



**Submitted Via Email & First Class Mail**

July 31, 2016

U.S. Army Corps of Engineers  
Attn. CECW-CO-R  
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Re: Coalition Comments on Proposal to Reissue and Modify NWP; COE-2015-0017/RIN0710-AA73

**GENERAL COMMENTS**

Our members appreciate the opportunity to comment on the U.S. Army Corps of Engineers (“Corps”) proposed reissuance and modification of the nationwide permits (“NWP”) under Section 404 of the Clean Water Act (“CWA”). The Coalition to Protect Puget Sound Habitat (CPPSH) is disappointed that the Corps has failed to protect our natural resources by allowing more than minimal cumulative adverse impacts on the environment as required under the CWA; continues to ignore the need for compliance with the National Environmental Policy Act (NEPA); and without completing formal programmatic ESA consultations with National Marine Fisheries Service (“NMFS”) and Fish and Wildlife Service (“FWS”) by not completing the formal programmatic ESA consultations.

The Corps and State Agencies have reiterated at meetings that we have attended, that streamlining the process is of utmost importance. However, it appears that this streamlining has resulted in regulations that will allow significant adverse environmental harm individually and cumulatively to both non-listed and listed aquatic species that rely on protection from this Federal Agency. It is also obvious from various documents, that pressure from legislators and lobbyists have resulted in lax regulations that put corporate profits above the public’s interest to preserve these species for future generations. While industry continues to mislead regulators on the jobs created by this industry, a look at the Washington State quarterly workers’ compensation filings document the minimal working wage jobs this industry actually reports. Also, it is dis-ingenuous to state that luxury commodities like high priced shellfish can help with feeding the world.

The NWPs authorize activities on a wide range of activities that can adversely impact the Nation’s wetlands and waters and the aquatic species that rely on them for survival. These activities include: exploration, production and transportation of oil, gas and minerals; utility lines, transportation projects; bridges, hydropower projects; coal mining activities; shellfish and finfish aquaculture. Since our organization is the most knowledgeable regarding aquaculture in Washington State, we will be focusing our comments on that specific activity. We do concur with other organizations that have commented on the other activities that cascading adverse effects from those activities must also be considered when analyzing the individual and cumulative adverse impacts that are known to occur from aquaculture. Aquaculture is now being conducted using industrial practices that are very damaging to the natural ecosystem.

## **NWP48 (Commercial Shellfish Aquaculture Activities)**

1. This NWP allows basically any activity that industry desires and these activities pose a significant risk of indirect, direct and cumulative impacts to listed species. While the term cumulative impact analysis has been frequently seen in Corps documentation, it is clear that a sufficient cumulative impacts analysis has not been conducted for NWP48 activities. In fact, the Corps cumulative impacts analysis is so minimal and inadequate, it is even difficult to find the analysis when looking for it in the various Corps documents. This is certainly in violation of CWA.122.
2. In support of the 2012 reissuance of NWP48, the Corps issued a Decision Document, which supposedly was to provide the review required by 33 CFR& 320.4 (a) (1) and (2); the environmental analysis required by NEPA and the impact analysis required by C through F of the 404 (b) (1) guidelines (40 CFR Part 230). This Decision Document contains a minimal cumulative impacts discussion that does not address local conditions, but instead addresses effects of authorization on a national and programmatic basis. We have witnessed firsthand, that the industry lobbying in Washington DC has virtually eliminated the exercise of discretionary authority by division and district engineers to protect our natural resources. The pictures of oysters laying on a beach is what legislators are shown, but the actual practices are rarely acknowledged.
3. It is impossible to analyze the conclusions that the environmental effects would be minimal and not significant according to the Corps, as the documentary support and substantive evidence is either not available, outdated or clearly provided by industry or their consultants. In fact, a majority of the 2007 NWP data/opinions were provided by Dr. Jeffrey Fisher, who did not disclose to the Corps that he represented Taylor Shellfish and he also had his own geoduck, clam and oyster operations in Totten Inlet. We still see his unpublished/non peer reviewed data included in many of the documents used during this NWP process. Dr. Fisher also continued to indirectly promote his personal stake and the industry's influence in his decision makers position in the National Marine Fisheries staff in the Olympia, Washington office.
4. While the industry touts at local, state and Federal regulatory meetings that the Corps monitors their activities, nothing could be further from the truth. There is no way that the few staff members that work on the Washington State aquaculture permitting can monitor over 1,000 sites in over 38,000 acres of Washington shoreline. There is no doubt that monitoring requirements should be imposed and policed to ensure that NWP terms and conditions are met. Unfortunately, the terms and conditions are not adequate to protect listed species and there is not enough staff or watercraft to monitor even those minimal conditions. At this point, the conditions are used to justify issuing a permit as it gives the appearance that it is protecting our listed species, but that is simply not the case.
5. We are very concerned about the following Corps proposed regulation that reads:  
"Project areas include lands where other legally binding agreements establish enforceable property interests. Define "new commercial shellfish aquaculture operation" as operating in an area where such activities have not occurred during the past 100 years." Our concerns are as follows:

- a. If you do not know how many of these “new 100 year operations” exist, then how can you identify the past, present and future indirect, direct and cumulative impacts?
- b. Since none of these areas would have a baseline survey, how would you know what the extent of the impact would be?
- c. How do you know what species were supposedly cultivated if there are no harvest records, etc.?
- d. How do you assess the cumulative impacts of a species change of oysters in a low density replaced by high densities of manila clams and/or geoducks?
- e. It is well known that the large shellfish corporations have been gathering a massive number of leases that have not been submitted for county or Federal permitting in Washington State in anticipation of their 100 year regulation being approved.
  - i. For example, we have included a copy of the standard lease for Minterbrook Oyster dated 10/7/03 written by prior management and 4 newer leases dated from 2012-2013 written by Kent Kingman. According to Minterbrook management prior to the Kingman/Taylor acquisition process during 2011-2013, Minterbrook Oyster never had any agreements with these 4 individuals or with any harvest agreements with these 4 parcels prior to Kingman writing these new leases. They pointed out that the revised industry lease language in the four new 2012-2013 leases and the wording intentionally leads the reader to believe that a shellfish operation had been in operation in the past—when there was no shellfish operation ever present at those locations. It is disappointing that the Corps would actually propose industry language which will help industry avoid Corps regulation and enable industry to continue their massive conversion of natural habitat to industrial aquaculture in South Puget Sound, North Puget Sound, Willapa Bay and Grays Harbor. See attached lease.
  - ii. This proposal is especially misguided as there is no State environmental permit in Washington State and industry tries to convince counties that the Corp permit is robust and no other environmental review is really necessary.
- f. A specific example of how damaging this language would be, is the Taylor Shellfish 25 acre Dungeness Spit geoduck proposal that was submitted to the Corps for approval, was being worked on as “preconstruction” and now has been withdrawn from the pending list. If this language is approved, this site which had minimal oyster operations would not require a new permit for 25 acres of geoduck aquaculture which has dramatically different adverse impacts. This site is adjacent to the Wildlife Refuge that is home to masses of migratory birds, seals and eelgrass. It would be a travesty to see this industry use a deceptive ploy that the Corps allows.

We request that this language not adopted by the Corps as it will significantly harm non-listed and listed species.

#### 6. Spawning Areas.

According to the Corps regulations, “Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.”

As important as forage fish spawning areas are to the future of Puget Sound, endorsing language of “maximum extent practicable” is really saying that they can do anything they want to further their bottom line. The aquaculture industry should have to be 100 feet from spawning areas if we are going to protect these species. In addition, this industry should be required to comply with work windows, just like the bulkhead and dock builders are in Washington State.

