/26/01 Geoduck over harvesting imperils industry. We strongly disagree that DNR does not carry out adequate oversight of the fishery. We feel that figures 4 & 5 on page 36 of the DSEIS remain accurate. Language in sections 3.4.1.4 starting on page 50 was added to the DSEIS to explain how the State manages the fishery to ensure a sustainable geoduck fishery. We remind the reviewer that it was an investigation by the State, which prompted the newspaper article, and that these concerns regarding high-grading, discarding, and poaching are addressed on pages 44-47 of the DSEIS. In addition, we offer the following response and clarification to the referenced newspaper article:

- Since WDFW issued the report referenced in the article, DNR has determined that the state has under-harvested our total allowable catch (TAC) by over 2 million pounds state-wide over the last five years. Recently, WDFW determined that because of the state's under-harvest, and other tribal under-harvest, the total allowable catch has not been exceeded during the last five years using the best available estimates of under-reported harvest
- We make every effort to adapt our on-water enforcement strategies to minimize the opportunities for under-reporting. When a harvester is caught, DNR imposes civil fines for their violation. DNR and WDFW can also impose criminal charges. In response to this, DNR will not harvest up to 2% of their regional share (1/2 of the TAC) for conservation purposes, to account for possible non-reported catch.

DNR has been working intensively with Tribal geoduck managers and policy staff and the Department of Fish and Wildlife staff on geoduck fishery management issues during the last five months. We are now at the point of signing new harvest management plans that will implement better oversight and accountability for the fishery. Many of the issues included in the new management plans are discussed on pages 51-53 of the DSEIS.

**8. *Roger Goodspeed, Hansville, WA***

The reviewer has not shown to have any evidence or incentive to substantiate that State or Tribal fishery management staff are not completely forthcoming with the public.

The reviewer should understand that the Treaty Tribes have sovereign status and are not beholden to all local or state laws. It is not the role of DNR to "check

other previously harvested tribal sites for wrong doing.” The Tribes are responsible for enforcing their own fishery regulations. We do, however, work cooperatively with the Tribes in managing the geoduck fishery and spend time with Tribal managers and enforcement staff addressing management problems and violations that we discover in harvest areas.

The DSEIS does not apply to the Tribal fishery. This information is provided for reference purposes. The reviewer should speak to individual tribes if he has questions regarding their fisheries. In addition, DNR has worked with Tribal managers and enforcement staff to address harvest management problems and violations that are discovered in harvest areas.

The harvestable surplus is that small portion of the total statewide geoduck biomass that is available for harvest. The mitigation measures described Section 4. on page 4 of the DSEIS define the area where the “harvestable surplus” of geoducks are harvested. More specifically, the harvestable surplus in any given management region is the total weight of geoducks which may be harvested during the year, referred to in most fisheries, including the geoduck fishery, as the TAC (Total Allowable Catch). Treaty Tribes therefore have a legal right to 50% of the regional TAC in management regions within their usual and accustomed grounds and stations. The TAC within a region is calculated each year as described on pages 36-39 of the DSEIS.

Page 6 – The reference to revenue is qualified with “(1990-1994)” in the DSEIS. For consistency we will update this to state 5-7 million dollars. The DSEIS is not intended to emphasize specific revenue information. The reviewer should request specific revenue information through a public disclosure request (call 360-902-1655).

Top of page 11 – The DSEIS is based on harvesting geoducks between the –18 ft. MLLW to –70 ft. contour. If the fishery were to be expanded it would be “subject to surveys and other biological criteria which protect the geoduck resource, eelgrass, and other critical resources and habitats” (as stated in the remainder of the sentence the reviewer references). In addition, we feel it is appropriate to provide discussion in the document regarding possible expansion of the fishery.

Page 56 – Page 56 of the DSEIS also states, “Additional management issues will be addressed if the (horse clam) fishery is expanded.”

In response to the reviewer’s question, “Does the S.E.I.S guarantee:”

- i. Sustainable harvest is discussed in section 3.4.1.3.
- ii. Impacts to infauna, epifauna, fish, marine mammals, birds, plants, macroalgae, and phytoplankton are discussed in detail in the DSEIS.

- iii. As stated above, the DSEIS is not written for the Tribal portion of the geoduck fishery. We are confident that the Tribes intend to be responsible resource managers.

The reviewer appears pre-disposed with the notion that the state is able to recoup benefits from the commercial geoduck fishery. The reviewer should consider that this is the only fishery where the state actually gets a portion of its true market value (versus the fishermen receiving all the market value). In addition, this is one of only a few fisheries, which the state solely determines and maintains a sustainable harvest rate without the political pressure from commercial and sport fishing lobbies to increase quotas for individual financial gain or additional sport fishing opportunity. This allows the state to manage a sustainable geoduck fishery in perpetuity for the benefit of all the citizens of the state (versus only sport and commercial fishers).

**9. *Jim Morrison, Hansville, WA***

See comments to David Mascarenas in #7 above.

We agree with the reviewer that "...the ecosystem dynamics are far from fully understood..." and that "...it is therefore impossible to say with certainty what the results of harvesting will be." We concur with Drs. Ray Hilborn and Carl Walters, Jr. who wrote in their 1992 book *Quantitative Fisheries Stock Assessment: Choice, Dynamics, and Uncertainty*: "We believe there will always be great uncertainty about the importance of fisheries management actions in affecting the dynamics of these stocks." Uncertainty, however, does not preclude wise use of natural resources. The authors stress throughout this excellent textbook that fisheries stock assessment involves making predictions, which *invariably include uncertainty*. The state's management plan includes the continuation of research into geoduck life history and other fishery-related topics. The DSEIS also documents numerous management measures, which take uncertainty into account. Just one such example is the routine seasonal fishing closure required near herring spawning areas, despite the fact that researchers are uncertain that there will be adverse effects.

**10. *Donald F. Flora, Bainbridge Island, Washington***

We appreciate the considerable time and effort undertaken by the respondent to review the geoduck equilibrium model and contribute to an improved DSEIS. The reviewer's expertise in modeling was especially useful in correcting errors in the original recovery study.

**11. *Joyce Strand, Issaquah, Washington***

Page 4 – We have no incentive or support to “snow” the reviewer. It is unfortunate that the reviewer would think otherwise. The reviewer has not identified any activity that would warrant this statement.

Section 3.4.1 describes how we manage the geoduck resources in the state for sustainability. The reader is wrong in her assumption that “...the State needs the money...” In fact, the State has under-harvested our allowable TAC by 2 million pounds of geoducks over the last five years. The reviewer should consider that this is the only fishery where the state actually gets a portion of its true market value (versus the fishermen receiving all the market value). It is not clear if the reviewer feels that all the financial benefits of the fishery should go to the fishers.

**12. *Casey Bakker, Olympia, Washington***

The reviewer initially sent hand written comments followed by a typed version. In a conversation on February 26, 2001, the reviewer stated that the two versions of the comments are a re-iteration each other. We agreed to provide comments to the typed version.

1. The DSEIS is an environmental document. There was no intention or requirement to emphasize the economic impacts of geoduck harvest, only to take them into account as part of the review. There is no requirement in chapter 197-11 WAC to fulfill the regulatory requirements of the Shoreline Management Act. The DEIS conforms well to the mandate of the Washington Department of Fish and Wildlife (RCW 77.04.012) which requires the Department to “preserve, protect, perpetuate and manage the wildlife and food fish, game fish, and shellfish in state waters ...” DNR and WDFW as co-managers of the fishery have a responsibility to support each other’s mandates.
2. It is unclear why the reviewer would be concerned about DNR supporting WDFW mandates or vice versa.
3. The issues raised by the reviewer seem to be related to labor relations between and employee and employer and were never intended to be evaluated in the context of an EIS. We fail to see the connection between section 4.4 of the DSEIS and the comments made by the reviewer. See section 1.1 of the DSEIS on the purpose and need for developing the DSEIS. DNR was not seeking public comment on how DNR’s economist values geoduck as part of our environmental review. See comment 1 above.
4. The methods for managing harvest that include the Tribes are discussed in sections 1 and 2 in the DSEIS. We disagree with the reviewer that DNR has the responsibility for securing moorage for privately owned geoduck harvest vessels. The availability of moorage for any vessel is based on the discretion of the marina owner/operator and typically based on the activities and behavior of the vessel owner (s). DNR has no legal authority to force marina owners to support the geoduck fishery.



5. This section distinguishes “high grading” as both a selective harvest and an illegal activity. The former is a reiteration of how a harvester described this activity in a public meeting. Because of the concern raised by the harvester’s depiction of high-grading, DNR was specifically asked by the Kitsap County commissioners to address this issue (using the harvesters terminology) in the DSEIS.
6. We disagree with the reviewer. In relation to the number of geoducks that are harvested, inadvertent horse clam harvest occurs at a minimum at best. The reviewer is well aware that any harvester that does mistakenly harvest horse clams on a regular basis will not be in the business for very long. DNR has no documentation from anyone to substantiate that we have “been told on a number of occasions of this particular resource wastage.” We disagree with the reviewer that regular accidental harvest of horse clams “is scrupulously ignored.” Our enforcement staff noted sporadic occurrences of horse clamshell on geoduck tracts, but not to the extent (“Wastage”) that is being implied by the reviewer. We request that the reviewer document all occurrences of “horse clam wastage” with DNR on-water enforcement in the future. In addition, if the reviewer feels this is a significant issue he should address his concerns about the harvest of horse clams and supporting documentation to WDFW shellfish biologists.
7. DNR disagrees with the reviewer’s appraisal of a “potential corrupting influence.” The reviewer should consider that this is the only fishery where the state actually gets a portion of its true market value (versus the fishermen receiving all the market value). DNR is responsible for providing maximum benefit to all the citizens of the state from geoduck resources. The reviewer should request specific revenue information through a public disclosure request (call 360-902-1655).

