

Ron Buckholt

From: Laura Hendricks <laura.l.hendricks@gmail.com>
Sent: Monday, December 5, 2022 10:04 AM
To: Ron Buckholt
Subject: Coalition-Deny-Johnson Point-Project # 2022103702-Taylor
Attachments: Army Corps NWP Washington State Unlawful-Oct 2019 Federal Decision (1) (2) (1) (1) (1) (2) (1).pdf; 9th Circuit Court of Appeals Feb 11 2021 Decision (1) (1).pdf; Tractors in the tidelands-Taylor-Acres Magazine-Winter 2015 (10) (1) (2).pdf; not-your-grandfathers-oyster-farm (2).pdf; Industrial Shellfish Aquaculture Threats March 2019 (1) F (1) (2) (6) (1) (1).pdf; Industrial Shellfish Aquaculture Plastic Pollution-March 2019 (1)F (1) (1) (1).pdf

Dear Mr. Buckholt,

The Coalition opposes the further expansion of industrial aquaculture to this Johnson Project #2022103702 in Thurston County. The 6.6 acres will once again fill Thurston County's waters with over 250,000 polluting PVC tubes, small net caps, rubber bands as well as thousands of High Density Polyethylene oyster bags, rebar and clips. Based on the attached scientific documentation included in our submittal, even the Federal Court agreed with the scientific adverse impacts.

Thurston County has allowed entire inlets and coves to be filled with industrial aquaculture without any planning for natural species foraging and habitat. The further spread of toxic plastics and the conversion of Thurston County beaches to industrial aquaculture is contrary to so many efforts to stop the decline of our Orcas, salmon, birds and other threatened species.

Is Thurston County ever going to Deny one of these applications?

We have attached the following supporting documents:

1. Judge Lasnik Order.
2. 9th Circuit Order. It should be noted that the 9th Circuit document has been approved for release.
3. Taylor Shellfish--Tractors On The Tidelands
4. This Isn't Your Grandfather's Oyster Farm Industrial Aquaculture Report
5. Industrial Shellfish Aquaculture Threats
6. Industrial Shellfish Aquaculture Plastic Pollution

Please add our name to your list of interested parties on this project.

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

Sincerely,

Laura Hendricks

Coalition To Protect Puget Sound Habitat

(253) 509-4987

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

THE COALITION TO PROTECT PUGET
SOUND HABITAT,

Plaintiff,

v.

U.S. ARMY CORPS. OF ENGINEERS, *et al.*,

Defendants,

and

TAYLOR SHELLFISH COMPANY, INC.,

Intervenor - Defendant.

Case No. C16-0950RSL

CENTER FOR FOOD SAFETY,

Plaintiff,

v.

U.S. ARMY CORPS OF ENGINEERS, *et al.*,

Defendants,

and

PACIFIC COAST SHELLFISH GROWERS
ASSOCIATION,

Intervenor - Defendant.

Case No. 17-1209RSL

ORDER HOLDING NWP 48
UNLAWFUL IN THE STATE OF
WASHINGTON AND
REQUESTING ADDITIONAL
BRIEFING

This matter comes before the Court on cross-motions for summary judgment filed by the parties and intervenors in the above-captioned matters. Dkt. # 36, # 44, and # 45 in C16-

0950RSL; Dkt. # 31, # 43, and # 44 in C17-1209RSL. The Court has also considered the Swinomish Indian Tribal Community's submission in a related case, C18-0598RSL (Dkt. # 28). Plaintiffs challenge the U.S. Army Corps of Engineers' issuance of Nationwide Permit 48 ("NWP 48") authorizing discharges, structures, and work in the waters of the United States related to commercial shellfish aquaculture activities. Plaintiffs argue that the Corps failed to comply with the Clean Water Act ("CWA"), the National Environmental Policy Act ("NEPA"), and the Endangered Species Act ("ESA") when it reissued NWP 48 in 2017. They request that the decision to adopt NWP 48 in Washington¹ be vacated under the Administrative Procedures Act ("APA") and that the Corps be required to comply with the environmental statutes before issuing any new permits or verifications for commercial shellfish aquaculture in this State.²

BACKGROUND

The CWA authorizes the Army Corps of Engineers to issue permits for the discharge of dredged or fill material into the navigable waters of the United States. 33 U.S.C. § 1344(a). If the Corps determines that activities involving discharges of dredged or fill material "are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment," it may issue general permits on a state, regional or nationwide basis permitting the activities for a five year period. 33

¹ The Coalition to Protect Puget Sound Habitat seeks to bar the use of NWP 48 only in Puget Sound.

² The Court finds that one or more members of plaintiff Center for Food Safety has/have standing to pursue the CWA, NEPA, and ESA claims based on their concrete, particularized, and imminent injuries arising from activities in Washington that are permitted under the 2017 version of NWP 48.

1 U.S.C. § 1344(e). “[T]he CWA imposes substantive restrictions on agency action” (Greater
2 Yellowstone Coalition v. Flowers, 359 F.3d 1257, 1273 (10th Cir. 2004)): if “the effect of a
3 general permit will be more than minimal, either individually or cumulatively, the Corps cannot
4 issue the permit” (Wyoming Outdoor Council v. U.S. Army Corps of Eng’rs, 351 F. Supp. 2d
5 1232, 1255-57 (D. Wyo. 2005)). General permits often impose requirements and standards that
6 govern the activities undertaken pursuant to the permit, but they relieve operators from the more
7 burdensome process of obtaining an individual, project-based permit.

9 In 2017, the Corps reissued NWP 48, thereby authorizing “the installation of buoys,
10 floats, racks, trays, nets, lines, tubes, containers, and other structures into navigable waters of the
11 United States. This NWP also authorizes discharges of dredged or fill material into waters of the
12 United States necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting
13 activities.” NWP003034. The nationwide permit authorizes(a) the cultivation of nonindigenous
14 shellfish species as long as the species has previously been cultivated in the body of water at
15 issue, (b) all shellfish operations affecting ½ acre or less of submerged aquatic vegetation, and
16 (c) the all operations affecting more than ½ acre of submerged aquatic vegetation if the area had
17 been used for commercial shellfish aquaculture activities at any point in the past 100 years.
18 NWP003034-35.³

21 In addition to the CWA’s requirement that the Corps make “minimal adverse effect”
22 findings before issuing a general permit, “NEPA imposes procedural requirements on federal
23 agencies to analyze the environmental impact of their proposals and actions.” O’Reilly v. U.S.
24

25
26 ³ The 100-year look back provision was not in the 2012 version of NWP 48.

1 Army Corps of Engr's, 477 F.3d 225, 228 (5th Cir. 2007). Federal agencies are required to do an
2 environmental assessment ("EA") of their proposed action, providing a brief discussion of the
3 anticipated environmental impacts and enough evidence and analysis to justify a no-significant-
4 impact determination. 40 C.F.R. § 1508.9. If the agency, after conducting an EA, is unable to
5 state that the proposed action "will not have a significant effect on the human environment," a
6 more detailed and comprehensive environmental impact statement ("EIS") must be prepared. 40
7 C.F.R. § 1508.11 and § 1508.13.⁴

9 The Corps' EA regarding the 2017 reissuance of NWP 48 is presented in a Decision
10 Document dated December 21, 2016. NWP003034-3116. An additional condition was later
11 imposed by the Seattle District through its Supplemental Decision Document dated March 19,
12 2017. COE 127485-611. The Court has considered both Decision Documents to the extent they
13 reflect the Corps' analysis of the anticipated environmental impacts of issuing the nationwide
14 permit and imposing the additional regional condition. The Decision Documents set forth the
15 Corps' discussion of anticipated environmental impacts and the evidence and analysis justifying
16 its determination "that the issuance of [NWP 48] will not have a significant impact on the quality
17 of the human environment," making an EIS unnecessary under NEPA. NWP003106. The
18 Decision Documents also reflect the Corps' determination that the "activities authorized by
19 [NWP 48] will result in no more than minimal individual and cumulative adverse effects on the
20 aquatic environment" for purposes of the CWA. NWP003107. The Seattle District, for its part,
21 concluded that if it added a regional condition preventing the commercial harvest of clams by
22
23
24

25 ⁴ "Impact" and "effect" are used interchangeably in the regulations and are deemed synonymous.
26 40 C.F.R. § 1508.8.

1 means of hydraulic escalator equipment and evaluated proposed activities as they were verified
2 under the reissued permit, the effects of the permitted activities would be individually and
3 cumulatively minimal. COE 127592-93.

4
5 Plaintiffs argue that these conclusions must be invalidated under the APA because the
6 record does not support the Corps' conclusions regarding the environmental effects of individual
7 shellfish aquaculture activities or their cumulative impacts and the EA does not accurately
8 describe the anticipated environmental impacts of NWP 48 or otherwise justify a no-significant-
9 impact determination. Under the APA, a reviewing court must set aside agency actions, findings,
10 or conclusions that are "arbitrary, capricious, an abuse of discretion, [] otherwise not in
11 accordance with law" or "without observance of procedure required by law." 5 U.S.C.
12 § 706(2)(A) and (D). Agency action is arbitrary and capricious "if the agency has relied on
13 factors which Congress has not intended it to consider, entirely failed to consider an important
14 aspect of the problem, offered an explanation for its decision that runs counter to the evidence
15 before the agency, or is so implausible that it could not be ascribed to a difference in view or the
16 product of agency expertise." Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463
17 U.S. 29, 43 (1983). Although agency predictions within the agency's area of expertise are
18 entitled to the highest deference, they must nevertheless have a substantial basis in fact. Ctr. for
19 Biological Diversity v. Zinke, 900 F.3d 1053, 1067 (9th Cir. 2018). In determining whether a
20 decision is supported by substantial evidence in the record, the Court will not substitute its own
21 judgment for that of the agency but rather considers whether the decision is based on relevant
22 evidence that a reasonable mind might accept as adequate to support the agency's conclusion.
23
24
25
26

1 San Luis & Delta-Mendota Water Auth. v. Jewell, 747 F.3d 581, 601 (9th Cir. 2014).⁵

2 **DISCUSSION**

3 Having reviewed the submissions of the parties and the administrative record, and having
4 heard the arguments of counsel, the Court finds that there is insufficient evidence in the record to
5 support the agency's conclusion that the reissuance of NWP 48 in 2017 would have minimal
6 individual and cumulative adverse impacts on the aquatic environment for purposes of the CWA
7 and that the Corps' environmental assessment does not satisfy NEPA's requirements. Although
8 the minimal impacts finding is repeated throughout the Corps' Decision Document (see
9 NWP003038, NWP003045-46, NWP003049, NWP003051, NWP003091, NWP003107), it is
10 based on little more than (1) selectively chosen statements from the scientific literature, (2) the
11 imposition of general conditions with which all activities under nationwide permits must
12 comply, and (3) the hope that regional Corps districts will impose additional conditions and/or
13 require applicants to obtain individual permits if necessary to ensure that the adverse impacts
14 will be minimal. Each of these considerations is discussed below.

17 **(1) Effects Analysis**

18 At various points in its analysis, the Corps acknowledges that commercial shellfish
19 aquaculture activities can have adverse environmental impacts. See NWP003040 (commercial
20

21
22 ⁵ Plaintiffs also argue that the agency action should be invalidated because the Corps (a) failed to
23 analyze a reasonable range of alternative actions in the EA, (b) failed to allow for meaningful public
24 participation, and (c) failed to re-initiate consultation with expert wildlife agencies under the ESA when
25 the 2017 version of NWP 48 was modified to increase the acreage on which commercial shellfish
26 production was authorized, failed to incorporate assumed conservation measures and conditions, and
failed to analyze the impacts of pesticides on endangered species. Because the Court finds that the Corps
violated the CWA and NEPA, it has not considered these alternative theories for why NWP 48 should
be invalidated.

1 shellfish aquaculture activities “have some adverse effects on the biotic and abiotic components
2 of coastal waters, including intertidal and subtidal areas”); Id. (noting that “at a small spacial
3 scale (e.g., the site directly impacted by a specific aquaculture activity) there will be an adverse
4 effect.”); NWP003041 (acknowledging “some impacts on intertidal and subtidal habitats, fish,
5 eelgrass, and birds”); NWP003042 (recognizing that “commercial shellfish aquaculture activities
6 do have some adverse effects on eelgrass and other species that inhabit coastal waters”); COE
7 127559 (stating that “marine debris is a serious impact on the marine environment”); COE
8 127570 (acknowledging “potential adverse impacts” to riffle and pool complexes); COE 127584
9 (noting that “[c]ommercial shellfish aquaculture activities can result in conversion of substrates
10 (e.g. mudflats to gravel bars), impacts to submerged aquatic vegetation, alteration in aquatic
11 communities from native to non-native shellfish species, and water quality impacts from harvest
12 activities”). It concludes that these impacts are no more than minimal, however, (a) when
13 considered on a landscape rather than a site-by-site scale, (b) because the relevant ecosystems
14 are resilient, and (c) because the impacts are “relatively mild” in comparison “to the disturbances
15 and degradation caused by coastal development, pollution, and other human activities in coastal
16 areas.” NWP003040 and NWP003044.

17 (a) Scale of Impacts Evaluation

18 In determining the potential effects of a proposed discharge of dredged or fill material in
19 an aquatic environment, the Corps is required to determine the nature and degree of the
20 environmental impact the discharge will have, both individually and cumulatively.

21 “Consideration shall be given to the effect at the proposed disposal site of potential changes in
22 substrate characteristics and elevation, water or substrate chemistry, nutrients, currents,

1 circulation, fluctuation, and salinity, on the recolonization and existence of indigenous aquatic
2 organisms or communities.” 40 C.F.R. § 230.11(e) (emphasis added). Ignoring or diluting site-
3 specific, individual impacts by focusing solely on a cumulative, landscape-scale analysis is not
4 consistent with the governing regulations.

5
6 (b) Resilient Ecosystems

7 The Decision Document issued by Corps Headquarters acknowledges that “[t]he effects
8 of commercial shellfish aquaculture activities on the structure, dynamics, and functions of
9 marine and estuarine waters are complicated, and there has been much discussion in the
10 scientific literature on whether those effects are beneficial or adverse.” NWP003040. Relying in
11 large part on a paper published by Dumbauld and McCoy for the U.S. Department of Agriculture
12 in 2015, the Corps concluded that the individual and cumulative impacts of the activities
13 authorized by NWP 48 would be minimal “because the disturbances caused by these activities
14 on intertidal and subtidal ecosystems are temporary and those ecosystems have demonstrated
15 their ability to recover from those temporary disturbances.” NWP003045-46.⁶
16
17

18 ⁶ The Corps also cites a 2009 paper co-written by Dumbauld, which it describes as “a review of
19 empirical evidence of the resilience of estuarine ecosystems and their recovery (including the recovery
20 of eelgrass) after disturbances caused by shellfish aquaculture activities.” NWP003044. The Corps relies
21 on the 2009 Dumbauld paper to support its conclusion that commercial shellfish production can have
22 beneficial impacts on some aspects of the aquatic environment. See NWP003406 (“Many species co-
23 exist with commercial shellfish aquaculture activities and many species benefit from these activities.”);
24 NWP003086 (noting improved water and habitat quality at moderate shellfish population densities);
25 NWP003087 (“Activities authorized by this NWP may alter habitat characteristics of tidal waters. Some
26 species of aquatic organisms will benefit from those changes, while others will be adversely affected.”);
27 NWP003104 (“Sessile or slow-moving animals in the path of discharges of dredged or fill material and
28 aquaculture equipment may be destroyed. Some aquatic animals may be smothered by the placement of
fill materials. Some aquatic organisms will inhabit the physical structure created by equipment used for
commercial shellfish aquaculture activities.”). The fact that there are environmental winners and losers
when activities authorized under NWP 48 are undertaken does not resolve the issue of whether the

1 Dumbauld and McCoy's research cannot justify such a broad, sweeping conclusion
2 regarding the resilience of entire ecosystems in both the intertidal and subtidal zones. According
3 to the Corps' own summary of the paper, the authors evaluated only the effects of oyster
4 aquaculture activities on submerged aquatic vegetation. NWP003044. The paper itself shows
5 that Dumbauld and McCoy were studying the effects of intertidal oyster aquaculture on the
6 seagrass *Zostera marina*. There is no discussion of the impacts on other types of aquatic
7 vegetation, on the benthic community, on fish, on birds, on water quality/chemistry/structures, or
8 on substrate characteristics. There is no discussion of the subtidal zone. There is no discussion
9 regarding the impacts of plastic use in shellfish aquaculture and only a passing reference to a
10 possible side effect of pesticide use. The Corps itself does not remedy these deficiencies:
11 although it identifies various resources that will be adversely impacted by issuance of the
12 national permit (along with resources that may benefit from shellfish production), it makes
13 virtually no effort to characterize the nature or degree of those impacts. The Decision
14 Document's "Impact Analysis" consists of little more than an assurance that district engineers
15 will consider the direct and indirect effects caused by the permitted activity on a regional or
16 case-by-case basis. NWP003073-74.

21 proposed agency action has more than minimal impacts or obviate the need for a "hard look" at all
22 impacts, beneficial and adverse. Native Ecosys. Council v. U.S. Forest Serv., 428 F.3d 1233, 1238-39
23 (9th Cir. 2005). The 2009 review clearly shows, and the Corps acknowledges, that at least some aquatic
24 species and characteristics are adversely affected by commercial shellfish aquaculture. The Ninth
25 Circuit, faced with a similar situation under NEPA, noted that "even if we had some basis for assuming
26 that [the agency's] implementation of the BiOp would have exclusively beneficial impacts on the
environment, we would still lack a firm foundation for holding that [the agency] need not prepare an EA
and, if necessary, an EIS." San Luis & Delta-Mendota Water Auth. v. Jewell, 747 F.3d 581, 652 n.52
(9th Cir. 2014).

27 ORDER HOLDING NWP 48 UNLAWFUL
28 IN THE STATE OF WASHINGTON AND
REQUESTING ADDITIONAL BRIEFING - 9

1 Under the CWA, the Corps must find that the proposed activity “will cause only minimal
2 adverse environmental effects when performed separately, and will have only minimal
3 cumulative adverse effect on the environment” before it issues a general permit. 33 U.S.C.
4 § 1344(e). Under NEPA, the Corps is required to “[b]riefly provide sufficient evidence and
5 analysis for determining whether to prepare an environmental impact statement or a finding of
6 no significant impact.” 40 C.F.R. § 1508.9(a)(1). The agency is required to take a “hard look” at
7 the likely environmental impacts of the proposed action and prepare an EA to determine whether
8 the impacts are significant enough to necessitate the preparation of an EIS. Native Ecosys.
9 Council, 428 F.3d at 1238-39. The analysis, though brief, “must be more than perfunctory” and
10 must be based on “some quantified or detailed information; . . . [g]eneral statements about
11 possible effects and some risk do not constitute a hard look absent a justification regarding why
12 more definitive information could not be provided.” Klamath-Siskiyou Wildlands Ctr. v. Bureau
13 of Land Mgmt., 387 F.3d 989, 993-94 (9th Cir. 2004) (alteration in original, citations omitted).