7. Migratory Bird Breeding Areas. According to the Corps regulations, “Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.” Once again, it should not be if it is practicable or the most profitable; the Corps should not be authorizing as many permits as they have and should be requiring a certain amount of natural shoreline between sites. In addition, the shellfish industry intentionally harasses birds to keep them from the shellfish sites so they do not eat the shellfish—that they historically used as a food source. The shellfish industry Pest Management plan (#53 Drop box document-see Link page 8) coupled with the science clearly supports our request for aquatic bird protection.
8. At the same time the Corps continues to authorize over 1,000 aquaculture sites and 38,000 acres and counting, there are over 1 Billion birds missing from North America according to the following recent report. We do not believe the Corps is complying with the regulations that protect birds when you are allowing massive canopy nets in the intertidal feeding areas throughout Puget Sound and not taking into account the pesticides sprayed in the water in Willapa Bay/Grays Harbor.

Link: 1 Billion Birds—Just Gone

[http://www.dailykos.com/story/2016/05/20/1528745/-1-000-000-000-Birds-Just-Gone?detail=emailgreen&link\\_id=1&can\\_id=930793b90f4391454dea1a75f42ec21a&source=email-1000000000-birdsjust-gone&email\\_referrer=1000000000-birdsjust-gone&email\\_subject=1000000000-birds-just-gone](http://www.dailykos.com/story/2016/05/20/1528745/-1-000-000-000-Birds-Just-Gone?detail=emailgreen&link_id=1&can_id=930793b90f4391454dea1a75f42ec21a&source=email-1000000000-birdsjust-gone&email_referrer=1000000000-birdsjust-gone&email_subject=1000000000-birds-just-gone)

9. Eelgrass and Kelp-As documented in overwhelming scientific literature, eelgrass and kelp are essential to the survival of salmon and other species in Washington State. Yet, from the lax regulations, it appears that the shellfish industry can actually site their operations in eelgrass and kelp beds if they try to mitigate the damage somewhere else. It is well documented that in Puget Sound, eelgrass restoration is marginally successful and cannot be compared to California eelgrass restoration success.

We have sat through too many meetings where the scientists are trying to save our eelgrass, and the shellfish industry is spending their time arguing that only a certain number of shoots of eelgrass is really an eelgrass bed and kelp is only protected if it is rooted. It is past time that we do the right thing—not the politically correct thing—and

protect as much eelgrass and kelp as we can to help recovery efforts for the many organization and the billions of dollars the public is spending for restoration.

Attached you will find a picture that documents the relationship of kelp and salmon—how can it be more obvious?

10. We have seen no evidence that the NWP48 with or without regional conditions has even tried to coordinate with the Puget Sound Recovery goals or the Salmon Recovery goals. Billions of dollars are being spent to save our iconic species, yet the Corps is still allowing unlimited conversion of natural shoreline habitat to industrial aquaculture and other listed activities.
11. In addition to not coordinating with Puget Sound recovery goals, the Corps has ignored recommendations from the EPA on the protection of eelgrass. The attached EPA letter clearly states that the Corps lack of protection of eelgrass is a violation of the Clean Water Act. While we know that the Washington Legislative delegation and the shellfish industry put undue pressure on the Washington DC Corps to drop protections, the Corps should have enforced the regulations that they are required by law to do.
12. We have attached a copy of our recent Coalition lawsuit against the Corps. The lack of cumulative impacts analysis considering the massive expansion of industrial aquaculture in Washington State is troubling, to say the least. As further documenting support, the following link contains our document titled “This Isn’t Your Grandfathers Oyster Farm” as the pictures clearly document the cumulative impacts.

<http://coalitiontoprotectpugetsoundhabitat.org/wp-content/uploads/2013/02/not-your-grandfathers-oyster-farm.pdf>

For further information on the adverse impacts of industrial aquaculture, visit our website at: <http://coalitiontoprotectpugetsoundhabitat.org/>

### **Navigation Hazards-Shellfish Aquaculture Plastic Netting and Gear**

We oppose the following Corps navigation regulation language as it will restrict navigation by the public and will result in unsafe public waters for boating, swimming, kayaking and windsurfing. Puget Sound is known for its recreational opportunities. The proposed language also allows the change from off bottom aquaculture to suspended aquaculture, which is very vague, but really says that anything less than a “minimal adverse effect on navigation” is all right.