# HOOD CANAL ENVIRONMENTAL COUNCIL

*America's Unique Heritage*

P. O. BOX 87 • SEABECK, WASHINGTON 98380

February 22, 2001

Mr. Dave Dietzman  
Environmental Quality and Compliance Division  
Department of Natural Resources  
P.O. Box 47015  
Olympia, Washington 98504-7015

Re: SEPA File No. 99-042004; Draft SEIS for Commercial Geoduck Fishery

Dear Mr. Dietzman:

The Hood Canal Environmental Council has reviewed the Draft Supplemental Environmental Impact Statement (SEIS) for the Puget Sound Commercial Geoduck Fishery dated December 2000, and submits the following comments:

1. The SEIS calculates a total geoduck population by taking the surveyed populations within the -18 to -70 ft depth range of the legally fishable tracts and adding estimates of the deep water populations based on a few television observations, and estimates of the populations shallower than -18 ft based on surveys of 7 of about 300 tracts. That calculated total population is then used to support the argument that the legally fishable population is really only 24% of the total population. We believe the estimates of the total population is far too imprecise, and that too little is known about the contributions of the deep and shallow water populations to recruitment in the fishable tracts to make plausible calculations. The SEIS also states that the legally fishable populations could be extended into the deeper and shallower areas in the future, all of which we believe makes the discussion of fishable quantities as a percent of total population irrelevant.

2. The discussion of infauna does not mention the effects of geoduck harvesting, on juvenile geoducks, but it does state that juveniles are frequently clumped around the adults. We would assume that the harvesting process destroys many juvenile geoducks and that they are not counted in the total fishing related mortalities. We think the juveniles within a tract are important to the tract's population recovery, and therefore, should be either protected from destruction or counted as part of the total allowable fishing related mortalities.

3. The only alternatives to the proposed action are alternative harvest methods, such as hydraulic escalator harvesters and suction harvesters, and a no-action alternative. The only Total Allowable Catch proposed is an annual

harvest rate of 2.7% of the total commercial biomass in each region, which is predicted to preserve 40% of the unfished spawning potential of the population. Although not stated, one can assume that up to 100% of the population of a tract could be harvested. We think that alternative harvest rates should be considered, particularly harvest rates less than 2.7% per year, and much less than 100% of the population of any given tract when designated for harvest.

1. In general, fisheries management in the State of Washington has contributed to the decimation of salmon, herring, ground fish and other fish populations. What confidence can the citizens of this state have that the proposed management of the geoduck fishery will be any better? It appears to us that so little is known about the Puget Sound marine ecosystem that the whole idea of intense commercial geoduck harvesting should be reexamined by the state and the tribes.

Thank you for the opportunity to comment on the SEIS.

Sincerely,

Joe Lambert, director  
Hood canal Environmental Council  
(360) 692-9815  
jlamb@home.com



# KITSAP COUNTY DEPARTMENT OF COMMUNITY DEVELOPMENT

614 DIVISION STREET MS-36, PORT ORCHARD WASHINGTON 98366-4682  
(360) 337-7181 FAX (360) 337-4925 HOME PAGE - [www.wa.gov/kitsap](http://www.wa.gov/kitsap)

BRUCE FREELAND, DIRECTOR

February 22, 2001



Mr. Loren Stern, Manager  
Aquatic Resources Division  
Washington State Department of Natural Resources  
1111 Washington St SE  
PO Box 47027  
Olympia, WA 98338

RE: Comments on Draft Supplemental Environmental Impact Statement

Dear Mr. Stern:

By this letter Kitsap County is providing your agency with comments regarding the DSEIS for subtidal geoduck harvesting. In addition to the comments of the Staff, we are attaching DSEIS comments prepared at the request of Kitsap County by AES.

First, the Department regards the DSEIS as an improvement over the prior draft and feels it will prove to be a user-friendlier tool from which to review the permit activities associated with geoduck harvesting. To that end, DNR should be aware that the previous shoreline permits for geoduck harvesting were remanded for additional environmental information. Upon completion of the FSEIS, DNR will need to notify Kitsap County when they wish to have the permit reset for hearings. At the current time it is the determination of the Prosecuting Attorney's Office that the review process will be pursuant to the Kitsap County Procedures Ordinance; this means that the permit applications will go to the Hearing Examiner.

1 With respect to specific issues, Kitsap County continues to see the management of the geoduck program as one with a strong appearance of conflict. When the same agency responsible for letting the leases is responsible for monitoring the harvest, and the success of the program depends on the revenue that is generated, it opens the door for opportunities to manipulate the system. The development of a program based on equitable checks and balances may be more appropriate. In addition, it remains unclear what portion of the Washington State Department of Fish and Wildlife budget is derived from the proceeds of the geoduck harvest.

2 Attention to the practice of high-grading or selective harvesting was identified last year when the DNR identified a large number of dead clams and debris in the Hood Canal. From that incident, it is possible to get an idea of the overall impact high-grading has to the MSY. It appears that information from this discovery may give biologists more of an idea of the numbers and impacts this type of activity is having on the industry.

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Mr. Loren Stern, Manager  
Page 2  
February 22, 2001

- 3 On page 79 references is made to a consultation with NMFS to meet 4(d) rule requirements. When does DNR anticipate that consultation occurring? And can you elaborate on the process DNR will be taking.

These comments, along with the enclosed letter, consist of the comments regarding the SDEIS at this time. We look forward to the review of the final documents and the review of the actual permits. Should you have any questions, please do not hesitate to contact me.

Best Regards,



Renee Beam,  
Shoreline Administrator

RB:jef

Enclosure

cc: Board of Commissioners  
Shelley Kneip, Prosecutor's Office

**APPLIED  
ENVIRONMENTAL  
SERVICES, INC.**

Tuesday, February 20, 2001

Kitsap County  
Department of Community Development  
614 Division Street  
Port Orchard, WA 98366

Attention: Rene Beam

Subject: Review of the State Environmental Documents for the Puget Sound Commercial  
Geoduck Fishery dated December 2000

Dear Rene:

Applied Environmental Services, Inc. (AES) was hired by Kitsap County to technically review the latest (most recent) state environmental documents prepared for the Puget Sound commercial geoduck fishery. We have completed our review. The documents we studied included:

- The Draft Supplemental Environmental Impact Statement, The Puget Sound Commercial Geoduck Fishery (DSEIS), December 2000 prepared jointly by the Washington Department of Fish and Wildlife (WDFW) and the Washington State Department of Natural Resources (DNR)
- The Puget Sound Commercial Geoduck Fishery Management Plan (Management Plan), December 2000 prepared by the Aquatic Resources Division of the DNR
- The Responsiveness Summary, December 2000 and
- The Appendices to the DSEIS for The Puget Sound Commercial Geoduck Fishery.

Thank you for again requesting our assistance. We hope our comments will add clarity and constructive modifications to the Draft SEIS and supporting texts.

First of all, we appreciate the time and effort the state of Washington has taken to prepare this December 2000 Draft SEIS and supporting documents for the Puget Sound commercial geoduck fishery. This document, and supporting text is a vast improvement over the 1999 version that was substantially better than the 1985 DEIS. We will divide our comments into two sections; general comments which will be more broad based and specific areas for improvement on specific topics within the SEIS.

### **General Comments**

1. AES is pleased to see such a marked improvement in the environmental documentation prepared for the Puget Sound commercial geoduck fishery. The current DSEIS is much more readable and understandable. Many of the previously noted inconsistencies no longer exist in the current document.

Literature and other technical references omitted from the 1999 DSEIS have been added. A more in depth analysis of the issues is presented with a discussion on how the authors reached the conclusions about the topic. Harvest restrictions; specifically with respect to eelgrass have been clarified.