14
15
16 In this case, the Corps acknowledged that reissuance of NWP 48 would have foreseeable
17 environmental impacts on the biotic and abiotic components of coastal waters, the intertidal and
18 subtidal habitats of fish, eelgrass, and birds, the marine substrate, the balance between native and
19 non-native species, pollution, and water quality, chemistry, and structure, but failed to describe,
20 much less quantify, these consequences. The Corps cites the two Dumbauld papers for general
21 statements regarding the positive or negative effects of shellfish aquaculture on certain aquatic
22 resources or characteristics (focusing on seagrass), but it makes no attempt to quantify the
23 effects or to support its conclusion that the effects are no more than minimal.
24
25

26 Even if the health and resilience of seagrass were the only concern - and, as discussed
27 ORDER HOLDING NWP 48 UNLAWFUL
28 IN THE STATE OF WASHINGTON AND
REQUESTING ADDITIONAL BRIEFING - 10

1 above, it is not - the 2015 Dumbauld and McCoy paper cannot reasonably be interpreted as
2 evidence that seagrass is only minimally impacted by commercial shellfish aquaculture. As
3 noted above, the paper evaluated only the effect of oyster aquaculture. In that context, it
4 recognized the research suggesting that oyster aquaculture has direct impacts on native
5 seagrasses at the site of the activity and in short temporal spans. These impacts are then ignored
6 by both Dumbauld and the Corps in favor of a landscape, cumulative analysis which, as
7 discussed above, is inadequate. Just as importantly, NWP 48 authorizes the discharge of dredged
8 and fill material from not only oyster operations, but also from mussel, clam, and geoduck
9 operations carried out on bottom substrate, in containers, and/or on rafts or floats. Thus,
10 Dumbauld and McCoy did not evaluate, and drew no conclusions regarding, the impact that
11 many of the activities authorized by NWP 48 would have on seagrass (much less other aquatic
12 resources). The Seattle District, for its part, acknowledged the breadth of species and cultivation
13 techniques that are encompassed in the phrase “commercial shellfish aquaculture.” A draft
14 cumulative impact assessment generated in February 2017 dedicated twenty-five pages to
15 discussing the wide range of work and activities covered by NWP 48 and noting the species-
16 dependent variability in cultivation techniques, gear, and timing. COE 125591-616.⁷ These
17 variations gave rise to a wide array of effects on the aquatic habitat (COE 125635-36), none of
18 which is acknowledged or evaluated in the national Decision Document. In its Supplement, the
19 Seattle District noted:

24 ⁷ The Corps acknowledges that the draft regional impact assessment “was a NEPA-level
25 analysis,” but faulted the author because that level of analysis should be performed by Headquarters for
26 a nationwide permit. COE 125856. No comparable analysis is included in the national Decision
Document, however.

1 The impacts to eelgrass from aquaculture can be temporary, depending on the
2 activity, because the habitat conditions themselves (elevation, water quality, etc.)
3 are not permanently altered which allows eelgrass to eventually recover given
4 sufficient time. In Washington State, the timeframe for recovery has been
5 documented to be about 5 years depending on the activity and other factors. For
6 example, when a geoduck farm is seeded it is covered with tubes and nets for 2 or
7 more years and then the tubes and nets are removed until harvest, 3-5 years later.
8 The eelgrass would have died back under the nets, had a chance to return when
9 nets were removed, and then eelgrass is disturbed/removed again when harvest
10 occurs. While this process allows for eelgrass return at the site, the frequency of
11 disturbance and relatively long recovery times result in a local habitat condition
12 where eelgrass more often than not is either not present or present at a much
13 reduced functional state. This effect would persist as long as aquaculture is
14 occurring at the site. In some cases, such as when nets are placed over planted
15 clam beds, any eelgrass is likely to be permanently smothered and not recover.
16 This is because of the permanence of the nets, which are only removed between
17 harvest and the next planting cycle. The time between harvest and planting may
18 only be a matter of weeks or months. Other impacts are discussed in the national
19 decision document. This existing cycle of impacts to eelgrass represents the
20 existing environment from aquaculture activities authorized under NWP [48] 2012;
21 and these or similar effects may continue if verification under NWP 48 2017 is
22 requested and received.

23 COE 127587-88.

24 Agency predictions within their areas of expertise are entitled to the highest deference,
25 but they must have a substantial basis in fact. The Corps recognized that certain shellfish
26 operations would displace eelgrass entirely for extended periods of time. In some cases, nets are
27 used to smother the vegetation, precluding any chance of recovery. Where smothering nets are
28 not in use, the eelgrass may recover to some extent, but was not likely to return to is full
functional state before being disturbed and/or removed again for the next harvest or seeding

ORDER HOLDING NWP 48 UNLAWFUL
IN THE STATE OF WASHINGTON AND
REQUESTING ADDITIONAL BRIEFING - 12

1 activity. The impacts of commercial shellfish aquaculture on eelgrass (and presumably on all
 2 species that rely on eelgrass) would continue as long as the permitted activity continued. Under
 3 the 2017 version of NWP 48, a significant number of additional acres that were not cultivated
 4 under the 2012 NWP could be put into shellfish aquaculture if the area had been commercially
 5 productive during the past 100 years. See COE 118145-49; COE 127584. Any such “reopened”
 6 beds could result in additional losses of seagrass and the benefits it provides. COE 127589
 7 (“[F]or many current operations, verification under NWP 2017 will create no appreciable change
 8 to the baseline environmental conditions, and the impacts will be minimal both individually and
 9 cumulatively.”⁸ For other operations, however, activities may create a change in current
 10 conditions, for example if activities are proposed on land populated with recovered eelgrass.”).
 11 The national Decision Document does not quantify the periodic and permanent losses of
 12 seagrass⁹ or the impact on the wider aquatic environment. A reasonable mind reviewing the
 13
 14
 15

16 ⁸ By quoting this portion of the Seattle District Supplement, the Court is not adopting its
 17 reasoning. National, regional, and state permits issued under the authority of the CWA last for only five
 18 years. When a NWP is reissued, the environmental impacts of the agency action logically include all
 19 activities conducted under the auspices of the permit, regardless of whether those operations are brand
 20 new or are simply “verified” as covered by the reissued NWP. The governing regulations expressly
 21 impose upon the Corps the obligation to consider the ongoing effects of past actions when conducting a
 22 cumulative impacts analysis. 40 C.F.R. § 1508.7. See Ohio Valley Env'tl. Coalition v. Hurst, 604 F.
 23 Supp. 2d 860, 886-87 (S.D. W. Va. 2009) (rejecting the Corps’ *post hoc* rationalization that past
 24 authorizations of mountaintop mining had no continuing effects and noting that, in the court’s “common
 25 sense judgment,” “[t]hese losses and impacts do not exist in a vacuum; they are not corrected or cured
 26 every five years with the renewal of a new nationwide permit. Nor do these accumulated harms become
 27 the baseline from which future impacts are measured. Before authorizing future activities with such
 28 tremendous impacts, the Corps must at least consider the present effects of past activities . . .”).

⁹ The cumulative impacts of reissuing NWP 48 are to be analyzed in accordance with 40 C.F.R.
 § 230.7(b)(3), pursuant to which the Corps must predict “the number of activities expected to occur until
 the general permit expires.” NWP003043. The Corps’ estimates of how many acres are likely to be
 cultivated under the reissued national permit vary widely, however. The estimate provided in Section

1 record as a whole would not accept Dumbauld and McCoy's limited findings regarding the
2 landscape-level impact of oyster cultivation on a species of seagrass in the intertidal zone as
3 support for the conclusion that entire ecosystems are resilient to the disturbances caused by
4 shellfish aquaculture or that the impacts of those operations were either individually or
5 cumulatively minimal.
6

7 (c) Impacts of Other Human Activity

8 Although the Corps does not rely on this line of reasoning in opposing plaintiffs' motions
9 for summary judgment, its Decision Document is replete with various forms of the following
10 statement: "[c]ommercial shellfish aquaculture activities are a minor subset of human activities
11 that affect coastal intertidal and subtidal habitats and contribute to cumulative effects to those
12 coastal habitats." NWP003041. See also NWP003040; NWP003042-44; NWP003061;
13 NWP003068; NWP003075-76; NWP003081; NWP003083-85. To the extent the Corps'
14 minimal impacts determination is based on some sort of comparison between the environmental
15 impacts of shellfish aquaculture and the environmental impacts of the rest of human activity (see
16
17

18 _____
19 7.2.2 of the Decision Document states that NWP 48 will be utilized 1,625 times over the five-year
20 period, resulting in impacts to approximately 56,250 acres of water. NWP003098. Those numbers are
21 reportedly based on past uses of the NWP plus an estimate of the number of activities that did not
22 require pre-construction notification and were not voluntarily reported to the Corps district. Id.
23 According to the Seattle District, however, over 56,000 acres of marine tidelands were permitted under
24 the 2012 version of NWP 48 in Washington State alone, and that number was only going to increase
25 under the 2017 version. COE 127590. Recognizing the long history of commercial shellfish operations
26 in the State's waters and the 100-year look back for identifying "existing" operations, the Seattle
District estimated that 72,300 acres of Washington tidelands could be authorized for commercial
shellfish production under the 2017 NWP 48. COE 127590-92. Thus, even if Headquarters had
attempted to quantify the proposed action's impacts on seagrass (or any other aquatic resource) before
reissuing NWP 48, its data regarding past uses of the permit was incorrect and its estimates of future
uses are suspect.

27 ORDER HOLDING NWP 48 UNLAWFUL
28 IN THE STATE OF WASHINGTON AND
REQUESTING ADDITIONAL BRIEFING - 14

1 NWP003046 (commercial shellfish aquaculture activities “cause far less change to the
2 environmental baseline than the adverse effects caused by development activities, pollution, and
3 changing hydrology that results from the people living and working in the watersheds that drain
4 to coastal waters . . .”); NWP003078 (“[T]here are many categories of activities that contribute
5 to cumulative effects to the human environment. The activities authorized by this NWP during
6 the 5-year period it will be in effect will result in no more than minimal incremental
7 contributions to the cumulative effects to these resource categories.”); NWP003081 (“The
8 activities authorized by this NWP will result in a minor incremental contribution to the
9 cumulative effects to wetlands, streams, and other aquatic resources in the United States
10 because, as discussed in this section, they are one category of many categories of activities that
11 affect those aquatic resources.”)), the analysis is inadequate. NEPA and the CWA were enacted
12 because humans were adversely affecting the environment to a noticeable and detrimental extent.
13 See 42 U.S.C. § 4331(a) (Congressional recognition of “the profound impact of man’s activity
14 on the interrelations of all components of the natural environment”); 33 U.S.C. § 1251(a) (“The
15 objective of [the CWA] is to restore and maintain the chemical, physical, and biological integrity
16 of the Nation’s waters.”). Noting that a particular environmental resource is degraded is not an
17 excuse or justification for further degradation. The Corps must analyze the individual and
18 cumulative impacts of the proposed activity against the environmental baseline, not as a
19 percentage of the decades or centuries of degrading activities that came before.
20
21
22

23 The Corps makes a similarly untenable argument whenever the use of pesticides in a
24 shellfish operation permitted under NWP 48 is discussed. While acknowledging that these
25 substances are used and released into the environment during permitted activities, the Corps
26

27 ORDER HOLDING NWP 48 UNLAWFUL
28 IN THE STATE OF WASHINGTON AND
REQUESTING ADDITIONAL BRIEFING - 15

declines to consider the environmental impacts of pesticides because they are regulated by some other entity. See NWP003077. Even if the Corps does not have jurisdiction to permit or prohibit the use of pesticides, it is obligated to consider “other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” NWP003074 (quoting 40 C.F.R. § 1508.7). The Corps’ decision to ignore the foreseeable uses and impacts of pesticides in the activities it permitted on a nationwide basis does not comport with the mandate of NEPA or with its obligations under the CWA. Having eschewed any attempt to describe the uses of pesticides in commercial shellfish aquaculture or to analyze their likely environmental impacts, the decision to permit such activities through NWP 48 cannot stand.

(2) General Conditions of NWP 48

In making its minimal impact determinations, the Corps relied in part on the general conditions imposed on all nationwide permits. NWP003072. According to the Corps, the prohibitions it has imposed against impacts on the life cycle movements of indigenous aquatic species (general condition 2), spawning areas (general condition 3), migratory bird breeding areas (general condition 4), concentrated shellfish beds (general condition 5), and endangered or threatened species (general condition 18), and the requirements that permittees use non-toxic materials (general condition 6) and confer with other regulatory agencies as needed (general condition 19) will ensure that the individual and cumulative environmental effects of NWP 48 are minimal. Even if the Court were to assume that the general conditions will be universally heeded, regulatory fiat does not satisfy NEPA’s requirement that the EA contain “sufficient evidence and analysis for determining whether to prepare an environmental impact statement or

1 a finding of no significant impact.” 40 C.F.R. § 1508.9(a)(1). The general conditions are just
2 that: general. They apply to all NWPs and do not reflect a “hard look” at the environmental
3 sequellae of commercial shellfish aquaculture. For purposes of the CWA, the general conditions
4 on which the Corps relies do not necessarily prohibit substantial impacts: general condition 3,
5 for example, precludes the most destructive of activities in spawning areas but leaves
6 unregulated many activities that could significantly impact those areas. In addition, the general
7 conditions relate to only some of the environmental resources the Corps acknowledges are
8 impacted by the permitted activities and do not address the cumulative impacts of commercial
9 shellfish aquaculture at all. 40 C.F.R. § 1508.7 (“Cumulative impacts can result from
10 individually minor but collectively significant actions taking place over a period of time.”).

11
12
13 The Court does not intend to suggest, and is not suggesting, that the general terms and
14 conditions imposed on a nationwide, regional, or state permit cannot be relevant to and
15 supportive of a finding of minimal impacts. They are simply too general to be the primary “data”
16 on which the agency relies when evaluating the impacts of the permitted activities.

17 **(3) Regional Conditions and District Engineers**

18
19 Any permit authorizing activities on a nationwide level runs the risk of sanctioning
20 activities that have more than minimal environmental impacts. In order to safeguard against that
21 risk, regional district engineers have the discretionary authority to modify, suspend, or revoke
22 the NWP within a particular region or class of waters, to add regional conditions to the NWP, to
23 impose special conditions on a particular project, and/or to require an applicant to seek an
24 individual permit. NWP003037 (citing 33 C.F.R. §§ 330.4(e) and 330.5). Although permittees
25 may generally proceed with activities authorized by an NWP without notifying the district
26

1 engineer, (33 C.F.R. § 330.1(e)(1)), general condition 18(c) requires the submission of a pre-
2 construction notification (“PCN”) if the proposed activity may affect or is in the vicinity of a
3 species listed or habitat designated as critical under the ESA. Because all aquaculture operations
4 in the State of Washington occur in waters where there are threatened/endangered species and/or
5 critical habitat, applicants who seek to operate under the auspices of NWP 48 in this State must
6 submit a PCN and obtain a “verification” that the activity falls within the terms of the permit and
7 that the requirements of the ESA have been satisfied. COE 127592. “For a project to qualify for
8 verification under a general permit, a Corps District Engineer must conclude that it complies
9 with the general permit’s conditions, will cause no more than minimal adverse effects on the
10 environment, and will serve the public interest.” Sierra Club v. U.S. Army Corps of Eng’rs, 803
11 F.3d 31, 39 (D.C. Cir. 2015) (citing 33 C.F.R. §§ 330.1(e)(2), 330.6(a)(3)(i)).

14 There is nothing arbitrary, capricious, or unlawful about having the regional district
15 engineer review site-specific proposals to “cement [Headquarters’] determination that the
16 projects it has authorized will have only minimal environmental impacts.” Ohio Valley Env’tl.
17 Coalition v. Bulen, 429 F.3d 493, 501 (4th Cir. 2005). Tiering the review and decision-making
18 tasks is permissible, but there must be a national decision document that actually evaluates the
19 impacts of the proposed activity in light of any regional conditions imposed. The problems here
20 are that the Corps’ minimal impact determinations were entirely conclusory and the regional
21 conditions that it assumed would minimize impacts were not in place at the time NWP 48 was
22 adopted. The record is devoid of any indication that the Corps considered regional data,
23 catalogued the species in and characteristics of the aquatic environments in which commercial
24 shellfish aquaculture activities occur, considered the myriad techniques, equipment, and

27 ORDER HOLDING NWP 48 UNLAWFUL
28 IN THE STATE OF WASHINGTON AND
REQUESTING ADDITIONAL BRIEFING - 18

1 materials used in shellfish aquaculture, attempted to quantify the impacts the permitted activity
2 would likely have on the identified species and characteristics, or evaluated the impacts of the
3 as-yet-unknown regional conditions.

4 Faced with incredible diversity in both the environment and the activities permitted under
5 NWP 48, the Corps effectively threw up its hands and turned the impact analyses over to the
6 district engineers. The "Impact Analysis" section of the national Decision Document simply
7 reiterates the district engineer's powers to revoke, modify, or condition the NWP and directs the
8 district engineers to make minimal adverse environmental effects determinations after
9 considering certain factors. NWP003073-74. Its "Cumulative Effects" analysis bluntly
10 acknowledges that "[i]t is not practical or feasible to provide quantitative data" regarding the
11 cumulative effects of NWP 48 other than the estimated number of times the permit will be used.
12 NWP003081.

13 Because a nationwide analysis was impossible, the task of conducting a cumulative
14 impacts analysis in specific watersheds was devolved to the district engineers. NWP003077.
15 Even where adverse impacts are acknowledged, the Corps ignores its obligation to analyze and
16 quantify them, instead relying on the district engineers to perform the analysis on a project-by-
17 project basis. In the context of the public interest discussion regarding impacts to fish and
18 wildlife, for example, the Corps recognizes that NWP 48 may "alter the habitat characteristics of
19 tidal waters," that "[s]ome species of aquatic organisms will benefit from those changes, while
20 other species will be adversely affected," and that equipment used in commercial shellfish
21 operations may impede bird feeding activities and trap birds." NWP003087. It then states:

22 The pre-construction notification requirement[] provides the district engineer with
23
24 ORDER HOLDING NWP 48 UNLAWFUL
25 IN THE STATE OF WASHINGTON AND
26 REQUESTING ADDITIONAL BRIEFING - 19
27
28

1 an opportunity to review those activities and assess potential impacts on fish and
2 wildlife values and ensure that the authorized activity results in no more than
3 minimal adverse environmental effects.

4 Id. This abdication of responsibility is not authorized under the CWA or NEPA.¹⁰

5 As discussed in the preceding sections, Headquarters' prediction that the issuance of
6 NWP 48 would have minimal individual and cumulative impacts on the environment, though
7 repeatedly stated in the Decision Document, is not based on relevant evidence that a reasonable
8 mind might accept as adequate to support the agency's conclusion, and the inclusion of general
9 permit conditions does not obviate the need to analyze the impacts of proposed federal action.
10 Thus, the Corps' impact analyses are based in large part on the hope that district engineers will
11 mitigate any adverse environmental effects by revoking NWP 48, imposing regional or project-
12 based conditions, and/or requiring an applicant to seek an individual permit. In this context, the
13 Court finds that the Corps may not rely solely on post-issuance procedures to make its pre-
14 issuance minimal impact determinations. See Bulen, 429 F.3d at 502 ("We would have
15 substantial doubts about the Corps' ability to issue a nationwide permit that relied solely on post-
16
17
18

19 ¹⁰ The Corps' analysis with regards to plastic debris discharged into the marine environment is
20 even more problematic. The Corps acknowledges the many public comments raising concerns about the
21 introduction of plastics into the marine food web, but relies on the fact that "[d]ivision engineers can
22 impose regional conditions to address the use of plastics" in response to these concerns. NWP003402.
23 The Seattle District, for its part, declined to quantify the impact of plastics, instead noting that "it would
24 not be a practicable solution to regionally condition NWP 48 to not allow the use of PVC and HDPE
25 gear as there are no current practicable alternatives to use of the materials." COE 127559. The CWA
26 requires the Corps to make minimal adverse effect findings before issuing a general permit. If, as
appears to be the case with regards to the discharge of plastics from the permitted operations, the Corps
is unable to make such a finding, a general permit cannot issue. The Corps has essentially acknowledged
that it needs to individually evaluate the impacts of a particular operation, including the species grown,
the cultivation techniques/gear used, and the specific location, before it can determine the extent of the
impacts the operation will have.