Proposed Corp Language:

“(a) No activity may cause more than a minimal adverse effect on navigation.”

“(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States. (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused

thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.”

1. Attached you will find a letter and documenting pictures from John McDonell to the Coast Guard that outlines the navigation hazards that Taylor Shellfish continues to deploy in the public trust waters in Burley Lagoon. We have received the same complaints in other areas in Puget Sound.
2. On July 21, 2016, several of us went out in a boat in Totten Inlet and Case Inlet along the shoreline. As we left Zittles Marina, one of the staff warned us to not get close to the shoreline if shellfish aquaculture was present as the aquaculture netting would get caught in our boat prop. Our boat driver finally refused to go close to the shoreline as we had on several occasions encountered floating shellfish aquaculture nets under our boat. During that day, Lee Ruddy, was one of our passengers. He told us that twice in the last several weeks he had to jump into the water at night to untangle aquaculture netting from their boat prop as they returned home in Totten Inlet from a waterfront restaurant in Olympia.
3. It is documented in Pierce County vs Washington Shellfish court decision that a windsurfer became entangled in shellfish aquaculture netting in Henderson Bay.
4. Linda Beltz reported in an email to Pierce County that she had become entangled in a shellfish aquaculture net while wind surfing in Henderson Bay.

These are just some of the examples of how the massive amount of netting that is being allowed in Puget Sound creates a navigational hazard and limits the use of Puget Sound for safe recreation and navigation.

### **Marine Plastic Pollution—On Site and Escaping the Site**

1. It is well documented that the shellfish industry is filling Puget Sound and Willapa Bay/Grays Harbor with unprecedented amounts of PVC tubes and High Density Polyethylene (HDPE) canopy nets, PVC net caps, oyster bags and mussel disks. Not only do these plastics pose a threat to aquatic non-listed and listed species, but the microplastics from the HDPE are a human health issue as it has been scientifically proven that filtering shellfish are known to ingest microplastics. Scientists refer to the intertidal area as the “nursery” and now a massive number of shoreline miles of these nurseries are filled with polluting plastics. We have not seen any Corps analysis that quantifies how much PVC and HDPE is being placed in Washington State marine waters or any restrictions on the types or amounts of plastics that can be used.
2. We have attached a few recent pictures of significant marine debris from the North Bay Taylor Shellfish site that is a common occurrence in South Puget Sound. See attached.
3. While it should not be the responsibility of citizens to take aerial pictures of the massive amount of shellfish aquaculture canopy netting, we have included some of the July 5, 2016 aerial pictures we have taken to demonstrate the modification of the beaches that can be seen from an airplane. It should be noted on the Burley Lagoon picture, the netting is adjacent to both Purdy Creek and Burley Creek, which are documented salmon creeks.
4. We are processing the large number of aerial pictures now and will be sending them to the Federal agencies on a disc in the coming weeks. To put it mildly, the extensive modification of South Puget Sound shorelines with canopy netting is disturbing.

5. The Federal Agencies should be required to obtain aerial photos to see what they have already approved so they can limit existing plastic use or deny any more nets/plastics.

### **Inadequate Science to Justify Aquaculture Expansion**

Forage fish, salmon and birds are important species to the economic base of Puget Sound. We have not seen the Corps present any peer reviewed scientific studies that have examined the effects of shellfish aquaculture on the natural habitat required for these species to survive.

### **Outdated Maps of Existing and Pending Shellfish Aquaculture Sites**

1. To our knowledge, the Corps has not prepared an updated map that shows all of the authorized shellfish aquaculture sites in Washington State. We do not feel it is possible for the Corps or other Federal Agencies to even begin to address the issue of cumulative impacts if they do not have a current map of the number of aquaculture sites that are filling the bays and coves of Puget Sound and Willapa Bay/Grays Harbor. It should be the responsibility of the Federal Agencies to prepare aquaculture site maps for all of Washington State.
2. We have prepared a map from the list of authorized shellfish aquaculture sites provided from the Corps to analyze the locations in South Puget Sound. We have attached that map so you can see the concentrations of shellfish aquaculture sites in the bays and coves that results in habitat fragmentation with minimal natural habitat. There is no doubt that this changes on a massive scale the natural habitat structure, processes and functions of our shorelines.