2. ~~The~~ Puget Sound Commercial Geoduck Fishery title of the DSEIS and supporting documentation is misleading. The documentation covers a vastly greater area than just Puget Sound. Hood Canal, the Straits of Juan de Fuca and San Juan Islands are also represented. This document is about the State of Washington's Commercial Geoduck Fishery. We suggest not limiting its applicability by changing the title of the DSEIS and supporting documentation.
3. Throughout the DSEIS and supporting documents, a few references are made to the Endangered Species Act (ESA) and protection of those species now considered threatened. There are also references to Environmental Assessments (EA) to be prepared by WDFW for each geoduck tract. There is no linkage between the EA's prepared for each tract and Biological Assessments (BA's) required for projects in the vicinity of threatened or endangered species. How are WDFW and DNR going to respond to Section 7 of the Endangered Species Act? Are biological assessments to be prepared for each region, or by tract? Who prepares these BA's, is it WDFW and DNR, or is it the individual harvester due to slight variability in harvest methods and practices. Also, since the Endangered Species Act is federally driven, the tribes will also need to prepare BA's as their harvest restrictions are not a mirror image of the state's restrictions. One document will not cover both entities.
4. It would be very good if negotiations between the state and Tribes could progress to the point where both groups could follow the same harvest rules. As co-managers of the state's fishery resources, we believe it is imperative that fishery harvest be cooperatively and consistently managed to achieve balanced results in harvest as well and stock preservation. Right now the Total Allowable Catch (TAC) of geoducks is divided equally between the state and the Tribes, yet the Tribes are not restricted to harvesting further than 200 yards from shore, or limited to weekday work. For example, in Kitsap County, the Colvos Passage tract is viable as far as density of geoducks is concerned but restricted for state harvest because a "majority is closer than 200 yards from shore" (Appendix 1 – 2000 Geoduck Atlas). It is conceivable that Tribal harvesters not limited by the shoreline distance restriction could fish this area. The SEIS does not adequately cover the entire fishery (treaty and non-treaty) impacts and we believe this to be a major problem that could lead to mismanagement over time and harvest techniques and fishery information becomes more focused with cumulative impacts of marine activity.
5. Since the listing of Puget Sound Chinook salmon and Hood Canal Summer Chum Salmon on the Endangered Species List, much work has been done to identify the inter-relatedness of species and habitat. For example, as scientists, we have more fully determined the importance of marine shoreline riparian vegetation to surf smelt and sand lance spawning success (Pentilla 2001, In Puget Sound Research 2001, Puget Sound Water Quality Action Team, February 12 – 14, 2001, Bellevue, WA). We have also identified the importance of "sub-estuaries" in the nearshore marine environment to juvenile salmon. Recent studies have also shown that larval marine fishes are dependent upon light penetration in order to see prey items and successfully forage. Any reduction in water quality that reduces light penetration will affect marine larval fishes

survival (Britt, et al. 2001, *In* Puget Sound Research 2001, Puget Sound Water Quality Action Team, February 12 – 14, 2001, Bellevue, WA). Geoduck harvest reduces light penetration due to release of silt and fines from the substrate that may have an affect on marine larval fishes. These elements along with total ecosystem management of cumulative actions should be discussed in a fishery based environmental impact statement. The DSEIS omits the critical nature of the inter-relatedness of marine habitat and the species that reside there.

### Specific Comments

1. On page 1 of the DSEIS Executive Summary are two comments about the 'surplus' of harvestable geoducks. Surplus is defined as an amount or quantity in excess of what is needed (American Heritage Dictionary 1983). The connotation is that this population of geoducks is extra, not a resource to be valued and managed. If this language is from the Federal ruling, then perhaps it must remain. If not, consider a harvestable amount, or harvestable number or some other word that places value on the resource.
2. Page 3 of the DSEIS Executive Summary discusses that the material presented is the 'best information available' to DNR and WDFW. If this is so it should also be termed 'best available science' to remain consistent with mandates and language from the Growth Management Act.
3. Page 3 of the DSEIS Executive Summary goes on to state that the geoduck fishery has been ongoing for 30 years without significant impact. WDFW has been monitoring many species of groundfish that utilize the subtidal zone occupied by geoduck. WDFW studies in Puget Sound have shown dramatic declines in fishing success. Results of these studies have led to an Endangered Species Act petition for six groundfish species (Palsson 2001, *In* Puget Sound Research 2001, Puget Sound Water Quality Action Team, February 12 – 14, 2001, Bellevue, WA). Cumulative impacts of all marine activities are likely to play a role in the decline of groundfish resources. Fishing, water quality, substrate disturbances and many other activities must be considered. Geoduck harvest occurs over a very large and diverse area. The subtidal habitat common to geoduck populations is used in common with many groundfish species for rearing, foraging, spawning and refuge. Disturbance impacts are likely to be important and should be discussed in context of the WDFW data rather than ignored.
4. Page 4 of the DSEIS Executive Summary discusses mitigation measures. These are considerably better than those presented in the 1999 SEIS, however consider adding some clarification text. EA's are prepared for each tract, submitted, reviewed and approved. This would be a good place to also require BA's to follow the same review and approval process at the Federal level. The bullet on restricted fishing seasons should be expanded to other species and rearing times as defined on page 15 of the DSEIS. Herring spawning is not the only harvest restriction. This is especially important to point out within this mitigation measures section. Other commercially important species are not mentioned in this section or adequately in other section. As with groundfish, sea cucumbers (a commercially harvested species) are not discussed. This species is also common to geoduck tracts and is very substrate oriented. Disturbances to substrate in terms of habitat and food source competition may have impacts to this species that are not considered in the DSEIS.



5. Page 18 of the DSEIS discusses removal of a harvest tract from the list of approved tracts for health reasons, or conflict with other water dependent uses. Please add unresolvable conflicts with listed threatened or endangered species.
6. Page 19 of the DSEIS outlines the review of a tract by local, state and federal agencies through SEPA. It is stated that this review is for non-Indian fishing. Inclusion of a BA requirement for all harvestable tracts would provide for a more thorough environmental review through the Federal process.
7. Page 35 of the DSEIS discusses the calculation of the density of the geoduck population shallower than -18 feet. We have some questions about the methodology and assumptions presented in this section. The authors state that the density of geoducks between -18 and -30 feet is the same as the geoduck density shallower than -18 feet. Further on in the DSEIS (page 41) it is stated that geoduck density increases with increasing depth. Based upon maps of the seven survey tracts and an assumption that geoduck density is consistent between the harvest area and shallower depths, the authors determined that 59% of the geoduck biomass is present shallower than -18 feet. If this is the case, then the seven tracts used in this analysis must have a very gradual slope between -18 to -30 feet (12 feet of vertical drop) and then a steeper drop between -30 and -70 feet (40 feet of vertical drop) to account for the high percentage of biomass in the short vertical zone. If this beach profile is consistent with usual beach profile characteristics for Washington, then the total shallow water geoduck biomass calculation is likely accurate. If these seven tracts are not fully representative of geoduck tracts in all the proposed harvest areas, then the numbers need to be revisited to determine a new total geoduck biomass for Washington, especially if this is the analysis that provides the number of 'total geoduck biomass which is considered commercially fishable'. Our knowledge of Puget Sound subtidal areas suggests that seven tracts is not sufficient information upon which to base an entire fishery management program. Statistically, we doubt that the sample number (seven tracts) is representative of the Puget Sound and will not withstand scientific scrutiny of the management plan. The Puget Sound Commercial Fishery Management Plan (December 2000), states on pages 5 and 6 that regional biomass estimates based on diver observations sets the harvest levels. There is confusion between the methods stated in the Management Plan document and the DSEIS document in determining TAC.
8. Page 36 of the DSEIS provides an illustration of annual state commercial harvest. This figure should include Tribal harvest as well since the paragraph is discussing TAC.
9. Page 40 of the DSEIS states that 2.7% of the total harvestable biomass is conservative. Paragraph 1 indicates that an increase in this percentage may occur. Other places in the DSEIS states that the harvestable zone could also be increased (deeper etc.). If it is the intent of DNR and WDFW to increase geoduck harvest, then this is contradictory to the statement made in the Executive Summary (page 3), "The SEIS is not intended to be used to introduce new issues or changes to the state/tribal management agreements..."
10. Page 49 of the DSEIS discusses the significance of geoduck impacts. The harvest rate is discussed, along with a '40% of the "virgin" level' etc. Perhaps a graph explaining this would be instrumental in minimizing confusion.
11. Page 52 of the DSEIS. We concur that it is a good idea to do further research on the survival of geoducks that have been subject to high grading with partial digging. This result could certainly affect the fishery related mortalities. How

would results of such research be implemented into the fishery management? The DSEIS only states that the simple experiment could be performed and tract photographs could be compared to determine high grading. Will these techniques be employed? Have they been proved to be effective in determining high grading? These "possible" activities do not lead the reader to understand how or if high grading will be estimated and how <sup>of</sup> if this information will be integrated into the fishery management.

12. Page 64 of the DSEIS mentions *Parastichopus californicus* (sea cucumber) is common on most geoduck tracts. This species is commercially important and possible impacts should be discussed in terms of habitat disturbance, food source competition and potential predator attraction resulting from geoduck harvest.

### Summary Comments

Again, this DSEIS and supporting documents are a vast improvement over the 1999 SEIS and the 1985 document. We hope that our comments have been constructive and represent current scientific knowledge of marine ecosystems. We hope to have added readability to the document with a few of the suggestions. Technically, one of the biggest errors we see in the document is the omission of the Biological Assessment process through the Endangered Species Act. In addition, the numerical calculation of geoduck numbers in shallow water is still difficult to understand (Comment 7 of the Specific Comments section of this letter).

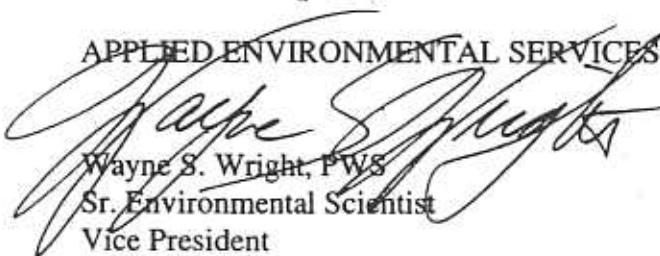
Several important elements remain missing from the analysis of the geoduck fishery have been identified above. Some of the more important items are:

- Inter- and intra- specific impacts (predation and competition) due to substrate disturbance from harvest activities (Comments 3, 4 and 12 of the Specific Comments section of this letter). Habitat overlap and life stage preferences for marine species as they relate to geoduck harvest areas is not well discussed and are critical to the overall management of Puget Sound due to the wide distribution of geoduck clams.
- Cumulative impacts to the overall marine environment and larval stages for marine fishes (Comment 5 of the General Comments section of this letter).