1 issuance, case-by-case determinations of minimal impact, with no general pre-issuance
2 determinations. In such a case, the Corps' 'determinations' would consist of little more than its
3 own promise to obey the law.").

4 CONCLUSION

5
6 A nationwide permit can be used to authorize activities involving the discharge of
7 dredged or fill material only if the Corps makes a determination that the activity will have only
8 minimal individual and cumulative adverse effects on the environment. In issuing NWP 48, the
9 Corps has opted to interpret the "similar in nature" requirement of 33 U.S.C. § 1344(e)(1)
10 broadly so that all commercial shellfish aquaculture activities in the United States could be
11 addressed in a single nationwide permit. That choice has made assessing the impacts of disparate
12 operations difficult: the Corps essentially acknowledges that the permitted activity is performed
13 in such different ways and in such varying ecosystems that evaluating impacts on a nationwide
14 level is nearly impossible. It tries to avoid its "statutory obligations to thoroughly examine the
15 environmental impacts of permitted activities" by promising that the district engineers will do it.
16 Hurst, 604 F. Supp. 2d at 901-02. The Court finds that the Corps has failed to adequately
17 consider the impacts of commercial shellfish aquaculture activities authorized by NWP 48, that
18 its conclusory findings of minimal individual and cumulative impacts are not supported by
19 substantial evidence in the record, and that its EA does not satisfy the requirements of NEPA
20 and the governing regulations.

21
22 For all of the foregoing reasons, plaintiffs' motions for summary judgment (Dkt. # 36 in
23 C16-0950RSL and Dkt. # 31 in C17-1209RSL) are GRANTED and defendant's and intervenors'
24 cross-motions (Dkt. # 44 and # 45 in C16-0950RSL and Dkt. # 43 and # 44 in C17-1209RSL)

25
26 ORDER HOLDING NWP 48 UNLAWFUL
27 IN THE STATE OF WASHINGTON AND
28 REQUESTING ADDITIONAL BRIEFING - 21

1 are DENIED. The Corps' issuance of a nationwide permit, at least with respect to activities in
2 the waters of the State of Washington, was arbitrary and capricious and not in accordance with
3 NEPA or the CWA. Pursuant to 5 U.S.C. § 706(2), the Court holds unlawful and sets aside NWP
4 48 insofar as it authorizes activities in Washington.

5
6 The only remaining issue is whether NWP 48 should be vacated outright to the extent it
7 has been applied in Washington, thereby invalidating all existing verifications, or whether equity
8 requires that the permit be left in place while the agency performs an adequate impact analysis
9 and environmental assessment to correct its unlawful actions. Idaho Farm Bureau Fed'n v.
10 Babbitt, 58 F.3d 1392, 1405 (9th Cir. 1995).

11
12 Although not without exception, vacatur of an unlawful agency action normally
13 accompanies a remand. Alsea Valley All. v. Dep't of Commerce, 358 F.3d 1181,
14 1185 (9th Cir. 2004). This is because "[o]rdinarily when a regulation is not
15 promulgated in compliance with the APA, the regulation is invalid." Idaho Farm
16 Bureau Fed'n, 58 F.3d at 1405]. When equity demands, however, the regulation
17 can be left in place while the agency reconsiders or replaces the action, or to give
18 the agency time to follow the necessary procedures. See Humane Soc. of U.S. v.
19 Locke, 626 F.3d 1040, 1053 n.7 (9th Cir. 2010); Idaho Farm Bureau Fed'n, 58
20 F.3d at 1405. A federal court "is not required to set aside every unlawful agency
21 action," and the "decision to grant or deny injunctive or declaratory relief under
22 APA is controlled by principles of equity." Nat'l Wildlife Fed'n v. Espy, 45 F.3d
23 1337, 1343 (9th Cir. 1995) (citations omitted).

24 All. for the Wild Rockies v. United States Forest Serv., 907 F.3d 1105, 1121 (9th Cir. 2018).

25 Courts "leave an invalid rule in place only when equity demands that we do so." Pollinator
26 Stewardship Council v. U.S. E.P.A., 806 F.3d 520, 532 (9th Cir. 2015) (internal quotation marks
27 and citation omitted). When determining whether to leave an agency action in place on remand,

28 ORDER HOLDING NWP 48 UNLAWFUL
IN THE STATE OF WASHINGTON AND
REQUESTING ADDITIONAL BRIEFING - 22

1 we weigh the seriousness of the agency's errors against "the disruptive consequences of an
2 interim change that may itself be changed." Cal. Cmities. Against Toxics v. U.S. E.P.A., 688
3 F.3d 989, 992 (9th Cir. 2012). In the context of environmental regulation, courts consider
4 whether vacating the invalid rule would risk environmental harm and whether the agency could
5 legitimately adopt the same rule on remand or whether the flaws were so fundamental that it is
6 unlikely the same rule would result after further analysis. Pollinator Stewardship, 806 F.3d at
7 532.

8
9 Despite the fact that both plaintiffs clearly requested vacatur as the remedy for unlawful
10 agency action, defendants provided very little evidence that would justify a departure from the
11 presumptive relief in this APA action. The federal defendants state that additional briefing as to
12 remedy should be permitted once the seriousness of the agency's error is determined. The
13 intervenors assert that vacatur would cause disruption in the Washington shellfish farms and
14 industry, including significant impacts to employees and the communities in which they live.
15 Neither tact is compelling. The substantive defects in the agency's analysis when adopting the
16 2017 NWP are significant, the existing record suggests that adverse environmental impacts will
17 arise if NWP 48 is not vacated, and, given the nature of the analytical defects and record
18 evidence that seagrass is adversely impacted in the immediate vicinity of shellfish aquaculture, it
19 seems unlikely that the same permit could issue following remand. As for the disruptive
20 consequences to Washington businesses, employees, and communities, more information is
21 required. As plaintiffs point out, shellfish growers can apply for individual permits (as they did
22 before 2007). In addition, the Court has the equitable power to allow a period of time in which
23 growers can avail themselves of that process before the existing verifications would be
24
25
26

27 ORDER HOLDING NWP 48 UNLAWFUL
28 IN THE STATE OF WASHINGTON AND
REQUESTING ADDITIONAL BRIEFING - 23

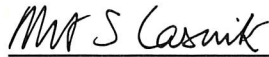
1 invalidated or to fashion some other equitable remedy to minimize both the risks of
2 environmental harm and any disruptive consequences.

3 While the current record does not support deviation from the presumptive remedy for an
4 APA violation, the Swinomish Indian Tribal Community has requested an opportunity to be
5 heard regarding the scope of the remedy. C18-0598RSL (Dkt. # 28). Swinomish also challenge
6 the Corps' minimal impacts analyses in reissuing NWP 48, but, unlike the plaintiffs in the
7 above-captioned matters, does not seek vacatur of verifications or permits issued under the
8 NWP. The Court will accept additional briefing regarding the appropriate remedy.
9

10 Because there is a presumption in favor of vacatur, defendants, intervenors, and
11 Swinomish will be the moving parties and may file motions, not to exceed 15 pages, regarding
12 the appropriate relief for the APA violations discussed above. Only one motion may be filed in
13 each of the three cause numbers at issue, C16-0950RSL, C17-1209RSL, and C18-0598RSL. The
14 motions, if any, shall be filed on or before October 30, 2019, and shall be noted for consideration
15 on November 15, 2019. Plaintiffs' responses, if any, shall not exceed 15 pages. Replies shall not
16 exceed 8 pages.
17

18 The Clerk of Court is directed to docket a copy of this order in Swinomish Indian Tribal
19 Community v. Army Corps of Engineers, C18-0598RSL.
20

21
22 Dated this 10th day of October, 2019.

23 
24 Robert S. Lasnik
25 United States District Judge
26

27 ORDER HOLDING NWP 48 UNLAWFUL
28 IN THE STATE OF WASHINGTON AND
REQUESTING ADDITIONAL BRIEFING - 24

NOT FOR PUBLICATION**FILED**

UNITED STATES COURT OF APPEALS

FEB 11 2021

FOR THE NINTH CIRCUIT

MOLLY C. DWYER, CLERK
U.S. COURT OF APPEALS

THE COALITION TO PROTECT PUGET
SOUND HABITAT, a non-profit
corporation,

Plaintiff-Appellee,

v.

UNITED STATES ARMY CORPS OF
ENGINEERS, an agency of the United
States of America; et al.,

Defendants,

and

TAYLOR SHELLFISH COMPANY, INC.,

Intervenor-Defendant-
Appellant.

No. 20-35546

D.C. No. 2:16-cv-00950-RSL

MEMORANDUM*

CENTER FOR FOOD SAFETY, a non-
profit corporation,

Plaintiff-Appellee,

v.

UNITED STATES ARMY CORPS OF

No. 20-35547

D.C. No. 2:17-cv-01209-RSL

* This disposition is not appropriate for publication and is not precedent except as provided by Ninth Circuit Rule 36-3.

ENGINEERS, an agency of the United
States of America; et al.,

Defendants,

NISBET OYSTER CO., INC.,

Intervenor-Defendant,

and

PACIFIC COAST SHELLFISH GROWERS
ASSOCIATION,

Intervenor-Defendant-
Appellant.

Appeal from the United States District Court
for the Western District of Washington
Robert S. Lasnik, District Judge, Presiding

Argued and Submitted February 2, 2021
Seattle, Washington

Before: GRABER, McKEOWN, and PAEZ, Circuit Judges.

Intervenors Taylor Shellfish Company and Pacific Coast Shellfish Growers Association timely appeal (a) the summary judgment in favor of Plaintiffs Coalition to Protect Puget Sound Habitat and Center for Food Safety, following the district court's holding that the United States Army Corps of Engineers violated the Clean Water Act and the National Environmental Policy Act ("NEPA") in issuing the 2017 version of nationwide permit ("NWP") 48; and (b) the district

court's order remedying the legal errors by vacating the permit and the associated verifications and by staying the vacatur in some respects. We affirm.

1. We have appellate jurisdiction under 28 U.S.C. § 1291, even though only Intervenor, and not the agency, have appealed. The district court's order finally resolved all claims and did not require the agency to take any action at all. The order therefore was not a "remand order" in the sense described by Alsea Valley Alliance v. Department of Commerce, 358 F.3d 1181 (9th Cir. 2004), and Pit River Tribe v. U.S. Forest Service, 615 F.3d 1069 (9th Cir. 2010). See generally Sierra Forest Legacy v. Sherman, 646 F.3d 1161, 1175 (9th Cir. 2011) ("The requirement of finality is to be given a practical rather than a technical construction." (alteration and internal quotation marks omitted) (quoting Gillespie v. U.S. Steel Corp., 379 U.S. 148, 152 (1964))).

2. The appeal is not moot. Although the Corps provisionally issued a 2021 version of NWP 48, Reissuance and Modification of Nationwide Permits, 86 Fed. Reg. 2744 (Jan. 13, 2021), that permit has not taken effect and, even if it goes into effect on schedule in mid-March, will not necessarily grant Intervenor full relief.

3. The district court correctly held that the agency abused its discretion, 5 U.S.C. § 706(2), by failing to explain adequately its conclusions that the 2017 version of NWP 48 will have "no significant impact" pursuant to NEPA, and "will have only minimal cumulative adverse effect on the environment," 33 U.S.C.

§ 1344(e)(1). See Bair v. Cal. Dep't of Transp., 982 F.3d 569, 577 (9th Cir. 2020) (describing NEPA's requirements). The Corps expressly acknowledged the negative effects on the environment from aquaculture activities but did not explain adequately why those effects were insignificant or minimal.

Several of the Corps' reasons were illogical. For example, the Corps explained that many other sources caused even greater harm to the aquatic environment than aquaculture, which is a reason that suggests there is a cumulative impact. See 40 C.F.R. § 1508.7 (2017) (defining cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency . . . undertakes such other actions." (emphasis added)). Similarly, the Corps responded to a concern about pesticides with the irrelevant explanation that the Corps does not regulate pesticides.

The Corps' citation to a limited scientific study of the effects of one type of shellfish on one natural resource, where the study did not consider a wide range of environmental stressors, does not suffice—without further explanation—to justify the Corps' much broader determination that at least five types of shellfish will have insignificant and minimal effects on the full aquatic environment. We also reject Intervenor's argument that certain programmatic documents (which were issued for a different purpose and which applied different legal standards) supply the

missing explanation. In issuing its national decision, which was the only document to make a finding under NEPA, the Corps indisputably did not cite or otherwise mention those documents. See Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983) ("We may not supply a reasoned basis for the agency's action that the agency itself has not given." (quoting SEC v. Chenery Corp., 332 U.S. 194, 196 (1947))). Finally, Intervenor's lawyer conceded, during oral argument, that an agency may not rely exclusively on a tiered review to justify its nationwide environmental assessments. Accord Sierra Club, Inc. v. Bostick, 787 F.3d 1043 (10th Cir. 2015); Kentucky Riverkeeper, Inc. v. Rowlette, 714 F.3d 402 (6th Cir. 2013); Ohio Valley Env't Coal. v. Bulen, 429 F.3d 493 (4th Cir. 2005).

4. The district court did not abuse its discretion in crafting an equitable remedy. See, e.g., Teutscher v. Woodson, 835 F.3d 936, 942 (9th Cir. 2016) (holding that we review for abuse of discretion an equitable remedy). Full vacatur is the ordinary remedy when a rule violates the Administrative Procedure Act, and courts deviate "only when equity demands." Pollinator Stewardship Council v. U.S. EPA, 806 F.3d 520, 532 (9th Cir. 2015) (internal quotation marks omitted). Here, the court ordered briefing from the parties on the appropriate remedy and carefully crafted a hybrid remedy that reasonably balanced the competing risks of environmental and economic harms. The court allowed many aquaculture

activities to continue while applicants seek an individualized permit from the Corps, and the court permissibly accepted the good-faith compromise reached by some parties.

Before the district court and before us, Intervenor have not sought a nuanced adjustment to the court's arrangement. Instead, Intervenor assert that anything short of a vacatur only with respect to new applicants, allowing nearly 900 aquaculturists to continue their operations in full without any further review by the Corps, constituted an abuse of discretion. Particularly because vacatur is the presumptive remedy, and because aquaculturists may seek individualized permits, we are unpersuaded that the district court's discretion was so constrained.

AFFIRMED.

United States Court of Appeals for the Ninth Circuit

Office of the Clerk
95 Seventh Street
San Francisco, CA 94103

Information Regarding Judgment and Post-Judgment Proceedings**Judgment**

- This Court has filed and entered the attached judgment in your case. Fed. R. App. P. 36. Please note the filed date on the attached decision because all of the dates described below run from that date, not from the date you receive this notice.

Mandate (Fed. R. App. P. 41; 9th Cir. R. 41-1 & -2)

- The mandate will issue 7 days after the expiration of the time for filing a petition for rehearing or 7 days from the denial of a petition for rehearing, unless the Court directs otherwise. To file a motion to stay the mandate, file it electronically via the appellate ECF system or, if you are a pro se litigant or an attorney with an exemption from using appellate ECF, file one original motion on paper.

Petition for Panel Rehearing (Fed. R. App. P. 40; 9th Cir. R. 40-1)**Petition for Rehearing En Banc (Fed. R. App. P. 35; 9th Cir. R. 35-1 to -3)****(1) A. Purpose (Panel Rehearing):**

- A party should seek panel rehearing only if one or more of the following grounds exist:
 - ▶ A material point of fact or law was overlooked in the decision;
 - ▶ A change in the law occurred after the case was submitted which appears to have been overlooked by the panel; or
 - ▶ An apparent conflict with another decision of the Court was not addressed in the opinion.
- Do not file a petition for panel rehearing merely to reargue the case.

B. Purpose (Rehearing En Banc)

- A party should seek en banc rehearing only if one or more of the following grounds exist:

- ▶ Consideration by the full Court is necessary to secure or maintain uniformity of the Court's decisions; or
- ▶ The proceeding involves a question of exceptional importance; or
- ▶ The opinion directly conflicts with an existing opinion by another court of appeals or the Supreme Court and substantially affects a rule of national application in which there is an overriding need for national uniformity.

(2) Deadlines for Filing:

- A petition for rehearing may be filed within 14 days after entry of judgment. Fed. R. App. P. 40(a)(1).
- If the United States or an agency or officer thereof is a party in a civil case, the time for filing a petition for rehearing is 45 days after entry of judgment. Fed. R. App. P. 40(a)(1).
- If the mandate has issued, the petition for rehearing should be accompanied by a motion to recall the mandate.
- See Advisory Note to 9th Cir. R. 40-1 (petitions must be received on the due date).
- An order to publish a previously unpublished memorandum disposition extends the time to file a petition for rehearing to 14 days after the date of the order of publication or, in all civil cases in which the United States or an agency or officer thereof is a party, 45 days after the date of the order of publication. 9th Cir. R. 40-2.

(3) Statement of Counsel

- A petition should contain an introduction stating that, in counsel's judgment, one or more of the situations described in the "purpose" section above exist. The points to be raised must be stated clearly.

(4) Form & Number of Copies (9th Cir. R. 40-1; Fed. R. App. P. 32(c)(2))

- The petition shall not exceed 15 pages unless it complies with the alternative length limitations of 4,200 words or 390 lines of text.
- The petition must be accompanied by a copy of the panel's decision being challenged.
- An answer, when ordered by the Court, shall comply with the same length limitations as the petition.
- If a pro se litigant elects to file a form brief pursuant to Circuit Rule 28-1, a petition for panel rehearing or for rehearing en banc need not comply with Fed. R. App. P. 32.

- The petition or answer must be accompanied by a Certificate of Compliance found at Form 11, available on our website at www.ca9.uscourts.gov under *Forms*.
- You may file a petition electronically via the appellate ECF system. No paper copies are required unless the Court orders otherwise. If you are a pro se litigant or an attorney exempted from using the appellate ECF system, file one original petition on paper. No additional paper copies are required unless the Court orders otherwise.

Bill of Costs (Fed. R. App. P. 39, 9th Cir. R. 39-1)

- The Bill of Costs must be filed within 14 days after entry of judgment.
- See Form 10 for additional information, available on our website at www.ca9.uscourts.gov under *Forms*.

Attorneys Fees

- Ninth Circuit Rule 39-1 describes the content and due dates for attorneys fees applications.
- All relevant forms are available on our website at www.ca9.uscourts.gov under *Forms* or by telephoning (415) 355-7806.

Petition for a Writ of Certiorari

- Please refer to the Rules of the United States Supreme Court at www.supremecourt.gov

Counsel Listing in Published Opinions

- Please check counsel listing on the attached decision.
- If there are any errors in a published opinion, please send a letter **in writing within 10 days** to:
 - ▶ Thomson Reuters; 610 Opperman Drive; PO Box 64526; Eagan, MN 55123 (Attn: Jean Green, Senior Publications Coordinator);
 - ▶ and electronically file a copy of the letter via the appellate ECF system by using “File Correspondence to Court,” or if you are an attorney exempted from using the appellate ECF system, mail the Court one copy of the letter.

**UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT**

Form 10. Bill of Costs

Instructions for this form: <http://www.ca9.uscourts.gov/forms/form10instructions.pdf>

9th Cir. Case Number(s)

Case Name

The Clerk is requested to award costs to (*party name(s)*):

I swear under penalty of perjury that the copies for which costs are requested were actually and necessarily produced, and that the requested costs were actually expended.

Signature

Date

(use "s/[typed name]" to sign electronically-filed documents)

COST TAXABLE	REQUESTED (each column must be completed)			
	No. of Copies	Pages per Copy	Cost per Page	TOTAL COST
Excerpts of Record*	<input type="text"/>	<input type="text"/>	\$ <input type="text"/>	\$ <input type="text"/>
Principal Brief(s) (<i>Opening Brief; Answering Brief; 1st, 2nd, and/or 3rd Brief on Cross-Appeal; Intervenor Brief</i>)	<input type="text"/>	<input type="text"/>	\$ <input type="text"/>	\$ <input type="text"/>
Reply Brief / Cross-Appeal Reply Brief	<input type="text"/>	<input type="text"/>	\$ <input type="text"/>	\$ <input type="text"/>
Supplemental Brief(s)	<input type="text"/>	<input type="text"/>	\$ <input type="text"/>	\$ <input type="text"/>
Petition for Review Docket Fee / Petition for Writ of Mandamus Docket Fee				\$ <input type="text"/>
TOTAL:				\$ <input type="text"/>

***Example:** Calculate 4 copies of 3 volumes of excerpts of record that total 500 pages [Vol. 1 (10 pgs.) + Vol. 2 (250 pgs.) + Vol. 3 (240 pgs.)] as:

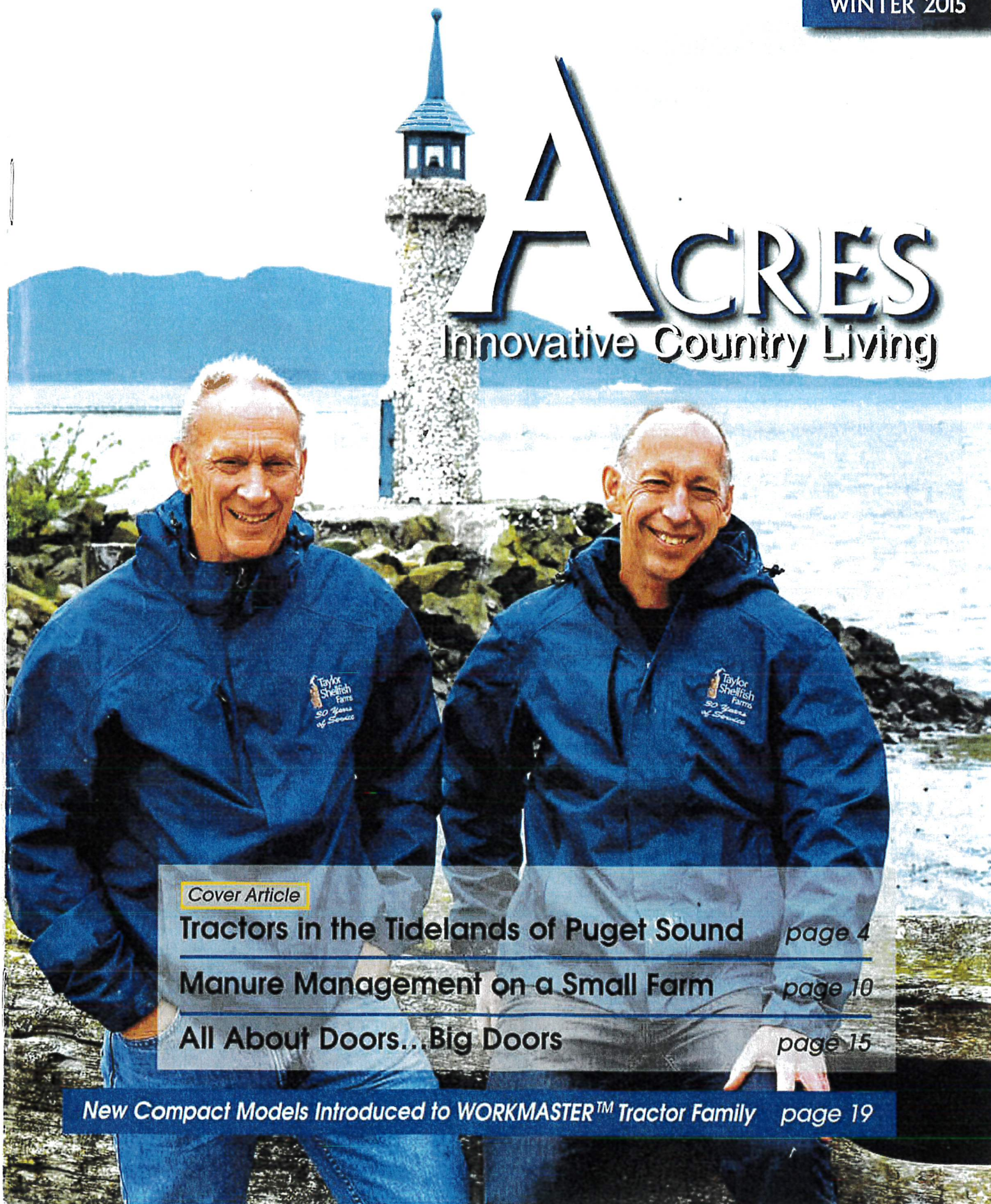
No. of Copies: 4; Pages per Copy: 500; Cost per Page: \$.10 (or actual cost IF less than \$.10);

TOTAL: 4 x 500 x \$.10 = \$200.

Feedback or questions about this form? Email us at forms@ca9.uscourts.gov

ACRES

Innovative Country Living



Cover Article

Tractors in the Tidelands of Puget Sound page 4

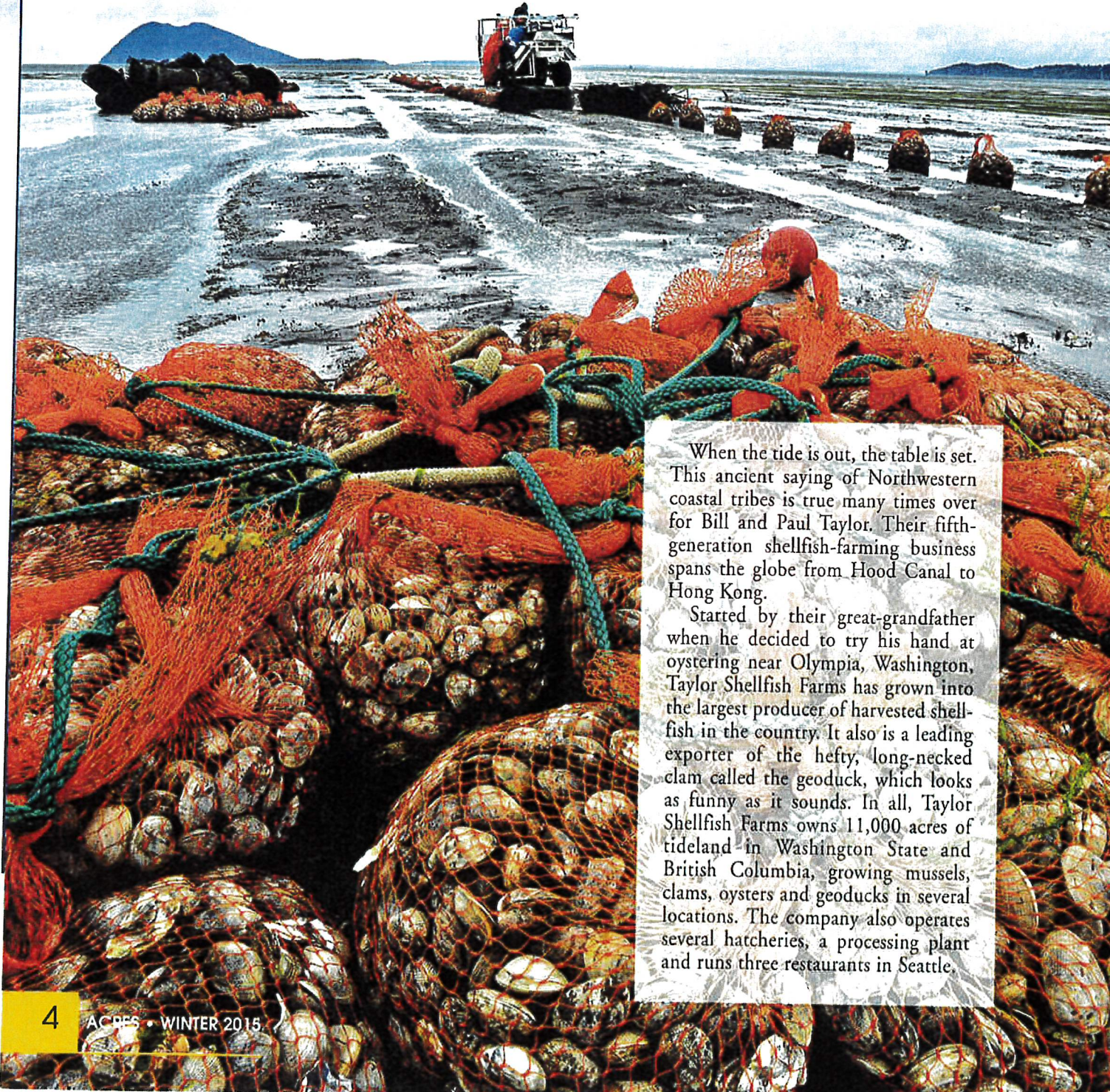
Manure Management on a Small Farm page 10

All About Doors...Big Doors page 15

New Compact Models Introduced to WORKMASTER™ Tractor Family page 19

Tractors in the Tidelands of Puget Sound

*Taylor Shellfish: 100 years of making
the world their oyster*



When the tide is out, the table is set. This ancient saying of Northwestern coastal tribes is true many times over for Bill and Paul Taylor. Their fifth-generation shellfish-farming business spans the globe from Hood Canal to Hong Kong.

Started by their great-grandfather when he decided to try his hand at oystering near Olympia, Washington, Taylor Shellfish Farms has grown into the largest producer of harvested shellfish in the country. It also is a leading exporter of the hefty, long-necked clam called the geoduck, which looks as funny as it sounds. In all, Taylor Shellfish Farms owns 11,000 acres of tideland in Washington State and British Columbia, growing mussels, clams, oysters and geoducks in several locations. The company also operates several hatcheries, a processing plant and runs three restaurants in Seattle.



Clams grow in rows planted in Samish Bay in south Puget Sound under plastic netting that deters birds and other hungry predators.

Farming around the tide

Gaining access to a crop that grows at a Taylor farm in a Puget Sound outlet named Samish Bay isn't easy. It requires proper timing and a boat — leaving the shore while there's enough water for the boat as the tide quickly recedes; then anchoring and jumping out when the water is not above hip-wader high.

Rows and rows of plastic netting are revealed as the watery bay turns into brown mud bottom flats. The nets, needed to keep hungry birds and crabs away, cover manila clams, some of the company's biggest sellers. After three to four years of growth, these small brown bivalves will turn into hundreds of bowls of buttery "steamers" in bars, restaurants and homes around the Northwest.

"When we grow the clams, we have to put a net over the top of them," Bill Taylor explains. "We plant little tiny seeds through the net. In the spring, the net gets marine algae growing all over it so we sweep off the algae."

Using what? A street sweeper attached to the end of a New Holland Boomer™ 50 compact tractor. The Taylors use New Holland tractors in aquaculture just as agricultural farmers do on land — for just about everything, including laying down four-foot wide nets in neat rows and sweeping the nets. The one difference: their blue tractors are parked on a platform float in the water and driven down a ramp at low tide.

The Taylors also use New Holland tractors for the Samish Bay Farm. The farm employs about 40 people to har-

vest clams and run a small retail store selling all things fresh and fishy.

"It's really different out here than a farm on land. The tractors are in the salt and mud and muck all the time," says Paul Taylor, 57, younger of the two brothers by two years. "This has 1,300 hours on it, that's several years' worth," he adds, pointing to the Boomer 50. "We work in a pretty harsh environment and the fact that the equipment can take it is pretty impressive to me."

Tricks from tulip farmers

Adapting a city street sweeper to clean off tidal slime is just one of several quirky creations found around the many Taylor Shellfish locations. Another creative adaption is the mammoth-sized harvesting machine that grinds through the muck, churning up clams in its wake.

"We modified a machine used in Europe for harvesting tulip bulbs," Bill Taylor explains as sandy clams fly up the chute and fling into blue nets. "It creeps along the tidal flats raking up the clams, shaking the sand off of them and sending them to a bucket in the back."

This method replaces the age-old metal rake and back-breaking manual labor. It is a tremendous asset, adds company spokesman Bill Dewey, who lives in the Samish Bay area and accompanied the Taylors on the farm tour. "It can do the work of five to six people in half the time," he says. "The clams we had to still dig by hand, so doing it this way is pretty unique. And seeding the clams makes the business much more predictable and we can inventory it better."

What they can't control is the natural rhythm of the ocean.

Every two weeks, there is a tidal cycle, so Samish Bay employees generally work 10 days on, four days off. They also only have a window of three to four hours out on the flats before their crop "fields" turn back into a bay. Working by moonlight and headlamp come with the territory.

Continued on page 6



Attaching a standard city street sweeper to a New Holland Boomer™ compact tractor helps remove thick growth of algae that accumulates on plastic netting protecting growing clams.

CNH Industrial America LLC recommends the use of a FOPS when a tractor is equipped with a loader attachment.



Taylor Shellfish Farms keep its New Holland Boomer™ tractor on a floating platform at its south Puget Sound location, Samish Bay. It's used when the tide goes out and the rows of growing clams are exposed. The attachment on the back is a Rain-Flo flat bed mulch layer.

CNH Industrial America LLC recommends the use of a FOPS when a tractor is equipped with a loader attachment.

"Tidelands" continued from page 5

A life of highs and lows

Low tide, high tide, minus tide. Such cycles have marked the days and nights of Bill and Paul Taylor for as long as they can remember, since the days their father, Justin Taylor, began passing along the family business that began with great-grandfather J.Y. Waldrip in the late 1880s.

"In Olympia, I grew up falling out of my dad's boat working out on the bay," Bill recalls with a smile. "I was digging clams at age six."

When Justin Taylor died in 2011 at the age of 90, he was remembered as a "humble giant," the one who built the family venture into the nation's largest shellfish-farming operation "one shovelful at a time." In his three children (including daughter Janet Taylor Pearson) he instilled an environmentalist ethic, teaching them the importance of water quality and conserving the ecosystem of Puget Sound.

Now, Justin Taylor, dressed in his ever-present work shirt, bill cap and waders, greets visitors to Samish Bay Farms in the form of a metal sculpture attached to a piling. Clam rake at the ready, coffee cup in hand, the



Oyster shells discarded on the beaches of Samish Bay.



Bill Taylor (in front) and his brother Paul Taylor check on how clams are rotating through a modified tulip bulb digger and conveyer belt.

memorial slips in and out with the tide, placing the patriarch at his favorite position "down on the flats."

Geoduck delicacy

While expanding internationally, Taylor Shellfish remains proud of its rugged western Washington roots and long ties to land and water. The company has grown into a power player in the burgeoning business of bivalves – mussel farmers with some serious muscle – especially when it comes to Washington State's strange claim-to-fame clam, the geoduck. The surging demand for this long, strangely-shaped sea creature is leading many shellfish farmers, including the Taylors, to add more geoduck growing sites. Revered as a delicacy in China and Hong Kong, geoducks reportedly sell there for \$100 per pound – three times the U.S. price.

"It's mostly Asian communities that want the geoduck but we're starting to see more going to white-tablecloth restaurants locally," Bill Taylor explains. Not easy or fast to produce, the world's largest burrowing clam requires six years to grow to market size and 6-inch diameter PVC pipes or mesh pipe to protect them.

Then comes the fun part, plunging an arm two to three feet into the muck and pulling out the squirting mollusk by its nasty four-foot long neck.

Bill Dewey, who raises his own geoducks in a separate venture from the Taylors, has been talking a lot about the bizarre bivalve lately as the global press discovers the international clam- or for Washington state's King of Clams.

"It's eaten sashimi style, raw and sliced, and it has a cucumber texture with a crunch," Dewey says. It's also often sautéed, made into chowder, or blanched in a broth.

Hatchery to harvesting

Washington State is the largest producer of hatchery reared and farmed shellfish in the United States.

A state act in 1895 allowed private individuals to buy tidal territory from the state for shellfish farming, transportation and other water industry — a practice that continued until 1971. Washington State also leases its tidal lands, which is what most states have always done. Shellfish farmers own (or in some cases lease) the land that appears as the tide recedes. Once the water rises again, covering their crops, the area reverts back to public use.

Of the 11,000 acres of tidelands Taylor Shellfish Farms owns, all of it is actively farmed. In some areas, all of the tideland is farmable and in others, as little as 30 percent due to pests, invasive species, sensitive habitats or inappropriate substrate.

Finding locations best suited for various types of oysters and clams is a large part of the company's success. For instance, Kumamoto oysters, known for their distinctive green tinge and sweetness, grow best in Chapman's Cove, near Shelton, Washington, where three freshwater creeks enrich a tidal plateau. Totten Inlet in the south Puget Sound area is best for Olympia, Pacific and Virginica oysters. It's also where the Taylors harvest mussels clinging onto long ropes, known as longlines. In Willapa Bay, in southwestern Washington along the Pacific Ocean, where the Taylors' own 6,300 acres, they seed and harvest 90 percent of their total oyster production.

Continued on page 8



Taylor Shellfish Farm employees wrap up an order at its Samish Bay location.



At its Samish Bay location, Taylor Shellfish Farms sells all things fishy — oysters, clams, geoducks.

According to the Washington Department of Fish and Wildlife, the geoduck is the world's largest burrowing clam, reaching an average size of 2.07 pounds (including the shell) in subtidal waters of Puget Sound. The clam's name, pronounced 'gooey-duck', is of Native American origin and means 'dig deep'.

Global threats in their own backyard

Over the years, Taylor Shellfish has battled many environmental threats, starting with the near extinction of the native Olympia oyster from over-harvesting and declining water quality conditions. Once abundant in Willapa Bay and South Puget Sound, by the 1980s the small but tasty Olympia oyster was all but shucked-out up and down the West Coast.

"By 1956, a pulp mill in Shelton had killed all oysters in the bay and that's when we realized how important water quality is," Bill Taylor said. "Then the shorelines were developed in the 1960s and human pollution became a problem."

His father was the first to recognize the threat of human activity on the native oyster and filed the first environmental lawsuit in Washington State against the pulp-mill industry. Taylor Shellfish Farms is credited with helping in the restoration efforts of

Olympia oyster populations in South Puget Sound and with the resurgence in their popularity. While Bill Taylor enjoys the challenge of raising the ornery Olympia oysters that need a specific water temperature, plenty of plankton, and three or four years for best cultivation, he's also in it for the taste. Of Olys — be they raw, shucked, smoked, sautéed — "there's nothing better," he says.

But Taylor Shellfish has also been criticized by environmental organizations and coastal communities who are concerned about the company's growing footprint and the effect on tideland creatures.