### **Scientific Review of Adverse Impacts of Shellfish Aquaculture**

We have attached one of our extensive comment letters that was sent to the Corps on a pending shellfish aquaculture application. For your convenience, the following drop box link contains all of the documents that are referenced in the footnotes of that document:

### **Coalition Drop Box Containing Studies and Documents**

<https://www.dropbox.com/sh/ptotz2w4jj36bia/AAxd5GSV7mnZqmvCLZ-aTEha?dl=0>

### **Mitigation Is Woefully Inadequate**

Since aquaculture sites are forever sites with perpetual permits, all impacts must be fully analyzed and adequate mitigation must be feasible. We do not believe that all of the effects can be adequately mitigated, especially with the few Corps mitigating conditions. When over 38,000 acres have been authorized by the Corps, it is essential that the following comprehensive mitigation list be considered:

### **Direct Alteration of Natural Habitat By Industrial Aquaculture Operations That Should Be Mitigated According to Federal Law**

When aquaculture alters the tidelands, it is like clearing the buffer or a critical area habitat to make way for a house and yard, or a commercial building, or a farm. A buffer can be vegetated with trees, or shrubs, or just beach grass. Tidelands can be similarly diverse.

The following are specific practices/actions by the shellfish industry that should be mitigated:

1. Removal of Embedded Natural Rocks, Barnacles, Shells and Woody Debris:
  - a. Impacts to Functions:
    - i. Reduced structural diversity.
    - ii. Reduced habitat structure for, and abundance of insects and plants.
    - iii. Reduced food sources provided by those insects and plants.
    - iv. Reduced larger animal abundance.
    - v. Reduced fish refuge from predators.
    - vi. Reduced attenuation of wave energy.
    - vii. Altered wave and sediment patterns and micro-patterns. In extreme cases, it alters sediment composition, microclimate and habitat.
    - viii. Reduced biological diversity.
  - b. Mitigation Possible:
    - i. Don't remove structural materials.
    - ii. Relocate existing materials nearby, including ensuring embedded stability.
    - iii. Recreate elsewhere using new materials.
2. Removal or Relocation of Individual Native Animal Life (crabs, seastars, shellfish moon snails, sand dollars, etc. NOTE: Clearing subsurface animals is similar to clearing and grading—see those impacts and mitigations.
  - a. Impacts to Functions:
    - i. Causes direct death, maiming, injury, driving out of habitat, behavioral trauma and/or increased competition in new location.
    - ii. Loss of food sources provided by those animals for fish and birds.
    - iii. Reduced larger animal abundance for native species.
    - iv. Reduced biological diversity.
  - b. Mitigation Possible:
    - i. Don't remove animals.
    - ii. Relocate animals nearby. This can reduce impacts to a lower level but not eliminate them.
    - iii. Out-of-kind mitigation.
3. Clearing Native Aquatic Vegetation (eelgrass, kelp, gracilaria, macro-algae)
  - a. Impacts to Functions:
    - i. Severe disturbance of habitat by eliminating extremely productive habitat for native species.
    - ii. Loss of structural diversity – i.e. a fine grained blanket of eelgrass, or course grained volume of kelp, etc.
    - iii. Causes direct death, maiming, injury, driving out of habitat, behavioral trauma, and/or increased competition in new location for plant and animal species.
    - iv. Loss of food sources provided by those insects and plants.
    - v. Reduced larger animal abundance.
    - vi. Lost refuge from predators.
    - vii. Reduced biological diversity.
    - viii. Reduced sediment stabilization (for eelgrass).
    - ix. Lost nutrient sink.
    - x. Reduced Climate Change vegetation buffers.
    - xi. Reduced vegetation that helps reduce ocean acidification effects.
  - b. Mitigation Possible:



- i. Don't remove vegetation.
      - ii. Re-create vegetation area elsewhere. This is very difficult, so big ratios are needed.
      - iii. Out-of-kind mitigation.
    4. Grading (fill and/or excavation) of the Tidelands and Periodic Harvest Activities (also see those activities).
      - a. Impacts to Functions:
        - i. Severe disturbance of subsurface habitat areas by removing them, burying them, or mixing them.
        - ii. Causes wholesale death, maiming, injury, or behavioral trauma to substrate creatures.
        - iii. Loss of food sources provided by existing insects and substrate creatures.
        - iv. Reduced larger animal abundance (including surface animals).
        - v. Reduced biological diversity.
        - vi. Alteration of wave energy due to slope changes.
        - vii. Altered sediment patterns due to wave energy changes.
        - viii. Mobilization of subsurface silts to the surface.
        - ix. Altered sediment grain size due to sediment pattern changes and siltation.
        - x. Altered substrate habitat and microclimate.
        - xi. Severe to minor water quality impacts due to suspension of disturbed sediments, and release of any contaminants present in substrate. This is most severe for wet grading and harvest, geoduck harvest using water jets, or other water using operations that drain to the water. This is less severe for dry grading and harvest.
        - xii. Silt and turbidity affect salmon migration/movement. Work windows.
      - b. Mitigation Possible:
        - i. Adhere to WDFW work windows for salmon and other protected species.
        - ii. Don't grade site.
        - iii. Restore previously altered (i.e. filled, etc.) site.
        - iv. Out-of-kind mitigation.
  5. Adding Gravel or Shell to Make Tidelands Suitable For Clam Aquaculture
    - a. Impacts to Functions:
      - i. Moderate to minor disturbance of subsurface habitat areas by burying them.
      - ii. Causes wholesale death, or behavioral trauma to substrate creatures by burying them rather than direct soil disturbance.
      - iii. Loss of food sources provided by those existing insects and substrate creatures.
      - iv. Reduced larger animal abundance.
      - v. Reduced biological diversity.
      - vi. Altered sediment patterns.
      - vii. Altered sediment grain size.
      - viii. Altered substrate habitat and microclimate.
    - b. Mitigation Possible:
      - i. Don't place gravel.
      - ii. Restore previously graveled or graded site.

- iii. Out-of-kind mitigation.
- 6. Operations Near Intertidal Forage Fish Spawning Sites
  - a. Impacts to Functions:
    - i. Trampling of forage fish eggs
    - ii. Sedimentation that changes forage fish spawning habitat
    - iii. Disturbance
- 7. High un-natural densities of filtering bivalves that ingest forage fish Larvae
  - a. Mitigation Possible:
    - i. Don't allow clam, oyster or geoduck operations near forage fish spawning sites;
    - ii. Require adequate buffer
    - iii. Out-of-kind mitigation

### **Displacement of Habitat Area and Conversion to Human Use**

When aquaculture occupies the tidelands after they have made their alterations, it is similar to building the house or parking lot in the buffer or in a habitat after it has been cleared. Natural features can no longer come back and occupy that space while the human use is there. And the human facilities will have ongoing impacts into the future.

A house will have glare, noise, chemical use, human presence and activity, etc. Aquaculture will also have long term impacts such as continual or periodic soil disturbances, plastic pollution, night operations, human disturbances, etc. – all of which were not there before.