Thank you for the opportunity to review this DSEIS and supporting documents. This technical review has been provided to Kitsap County under contract and is based upon available scientific literature and our professional experience as environmental scientists active in the Pacific Northwest. If you have any questions about this review, please call.

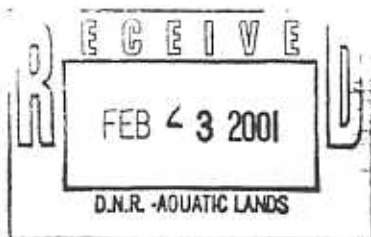
Sincerely,

APPLIED ENVIRONMENTAL SERVICES, INC.



Wayne S. Wright, PWS  
Sr. Environmental Scientist  
Vice President

FEB 22



## THE PUGET SOUND COMMERCIAL GEODUCK FISHERY

## Draft Supplemental Environmental Impact Statement

December 2000

Re-Issue

Comments by

Michael A. Kyte

Senior Marine Biologist

Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond, WA 98052-3333

22 February, 2001

## INTRODUCTION

In general, the DSEIS is well written and addresses most of the important issues surrounding the commercial geoduck fishery. The re-issue of the 1999 DSEIS has answered most of the comments and questions that I and others had with the original 1999 issue. However, the responses to the comments have raised additional questions that are presented here. I have read the responses to comments on the previous issue and will attempt not to reiterate needlessly comments made earlier unless they have not been addressed adequately.

## GENERAL COMMENTS

- Comment 1: In several places within the DSEIS, differences between Tribal and non-Indian fishing practices and governing regulations are mentioned. The SEIS should devote a short section in explaining and specifying these differences in one place rather than referring to them without explanation throughout the document.
- Comment 2: Washington Department of Natural Resources has recently completed the *Washington State Shoreline Inventory*. This combination of this inventory and the location and status of mapped geoduck tracts would be very helpful to shoreline planners, biologists, regulators, Tribal biologists, etc. The WDFW Geoduck Atlas information could be combined in a GIS format and package and could be annually issued as a CD.
- Comment 3: The DSEIS as a public technical document should be subject to a quality assurance process including technical editing before release. Enough typographical, grammatical, and punctuation errors were found to indicate that this is not the case. The document should be subject to a thorough editing by a

Geoduck DSEIS 2001 Comments by Michael Kyte. 22 February 2001. Page 2

professional technical editor before release. This comment applies also to the Response Summary. For instance, a common error seen in both documents is the substitution of "you" for "your." While this may seem to be trivial, such errors reduce the document's credibility, readability, and comprehensibility.

Comment 4: Much emphasis is placed throughout the document on the "Environmental Assessment" (EA) process through which a proposal to harvest a specific tract goes. Examples of reference to the EA process are found in the Executive Summary, page 5; section 2.2, page 15 (as "preharvest environmental surveys"), section 2.4, page 18; and other locations. I have examined a number of these EA documents supplied to me by WDNR. Each document describes in detail the harvestable geoduck population of the tract proposed for harvesting.

However, the descriptions of existing physical and biological conditions are cursory and apparently were cut and pasted from one EA to another. The sediment and species descriptions were exactly the same between documents with no site specific information. In fact, some of the species listed do not normally occur in the basins or habitats for which they were listed. If they actually occurred at these locations, it would be very notable and indicative of conditions very different than what were described in the EA.

An example of the paucity and probable erroneous information in these EA reports is the consistent mention of seapens (*Ptilosarcus gurneyi*) in every tract without inclusion of their known suite of predators. Seapens are a "key-industry"<sup>1</sup> species supporting 6 to 7 predators that occur with the seapens in nearly all situations. The EAs that I reviewed consistently mentioned seapens but did not include their predators. Were they completely absent or just not recorded? In addition, seapens have disappeared along the eastern edge of Central Puget Sound in the last 15 to 20 years<sup>2</sup>, and these EAs, if they included more and accurate information, could be used to estimate the scope of this phenomenon. not the indicator

Admittedly, the EAs are "snapshots" in time and cannot address seasonal variations. However, these EAs are intended as important as tools with which to assess the environmental impacts of harvesting. A site specific accurate species list with at least relative abundances should be a minimum requirement. As they are currently prepared, the EAs are not based on best available science, are not scientifically or statistically sound, and cannot be used to assess impacts other than to the geoduck population.

In addition, a field test for percent fines (grain size less than 0.063 mm) should be included. This test is very easy to do, indicative of sedimentary conditions, and would be helpful in assessing impacts.

<sup>1</sup> Birkeland, Charles E. 1974. Interactions between a sea pen and seven of its predators. Ecological Monographs 44:211-232.

<sup>2</sup> Kyte, Michael. 2001. Vacant Benthic Habitats: Where Have All the Sea Pens Gone? Proceedings of the 2001 Puget Sound Research Conference, Seattle, WA.

Geoduck DSEIS 2001 Comments by Michael Kyte. 22 February 2001. Page 3

Comment 5: Geoducks range throughout the Pacific Northwest including British Columbia and Alaska. The populations of Washington and British Columbia are closely connected biologically because of the broadcast spawning and pelagic larval reproduction strategy of geoducks. Also, geoducks are commercially harvested in British Columbia. Is there any coordination or communication at the regulatory level between the two jurisdictions to manage these mutual stocks? If not, it seems that there should be.

## SPECIFIC COMMENTS

### DSEIS Executive Summary

Comment 1: On Page 3, last paragraph, the first sentence states "The harvest has been conducted for over 30 years without significant adverse impacts." This statement is somewhat in contradiction with the following conclusions section and the geoduck harvest impact section (3.4.1.2), which recognizes that the removal of geoducks as a significant impact at least to the geoduck population.

In addition, the impact sections recognize that little is known about the linkage of the geoduck population to the benthic ecosystem. The simple removal of such a large amount of biomass from this ecosystem should be considered and recognized in the Executive Summary as a significant impact.

In the following conclusions section, the impact is recognized but characterized as "temporary." Temporary is a relative term, and WDFW and other agencies view temporary as much shorter in duration, usually indicating a matter of days or weeks, not 11 to 73 years. Removal of significant quantities of biomass from the benthic ecosystem for any length of time should be considered significant without any qualification. In fact, it seems that this sentence contradicts itself by first saying that the harvest impact is temporary and then stating "the total harvestable geoduck biomass will be permanently reduced." Which is it - temporary or permanent?

Comment 2: On page 6, second paragraph, the third sentence states "Fishing affects a relatively small area of total habitat..." While this may be true relative to the total area of Puget Sound or any basin in which a harvest is conducted, this "small area" is most of the "Nearshore Habitat" now considered as critical to the health of Puget Sound by a number of agencies. For instance, King County, in order to preserve, restore, and enhance salmonid resources in response to the Endangered Species Act, has formed the Nearshore Technical Committee whose focus is this small area in which geoduck harvest occurs. Thus, harvest impacts to this area should be carefully and fully considered as cumulative impacts to a critical habitat and not dismissed because of their relatively small spatial area.

### Section 2.0

Comment: Throughout this section, statements are made referring to the differences between Tribal and non-Indian harvesting regulations and agreements. It would be very helpful if a section could be inserted summarizing these differences. These differences are confusing to the reader and apparently contradictory in some cases.

Lower limit of photic zone  
-30 m MLLW  
to riparian zone

Geoduck DSEIS 2001 Comments by Michael Kyts. 22 February 2001. Page 4

**Comment: Section 2.3.** On page 17, the DSEIS states "The hydraulic escalator harvester operates by removing all sediment in its path..." Having worked extensively with hydraulic escalator harvesters, I have seen that the harvester actually liquefies the sediment, as does a geoduck harvester's water jet. In fact, the track of an escalator harvester when operated properly appears nearly the same as the mark made by a geoduck harvester, but in the form of an elongate track or shallow trench. The escalator releases more fine sediments into the water because of the greater volume of sediments that is disturbed during any one time interval but does not operate by "removing all sediment from its path."

I made this comment on the previous issue of the DSEIS. It was acknowledged, but the error remains.

### Section 3.0

**Comment: Section 3.3.2.** On page 27, second paragraph, it is stated that DOH monitors the water quality of all geoduck harvest tracts and that areas known to contain toxic sediments are not approved for harvest. Does WDNR, DOH, or the Department of Ecology check geoduck harvest tracts for contamination exceeding the State Sediment Management Standards before each harvest? Admittedly, the risk is likely low as most tracts are not located near known sources. However, unrecorded or unknown deposits of toxic chemicals have been found in the past. As a standard precaution some effort should be made to survey tracts to determine the presence and level of any contaminants.

**Comment: Section 3.4.1.1, Page 34.** Observations in Case Inlet by underwater television are used to estimate the ratio between geoduck biomass below -70 feet MLLW and the biomass in harvestable depths. First, WDFW and others, including me, have found that underwater video without "ground-truthing" is not reliable for estimating geoduck populations. In fact, I have been told in the past by WDFW personnel that any surveys conducted using video cannot be accepted for any purpose. Thus, why is video used here as evidence for a very important conclusion? It may be the only information available, but, if it is, that should be stated as a qualification on this estimate.

Second, is Case Inlet typical of South Puget Sound? Also, according to this DSEIS, South Puget Sound geoduck populations are significantly different from those in other management regions. An estimate from a single area using unreliable technology without controls or "ground-truthing" should not be used to estimate geoduck reserve biomass in the rest of Washington.