In May, after an outcry from area chefs and customers, the company and other shellfish farmers backed down from a plan to use a neurotoxin approved by the state called Imidacloprid to kill native shrimp burrowing into the oyster beds. Its geoduck production is also considered a shoreline eyesore because of the PVC pipes used to stabilize the giant clams. Dewey says the company is moving toward mesh netting that is less visible and has made a number of other adjustments to farming practices to address neighbors' concerns.

The company's biggest threat arrived in the summer of 2009. Millions of oyster larvae suddenly died around Washington State hatcheries, dropping production by 80 percent and costing the industry an estimated \$110 million. The cause? Ocean acidification, which occurs when oceans absorb carbon dioxide emissions.

"The ocean's surface water has become 30 percent more acidic," says

Dewey, calling it the biggest threat to seafood around the globe. In 2013, the state allotted funds for ocean acidification research. Taylor Shellfish has since installed \$45,000 in sophisticated monitoring equipment to track water chemistry at its oyster larvae farms. If the water gets too acidic, sodium carbonate is automatically injected to restore pH balance.

No longer 'just digging clams'

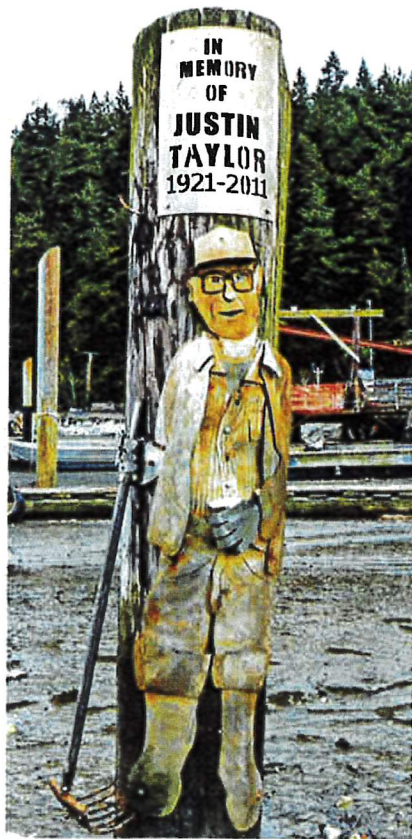
Pollution, pests and press calls are just a few of the pressures facing Taylor Shellfish executives daily.

The company owns and operates the entire process of the shellfish they sell from hatchery to harvests to hardy servings of steaming clams. It just opened its third restaurant in Seattle in the historic downtown Pioneer Square adding to its two Seattle oyster bars.

With 500 employees in multiple locations around the state, business contracts around the country and world, and more than \$60 million in annual revenue, Taylor Shellfish Farms is a little bigger than your average "family farm."

Or as Bill Taylor puts in the understated Taylor family way, the shellfish business "is a little more complicated than just digging clams." 🍷

New Holland Dealer: Brim Tractor, Mt. Vernon, Washington



A metal sculpture of Justin Taylor, the family patriarch, greets visitors to Samish Bay Farms.



The shellfish business is a little more complicated than just digging clams."

—Bill Taylor

This Isn't Your Grandfather's Oyster Farm

The story of industrial shellfish aquaculture in Puget Sound threatening the survival of our native species and privatizing our shorelines

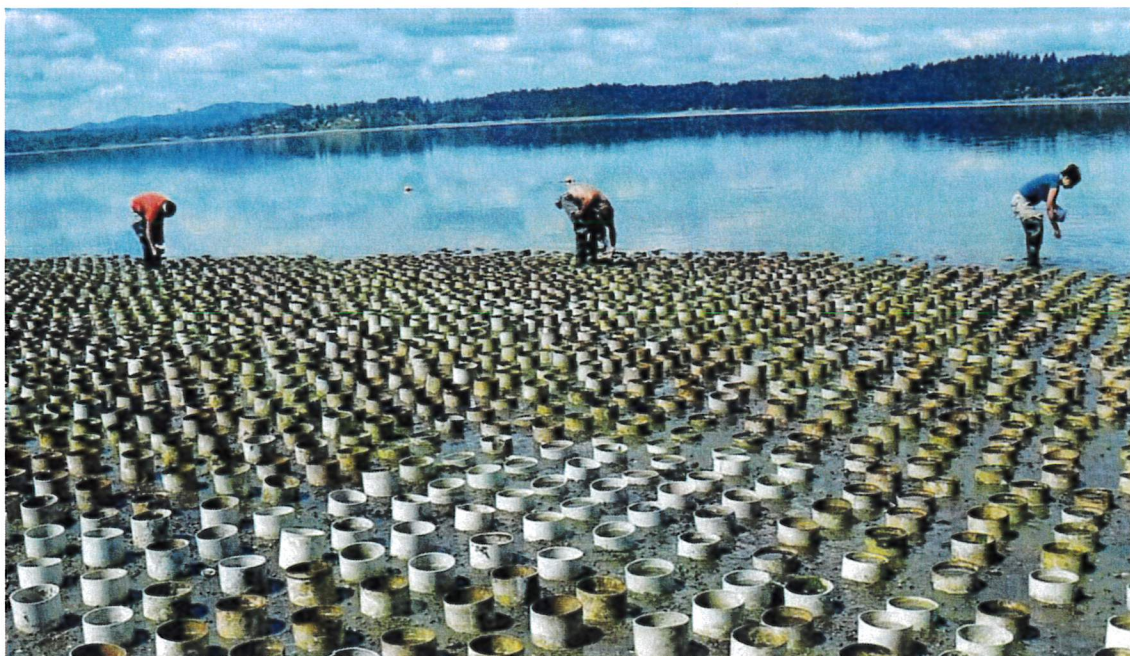
Native Olympia oysters have grown in Puget Sound for thousands of years. Harvesting was often done as a community event and the environmental impacts were minimal. That all changed in the 1990's with the introduction of high densities of non-native Pacific oysters grown in plastic grow-bags; non-native gallo mussels grown on rafts; non-native manila clams covered with canopy nets; and, intertidal geoducks grown in PVC tubes along with net caps, plastic bands and canopy nets. We advocate for sustainable densities and methods with limited expansion.

For geoduck aquaculture, PVC tubes are used to retain water over the geoducks when the tide goes out, allowing geoducks to be cultivated higher up in the intertidal zone than they occur naturally. Nets are placed over the PVC pipes to keep fish and birds (industry-classified predators) from their natural feeding grounds. The shellfish industry adopted this technique, along with the use of plastic oyster bags and rafts, to grow dense concentrations of geoducks, non-native Pacific oysters and Gallo mussels. Typically, geoducks can bring in \$700,000 to \$1 million from one acre of

seldom-labored tidal flat with a 5 to 7 year grow cycle.

In South Puget Sound, 85% of Totten Inlet has been converted to intensive shellfish aquaculture. Eld Inlet and Hammersley Inlet shorelines have also been converted to intensive aquaculture and the industry is actively soliciting long-term leases on private and public tidelands throughout Case Inlet, Carr Inlet, Henderson Inlet, Henderson Bay, and Nisqually Reach in the Department of Natural Resources aquatic reserve. Scientists consider these intertidal areas as nurseries for our beach life, fish, forage fish, flat fish, crabs, birds and other important species necessary to maintain salmon and other endangered species in Puget Sound.

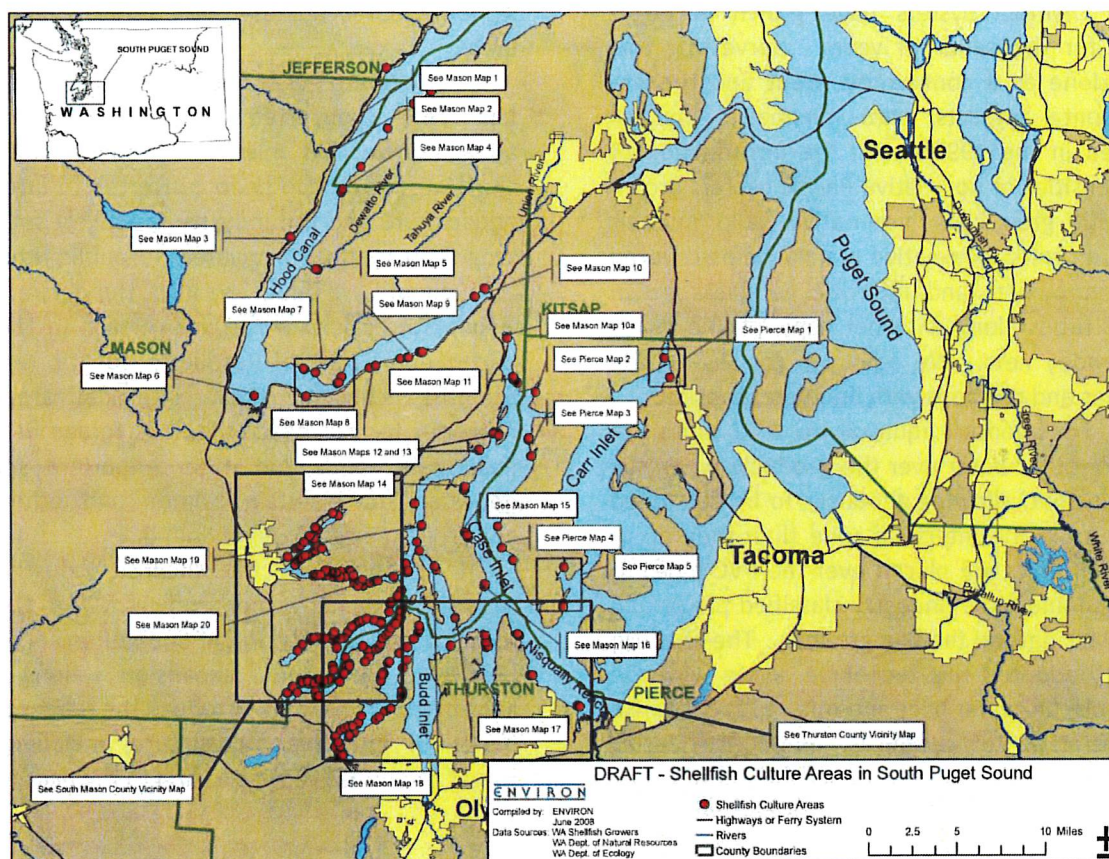
Lobbying by the shellfish industry has resulted in the Governor's office, NOAA, Department of Ecology, and Puget Sound Partnership to promote unlimited expansion along our shorelines. We aim to introduce the reader to the issues of intensive aquaculture, including the threat to our native species and to the economy.



Shoreline geoduck aquaculture-over 40,000 PVC tubes per acre, many with net caps

A Puget Sound Phenomenon

The red dots on the map below show the numerous aquaculture sites on Puget Sound shores. These sites are permanent, perpetual operations filling bays and coves. There is no "recovery time" as assumed by the limited scope of the Sea Grant study¹, calling its conclusions into question. Non-published industry contract science and un-supported industry statements are being promoted to avoid regulation.



Existing commercial geoduck beds

"Private tidelands are misrepresented as residential/recreational beaches. [Pierce] County must recognize that the primary purpose of privately held tidelands is shellfish farming and not residential recreation."

*Peter Downey, Pacific Coast Shellfish Growers Association
Pierce County Council Meeting Letter, January 15, 2007.*

Numerous industry members have voiced the same opinion that Puget Sound shorelines are solely for commercial aquaculture. That vision is out-of-touch with the average Washingtonian who uses the shoreline for kayaking, swimming, windsurfing and other recreational activities. The expansion and reach of large-scale commercial aquaculture must comply with the 1971 Shoreline Management Act (RCW 90.58) that states: "Permitted uses in the shorelines of the state shall be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public's use of the water."

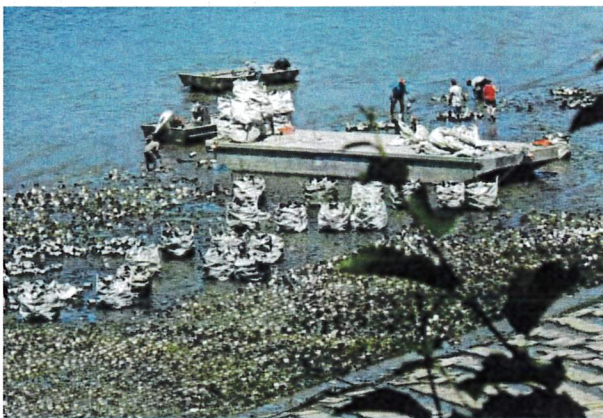
¹ Washington Sea Grant, Feb. 2012. *Geoduck Aquaculture Research Program Interim Progress Report*. University of Washington (Seattle).

Shellfish Industry False Marketing

"Aquaculture Cleans the Water"



Liquefying beach for geoduck harvest



Geoduck aquaculture barge and equipment



Wildlife eradication nets over geoduck tubes

Corporate polluters often use grossly exaggerated and inaccurate marketing terms to sell their products and practices. Examples are terms like "Clean Coal" for the dirtiest of all fossil fuels, or "Clean Energy" for natural gas derived from fracking rock that can pollute pristine subterranean aquifers. The shellfish industry uses "Cleaning the Water" to describe how shellfish growing will clean up Puget Sound, which notion has not yet been verified by independent peer-reviewed science. These campaigns have been very successful in masking the degradation to our air, streams, and marine waters as corporate expansion moves ahead. In Puget Sound, marine ecosystems, necessary for a stable healthy natural habitat for forage fish, birds, salmon and Orcas, are being destroyed by the large-scale expansion of shellfish aquaculture. Conversion of natural habitats, elimination of native species, and the prolific use of chemicals, plastics and other non-biodegradable additives present environmental hazards to existing natural marine habitats. Shellfish industry expansion and higher densities will lower those agents even further.

The adjacent photos detail the massive amounts of unnatural substances introduced into the marine ecosystem by industrial-scale aquaculture. Any "cleaning" of the water is directly undermined by the stressors created when shellfish are grown in such conditions.

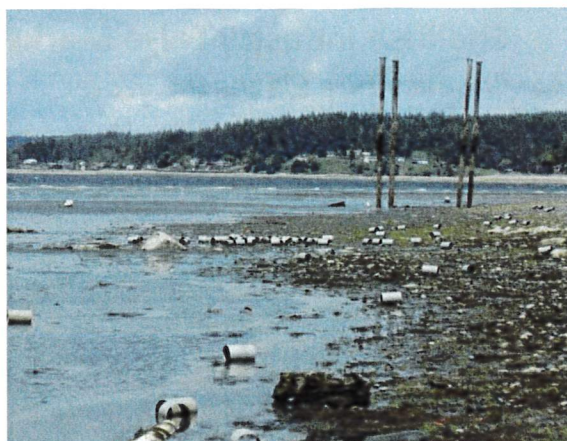


Oyster bags covering beach

Adverse Effects on the Environment

- Eliminating aquatic plant and animal species resulting in a monoculture from clearing all natural beach material (e.g., wood, rocks, shells), purging all natural species, netting beaches, and liquefying beaches.
- Increasing marine plastic pollution. Every acre of geoduck aquaculture includes approximately 8 miles of PVC tubes plus 40,000 plastic net caps, plastic bands and/or 30 x 30 ft. plastic canopy nets. All this plastic debris damages or destroys life in these delicate marine ecosystems (See "Harm To Marine Life", next page).
- Degrading water quality for all species' life cycles, altering shoreline habitat and food sources.
- Depleting irreplaceable public fisheries resources, by using native species' fish eggs, larvae, crab zoes (zooplankton) as "shellfish food" to fatten up the planted shellfish.
- Operating adjacent to high priority sites like forage fish spawning habitat.
- Eradicating seagrasses and macroalgae essential to the Puget Sound food web.
- Spraying pesticides and herbicides in Willapa Bay, Grays Harbor and Puget Sound.

Over 3 tons of carbaryl have been aerially sprayed over Willapa Bay and Grays Harbor tidelands for 40 years. With legal ban on carbaryl now in effect, the large-scale commercial shellfish industry has proposed a switch to Imidacloprid, a known bee killer. Glysophate and Imazapyr have been sprayed over the tidelands to eradicate Spartina grass. Industry is currently attempting to eradicate crucial Japanese eelgrass in Willapa Bay and Puget Sound using the chemical Imazamox.



PVC plastic pollution in Case Inlet.



Degrading, broken PVC pollution.



Small sample of shellfish farming debris routinely found on private tidelands.

"The Pacific oyster (*Crassostrea gigas*) has been intentionally released and cultured in coastal waters around the world. It can dominate native species and destroy habitat (ecological impact 3-out of a high of 4)."

Assessing the Global Threat of Invasive Species to Marine Biodiversity, 2006



Eagle trapped in wildlife eradication nets



Eagle trapped in wildlife eradication nets

"Our results suggest a net decrease in total shorebird use in areas developed for aquaculture."²



Carcass of drowned seabird in wildlife eradication nets.

² Kelly, et. al., 1996. *Effects of aquaculture on habitat use by wintering shorebirds*. California Fish and Game 82(4): 160-174.

Harm to Marine Wildlife

Captain Charles Moore, a world-renowned marine plastic pollution expert, testified before the Pierce County Hearings Examiner and the Washington Shorelines Hearings Board in 2012. His statement is as follows: "To summarize, the introduction of plastics into the marine environment poses hazards of three main types, ingestion, entanglement and the transport of exotic species. PVC is especially toxic and poses hazards to environmental health at every stage of its existence. Other plastics may eliminate some, but not all of these problems, therefore, it does not appear possible to introduce any plastic into the marine environment without harmful consequences."



Starfish killed by lime spread by grower.

"It is generally acknowledged that the culture of bivalve molluscs may have a wide range of impacts on the habitat and community structure of coastal marine ecosystems."³

³ McKindsey, et. al., 2006. *Effects of Shellfish Aquaculture on Fish Habitat*. Canadian Science Advisory Secretariat Research Document 2006/011.

Shellfish Industry Tax Revenue

Shellfish Industry Pays Minimal Taxes Yet Uses Public Waters and Agency Resources

With budget deficits appearing in every county and state agency in Washington, legitimate sources of revenue should be re-examined for all activities. The shellfish industry uses Washington public waters, directly generating \$107 million in sales, but pays limited taxes benefiting Washington State citizens. For this, the industry receives significant staff support and publicity from state resource agencies and county government services, most of which do not charge a fee.



PVC pipes covering the shoreline.

The following is a summary of taxes paid by the shellfish industry:

Sales Tax	None collected on shellfish exported.
Export Tax	None collected.
Excise Tax	All shellfish (including oysters, clams, and geoducks) grown on private aquatic lands are exempt from the Enhanced Food Fish Excise Tax (Fish tax).
Business and Occupational Tax	Most of the shellfish industry is taking the Agriculture Wholesale B&O Exemption found in RCW 82.04" (Jim Jesernig to PCSGA, January 2012). Shellfish which are exported are exempt (Department of Revenue).
Property Tax	<i>Tidelands which have commercial aquaculture are not appraised by counties at their true value and in most cases the taxes are very low (e.g., Taylor Shellfish's 12 acre geoduck farm in Hammersely Inlet pays \$24 in annual property tax).</i>

Value of Puget Sound Ecosystem

"Ecosystems within the Puget Sound Basin provide between \$7.4 and \$61.7 billion in benefits to people every year." *New View of the Puget Sound Economy, Earth Economics (2012).*

The shellfish industry is given high priority despite their degradation of the ecosystem, yet reports only \$107 million in sales. The largest shellfish employer reports past revenues of \$50 million and 330 jobs.