### **Sources of Plastic Pollution Resulting from the Addition of Massive Quantities of Aquaculture Gear**

- 1. Microplastics from PVC and High Density Polyethylene (HDPE)
  - a. Impact: Extensive use of plastics (PVC tubes; HDPE- oyster bags, tube net caps, fasteners (zip ties, bands) mussel disks) that degrade, break and abrade in the environment, are ingested by sea life clogging their digestive systems, which kills or sickens aquatic life. High density polyethylene adsorbs persistent organic pollutants which in turn act as poison pills to aquatic life when ingested.
  - b. Mitigation: Do not use plastics; or use a limited amount of biodegradable materials; strict approvals of types of materials used in marine waters
- 2. Toxic PVC Chemicals
  - a. Impact: Depends on source of PVC; lead
  - b. Mitigation: Don't use PVC and other plastics that release chemicals
- 3. Geoduck Tube Marine Debris
  - a. Impact: large numbers of tubes come loose when substrate is mobilized during storms.
  - b. Mitigation: use longer tubes to prevent dislodging in extreme weather; don't use tubes.
- 4. Geoduck Net Cap and Fastener Debris
  - a. Impact: net caps and plastic band fasteners come loose to become pollution and become microplastics.
  - b. Mitigation: don't use plastics, use a system to tether the caps and bands to the tube (but creates more plastic pollution).
- 5. Derelict Canopy Nets

- a. Impact: Canopy net comes loose and moves to other locations becoming a derelict net, which traps sea life (including crabs, birds, forage fish, etc.) and entangles human water users (including wind surfers, swimmers, boaters, etc.).
- b. Mitigation: use sturdy anchor and leash system attached at multiple points with grommets or similar sturdy fasteners (but creates more pollution).

### **Effects of Specific Gear**

1. Surface gear used to retain water, such as geoduck tubes extending above grade, or nursery pools.
  - a. Impacts: creates artificial conditions rather than using a more appropriate location.
  - b. Mitigation: do not allow tubes above grade, do not use nursery pools on the tidal bed (move upland).
2. Canopy net surface fasteners regularly fail.
  - a. Impacts: Net stays largely in place, but balloons upward off substrate. Net traps aquatic sea life when it settles again (including crabs, forage fish, etc.). Net traps birds that dive into net unknowingly. Net entangles human water users that can't see it (including wind surfers, swimmers, boaters, etc.).
  - b. Mitigation: Improve substrate fasteners using more sturdy equipment, use buoys to clearly mark net fields (can possibly restrict navigation).
3. Canopy netting and gear on substrate.
  - a. Impacts:
    - i. Netting and gear changes sediment movement patterns and changes sediment microclimate and substrate habitat. Changes in surface sediments affect forage fish spawning, and sediment dependent creatures.
    - ii. After initial site clearing, aquatic organisms begin recolonizing netting and gear. Periodic cleaning causes additional periodic impacts, similar to initial site clearing, including lost forage fish eggs attached to the netting.
    - iii. Placing extensive areas of netting and gear throughout large areas of the tidal bed changes the nature of the tidal bed for aquatic life (birds, fish, crabs, etc.) that use it.
    - iv. Placing bags and other objects across extensive areas also creates obstacles to swimmers during shallow water periods of the tidal cycle.
  - b. Mitigation: Don't use netting and gear. Use other netting alternatives (such as tube net caps). Limit areas of netting and gear. Do not clean gear during egg presence for any forage fish. Do not allow on beaches with forage fish spawning or require substantial separation.
4. Canopy nets and plastic fabrics that blanket the substrate, such as plastic nursery pools, plastic bags, plywood, etc.
  - a. Impacts:
    - i. Retards or stops oxygen, water, and nutrient transfer between the surface and subsurface;
    - ii. Reduces productivity or causes dead areas under the gear; and
    - iii. Hinders or stops animal movement between the surface and subsurface.
  - b. Mitigation: Do not use canopy nets and plastic fabrics on substrate.
5. Above-grade structures and gear (not on-grade gear like bags or nets) more than approximately 1 foot above grade. Examples – pole or piling mounted gear, elevated

cable-mounted gear, cages, large scale rafts, large scale net pens; but excluding smaller docks or similar structures.