**Comment: Section 3.4.1.1, Page 34 to 35.** The DSEIS uses dive data collected between -18 and -30 feet MLLW from seven tracts to estimate the average density in habitats shallower than -18 feet. This is not a valid estimate according to data collected by me and probably a number of other surveyors. I have found in quantitative surveys conducted at Kingston (1996, 1998) and Des Moines (1997, 1999), that geoduck populations above -18 feet MLLW are statistically different than those between -18 and -30 feet MLLW. My surveys and those of other consultants have been submitted to and approved by WDFW and could be used for this estimate.

Check this →

## Geoduck DSEIS 2001 Comments by Michael Kyte. 22 February 2001. Page 5

Comment: Section 3.4.1.1. On page 40, it is stated that the oldest live geoduck that has been aged from Puget Sound was 131 years old. This information should be updated with the results from the study by Are Strom at the University of Washington. Mr. Strom's study is using a shell from a geoduck that was determined to be 165 years old.

Comment: Section 3.4.1.1. Page 41. The potential for expanding harvest activities into deeper water to 100 feet is discussed. A factor of this expansion could be the presence of higher quality geoducks in deeper water. This factor could make harvesting in deeper water economically viable despite the added cost of more expensive diving technology and procedures. Does either WDNR or WDFW have any information on the market quality of geoducks in deeper water?

Comment: Section 3.4.1.1. Page 42. The fourth and fifth methods of expanding the current geoduck harvest are essentially the same. They both amount to harvesting geoducks from decertified areas whether the geoducks are intended for human consumption or not.

Another expansion may be the use of aquaculture. As I commented in the 1999 edition, the potential and existing stocks of private stocks of private aquaculturists should be inventoried or at least considered in this DSEIS to estimate the possible future effect on the "wild" fishery.

Comment: Section 3.4.1.2. Page 44. In the first paragraph, the statement is made "Recruitment appears to be slower on harvested tracts than on unharvested tracts." Unfortunately, I do not have access to Goodwin and Shaul (1984), nor is this publication included in the appendices to the DSEIS. The final SEIS should be more specific on the meaning of this statement; by how much is the recruitment slower and what are the long-term implications of this differential to management?

Comment: Section 3.4.1.2. Page 46. The estimates of mortality through wastage or discarding can only be considered as preliminary. The information presented in this discussion includes a very large variance in estimates with a low sampling number. It should be recognized that these estimates are probably indicative of potentially larger problem that deserves closer study. In addition, is a lower or a higher wastage estimate used in the present management model? It seems that use of the higher number, 28 percent, could have a significant impact on the estimates of Total Allowable Catch.

Comment: Section 3.4.1.3. Page 49. The terms "dramatic" and "long-term" are used to describe the impacts by harvesting on local (i.e., not state-wide) geoduck populations. These impacts should be described as "significant" both biologically and statistically. While recovery eventually occurs; a range in time for full recovery of 11 to 73 years would seem to constitute a significant impact. WDFW, WDNR, Ecology, and other agencies are very concerned in other projects about "temporal impacts" where conditions in eelgrass beds and other benthic intertidal and subtidal habitats are not returned to pre-disturbance conditions nearly immediately. Why is a recovery rate of 11 to 73 years for removal of a major portion of the benthic biomass not considered significant?

Geoduck DSEIS 2001 Comments by Michael Kyte. 22 February 2001. Page 6

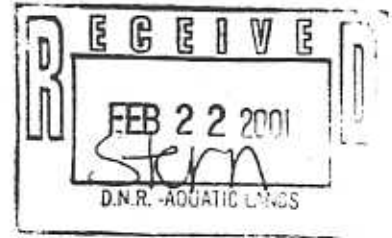
In addition, two contradictory statements are made in the first paragraph. First, it is stated "... since only 2.7% of the commercially commercial [sic: repeated word] biomass is removed each, and recovery occurs on fished-out tracts." The discussion on mortality in section 3.4.1.2 contradicts the statement that only 2.7% is removed.

The second apparent contradiction is between sentences four and six. In sentence 4, it is stated "... there is an expected, [sic: comma] gradual decline in commercial biomass ... ." Sentence six contains the statement "... the harvestable population is expected to reach a new fishing equilibrium and fluctuate around this lower level indefinitely." It appears that these two statements contradict each other with the first one describing an indefinite decline with the second indicating that the decline will level off and then fluctuate. If the second statement is the anticipated situation, the paragraph should be rewritten to remove the apparent contradiction. If the first is true, the management plan should be revisited to address the long-term decline.





State of Washington  
**DEPARTMENT OF FISH AND WILDLIFE**  
Region 6 Office: 48 Devonshire Road - Montesano, Washington 98563-9618 - (360) 249-4628



February 12, 2001

Washington Department of Natural Resources  
ATTENTION: Loren Stern, Manager  
Post Office Box 47027  
Olympia, Washington 98338

Dear Mr. Stern:

**SUBJECT: State Environmental Policy Act Document; Washington Department of Natural Resources (DNR) Proponent, Revised Draft Supplemental Environmental Impact Statement (SEIS) for the Puget Sound Commercial Geoduck Fishery**

The Habitat Program of the Washington Department of Fish and Wildlife (WDFW) has reviewed the above-referenced State Environmental Policy Act (SEPA) document received on February 2, 2001, and offers the following comments at this time. Other comments may be offered as the project progresses.

We feel that the current mitigation measures as outlined in the Executive Summary on pages 4 and 5 are adequate to protect most fish resources, salmon included, from detrimental impacts of this fishery. However, we are concerned that these measures may not adequately protect herring, which commonly spawn on vegetation and substrates other than eelgrass, and other demersal fish that may use similar habitats. Therefore, we recommend that geoduck harvest activities be prohibited in all macroalgae and other suitable spawning substrate as identified in WAC 220-110-250(d), and within other types of marine vegetation that has been identified as suitable herring spawning substrate, within or adjacent to identified herring spawning beds. Avoiding these beds by two vertical feet, or 180 horizontal feet if the slope is very shallow, as is done with eelgrass beds, is acceptable.

In addition, because we are concerned that siltation caused by disturbance of the bed during geoduck harvest activities may cause inadvertent mortality of herring eggs, we recommend that the prohibited work times for the protection of herring spawning beds as identified in WAC 220-110-271 be imposed on harvest activities in close proximity to identified herring spawning beds.

Finally, we recommend that no harvest occur in identified rockfish and lingcod settlement and nursery habitat areas as identified in WAC 220-110-250 (e) and (f).

We recognize the importance of this fishery, and support the careful management and mitigation measures that have been implemented to allow this fishery to proceed in a manner that protects

Mr. Stern  
February 5, 2001  
Page 2

this and other fish resources. And we feel that the mitigation provided does adequately protect salmonids, even ESA listed species, as the activity is well removed from habitat critical to these fish. However, because of heightened concern over potential listings of non-salmonids in Puget Sound, we feel that these additional restrictions to protect herring, rockfish, and lingcod are necessary.

Thank you for the opportunity to provide these comments. If you have any questions, please contact me at (360) 249-1217.

Sincerely,



Robert L. Burkle  
Assistant Habitat Program Manager

RLB:rlb

cc: SEPA Coordinator, WDFW  
SEPA Coordinator, Ecology  
Dan Pentilla, WDFW  
Hal Beattie, WDFW  
Brian Williams, WDFW  
Sue Patnude, WDFW

Mr. Dave Deitzman  
P. O. Box 47015  
Olympia, Washington 98504-7015

Re: SEPA File No. 99-042004

Dear Mr. Deitzman:

This letter is in response to the 1999 Draft Supplement Environmental Impact Statement for the Puget Sound Commercial Geoduck Fishery. Thank you for this opportunity to review and comment and share my concerns about the need for reassessment of this fishery.

I appreciate the improved organization of the newest SEIS. The draft portion is easier to read and is more focused with the appendices providing additional data to help in the evaluation process. The tribal rights and management of geoduck harvesting are outlined and acknowledged at the beginning of the proposal and an appropriate caveat included regarding DNR's current understanding of the marine environment. The *Responsiveness Summary* showed considerable effort to respond to specific comments received by DNR to the last SEIS statement two years ago.

① I continue to question the DNR statement that "... harvest has been conducted for over 30 years without significant adverse impact" which defines the DNR position posited in previous EIS and SEIS statements. The lack of a stable and accurate baseline of the geoduck population, combined with a very modest amount of consistent, longitudinal data on the impact of commercial harvesting and the maintenance of a healthy geoduck population does not support such an absolute and authoritative position. It may be true that harvesting has been done for 30 years, but monitoring and evaluation of the geoduck population has been a much more recent undertaking. Although efforts at evaluation and monitoring have been improving over the years, there is much we do not know about the population and recovery of this clam.

② If the range of years for recovery of a harvestable geoduck bed is 11 to 73 years with a mean of 39 years, then many (about half) of the geoduck beds in which harvesting has occurred over the past 30 years have not had time to fully recover. In addition some beds do not recover at all. This would indicate a considerable loss over the 30 years of pre-fishing densities and the total biomass of harvestable geoducks. In addition, little harvesting was done until the 1980's, so it cannot be stated that we have 30 years of data on the impact of harvesting on the geoduck. How can we continue on this course without significant and perhaps permanent loss of geoduck beds available to harvesters?