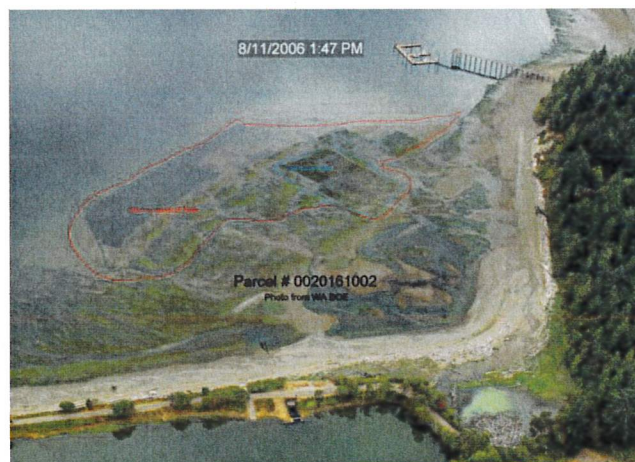
We recommend that tidelands be taxed at market value if they are being used for commercial aquaculture production. Geoduck aquaculture should not be allowed on privately owned intertidal areas, but instead in deeper water using older geoduck seed on state lands. This change would generate revenue from the shellfish industry which uses significant local and state agency staff time and public waters for commercial purposes.

Shellfish Industry Restrictions on Wildlife and Recreation

All of this is allowed in the proposed Pierce County Shoreline Master Program Updates. This is the shellfish industry vision—Is It Yours?



Mussel Rafts in Totten Inlet.



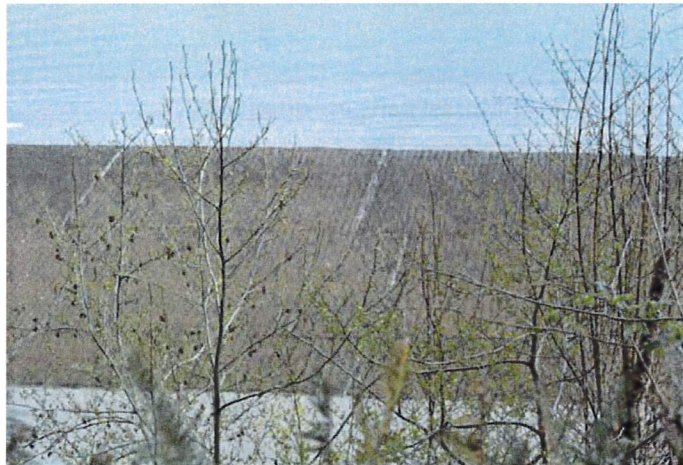
Tidelands inaccessible due to clam netting, Key Peninsula, Pierce County



Barges with plastic tubes for geoduck planting.



Totten Inlet barrels, stakes, rebar, PVC tubes, nets, oyster grow bags.



Totten Inlet massive canopy nets on tidelands.



Henderson Inlet geoduck seed containers on beach.

Shellfish Industry Targets Native Species

"Pests" have no legal protection from eradication efforts

The following is a list of aquatic animals and plants that the shellfish industry considers a "Pest" or a "Weed." (*Pest Management Strategic Plan for Bivalves in Oregon and Washington*, Workshop held on March 11, 2010 in Long Beach, Washington, issued July 2010, p. 27.) The shellfish industry routinely eliminates these species from their sites to increase their profitability. There are no laws in Washington that protect species from this industry.

Major Pests

Invertebrate Pests:

Bamboo worm
Barnacle
Burrowing shrimp
Cockles
Crabs
Flatworms
Horse clams
Moon snail
Oyster drills
Sand dollars
Starfish

Weeds:

Algae
Grasses
Japanese eelgrass
Native eelgrass

Vertebrate Pests:

Perch
Seagulls, crows and
ravens, and waterfowl

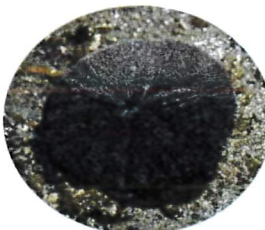
Sporadic and Minor Pests

Invertebrate Pests:

Mussels (*musculista* and native blue)
Polydora
Slipper Shells (*Crepidula*)
Tunicates
Other Parasites

Vertebrate Pests:

Flatfish and sculpins
Raccoon
River otter



Allowing the shellfish industry to remove aquatic life is contrary to restoration efforts and the findings of the Governor's Blue Ribbon Panel on Ocean Acidification:

"Sea stars, urchins and salmon are among Washington's keystone marine species."⁵

"Preserve Washington's existing native sea grass and kelp populations and where possible restore these populations."⁶

⁵ Washington State Blue Ribbon Panel on Ocean Acidification-November, 2012, p. 21.

⁶ *Ibid*, p. 30.

Conclusion

According to the 2009 State of the Sound report, "Puget Sound is one of the most spectacular places on earth. "...During our lifetimes, Puget Sound is in danger of losing many of its plant and animal species, and the unique ecological functions they serve."

To save Puget Sound, millions of dollars are being poured into restoration efforts to save plant and animal species. At the same time, the shellfish industry is being allowed with streamlined permitting to convert mile after mile of natural shoreline, bays and coves into permanent industrial aquaculture while removing the species that were to be saved. According to the 2012 State of the Sound report, "...eelgrass has not increased in extent and is well short of meeting the 2020 target.", and "Birds serve as useful indicators of ecosystem change and ecosystem health." Yet, aquaculture operations are being sited adjacent to eelgrass beds, spraying of *Imazamox* is proposed, birds are allowed to be harassed and natural feeding grounds are altered and restricted for all species.

Proponents misrepresent the multitude of "net loss" impacts from industrial aquaculture as "localized, short term and consistent with natural disturbance." Even though available science documents that nitrogen reduction by shellfish is minimal, industry continues to misinform decision

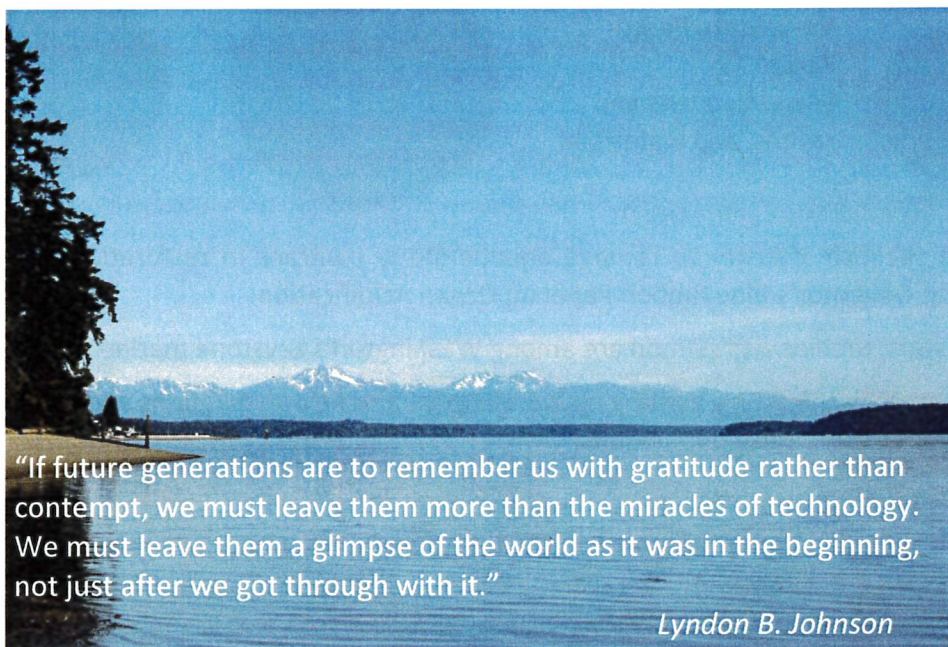
makers to gain expansion approval.

The Governor's Ocean Acidification report includes Action 6.1.2 to "Maintain and expand shellfish production to support healthy marine waters." While we support maintaining a healthy shellfish industry, expansion must be limited and sustainable. The Governor's Shellfish Initiative is not a law, but an industry expansion lobbying tool that is being used to pressure decision makers to "streamline" approvals resulting in violations of Federal and State laws.

According to the 2009 State of the Sound report, "Outdoor, nature-based activities (boating, fishing, swimming, wildlife viewing, picnicking, hiking, and scenic viewing) are of significant value to Puget Sound residents." Both citizens and wildlife are restricted by these expanding operations.

In order to protect our community aquatic resources, decision makers need to enforce existing laws: the Shoreline Management Act, Endangered Species Act, and the Clean Water Act. The shellfish industry already has over 38,000 acres of production in Willapa Bay and Puget Sound — how much is enough? Puget Sound aquatic species and their natural shoreline habitat need protection now.

For more information please go to
<http://www.coalitiontoprotectpugetsoundhabitat.com>





P.O. Box 233
Burley, WA 98322
coalitiontoprotectpugetsound.org

Scientific Evidence that Industrial Shellfish Aquaculture Adversely Affects Iconic Washington State Marine Life

Introduction

Washington State's iconic aquatic species are suffering even as Governor Inslee's new [Executive Order](#)¹ to protect salmon and orca is signed. Despite the widely recognized urgency, regulators continue to ignore the significant adverse impacts from industrial shellfish aquaculture that continues to convert natural habitat to industrial uses. The following scientific findings document the need to limit further expansion and to monitor the existing adverse impacts of roughly 50,000 acres of industrial shellfish aquaculture.

Section I - Scientific Studies Documenting Adverse Impacts

Summary of Recent Science:

Shellfish aquaculture adversely affects marine life, including Chinook salmon which are essential to Southern Resident Killer Whale (Orca) survival.

1a. 2017 Army Corps Draft Cumulative Impacts Analysis (CIA):

This 117 page detailed draft Cumulative Impact Analysis (CIA) is an astonishingly frank assessment of what the science shows will likely happen if this industrial scale aquaculture is allowed to continue. The Corps concluded:

"The proposed action (shellfish aquaculture permitting) is likely to adversely affect designated critical habitat for several species listed under the ESA including Puget Sound Chinook salmon, Hood Canal summer run chum salmon, and Puget Sound steelhead." Page 101

"Given the magnitude of the impacts in acreage, the importance of eelgrass to the marine ecosystem, and the scale of the aquaculture impacts relative to other stressors, the impacts are considered **significant** (emphasis added)." Page 103

¹ Governor Inslee's New 2018 Salmon and Orca Protection Executive Order
https://www.governor.wa.gov/sites/default/files/exe_order/eo_18-02_1.pdf

For those who care about State and Federal law, the Corps also noted that in their view: "The action (shellfish aquaculture permitting) does threaten a violation of State requirements under the Shoreline Management Act to achieve no net loss of eelgrass and Federal requirements to protect eelgrass imposed under the ESA for aquaculture activities. The proposed action is not consistent with either of these requirements." Page 101

Similarly, for key forage fish species such as Pacific Sand Lance (sometimes called Candlefish) and Surf Smelt, on which salmon and Orca rely, the Corps concluded in the analysis that:

"The conclusion therefore is that **significant** (emphasis added) cumulative effects to surf smelt and sand lance spawning habitat would occur due to the proposed action (shellfish aquaculture permitting)." Page 112

And with regard to compliance with State law related to these forage fish, the Corps concluded:

"The proposed action (shellfish aquaculture permitting) is inconsistent with State requirements under the SMA to protect forage fish spawning habitat." Page 111

More report details on the harm to forage fish habitat:

"The effects of the proposed action are discussed above in Section 3. They include removing spawning habitat by placement of nets, floats, barges, or other structures on spawning beaches, smothering eggs, by trampling by foot or vehicle or grounding of vessels on beaches, and direct mortality of adults due to capture in aquaculture cover nets. There are no timing restrictions or monitoring associated with the proposed action that could minimize these effects. Surf smelt and sand lance would be particularly vulnerable to cover nets installed along the shorelines because of their spawning behavior. If not dissuaded from spawning by the nets, they could be captured and killed by the nets. If they are persuaded from spawning, this habitat no longer provides the spawning function for these species. There are currently an estimated 1, 1162 aquaculture acres collocated with mapped smelt and 416 acres collocated with mapped sand lance spawning habitat. GIS analysis indicates that aquaculture project areas collocated with spawning habitat extend waterward from the shoreline about 150-600ft. Conservatively assuming each aquaculture project area extends out 400 ft waterward of the shoreline results in an estimated 109 ft of lineal shoreline per acre. This translates to totals of 24 miles (126,658 lineal ft) of surf smelt and 9 miles (45,344 lineal ft) of sand lance spawning habitat affected by aquaculture. Note this does not account for impacts that may occur to adult fish migrating along the shoreline to spawning areas that may encounter nets outside of the spawning area." Page 108

Link: Army Corps Draft Cumulative Impacts Analysis Submitted by the Corps to the Court Record Without Any Caveats in the Coalition vs. Army Corps Lawsuit and is Consistent with the following 2016 NMFS Biological Opinion

http://users.neo.registeredsite.com/3/7/5/12218573/assets/2017_NWP48_Draft_Cumulative_Impact_Analysis.pdf

1b. 2015: Army Corps of Engineers Latest Biological Assessment:

Per the Assessment: "Determination that shellfish aquaculture: **"may affect, likely to adversely affect."**

"8.1.3. Effect Determination The proposed action (shellfish aquaculture permitting) may affect, likely to adversely affect Puget Sound Chinook salmon and Puget Sound Chinook salmon designated critical habitat." [Page 106]

"8.3.3. Effect Determination The proposed action may affect, likely to adversely affect Hood Canal summer chum salmon and Hood Canal summer chum salmon designated critical habitat". [Page 109]

"8.6.3. Effect Determination The proposed action may affect, likely to adversely affect bull trout and bull trout designated critical habitat." [Page 112]

"8.7.3. Effect Determination The proposed action may affect, likely to adversely affect green sturgeon and may affect, not likely to adversely affect green sturgeon designated critical habitat." [Page 115]

Important Study Findings:

1c. Even with mitigation, shellfish aquaculture still results in adverse impacts.

See below

"9.2. Conclusion As discussed in the PBA and summarized above, the activities authorized under the proposed action would affect EFH (Essential Fish Habitat). While these effects would be minimized by the implementation of the many Conservation Measures, the proposed action would result in adverse effects to EFH for groundfish, coastal pelagic, and Pacific salmon species." [Page 126]

1d. Summary of Active and Fallow Shellfish Aquaculture Co-located with eelgrass and forage fish spawning

<u>Eelgrass Beds-Table D-1</u>		<u>Forage Fish Spawning-E-9, E-10</u>	
	Active and Fallow Areas	Active Areas	Fallow Areas (but allowed)
Grays Harbor	65%	6%	0%
Willapa Bay	76	13	5
Hood Canal	51	54	37
South Puget Sound	9	29	50
North Puget Sound	91	46	96

Link: Army Corps October 2015 Biological Assessment:

[http://www.nws.usace.army.mil/Portals/27/docs/regulatory/160907/Shellfish%20PBA %20Oct30 2015 final.pdf](http://www.nws.usace.army.mil/Portals/27/docs/regulatory/160907/Shellfish%20PBA%20Oct30%202015%20final.pdf)

2. 2016: National Marine Fisheries Service (NMFS) Latest Biological Opinion: Stated in the Biological Opinion: NMFS Shellfish Aquaculture Determination shellfish aquaculture is: "Likely to Adversely Affect" various species. [Page 1]

"NMFS also concludes that "the proposed action [shellfish aquaculture permitting] is likely to adversely affect Puget Sound (PS) Chinook salmon (*Onchorhynchus tshawytscha*), Hood Canal summer-run chum salmon (*O. keta*), North American green sturgeon (*Acipenser medirostris*) and their designated critical habitat, but is not likely to jeopardize the continued existence of these species or to adversely modify their critical habitat." Page 1

Link: NMFS 2016 Opinion:

http://www.nws.usace.army.mil/Portals/27/docs/regulatory/160907/NMFS_2016_09-02_WA%20Shellfish%20Aquaculture_WCR-2014-1502.pdf

Note: This 2016 NMFS Biological Opinion is Elevated from the 2009 NMFS Opinion which failed to recognize any harm at that time, stating that shellfish aquaculture was "not likely to jeopardize the continued existence of the . . . marine and anadromous species listed under the ESA."

- 3. 2015:** "Evaluating Trophic and Non-Trophic Effects of Shellfish Aquaculture in a Coastal Estuarine Foodweb". Ferriss et al., ICES Journal of Marine Science, October 13, 2015.

Data from the study:

- a. Geoduck Aquaculture decreases Aquatic Life: [Pages 8-9]
 - Hérons (-23%)
 - Resident Birds (-17%)
 - Juvenile Wild Salmon (-7%)
 - Flatfish (no number given)
- b. Recognizes "Habitat Modification" from geoduck aquaculture which industry denies. [Page 9]
- c. States "Understanding these relationships can inform management decisions by clarifying trade-offs in ecosystem functions and services in Puget Sound and facilitates estimation of direct and cumulative effects of bivalve aquaculture at a food web scale." [Page 1]
- d. We note that Central Puget Sound, where the study was conducted, has only one geoduck operation at 1.79% of total geoduck production, which is not a representative sample of geoduck operations in Puget Sound. Most geoduck industrial sites are located in South Puget Sound covering over extensive acres of habitat. Increases in additional acreage would create significantly greater impacts.

Link: Sea Grant Ferriss et al. study::

[https://www.dropbox.com/sh/ptotz2w4jj36bia/AAxd5GSV7mnZqmvCLZ-aTEha?amp%3Bpreview=\(17\)+Charles+Moore+Algalita+Power+point.pdf&dl=0&preview=\(62\)+SeaGrant+%26+Ferriss+2015+-+Evaluating+birds+%26+puget+geoducks+effects+shellfish+aquaculture+coastal+estuarine+foodweb..pdf](https://www.dropbox.com/sh/ptotz2w4jj36bia/AAxd5GSV7mnZqmvCLZ-aTEha?amp%3Bpreview=(17)+Charles+Moore+Algalita+Power+point.pdf&dl=0&preview=(62)+SeaGrant+%26+Ferriss+2015+-+Evaluating+birds+%26+puget+geoducks+effects+shellfish+aquaculture+coastal+estuarine+foodweb..pdf)

4. 2007: Puget Sound Salmon Recovery Plan, adopted by NMFS

"Shellfish Aquaculture Cultivating shellfish in the South Sound results in the loss of shallow nearshore habitat and habitat diversity that is important to salmon. These impacts can be potentially positive or negative depending on the type of aquaculture practice." [Page 299] 4.

Link: Puget Sound Salmon Recovery Plan:

http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/puget_sound/chinook/pugetsoundchinookrecoveryplan.pdf

Comment from Puget Sound Nearshore and Restoration Biologist: In the Summary of Aquaculture: "They did not include the full "model" provided in the draft, but the conclusion is the same, albeit a bit watered down. But the model could be included by reference, since it was used to help make that determination. Regardless, they clearly identify aquaculture as a key stressor, stating it will affect juvenile salmon habitat and survivability."