- a. Impacts: Obstructs the public's use of the water for varying portions of the tidal cycle over large areas of tidal bed or open water.
  - b. Mitigation: break large areas into smaller areas spaced apart; use warning markers to identify potential underwater obstructions; move obstructions away from near-shore water travel paths, and common boating paths and navigation ways.
6. Floating multi-level structures (such as rafts with hanging aquaculture, and netpens) that are intended to greatly increase the animal densities.
- a. Impacts – many are similar to upland feedlots:
    - i. High densities often require use of feed, chemicals, and pharmaceuticals, which affect water quality.
    - ii. Waste generated by animal density levels affect water quality.
    - iii. Water quality impacts result in dead zones under and near structures.
    - iv. Escape of mature and mobile non-native species or non-wild species can affect native wild species.
    - v. Sizable visual impact changing natural water vistas to artificial ones.
    - vi. Impacts to public use of water, boating, and navigation.
  - b. Mitigation:
    - i. Do not use multi-level structures.
    - ii. Reduce industrial animal densities.
    - iii. Break large areas into smaller areas spaced apart.
    - iv. Use water mobilizers under structures.
    - v. Use warning markers to identify boating and navigation obstructions.
    - vi. Move obstructions away from near-shore water travel paths, and common boating paths and navigation ways.
    - vii. Limit height to 3 feet, and do not allow structures and machinery to be located on floating structures.
    - viii. Use redundant animal escape prevention systems, and contingency planning.
    - ix. Do not use feed, chemicals, and pharmaceuticals except under extreme situations provided under contingency planning.

### **General Effects of High, Unnatural Densities of Filter Feeders**

1. Impacts: Depletion of phytoplankton and zooplankton necessary for other aquatic life.
2. Mitigation: Reduce industrial animal densities.

### **Effects of Periodic Substrate Harvest, such as for clams, oysters, geoduck and mussels—also see human activity impacts that occur during harvest**

1. Substrate surface grading or excavation, such as using backhoe digger – see direct alteration impacts for grading and excavation repeated on a periodic interval.
2. Mobile surface harvest machines, such as clam screener—see direct alteration for grading and excavation repeated on a periodic interval, though of lesser disturbance levels and impacts with shallower harvest.
3. Geoduck harvest using deep digging, or hydraulic liquefaction of substrate (depth is typically 3-4 feet).

- a. Impacts:
  - i. See direct alteration impacts for grading and excavation applied at depth, and repeated on a periodic interval. For example, deep mixing of the substrate, killing or driving off organisms, turbidity of water, destruction of forage fish eggs, also see human disturbance related to hoses and workers.
  - ii. Dragging hoses across eelgrass, workers walk on eelgrass, dive harvest/in-water harvest, deep silt up to sand/gravel.
  - iii. Due to the long period between harvests, re-establishment of plants and animals may have taken place in the farm area. Loss of them during subsequent harvests may have additional impacts.
- b. Mitigation:
  - i. See direct alteration mitigation for grading and excavation.
  - ii. Exclude geoducks from locations where aquatic vegetation is likely to establish or re-establish.
  - iii. Preclude geoduck harvest during spawning seasons at locations in or near forage fish spawning areas.
  - iv. Exclude geoducks from highly productive mudflat and similar locations.
1. Effects of human presence and operations activity—both inside and outside site boundaries. Examples include heavy foot traffic, vehicle use, dragging or relocating hoses and other equipment (such as bags, or cages), cleaning gear, and human presence during operations.
  - a. Impacts:
    - i. Heavy foot traffic and vehicle use causes permanent or temporary compaction of certain sediment substrates such as mudflats, which harms or drives off some subsurface species.
    - ii. Activities that extend into adjacent eelgrass beds or other vegetation habitats damage or destroy those habitats.
    - iii. Forage fish eggs attach to gear located near forage fish spawning areas, especially nets and other finely textured gear. Regular cleaning of gear destroys eggs.
    - iv. Human presence drives off or excludes use by most species, such as birds.
  - b. Mitigation: Exclude traffic and equipment use from vegetation habitat, and forage fish spawning areas. Limit area, duration, and timing of traffic. Limit area, duration, and timing of human presence. Limit timing of gear cleaning.

We request that you seriously evaluate the documentation we have provided and make the changes necessary to these proposed regulations as they will certainly result in the significant loss of non-listed and listed species as they are proposed. The Corps regulations are supposed to protect these species, not just be another slam dunk approval.

If you have any questions, please feel free to contact us.

Sincerely,

Laura Hendricks

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