③ Lumping all geoducks into a population model, regardless of the depth in which beds exist, does not allow for differences which may occur within the specie. Geoducks which populate one depth in Puget Sound may not be able to inhabit another depth nor have the same characteristics as those in other differing habitats. In fact the SEIS indicates their size is related to the water depth they inhabit. No information seems to be available to assure the Kitsap County citizen that all varieties of this natural resource will be sustained.

④ I question whether a population model in which geoducks may be reduced to a 40% level can provide realistic security of the continued existence of the geoduck. The SEIS draft states (p 49) that the impacts of commercial harvest on geoduck populations within tracts are dramatic and long-term and mentions the low rate of natural recruitment for the bivalve. The decline of the geoduck, it is stated, is expected to reach a level of 40% of the unfished "virgin" level and then, supposedly be maintained at that 40% level. Forty percent of the virgin population seems to be a very thin maintenance margin which does not allow for unexpected or unforeseen natural factors which might impact the population and restoration of geoducks or unlawful harvesting, high-grading, and wastage of the clam. The model also does not take into consideration the almost 25% of the geoduck biomass which may be unfit to harvest because of septic contamination. I believe this plan places the geoduck too much at risk for extension of commercial harvesting at deeper water levels, more frequent harvesting of current beds, and possible loss of this unique clam.

5  
C. W. F. W.

The statistical analysis of the recovery rate of geoducks in 15 harvested tracts still puzzles me (Goodwin-Bradbury, 1999). I do not understand the dropping of six tracts from the analysis because they showed no significant recovery. The explanation given was that only one tract was eliminated entirely from the study. Doesn't reducing the n by almost half because the recovery rate was nil create a misleading conclusion in the statistical estimates of the recovery rate of geoduck beds in the study? Recovery is already an important question for which we have limited empirical evidence and presenting data that conclude a more robust recovery than is warranted by dropping disappointing tracts from the n appears to lead to an erroneous conclusion.

6

The premise that the use of water-jets by divers is the "most environmentally benign method of harvest currently available" may be true, but that does not mean it is environmentally benign. Maintaining that there is no adverse effects from liquifying the sand and silt around the geoducks and creating thousands of holes in harvested beds defies common sense. For example, if each hole created by the removal of a mature geoduck is roughly 15" in diameter and the sand from the hole is displaced into a berm around the hole, the diameter of the berm plus the hole is about two feet. Harvesting takes about 10,000 clams per acre—an acre is about 40,000 square feet. We are saying that about 75% of this acre after harvest is either hole or berm. This is not minor disturbance of the natural environment nor of the area where geoducks once inhabited.

7

The impact of harvesting on the marine ecosystem is almost unknown. Preliminary studies regarding sediment, epifauna, infauna, fish, and other marine life from which DNR concludes there is no damage to the marine ecosystem seems highly optimistic and self-serving. The method of harvest has to have considerable impact on the marine environment. Sediment plumes alone would have to impact marine life along the routes the currents would take them. The study does point out that harvesting has a potential for adverse affects on herring and chinook salmon but denies that it affects other marine life. The latter may still be debatable, but the former is reason enough to modify the commercial harvesting of geoducks.

8

The number of jobs this industry provides is negligible. I believe DNR quoted 50-60 in the last SEIS which hardly is a major benefit to employment in the state

9  
intertidal benches

The citizens of Kitsap County, which enjoys the longest shoreline area in which geoducks are harvested, receives very little benefit and considerable loss from the fishery.

10

The implication that those who object to the commercial fishing of the geoduck are those who don't want the considerable noise caused by the divers and the boats is not accurate. The noise is a problem. The measurement data that are given do not take into consideration the frequency spectrum of the sound. The 50dbA of sound concentrated into the low frequency thump-thump-thump of compressors will sound very different from 50dbA spread into the sound of the wind, waves, birds and general noise residents are accustomed to hearing. The sound itself is noxious and the constant noise over months will increase daily stress levels for nearby residents. However, I have been in contact with over 200 persons in the North Kitsap area regarding this issue and most are concerned more about the loss of the geoduck from the waters of Puget Sound. The loss of the native geoduck as a unique member of the Puget Sound ecosystem is not what the citizens of Washington want—not even for \$5-7 million a year. Those I have talked with feel as I do, we want the geoduck protected. We want the Puget Sound to retain the distinctive qualities that we remember when young. We want a moratorium established on geoduck harvesting for several years to evaluate how best to protect it and its habitat so that we will not lose another creature of our marine ecosystem in Puget Sound.

11

It is important to acknowledge that DNR is heavily invested in the commercial harvesting of geoducks. Their draft indicates a \$5-7 million revenue generated by this industry which is partly used for the operating costs of the state department of fisheries and, perhaps, DNR itself. It is impossible for this agency to be an independent agent in the evaluation of whether the commercial harvesting is of benefit to the citizens of the state or not. Given the history of decline of many species of marine life in Puget Sound over the years, such as cod, rockfish, salmon due to "recreational and commercial overharvest," how can one assume that DNR will do a better job of protecting and maintaining the geoduck?

In conclusion, I would like it to be noted that this is a preliminary and general response to the SEIS. I spent considerable time analyzing the information and statistical data of the last SEIS and wrote a detailed letter about my concerns and some of the problems I saw with those data and the conclusions of the SEIS statement. DNR indicated recently that they did not receive my letter which was posted about a week before the last deadline. Since that time I lost the hard drive on my computer which contained the letter and all geoduck-related notes. That means that I have the task of re-analyzing all the information in this SEIS, starting from scratch, and comparing it to the previous SEIS draft. My current schedule has not allowed time for this; therefore, this letter indicates some of the more general concerns I continue to have and I will do a more thorough review and submit a more specific response in the near future.

Again, thank you for the opportunity to comment on this important matter.

Sincerely yours,



Gay Wickerham Davis, Ph.D.  
37702 Olympic View Road N.E.  
Hansville, WA 98340

2/20/01

Dave Dietzman  
Dept. of Natural Resources  
POB 47015  
Olympia, WA 98504-7015

Re. SEPA File NO. 99-042004

Dear Mr. Dietzman:

Thank you for your prompt response sending me a copy of the draft SEIS, The Puget Sound Commercial Geoduck Fishery, dated December 2000. I would like to note the following concerns,

1. What effect will the new state Shoreline Management Act and local master programs have on the geoduck fishery?
2. What effect will the Endangered Species Act have on same fishery?
3. With increased population in Puget Sound, pollution from nonpoint sources, failing septic systems, sewage treatment outfall, more and more western Washington beaches are being closed to commercial shellfish harvesting. (See Changing Our Water Ways/DNR.)

It appears with all this pollution in certain areas the poor geoduck is not able to pass all this through its system. Is there testing for bacteria such as fecal coliform and others?

Oyster growers are required to test throughout the year by sending samples to the Dept. of Health on a weekly basis more or less.

Care must be taken that pressure not be put on good tracts or beds not to overfish them, and this renewable resource must be protected so that geoducks do not go the way of the salmon and other threatened species.

Yours truly,



David Mascarenas  
517 Laurel Dr.  
Everett, WA 98201-4130  
425-259-6432

MAR - 5



2/27/2001

Dave Dietzman  
Dept. of Natural Resources  
POB 47015  
Olympia, WA 98504-7015

Re. Geoduck overharvesting.

Dear Mr. Dietzman:

I was horrified to read after writing to you 2/20/01 about the SEPA File No. 99-0422004 the enclosed article in the Everett Herald 2/26/01.. It appears that there are a lot of deliberate lies in the draft SEIS, dated December 2000, particularly on page 36, figures 4 and 5.

I request that some kind of criminal charges be brought against those people responsible both in the agencies and in the private sector. Please keep me informed on this issue.

Thank you,

*David Mascarenas*

David Mascarenas  
517 Laurel Dr.  
Everett, WA 98201-4130

*425-259-6432*

**ROGER D. GOODSPEED**

5049 Canal Lane  
Hansville, WA. 98340  
360-638-1677

Dme

FEB 22 2001

February 22, 2001

Mr. David Dietzman  
Environmental Quality & Compliance Division  
Dept. of Natural Resources  
1111 Washington Street SE  
P. O. Box 47015  
Olympia WA 98504

Dear Mr. Dietzman,

I have reviewed my copies of letters I sent to you over the last couple of years. I still stand by my comments made in those letters, and I will now add to some of the areas.

I feel that the DNR, WDFW and the Tribes are not completely forthcoming with the public. To begin with, I ask that you recall the SUN article of March 26, 2000 titled "*Tribe dumped 70,000 pounds of G.D.*" With regards to this dumping D. Herrera made the comment in the SUN... "*We've already developed a new monitoring and compliance program*" and "*The Tribes are very concerned about this report.*" Then on March 31, 2000, Herrera states, "*We wanted to move on so we could have another tract to harvest from*". It was in this tract that the 'high grading' occurred. Did the state check other previously harvested tribal sites for wrong doing there? Please explain the statement "*Tribes' right to 50% of the harvestable surplus of geoducks*", as referred to on page 1 of Aquatic Resource Division - December 2000 Management Plan.

In the draft S.E.I.S. December 2000, page 2, "*because of their sovereign status, Tribes are not bound by state, city or county law such as local shoreline management regulations or ordinances in the exercise of their treaty fishing rights*". Who are they accountable to? The Feds? That action can only create distrust if the tribe fail or refuse



to submit written documentation to the state. DNR has proprietary rights over the states one half, and cannot speak for the tribes. Who speaks for the tribe? What data is compiled and where is it published? What monitoring and enforcement is being done and how and what are these standards of compliance, compared to the state? Instead of "many of the tribes" which is located on page 5 of the S.E.I.S., why not ALL of the tribes?