Link: Chinook and Bull Trout Shellfish Aquaculture Chart-Full Model

http://users.neo.registeredsite.com/3/7/5/12218573/assets/2005_South_Sound_Puget_Sound_Salmon_Recovery_Group_Chinook_and_Bull_Trout_Shellfish_Aquaculture_Chart.pdf

- a. Comment: It should be noted that the only "improved" category on the Aquaculture Model [water quality] has not been scientifically proven as per the following US Geological Services (USGS) study, however the shellfish industry incorrectly states that shellfish in Washington State "clean the water/improve water quality" in support of their efforts to be permitted to expand aquaculture
- b. Comment: At the December 8, 2014 Department of Ecology seminar on aquaculture, USGS presented "Approaches for evaluating the effects of bivalve filter feeding on nutrient dynamics in Puget Sound Washington." The USGS presenter publicly confirmed that they found no science that supports the shellfish industry claim that shellfish improve water quality. According to the presentation: "The water quality effects of bivalves are not understood in much of Puget Sound." [Page 4]

2. It is very important to note that the 2017 Nisqually Salmon Study documents the importance of the shrimp larvae, shrimp, crab larvae, crab, polychaetes and eelgrass to the survival of Chinook salmon. [Page 38]

Link: Nisqually Reach Reserve Salmon Study

http://users.neo.registeredsite.com/3/7/5/12218573/assets/2017_Nisqually_Reach_Reserve_Salmon_Study_Ellings_NRAR.pdf

Section III – Washington’s Shellfish Initiative Industry Lobbying Effort

Introduction

The state’s shellfish initiative is not state law; rather it is the result of lobbying by the shellfish industry to attempt to encourage support for the expansion of the industrial use of the state’s tidelands and public waters.

The Shellfish Initiative – A Law Review Article

2014 “The Legal and Environmental Implications of the Washington Shellfish Initiative: Is it Sustainable?” Ward, Lindsey, 4 Seattle Journal of Environmental Law 1, 162.

“VIII. CONCLUSION: According to a 2009 State of the Sound Report, Puget Sound is in danger of losing many of its most valuable plant and animal species and the unique ecological functions they serve during our lifetimes. Given this risk, protecting our shorelines is of paramount interest to ensure that future generations may enjoy the same natural splendor, abundant resources, and scientific opportunity. The Washington Shellfish Initiative seeks to capitalize economically on an already harmful industry, thereby further jeopardizing delicate ecosystems and making it difficult, if not impossible, for them to ever recover. In order to protect our precious coastal resources, community lawmakers must enforce existing laws: the Shoreline Management Act, Endangered Species Act, the Clean Water Act, and local policies and statutes. While the Washington Shellfish Initiative purports to comply with these critical doctrines, its policies and recommendations actually run counter to them in many areas because the underlying objectives are economical rather than environmental. In order to ensure a sustainable shellfish industry for years to come and preserve our State’s unique shoreline habitat, the Washington Shellfish Initiative must be revised so that it complies with federal, state, and local regulations. “

Link: Shellfish Initiative Law Review:

<http://digitalcommons.law.seattleu.edu/cgi/viewcontent.cgi?article=1034&context=sjel>

Section IV – Need for Current Research to Evaluate Industrial Shellfish Industry Harm to Washington’s Marine Life

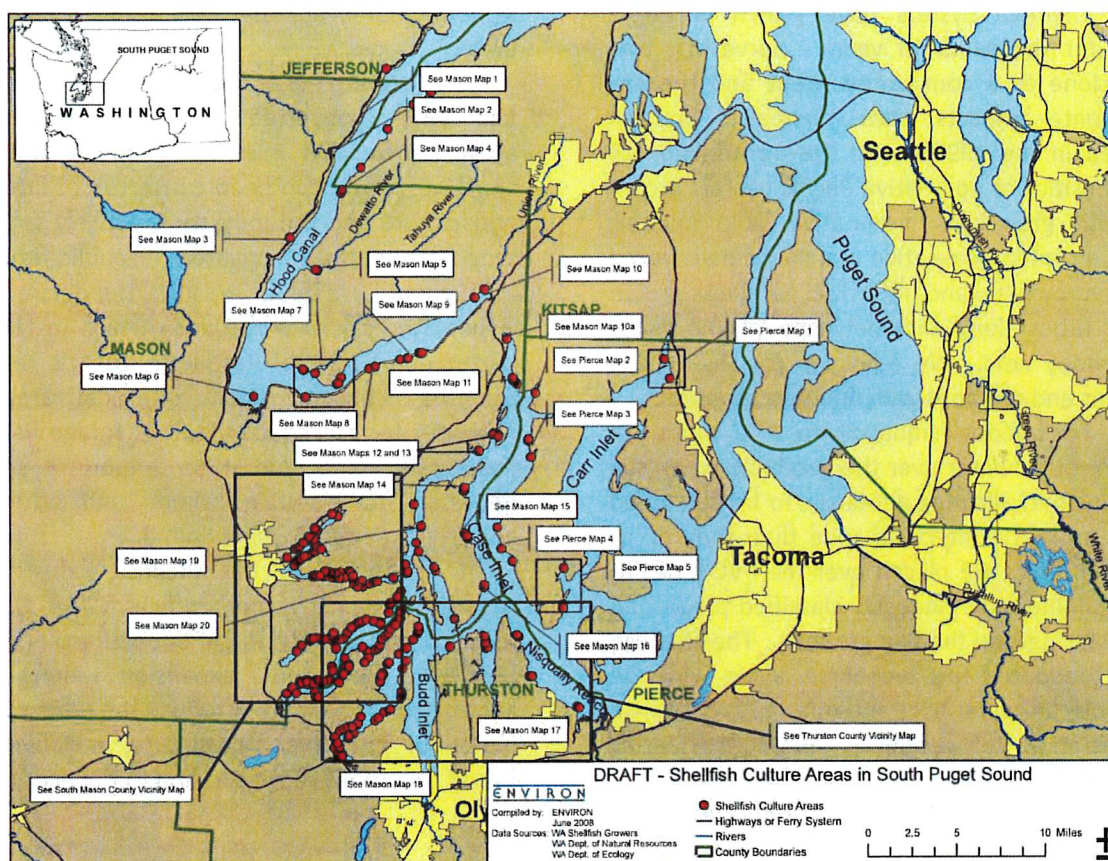
Introduction

For a number of years, the studies conducted on the environmental impacts of industrial aquaculture were very limited in scope and in breadth of the study. In the past few years, the gap has been filled as researchers not affiliated with the federal and state agencies promoting this industry have published scientific studies. Some of the studies relied upon by the Washington state agencies regulating industrial-scale aquaculture are now out-of-date and need to be replaced by more recent scientific information. We continue to see local, state and Federal authorities rely on industry paid for assessments that are not based on the most current or peer reviewed science.

1. Washington State Sea Grant issued their final geoduck research report in November 2013, documenting the studies that were done prior to 2013. Many of the studies listed in the material above, especially regarding plastics, have been published after the Sea Grant report.
2. Sea Grant studied only a few small nearshore geoduck plots based on planting or harvesting impacts but did not evaluate the total clearing, planting, netting and harvesting practices or the impacts from industrial-scale growing of other species. No repeat long-term studies were done.
3. Sea Grant studies considered geoduck aquaculture as only a “periodic disturbance” which is not consistent with the forever permits issued for industrial aquaculture with concomitant permanent adverse impacts.
4. No peer-reviewed studies have been conducted in Washington State to evaluate the impacts on orcas, salmon or forage fish, despite the co-locations.
5. No peer-reviewed studies have been conducted in Washington State to evaluate the impacts of aquaculture plastic gear and shed microplastics from operations on the shorelines as well as extent and impacts of derelict gear. Massive amounts of toxic PVC and HDPE aquaculture plastic gear are intentionally placed in the sensitive nearshore area even as there are worldwide efforts to eliminate plastic bags and single use plastics that unintentionally end up in marine waters.
6. No peer-reviewed cumulative impact studies have been conducted in Washington State to assess the cumulative impacts of the forever aquaculture permits or the cumulative impacts from roughly 50,000 acres of industrial aquaculture in Washington State.

A Puget Sound Phenomenon

The red dots on the map below show the numerous aquaculture sites on Puget Sound shores. These sites are permanent, perpetual operations filling bays and coves. There is no "recovery time" as assumed by the limited scope of the Sea Grant study¹, calling its conclusions into question. Non-published industry contract science and un-supported industry statements are being promoted to avoid regulation.



Existing commercial geoduck beds

"Private tidelands are misrepresented as residential/recreational beaches. [Pierce] County must recognize that the primary purpose of privately held tidelands is shellfish farming and not residential recreation."

*Peter Downey, Pacific Coast Shellfish Growers Association
Pierce County Council Meeting Letter, January 15, 2007.*

Numerous industry members have voiced the same opinion that Puget Sound shorelines are solely for commercial aquaculture. That vision is out-of-touch with the average Washingtonian who uses the shoreline for kayaking, swimming, windsurfing and other recreational activities. The expansion and reach of large-scale commercial aquaculture must comply with the 1971 Shoreline Management Act (RCW 90.58) that states: "Permitted uses in the shorelines of the state shall be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public's use of the water."

¹ Washington Sea Grant, Feb. 2012. *Geoduck Aquaculture Research Program Interim Progress Report*. University of Washington (Seattle).

Shellfish Industry False Marketing

"Aquaculture Cleans the Water"



Liquefying beach for geoduck harvest



Geoduck aquaculture barge and equipment



Wildlife eradication nets over geoduck tubes

Corporate polluters often use grossly exaggerated and inaccurate marketing terms to sell their products and practices. Examples are terms like "Clean Coal" for the dirtiest of all fossil fuels, or "Clean Energy" for natural gas derived from fracking rock that can pollute pristine subterranean aquifers. The shellfish industry uses "Cleaning the Water" to describe how shellfish growing will clean up Puget Sound, which notion has not yet been verified by independent peer-reviewed science. These campaigns have been very successful in masking the degradation to our air, streams, and marine waters as corporate expansion moves ahead. In Puget Sound, marine ecosystems, necessary for a stable healthy natural habitat for forage fish, birds, salmon and Orcas, are being destroyed by the large-scale expansion of shellfish aquaculture. Conversion of natural habitats, elimination of native species, and the prolific use of chemicals, plastics and other non-biodegradable additives present environmental hazards to existing natural marine habitats. Shellfish industry expansion and higher densities will lower those agents even further.

The adjacent photos detail the massive amounts of unnatural substances introduced into the marine ecosystem by industrial-scale aquaculture. Any "cleaning" of the water is directly undermined by the stressors created when shellfish are grown in such conditions.



Oyster bags covering beach

Adverse Effects on the Environment

- Eliminating aquatic plant and animal species resulting in a monoculture from clearing all natural beach material (e.g., wood, rocks, shells), purging all natural species, netting beaches, and liquefying beaches.
- Increasing marine plastic pollution. Every acre of geoduck aquaculture includes approximately 8 miles of PVC tubes plus 40,000 plastic net caps, plastic bands and/or 30 x 30 ft. plastic canopy nets. All this plastic debris damages or destroys life in these delicate marine ecosystems (See "Harm To Marine Life", next page).
- Degrading water quality for all species' life cycles, altering shoreline habitat and food sources.
- Depleting irreplaceable public fisheries resources, by using native species' fish eggs, larvae, crab zoes (zooplankton) as "shellfish food" to fatten up the planted shellfish.
- Operating adjacent to high priority sites like forage fish spawning habitat.
- Eradicating seagrasses and macroalgae essential to the Puget Sound food web.
- Spraying pesticides and herbicides in Willapa Bay, Grays Harbor and Puget Sound.

Over 3 tons of carbaryl have been aerially sprayed over Willapa Bay and Grays Harbor tidelands for 40 years. With legal ban on carbaryl now in effect, the large-scale commercial shellfish industry has proposed a switch to Imidacloprid, a known bee killer. Glyphosate and Imazapyr have been sprayed over the tidelands to eradicate Spartina grass. Industry is currently attempting to eradicate crucial Japanese eelgrass in Willapa Bay and Puget Sound using the chemical Imazamox.



PVC plastic pollution in Case Inlet.



Degrading, broken PVC pollution.



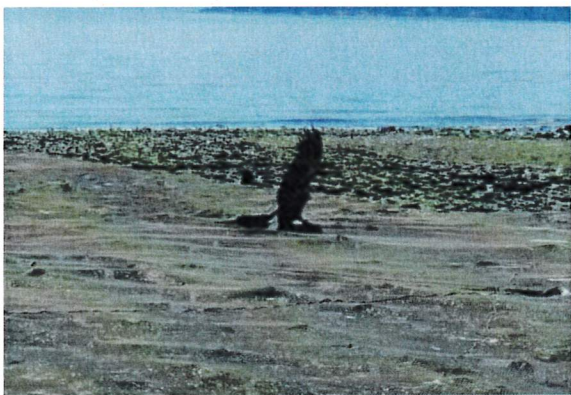
Small sample of shellfish farming debris routinely found on private tidelands.

"The Pacific oyster (*Crassostrea gigas*) has been intentionally released and cultured in coastal waters around the world. It can dominate native species and destroy habitat (ecological impact 3-out of a high of 4)."

Assessing the Global Threat of Invasive Species to Marine Biodiversity, 2006



Eagle trapped in wildlife eradication nets



Eagle trapped in wildlife eradication nets

"Our results suggest a net decrease in total shorebird use in areas developed for aquaculture."²



Carcass of drowned seabird in wildlife eradication nets.

² Kelly, et. al., 1996. *Effects of aquaculture on habitat use by wintering shorebirds*. California Fish and Game 82(4): 160-174.

Harm to Marine Wildlife

Captain Charles Moore, a world-renowned marine plastic pollution expert, testified before the Pierce County Hearings Examiner and the Washington Shorelines Hearings Board in 2012. His statement is as follows: "To summarize, the introduction of plastics into the marine environment poses hazards of three main types, ingestion, entanglement and the transport of exotic species. PVC is especially toxic and poses hazards to environmental health at every stage of its existence. Other plastics may eliminate some, but not all of these problems, therefore, it does not appear possible to introduce any plastic into the marine environment without harmful consequences."



Starfish killed by lime spread by grower.

"It is generally acknowledged that the culture of bivalve molluscs may have a wide range of impacts on the habitat and community structure of coastal marine ecosystems."³

³ McKindsey, et. al., 2006. *Effects of Shellfish Aquaculture on Fish Habitat*. Canadian Science Advisory Secretariat Research Document 2006/011.

Shellfish Industry Tax Revenue

Shellfish Industry Pays Minimal Taxes Yet Uses Public Waters and Agency Resources

With budget deficits appearing in every county and state agency in Washington, legitimate sources of revenue should be re-examined for all activities. The shellfish industry uses Washington public waters, directly generating \$107 million in sales, but pays limited taxes benefiting Washington State citizens. For this, the industry receives significant staff support and publicity from state resource agencies and county government services, most of which do not charge a fee.



PVC pipes covering the shoreline.

The following is a summary of taxes paid by the shellfish industry:

Sales Tax	None collected on shellfish exported.
Export Tax	None collected.
Excise Tax	All shellfish (including oysters, clams, and geoducks) grown on private aquatic lands are exempt from the Enhanced Food Fish Excise Tax (Fish tax).
Business and Occupational Tax	Most of the shellfish industry is taking the Agriculture Wholesale B&O Exemption found in RCW 82.04" (Jim Jesernig to PCSGA, January 2012). Shellfish which are exported are exempt (Department of Revenue).
Property Tax	<i>Tidelands which have commercial aquaculture are not appraised by counties at their true value and in most cases the taxes are very low (e.g., Taylor Shellfish's 12 acre geoduck farm in Hammersely Inlet pays \$24 in annual property tax).</i>

Value of Puget Sound Ecosystem

"Ecosystems within the Puget Sound Basin provide between \$7.4 and \$61.7 billion in benefits to people every year." *New View of the Puget Sound Economy, Earth Economics (2012).*

The shellfish industry is given high priority despite their degradation of the ecosystem, yet reports only \$107 million in sales. The largest shellfish employer reports past revenues of \$50 million and 330 jobs.

We recommend that tidelands be taxed at market value if they are being used for commercial aquaculture production. Geoduck aquaculture should not be allowed on privately owned intertidal areas, but instead in deeper water using older geoduck seed on state lands. This change would generate revenue from the shellfish industry which uses significant local and state agency staff time and public waters for commercial purposes.

Shellfish Industry Restrictions on Wildlife and Recreation

All of this is allowed in the proposed Pierce County Shoreline Master Program Updates. This is the shellfish industry vision—Is It Yours?



Mussel Rafts in Totten Inlet.



Tidelands inaccessible due to clam netting, Key Peninsula, Pierce County



Barges with plastic tubes for geoduck planting.



Totten Inlet barrels, stakes, rebar, PVC tubes, nets, oyster grow bags.



Totten Inlet massive canopy nets on tidelands.



Henderson Inlet geoduck seed containers on beach.

Shellfish Industry Targets Native Species

"Pests" have no legal protection from eradication efforts

The following is a list of aquatic animals and plants that the shellfish industry considers a "Pest" or a "Weed." (*Pest Management Strategic Plan for Bivalves in Oregon and Washington*, Workshop held on March 11, 2010 in Long Beach, Washington, issued July 2010, p. 27.) The shellfish industry routinely eliminates these species from their sites to increase their profitability. There are no laws in Washington that protect species from this industry.

Major Pests

Invertebrate Pests:

Bamboo worm
Barnacle
Burrowing shrimp
Cockles
Crabs
Flatworms
Horse clams
Moon snail
Oyster drills
Sand dollars
Starfish

Weeds:

Algae
Grasses
Japanese eelgrass
Native eelgrass

Vertebrate Pests:

Perch
Seagulls, crows and
ravens, and waterfowl

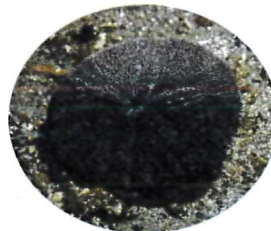
Sporadic and Minor Pests

Invertebrate Pests:

Mussels (*musculista* and native blue)
Polydora
Slipper Shells (*Crepidula*)
Tunicates
Other Parasites

Vertebrate Pests:

Flatfish and sculpins
Raccoon
River otter



Allowing the shellfish industry to remove aquatic life is contrary to restoration efforts and the findings of the Governor's Blue Ribbon Panel on Ocean Acidification:

"Sea stars, urchins and salmon are among Washington's keystone marine species."⁵

"Preserve Washington's existing native sea grass and kelp populations and where possible restore these populations."⁶

⁵ Washington State Blue Ribbon Panel on Ocean Acidification-November, 2012, p. 21.

⁶ *Ibid*, p. 30.

Conclusion

According to the 2009 State of the Sound report, "Puget Sound is one of the most spectacular places on earth. "...During our lifetimes, Puget Sound is in danger of losing many of its plant and animal species, and the unique ecological functions they serve."

To save Puget Sound, millions of dollars are being poured into restoration efforts to save plant and animal species. At the same time, the shellfish industry is being allowed with streamlined permitting to convert mile after mile of natural shoreline, bays and coves into permanent industrial aquaculture while removing the species that were to be saved. According to the 2012 State of the Sound report, "...eelgrass has not increased in extent and is well short of meeting the 2020 target.", and "Birds serve as useful indicators of ecosystem change and ecosystem health." Yet, aquaculture operations are being sited adjacent to eelgrass beds, spraying of *Imazamox* is proposed, birds are allowed to be harassed and natural feeding grounds are altered and restricted for all species.