On page 6 in the second paragraph sixth line down referring to known impacts, "WDFW and DNR have continuing programs to monitor and assess harvest impacts, and environmental assessment of each state auctioned tract". Is this done by the tribes too? If not, why? Further down it is stated "production of about four million pounds of goeducks annually" and "between 2 to 5.7 million dollars per year of revenue is paid to the state from private harvesters."

If this is the inclusion of State 1.6 million and Tribe 1.6 million which equals 3.2 million, that means someone has .8 million pounds not accounted for. In the Aquatic Resources Division Management Plan, December 2000, page 2, "Between \$5-7 million is generated annually for the state." This doesn't track. Is the amount of revenue 2 to 5.7 million or is it 5 to 7 million? What is the total revenue that the State receives from contractors and what is the total revenue the contractors receive?

This goeduck fishery provides funding for the following programs:

- a. Clean up and Restorations of contaminated sediment in the Puget Sound,
- b. Inventory of all nearshore aquatic habitats in Puget Sound.
- c. Control of the invasive aquatic; etc.

QUESTION: What is the cost breakdown for each of these programs plus direct employment of approximately 50 60 people? Does the tribe pay 50% of this bill? If not, then the goals of management are meaningless.

On page eleven at the top, "The tribes and state have reserved the right, in State Tribal management agreements to harvest in areas shallower than minus 18 feet MLLW and deeper than 70 feet in the future". Then, on page 41, 42, 43, the talk is about future plans of expansion of harvesting into other areas. such as, "deeper waters, shoreward of the -18 ft line (which the tribe can do without negotiation), into areas within current legal depths, and polluted areas." It should not even be brought up if the harvesting on tracts

now will be reharvested on a rotated basis. This is what has been implied from past information. On Page 56 of Draft SEIS, "horse clam harvest is currently allowed by the tribes within commercial geoduck tracts with no quota for the tribes because they are sometimes undistinguishable, or inadvertently taken." There is also an implication for the contractors to do the same in the future. "Horse Clams required by the market could be taken opportunistically during regular geoduck fishing. Thus, both harvesters and the state would make money on clams that are currently wasted and unreported." Appendix 5/A page 6 and on page 7 C, "Horse clams could be fished annually from discrete, surveyed beds. The chosen beds would be fished year in and year out."

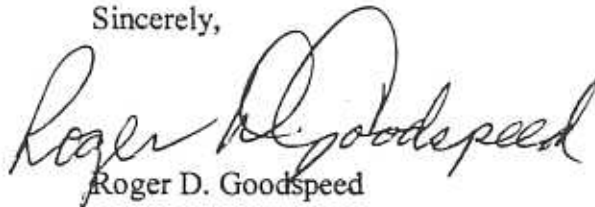
Does the S.E.I.S. guarantee:

- a. Sustainable harvests of ALL state-managed tracts in perpetuity?
- b. That other marine species will not be damaged by respected rotated harvests?
- c. That the tribe will be as good at tract management as the state promises to be?

I think what is driving this whole process is in your Executive Summary, "it is the largest and most economically important clam fishery on the West Coast of North America" and the desired growth of your bureaucracy.

In summary everything you have reported only reinforces my conviction that you are only really interested in FOLLOWING THE MONEY.

Sincerely,



Roger D. Goodspeed

AL

Jim Morrison  
38058 Bay Street N.E.  
Hansville, WA 98340-9998  
(360) 638-2705

Dave Dietzmann, Environmental Quality and Compliance Division  
Department of Natural Resources  
1111 Washington St. SE  
Olympia, WA 98504

February 26, 2001

RE: Revised Draft Supplemental Environmental Impact Statement (DSEIS) for the Puget Sound Commercial geoduck Fishery (99-042004)

I see from the morning paper that the shoreline residents adjacent to the harvest tracks are not the only ones concerned with abuses in the Geoduck Fishery. (Seattle Post Intelligencer, February 26, 2001, "Dumping of lower-grade geoduck sends fishery to brink", from the Associated Press).

The article says that the illegal harvesting dates back to at least 1997. Apparently the fishery wasn't monitored or the rules properly enforced. Unfortunately, the DSEIS only estimates the results of a commercial harvest that includes adequate monitoring and enforcement. Although the Washington State Dept. of Fish and Wildlife WDFW probably claims they now have adequate controls, I am sure they said that before 1997 also.

Much of the DSEIS relates to scientific studies that have been done to evaluate the affected environments. It is well known that the ecosystem dynamics are far from fully understood, and that we have not managed our natural resources well in the past. The interdependence of marine life in the seabed is, to say the least, an elaborate system. It is therefore impossible to say with certainty what the results of harvesting will be.

If you truly wish to protect the environment you will discontinue the commercial harvesting of these clams.

Jim Morrison 

Copy sent to David Paluzzi

12877 Manzanita Road  
Bainbridge Island  
Washington 98110



24 January 2001

Dave Dietzman  
Environmental Quality & Compliance Division  
Washington Department of Natural Resources  
P.O. Box 47015  
Olympia, WA 98338

Re: File 99-042004, Geoduck Draft SEIS

Dear Mr. Dietzman:

Thanks very much for including me among your 'interested parties' and sending the new draft, dated January 20, 2001, with its several collateral documents.

I have no substantive comments.

The 1985 EIS was a fine document, comprehensive and readable. This update demonstrates the great progress made in 15 years by a small research group, on a difficult subject. It is excellent work.

I'm looking forward to the next round of studies, some already underway, on geoduck dynamics and ecology.

Sincerely,

A handwritten signature in cursive script that reads "Donald F. Flora".

Donald F. Flora

cc: David Palazzi  
Lynn Goodwin  
Alex Bradbury  
Bob Sizemore

January 22, 2001

Loren Stern, Manager  
Aquatic Resources Division  
Washington St. SE  
P O Box 47027  
Olympia, Wa. 98338

*Dear Mr. Stern,  
Because the packets are  
so costly to print and mail,  
please take my name  
of the list.  
If possible a letter  
with an "up-date" would  
be appreciated.  
Thanks -*

Re: Revised Draft SEIS for Puget Sound Coi

Joyce Strand  
3661 224th Pl S.E.  
Issaquah, WA 98029-6246

Dear Mr. Stern.

I'm what you call an "interested party" - in fact last year I was so alarmed at hearing the number of thousands of pounds of goeducks harvested I did some calling to my Congress and Senate representatives. I received a packet from your department at that time. Now, in January I have received an even larger package - four packets which is impressive and tells me more than I want to know. - if you know what I mean.

First, I am impressed with the documentation!

Second, I am still alarmed at the numbers of goeducks harvested and want to point out that the statement on page 4 of the "Draft - S.E.I.S" scares me to death. First, let me say I am not an expert - but I have this gut feeling we are being "snowed" with paragraph 2. It reads in part: "total harvestable goeduck biomass will be permanently reduced. Populations on most harvested tracts may require a significant time to return to pre-fishing densities and biomass following harvest. In post-harvest studies done at 15 different goeduck tracts throughout Puget Sound, the projected recovery time averaged 39 years, and ranged between a low of 11 years to a high of 73 years."

"Because the biomass of goeducks available to the commercial fishery represents less than a quarter of the total goeduck biomass in the state, roughly three-quarters of the total goeduck biomass in the state is not currently available for harvest by the commercial fishery."

Now Mr. Stern..... the 3/4 of the total they claim is, by the report's own admission, down so deep and in areas so hard to get to - even the commercial companies don't want to reap the harvest. - And the Indians probably won't want to either.

In a nut shell - please watch the numbers to be harvested. 79 years - 50 years - 25 years - even 15 years is too long to wait for new growth. Our children will miss out on it entirely - and so will yours. I know the State needs the money - but its like the "old growth" of trees - once gone... this too will be gone FOREVER. Can we count on you to protect this resource for us?

Thank you for taking the time to read this letter.

Joyce Strand  
3661 224<sup>th</sup> Pl S E  
Issaquah, Wa. 98029

*cc: Jennifer Deenan  
Eric Strand  
Nelreen Batten*

*Perhaps, etc  
Mr. Stern*

Casey Bakker  
POB 282  
Olympia, WA 98507  
360-791-2833

To: David Palazzi  
re: DSEIS Geoduck

Dear David,

I am a resident of Washington state and a long time participant in the Wa. geoduck fishery. I have several concerns relating to the latest draft SEIS.

① The current draft has little information relating to the economic impacts of the geoduck harvest and most of that information relates to the income the DNR receives. This is a superficial and agency self serving analysis and I do not believe this fulfills the regulatory requirements of the Shoreline Management Act, WDFW mandate or the WDNR management role in this fishery.

② I note, on page 3 of the DSEIS, that WDNR seems to supersede WDFW's authority by stating, "The SEIS will also provide DNR a way to responsibly meet its mandates to manage a sustainable commercial geoduck fishery...". Currently that mandate should be WDFW's responsibility to oversee and maintain the economic well being and future viability of the geoduck fishery through RCW 75.04.012 and 75.08.012.

③ The current economic condition of this fishery and its on-water harvesters is most dire. The on-water harvesters which are responsible for the WDNR's incredible 5 million dollar annual revenue do not have the basic Worker compensation benefits or Worker injury protections that all Washington state workers have and which are considered a required employer responsibility. The on-water geoduck harvesters can expect to earn the WDNR approximately \$700,000 each annually and yet the worker can expect to have grave difficulty locating health coverage for job injuries, no pension or worker bargaining rights, no life or disability provisions or insurance. The harvesters work in cold, dangerous and physically demanding conditions and almost all the workers suffer from Carpal tunnel syndrome, bursitis, arthritis, compromised lower back functions and the daily risk of potential life threatening dive maladies. The harvesters can expect no help from State mandated worker programs. The sad fact is that almost 75% of the workers earn less than the Federal family poverty wage guideline. This should be a tremendous embarrassment to WDNR and an indictment of a significant programmatic failure to address worker safety and job place injury income protections and overall adequate earned income. These comments relate directly to the section 4.4 Social Services and the DSEIS statement that there is "no significant effect on State services...". How was this conclusion drawn and what is the supporting data which relates to this particular conclusion? I believe this is a significant oversight by this DSEIS and should be addressed by WDFW through their mandate and agency requirement to provide for, "...the economic well being and stability of the commercial fishing industry."(RCW 75.08.012).

④ Ordinarily, I would say that a state agency economic effects on a business would be small and probably considered non significant. But, not in this case and not WDNR. WDNR's economist values the geoduck lease using an in-house formula which among other factors includes harvest costs. This valuation process in essence sets the geoduck on-water harvesters income. This formula, its related information and the process the formula is derived needs to be included in the SEIS under the economic impacts and available for public comment.

⑤ WDFW's mandate includes creating an orderly harvest and due to the Tribal shellfish ruling with the subsequent significant changes in the management plan harvesting is being moved around the state waters at a much more frequent and sometimes unexpected intervals. This new management requirement has not been fully addressed within the DSEIS. The harvest companies, their personnel and their vessels are finding great difficulty locating moorage and off-load locations due to this new management



determine the funds use. Along these lines, the DSEIS fails to denote the percentages of leasing income used to pay Aquatic lands to administer, maintain and fulfill its total geoduck leasing program. This should be available for public comment.



To: David Palazzi  
FAX: 360-902-1786  
FROM: CASEY BAKKER

In the 1981, "Management plan for the Puget Sound commercial geoduck fishery," on page 9, states: "WDF is further directed to maintain the economic well being and stability of the commercial fishing industry." (RCW 75.08.212)

The draft SEIS does not make any attempt to show harvester income. Currently over half of the on-water personnel in the geoduck fishery make less than the Federal poverty level guidelines for a family of four. ~~approximately~~

This must be addressed both by WDFW and within the draft SEIS as mandated by the SMA's economic impact requirement. The 8-10 state tract divers earn for the benefit of the citizens of the State of Washington between ~~\$~~\$500,000 - \$1,000,000 annually. Yet these same workers can expect no medical benefits, no pension benefits and NO WORKERS COMPENSATION or INJURY PROTECTION ON THE JOB! This draft SEIS states on pg. 92 there are "no significant effect on State services other than the management and enforcement activities of WDFW and WDNR..."

harvesters economic situation including but not

WOPNR leases subtidal lands to these marinas and gains income thereby, but the same marinas exclude us while allowing the WOPNR 42' compliance vessel moorage and offload rights. Along the same lines WOPNR fails under 4.3, page 91 to provide suitable off load sites and the practice at marinas and other ports to exclude geoduck harvest offloading has become endemic in recent years. The costs associated with greater travel to and from the harvest is not being factored in to WOPNR's <sup>Fair market</sup> economic formula.

The restriction in recent years ~~to~~ harvest hours of 9am to 4pm has placed our offload schedules in direct conflict with other public uses

The harvesting vessels must travel further, creating

This situation must be addressed and needs to be addressed within the fair market value lease analysis and also by WOPNR aquatic lands lease personnel when aquatic leases are issued to marinas. It is not in WOPNR or WOPNR's or WOPNR's best interest to expose harvesters to the added expense of traveling long distances, requesting them to poor offload locations which can injure or maim the harvesters or damage their vessels due to <sup>sometimes</sup> dangerous conditions due to Puget Sound's unpredictable weather.

In creating an orderly (ie safe) harvest the WOPNR & WOPNR should create an agreement with marina aquatic lease holders to provide suitable offload facilities.

~~I have been~~ a participant in the Wa St geoduck  
~~I have a number of concerns~~

fishery since 1981. I have a number of concerns regarding the current draft SEIS.

Currently WDFW is responsible to maintain the economic well being of the geoduck fishery (RCW 75.08.012) \* (RCW 77.04.012). However I do not find any references to this particular regulation nor any but the most superficial information relating to this industry's economic health.

I note on page 3, that WDNR attempts to supersede WDFW's authority by stating, "~~that~~ The SEIS will also provide DNR a way to responsibly meet its mandates to manage a sustainable state commercial geoduck fishery..." This "mandate" is clearly WDFW's responsibility and the SEIS should be amended accordingly.

There ~~also~~ is an abundance of economic information relating to the use of the lease money by the <sup>Wa St</sup> agencies but grossly neglected ~~and for~~ ~~the~~ ~~important~~ the economic impacts on the harvesters or their work conditions. I do not believe it is in the State's best interest to ~~manage~~ a fishery based on purely economic gain.

According to WDFW's mandate the DSEIS must include an extensive analysis of the harvesters economic situation including but not

Limited to:

1. No ~~workers~~ workers' <sup>occupational injury program</sup> compensation program in the event of ~~injury~~ occupational
2. Great difficulty in purchasing life, health and disability coverages
3. No pension or ~~jobs~~ bargaining rights

4. ~~More~~ <sup>4</sup> ~~More~~ over 1/2 of the on water harvest personnel earn less than the Federal ~~Family~~ family wage guidelines.

This situation has been brought about by ~~the~~ <sup>the</sup> WDFW's general ignorance of the harvester's working environment. ~~and~~ <sup>and</sup> further the DSEIS lacks the economic formula, clearly stated, by which DNR determines the geoduck leases Fair Market value. This formula incorporates ~~profitability information on potential~~ <sup>essentially</sup> leaseholder's costs and as a result ~~this self-perpetuating~~ <sup>essentially</sup> creates ~~this self-perpetuating~~ the harvesters' wage. DNR knowingly uses a low harvest cost figure to increase its own revenue while leaving the harvesters destitute. This situation is clearly not in the public's best interest since the attendant social services cost out weights the economic gain to WDFW. The short paragraph on page 92, section 4.4, should be replaced with a more comprehensive study which shows the actual social costs paid for by ~~the state~~ <sup>by the state</sup> ~~by the state~~ <sup>by the state</sup> ~~harvesters~~ <sup>harvesters</sup> ~~that~~ <sup>that</sup> ~~cannot~~ <sup>cannot</sup> as a result of DNR's program.

A state agency or division is not a free enterprise business and its mission should not be diluted by any <sup>decisions</sup> ~~repercussions~~ relating to bonding gained or lost ~~by~~ by following its mandate.

I have an objection to the use of the term "high grading" in the DSEIS. It is used in with two different meanings, as a legal and accepted practice of fishing and as an illegal term. ~~This~~ This ~~is~~ practice of using ~~the~~ the same word for 2 different acts needs to be clarified.

I propose the DSEIS is revised to state, "legal selective harvesting" and the term high-grading to apply to illegal wastage. The use of the term interchangeably can create doubt and mistrust in the public's eyes and cast aspersions on the characters of legitimate harvesters.

I also object to the acceptance of wastage of Horse Clams by WODNR on its leased areas. WODNR is turning a blind eye to an illegal act. This is wastage when horse clams are discarded by harvesters. It is also illegal for the harvester to retain the horse clam. This <sup>situation</sup> must be changed. The harvesters for years have been complaining to WODNR that large amounts of horse clams are wasted during good harvest and should

~~I think that is the pro~~

No mention is made regarding the ALBA fund which is controlled by WBNR. This fund should be removed from direct <sup>WBNR</sup> management and placed in legislative ~~or~~ control. This fund is the root cause ~~and~~ for many of WBNR's bad management decisions. The line of \$3 to 5 millions <sup>annually</sup> which WBNR distributes ~~for~~ along very broad guidelines <sup>and obscures the WBNR mission to protect and</sup> basically comprises a slush fund. This is the largest ~~unreserved~~ <sup>and protect au-</sup> non dedicated fund in WBNR and its use is not overseen by <sup>the</sup> WCA legislature or its committees. I believe the ~~is~~ unstructured and broad use of this fund results in WBNR making and implementing poor <sup>natural resource</sup> decisions.

I recommend the legislature and WBNR and WDFW look closely at changing this ~~from~~ an agency directed fund to a legislatively directed fund via a ~~committee~~ <sup>of</sup> WCA state commission. This would remove the temptation WBNR has of making natural resource decisions based on the agency's economic gain. I also propose that aquatic lands division not be the recipient of any monies generated by its leasing activities to keep economic gain from distracting the agency from proper natural resource decisions.

be allowed as incidental catch and sold at market. WDNR has failed in its mandate and states to disguise this fact on page 54, "... are seldom harvested by mistake..." As a long time harvester this just isn't true and this wastage and WDNR's refusal to acknowledge and account for this species is what harvesters' have come to expect from this agency. I hope WDFW would issue permits and take the appropriate steps to ensure an orderly fishery since ~~WDNR~~ WDNR refuses to.

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