Proponents misrepresent the multitude of "net loss" impacts from industrial aquaculture as "localized, short term and consistent with natural disturbance." Even though available science documents that nitrogen reduction by shellfish is minimal, industry continues to misinform decision

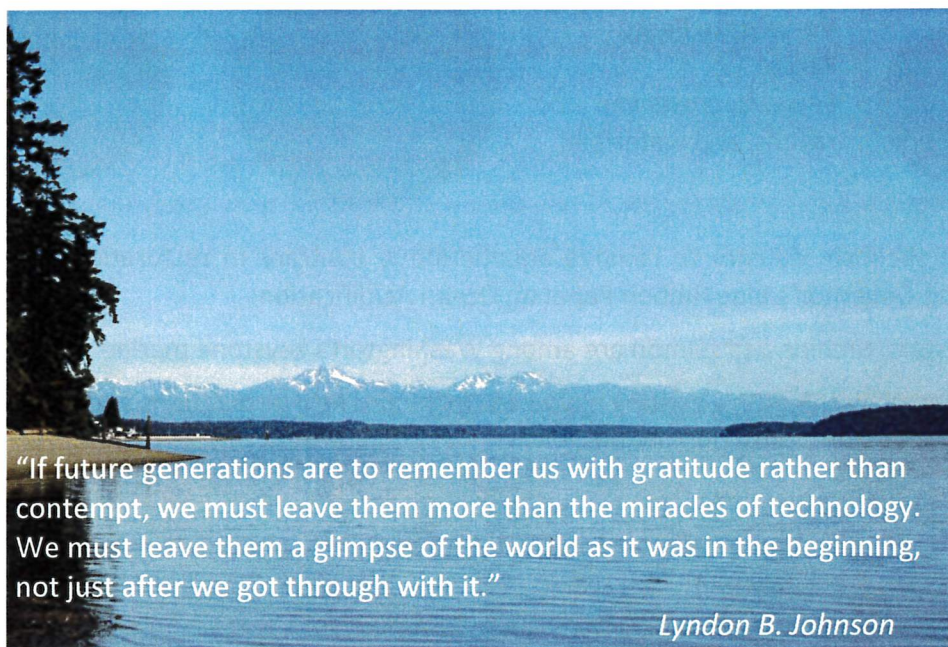
makers to gain expansion approval.

The Governor's Ocean Acidification report includes Action 6.1.2 to "Maintain and expand shellfish production to support healthy marine waters." While we support maintaining a healthy shellfish industry, expansion must be limited and sustainable. The Governor's Shellfish Initiative is not a law, but an industry expansion lobbying tool that is being used to pressure decision makers to "streamline" approvals resulting in violations of Federal and State laws.

According to the 2009 State of the Sound report, "Outdoor, nature-based activities (boating, fishing, swimming, wildlife viewing, picnicking, hiking, and scenic viewing) are of significant value to Puget Sound residents." Both citizens and wildlife are restricted by these expanding operations.

In order to protect our community aquatic resources, decision makers need to enforce existing laws: the Shoreline Management Act, Endangered Species Act, and the Clean Water Act. The shellfish industry already has over 38,000 acres of production in Willapa Bay and Puget Sound — how much is enough? Puget Sound aquatic species and their natural shoreline habitat need protection now.

For more information please go to
<http://www.coalitiontoprotectpugetsoundhabitat.com>



"If future generations are to remember us with gratitude rather than contempt, we must leave them more than the miracles of technology. We must leave them a glimpse of the world as it was in the beginning, not just after we got through with it."

Lyndon B. Johnson



P.O. Box 233
Burley, WA 98322
coalitiontoprotectpugetsound.org

Scientific Evidence that Industrial Shellfish Aquaculture “Is Poisoning Our Shorelines”

Section I - Aquaculture Gear and Toxic Plastic Pollution

Summary of Recent Science

Since the late 1990's, Washington State has allowed unlimited toxic, polluting plastics authorized in over 50,000 shoreline acres for geoduck, oysters and clams. PVC tubes, High Density Polyethylene (HDPE) canopy nets, HDPE oyster bags, HDPE zipties, HDPE oyster purses, HDPE mesh tubes and Polypropylene blue oyster ropes are routinely used. Carbon Black, the same additive used for tires, is added to the HDPE to absorb sunlight radiation. Shellfish industry plastic aquaculture gear has been scientifically examined and is a major threat to our marine life as documented in the studies cited below.

1. **2018** “Abundance and Distribution of Microplastics within Surface Sediments of Key Shellfish Growing Regions of Canada. Bendell et al., PLOS One, May 23, 2018.

Associated news article: “Alarming High Amounts of Plastic Microbeads Found in BC Shellfish Farming Areas” “Researcher says better standards needed for shellfish industry.” “We found (shellfish industry) microbeads in the smallest bits of sediment and in a concentration equal to the amounts of silt and organic matter,” Leah Bendell, Professor of Marine Ecology and Ecotoxicology at Simon Fraser University (SFU), said in the statement.

Study states: “..the industry also makes extensive use of High Density Polyethylene (HDPE), in the form of netting, oyster bags, trays, cages and fences (e.g., vexar) [37]. Each year, 3–4 tonnes of debris, comprised primarily of these plastic materials is recovered from the intertidal regions of Baynes Sound [38]. Sites where the greatest number of microfragments and microfibers were found also coincide with regions of extensive shellfish aquaculture equipment.”

Link: PLOS Journal Study:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0196005>

Link: New Article: Abundance and Distribution of Microplastics - Bendell Article:
'Alarmingly high' amount of plastic microbeads found in B.C. shellfish farming
areas:

<http://www.cbc.ca/news/canada/british-columbia/shellfish-microplastics-bc-aquaculture-1.4675672>

2. **2018** "Macro and Micro Plastics Sorb and Desorb Metals and Act As A Point Source of Trace Metals To Coastal Ecosystems." Bendell et al., PLOS One published February 14, 2018.

Associated news article: "Heavy Metals: The New Toxic Danger Posed by Ocean Plastic Trash." "For example, PVC, the most commonly found plastic, had high levels of lead and copper attached to its surface. The comparison of the new and debris plastic also showed how some of the chemicals used in plastic production may release over time – including cadmium, which is used to make plastic rigid and resistant to UV light. The researchers found that new PVC releases zinc and cadmium. "

The study found: "Field samples of PVC, HDPE and LDPE had significantly greater amounts of acid extracted copper and HDPE, LDPE and PUR significantly greater amounts of acid extracted zinc. PVC and LDPE had significantly greater amounts of acid extracted cadmium and PVC tended to have greater levels of acid extracted lead, significantly so for HDPE... Plastic debris will affect metals within coastal ecosystems by; 1) providing a sorption site (copper and lead), notably for PVC; 2) desorption from the plastic i.e., the "inherent" load (cadmium and zinc) and 3) serving as a point source of acute trace metal exposure to coastal ecosystems. All three mechanisms will put coastal ecosystems at risk to the toxic effects of these metals."

Link: PLOS Journal Study:

<http://journals..org/plosone/article?id=10.1371/journal.pone.0191759>

Link: Macro and Micro Plastics. Bendel Article:

<https://www.newsdeeply.com/oceans/articles/2018/04/03/heavy-metal-the-new-toxic-danger-posed-by-ocean-plastic-trash>

3. **2016 Microplastic Ingestion by Wild and Cultured Manila Clams from Baynes Sound, BC.** Katie Davidson, Sarah Dudas. Arch Environ Contam Toxicol (2016) 71:147–156.

Aquaculture Gear Microplastics:

“The most commonly observed fibers in our study were colourless (36 %), followed by dark gray (26 %); in contrast with Desforges et al. (2014), blue, red, and purple fibers were considerably lower in abundance. Of the gray fibers recorded, 87 % were from farmed clams. It is possible the source of these dark gray fibers is the black anti-predator netting (APN) located directly above the clams, although without spectroscopic analysis (e.g., FT-IR) this cannot be verified. It has been suggested that clams might have highest concentrations of blue fibers due to the widespread use of blue polypropylene rope used on oyster farms located near clam farms throughout Baynes Sound.”

Link: Microplastic Ingestion by Wild and Cultured Manilla Clams
http://users.neo.registeredsite.com/3/7/5/12218573/assets/2016_Davidson_Dudas_Microplastic_Ingestion_by_Wild_and_Cultured_Manila_Clams.pdf

2017 KCTS 9 Interview with Dudas: “How Much Plastic Do You Want In Your Oysters and Clams?”

“Others note that the world consumes hundreds of millions of tons of plastic annually -- like food packaging and straws. Dudas said that, while she is finding that farmed shellfish don’t contain any more plastic than non-farmed shellfish, she has no doubt that nets and ropes from shellfish aquaculture sites also shed fibers into the ocean.”

Link: Dudas KCTS 9 Story:
<https://kcts9.org/programs/earthfix-local-stories/how-much-plastic-do-you-want-in-your-oysters-and-clams>

4. **2014 “Rapidly Increasing Plastic Pollution from Aquaculture Threatens Marine Life”.** Moore, Charles. 27 Tulane Env Law Journal 205

“CONCLUSION: Unmonitored and unregulated aquaculture activities around the world are poisoning and choking the marine environment with their lost and derelict plastic gear.... At the present time, it does not

appear possible to introduce any conventional plastic into the marine environment without harmful consequences.”

Link: Charles Moore Tulane Environmental Law Journal:
http://users.neo.registeredsite.com/3/7/5/12218573/assets/2014_CharlesMoore_Tulane_Plastic_Pollution_Threatens_Marine_Life.pdf

5. **2015** Bivalve Aquaculture Associated Plastic Pollution in South Puget Sound. Charles Moore, Renowned Marine Plastic Expert, Washington State Shorelines Hearings Board Presentation.

Mr. Moore tested the PVC, HDPE and Polypropylene blue oyster rope gear used by Taylor Shellfish which are the standard plastics used by the aquaculture industry throughout the world. At the hearing, under oath, he stated: “The plastic gear used on the 11-acre site and the gear and parts of gear that leave the site are a significant adverse impact. No baseline is available to determine current levels of aquaculture debris in the subject inlets or South Sound aquaculture sites. The mitigation of beach cleanups is only a very partial solution to the impact problem and ignores microplastic pollution.”

Link: Charles Moore Presentation:
[https://www.dropbox.com/sh/ptotz2w4jj36bia/AAxd5GSV7mnZgmvCLZ-aTEha?dl=0&preview=\(17\)+Charles+Moore+Algalita+Power+point.pdf](https://www.dropbox.com/sh/ptotz2w4jj36bia/AAxd5GSV7mnZgmvCLZ-aTEha?dl=0&preview=(17)+Charles+Moore+Algalita+Power+point.pdf)

6. **2013.** Long-Term Field Measurement of Sorption of Organic Contaminants to Five Types of Plastic Pellets: Implications for Plastic Marine Debris. Chelsea M. Rochman, Eunha Hoh, Brian T. Hentschel and Shawn Kaye. Environ. Sci. Technol. 2013, 47, 1646–1654.

“The ingestion of plastic debris by marine animals, including invertebrates, fishes, sea turtles, seabirds, and whales, raises concerns that plastic is another mechanism for such chemicals to enter food webs. This mixture of hazardous monomers, plastic additives, and sorbed pollutants, may impose a multiple stressor to marine organisms upon ingestion.” “Our data suggest that for PAHs and PCBs, PET and PVC reach equilibrium in the marine environment much faster than HDPE, LDPE, and PP. Most importantly, concentrations of PAHs and PCBs sorbed to HDPE, LDPE, and PP were consistently much greater than concentrations sorbed to PET and PVC. These data imply that products made from HDPE, LDPE,

and PP pose a greater risk than products made from PET and PVC of concentrating these hazardous chemicals onto fragmented plastic debris ingested by marine animals. (See attached Rochman et. al study).

Study News Link:

<https://www.ucdavis.edu/news/plastics-and-chemicals-they-absorb-pose-double-threat-marine-life>

7. 2015 Confluence Shellfish Industry Report Documents Birds Foraging on Harmful HDPE Plastic Oyster Bags-

“Foraging in Shellfish Beds – in the photos note least sandpipers on oyster bags, dunlins on oyster bags, and godwits around and on oyster bags.”

Link: Confluence Report

[https://www.dropbox.com/sh/ptotz2w4jj36bia/AAAd5GSV7mnZgmvCLZ-aTEha?dl=0&preview=\(18\)+Confluence+Report%2C+Bird+Interactions+with+Shellfish+Aquaculture+Gear+and+Operations.pdf](https://www.dropbox.com/sh/ptotz2w4jj36bia/AAAd5GSV7mnZgmvCLZ-aTEha?dl=0&preview=(18)+Confluence+Report%2C+Bird+Interactions+with+Shellfish+Aquaculture+Gear+and+Operations.pdf)

8. 2014 Calculation of Per Acre Plastic Pollution From Geoduck Aquaculture. Note:
This calculation does not include the tons of plastics from oyster and clam aquaculture

“The geoduck aquaculture industry embeds approximately 8 miles of PVC pipe per acre in pristine intertidal habitat areas of Puget Sound, mostly in South Sound. Based on the approximate weight per acre calculations provided by the geoduck industry, 4 inch schedule 10 PVC tubes, the smallest size used, weigh about 32,000 pounds, or 16 tons per acre of PVC. The best current estimate according to the Shellfish Aquaculture Regulatory Commission, as of June 1, 2010, suggests there are currently 364 acres of active geoduck farms in Puget Sound. This represents nearly 3 thousand miles, 12 million pounds or 6 thousand tons of PVC in Puget Sound from geoduck aquaculture. If one assumes that at any given time only one-third of all geoduck farms have PVC tubes installed in the tidelands, then this would yield about 1 thousand miles, 4 million pounds or 2 thousand tons of PVC.”

Link: Calculation of Geoduck Plastic Pollution: Link

<http://www.caseinlet.org/uploads/PVC.pdf>

9. Number of Geoduck Aquaculture Acres and Aquaculture Plastic Pollution

According to industry figures, there are approximately 500 acres of geoduck aquaculture in Puget Sound. If the shellfish industry standard practice of 40,000 PVC or HDPE mesh tubes are inserted in the tidelands **per acre**, over 20 million pieces of polluting plastics will be “poisoning our shorelines.” If the industry standard practice of using HDPE net caps and HDPE zipties are added to those PVC tubes, over 20 million-40 million more polluting plastics will be “poisoning our shorelines.”

10. Carbon Black Shellfish-UV Stabilizer

According to the September 28, 2016 email from Joth Davis, Taylor Shellfish biologist: “Norplex manufactures shellfish cages that are used in the industry along with mesh tubes used for geoduck aquaculture and other netting products used by shellfish growers.” “Mr Sanford reported that Norplex adds 6% “small carbon black” to the HDPE during the manufacturing process...” Carbon Black “is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, NIOSH and IARC (NJ Department of Health Right To Know Hazardous Substance Fact Sheet).

Fact Sheet Link:

<https://nj.gov/health/eoh/rtkweb/documents/fs/0342.pdf>

Section II-Shellfish Industry Use of Pesticides

The shellfish industry has been spraying pesticides in Willapa Bay and Grays Harbor for over 50 years to eradicate both non-native *Zostera japonica* eelgrass and *Spartina* as well as native aquatic vegetation/eelgrass and native burrowing shrimp. The shellfish industry accidentally brought in both *Zostera japonica* and *Spartina* with their non-native oysters.

In addition, citizens in Puget Sound have reported to the Coalition and state agencies that shellfish industry growers have applied pesticides to shorelines where they have aquaculture sites. For more information on this issue, read the true story Toxic Pearl.

Toxic Pearl Website: <http://www.toxicpearl.com/>

1. 2014. Major Pesticides Are More Toxic to Human Cells Than Their Declared Active Principles

Mesnage, Defarge, de Vendomois, Seralini. 2014. BioMed Research International.

“Glyphosate, isoproturon, fluroxpyr, pirimicarb, imidacloprid, acetamiprid, tebuconazole, epoxiconazole and prochloraz constitute, respectively, the active principles of 3 major herbicides, 3 insecticides, and 3 fungicides.”
“Most importantly, 8 formulations out of 9 were up to one thousand more toxic than their active principles. Our results challenge the relevance of the acceptable daily intake for pesticides because this norm is calculated from the toxicity of the active principle along. Chronic tests on pesticides may not reflect relevant environmental exposures if only one ingredient of these mixtures is tested alone.” Page 1

Study Link:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3955666/>

Section III-Mussel Cage Scientific Analysis-Per Mussel Cage Leader Maradel Gale, Bainbridge Island.

“Every other year since 2011 at more than 70 sites around Puget Sound, mussels are set out in cages for three months over the winter and then analyzed to determine the contaminants in their bodies. Like other bivalves (clams, oysters, geoducks), mussels are filter feeders, which means they in-filter whatever is in the water around them. The most abundant contaminants measured were PAHs, PCB's, PBDE's and DDT's (see technical names below). The first two organic contaminants were found in mussels from every site. The amount of contamination varied and was higher at more urban sites, as measured by land use classifications and by the percent of impervious surface in the upland watersheds adjacent to the nearshore where the mussels were placed. Additionally, heavy metals (zinc, arsenic, cadmium, copper and mercury) were found in mussels from all of the study sites; lead was found in mussels from most sites, but not all. Issues with microplastics and persistent organic pollutants are closely interrelated. This is because the organic pollutants are hydrophobic and adsorb onto the microplastics, which are the same size as zooplankton and thus are in-filtered by the bivalves, where the organic pollutants desorb in the gut of the animal.”

PAH-Polycyclic aromatic hydrocarbon
PCB-Polychlorinated biphenyl
PBDE-Polybrominated diphenyl ethers
DDT-Dichlorodiphenyltrichloroethane

Section IV-Lack of Testing of Toxins in Washington State Shellfish By the Washington State Department of Health

Email from the Washington Department of Health

From: **Toy, Mark C (DOH)** <Mark.Toy@doh.wa.gov>

Date: Tue, Feb 12, 2019 at 12:09 PM

Subject: Shellfish question

Dear Stella – You asked *Can you tell me if the DOH routinely tests commercial and recreational shellfish for pesticides and heavy metals?*

Anyway, that question got bounced to me so I will take a stab at it and am cc'ing everyone else you e-mailed so they have a future reference.

The short answer is no, except for geoducks which are tested for arsenic routinely because that is a requirement for export to China (<https://www.doh.wa.gov/CommunityandEnvironment/Shellfish/CommercialShellfish/Export/ExporttoChina>) .

DOH did a comprehensive survey of toxics in shellfish in the 90's (see attached report) and found generally low (or below limits of detection) concentrations of 105 contaminants (see page 8 for list) except for Eagle Harbor (Prohibited area).

NOAA implements Mussel Watch nationally (https://en.wikipedia.org/wiki/Mussel_Watch_Program), and WDFW implements this in Washington State. Here is a good local presentation on the Mussel Watch program, which tests (ideally on a biennial basis) for a variety of contaminants (including organochlorine pesticides) <https://soundwaterstewards.org/web/wp-content/uploads/2014/09/MusselWatchProgram-presentation-WhidbeyIslandBeachWatchers-9-8-2014.pdf>

DOH does environmental site assessments where we have concerns about legacy pollution, particularly in areas where we are considering an initial classification. There are three site assessments done in Pierce County for shellfish and sediments: <https://www.doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/SiteAssessments#Pierce> On this website you will find other assessments in Oakland Bay, Port Gamble, Irondale, and Port Angeles Harbor (to name a few).

Hopefully this satisfactorily answers your question. Let me know if you have any additional questions or concerns.



P.O. Box 233
Burley, WA 98322
coalitiontoprotectpugetsound.org

Mark Toy

Environmental Engineer
Office of Environmental Health & Safety
Environmental Public Health Division
Washington State Department of Health

Summary

Our Question-Would you eat food raised in toxic PVC, HDPE or Rubber Tires? Should our native species be subjected to these toxic plastics and pesticides when their populations are dramatically declining in favor of shellfish exports?

Tell your local, state and Federal officials that these polluting plastics and pesticides should not be allowed in Washington State marine waters!

Compiled by the Coalition To Protect Puget Sound March 2019

