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Shellfish Industry Increases Marine Plastic Pollution by Placing Tons of Plastics in Washington Waters

Marine plastic pollution is a serious threat facing marine life around the globe. As worldwide efforts continue to reduce the introduction of plastics into marine waters, Puget Sound is being filled with millions of pieces of plastic pollution by the shellfish industry. Industry began these unsustainable practices over 12 years ago and continue to place over 120,000 pieces of plastic into **each acre** for intertidal geoduck operations (42,560 PVC tubes, small net caps, plastic bands/zip ties, canopy nets) as well as using thousands of oyster bags and nets over manila clam beds in Puget Sound intertidal areas.

According to the Shoreline Management Act: Aquaculture is a water-dependent use and is a preferred use of the shoreline per WAC 173-26-241(3)(b) when consistent with: 1) Control of pollution; 2) The no net loss requirements of Title 18S PCC; and 3) The prevention of damage to the environment and to Federal and State listed species and their associated habitats.

The following information documents why industrial aquaculture that increases plastic pollution in our marine waters does not qualify as a preferred use and violates the Shoreline Management Act.

Two Marine Plastic Experts Point Out Serious Impacts Caused by Shellfish Industry Plastics Used in Puget Sound

Curtis Ebbesmeyer, Phd, an oceanographer and marine plastic expert stated:

“Such plastic poses one of the grave threats to the health of Puget Sound. The particulate plastic from such PVC tubes enters the food web and does untold harm to all the creatures in Puget Sound, including us. It is not healthy to eat geoducks raised in such a fashion.”

“One thousand miles of PVC tubing= 4 million pounds=two thousand tons of PVC” are estimated to be in Puget Sound waters from these intertidal geoduck operations.

See Plastic Marine Debris Report:

<https://www.sierraclub.org/sites/www.sierraclub.org/files/sce-authors/u591/PVC-Report-June-28-2010.pdf>

Please visit the following Toxipedia link for information on PVC toxicity in marine waters and the concerns for aquatic life:

<http://toxipedia.org/display/toxipedia/PVC>

Charles Moore, the founder of the Algalita Foundation and a world renowned marine plastic debris expert stated the following at a Pierce County hearing in March 2011 and later at a presentation in Olympia sponsored by the Sierra Club:

“When windstorms and waves dislodge the (PVC) tubes, screens and UV resistant bands that hold them, they will share different but similar fates. The tubes, being heavier than water will sink and roll into Marine canyons, where they will pollute the benthos. These canyons are where soft sediments accumulate that are used for foraging by migrating gray whales. Will they then join golf balls and this list of items found in the gray that washed ashore on a west Seattle beach last year? ... A pair of sweatpants, golf balls, 20 plastic bags, small towels, duct tape, and surgical gloves?”

“To summarize, the introduction of plastics into the marine environment poses hazards of three main types, ingestion, entanglement and the transport of exotic species. (Barnes) 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.”

For More Information on Captain Moore’s testimony at the Shorelines Hearings Board and Pierce County on behalf of citizens:

Captain Moore’s Shoreline Hearings Board Presentation

http://www.caseinlet.org/uploads/Geoduck_2012-02_01_12_Moore_SHB_Revised.pdf

To view Captain Moore’s Seattle Townhall 2012 presentation visit the following link:
<http://www.edmaysproductions.net/webvideo/moore.wmv>

For more on Captain Moore’s Pierce County Testimony:

http://www.caseinlet.org/uploads/Charles_Moore_testimony_020211_1_1_.pdf

http://www.caseinlet.org/uploads/Longbranch--Penttila--Moore_Hearing_Testimony.pdf

http://www.caseinlet.org/uploads/Longbranch-Moore_Rebuttal.pdf

Charles Moore’s response to the Pacific Shellfish Growers President who questioned the 2005 Wayne Palsson WDF&W report that over 80,000 pieces of aquaculture plastic debris was found at the Tacoma Narrows Bridge:

“You know, there is a range there, but it’s a substantial amount of aquaculture debris. If it’s 12 dump trucks full, 17 percent of 72 dump trucks, that’s a substantial amount of debris and it traveled from the area of the aquaculture operations to the Tacoma Narrows Bridge area, which is a substantial distance away. So the plastic is mobile. And being of different types, it will occupy different areas in the water column and do different things.”

Additional Documentation of PVC Degrading in Marine Environment

1. Question to Rita Schenck, shellfish industry expert, by Pierce County Hearing Examiner Causseaux: “People bring in the (PVC) tubes, the tubes wear out? What happens?”

Dr. Schenck Response:

“I don’t have an opinion. Most tubes set up on beach by waves. Could be eaten by aquatic organisms. Small fraction of plastic go into benthos.”

2. Per Rita Schenck Expert Pierce County Report 2/15/11: “After 16-24 months, the (PVC) pipes are removed and re-used. They can be reused for a decade or more.”

While PVC pipe is no longer usable in the marine waters after a decade or more, PVC life expectancy when used as designed is as follows: “The study concluded that PVC pipe can be expected to last over 100 years.”

<http://www.uni-bell.org/resources/php?c=21>

Picture Documentation--Shellfish Industry Marine Plastic Debris

The following power point provides pictures of the massive amounts of plastics that are being placed in Puget Sound by the shellfish industry. For years, citizens have reported to state agencies that this plastic marine debris is polluting our shorelines and deeper waters miles away from aquaculture sites.

http://www.caseinlet.org/uploads/Longbranch_DNS.pdf

The Law on Plastic Pollution

A. Governor Gregoire signed the following West Coast Governors Agreement on Ocean Health that has a task force specifically dedicated to deal with the marine plastic debris issue:

http://www.westcoastoceans.gov/Docs/Marine_Debris_Final_Work_Plan.pdf

“Marine debris was identified as an important component of Priority Area 1: Clean Coastal Waters and Beaches. Action 1.4 asserts that the three states will:

Establish baseline estimates of marine debris and derelict gear off the West Coast and set reduction goals. Support state and federal policies for achieving marine debris reduction goals, including debris prevention through expanded recycling, improved trash maintenance, and enforcement of litter laws.”

B. As the Growth Management Hearings Board observed:

“The Board finds that the Record demonstrates that the PVC pipes used for intertidal shellfish farming sometimes break, become dislodged, or are simply abandoned by farmers. Once broken and/or dislodged, these PVC pipes are carried by the tides to other areas, thereby littering not just adjacent shorelines but the benthic community of the nearshore and pelagic environment on even distant shorelines. These broken pipes, along with associated nets and ropes, could create hazards for fish and wildlife as well as other users of the waters.”

Seattle Shellfish LLC v. Pierce County, 2010 WL 3984673 (FDO) at 17 (footnotes omitted).

C. The following RCW was enacted because marine plastic debris is a significant adverse impact that each grower contributes to as they all use the same voluntary codes of practice which do not prevent the pollution:

RCW 79.145.010

• “The legislation finds that the public health and safety is threatened by an increase in the amount of plastic garbage being deposited in the waters and on the shores of the state. To address this growing problem, the commissioner appointed the marine plastic debris task force which presented a state action plan in October 1988. It is necessary for the state of Washington to implement the action plan in order to:

- Cleanup and **prevent further pollution** of the state's waters and aquatic lands
- Increase public awareness;
- Coordinate federal, state, local, and private efforts;
- Foster the stewardship of the aquatic lands of the state.

Actions Taken to Reduce Plastics in Washington

Bans on the use of Styrofoam have been enacted for docks and piers. Legislation has been passed banning plastic sacks and Styrofoam in several communities and continues to be

proposed for other communities.

Action Needed

County, state and federal officials should enforce the existing laws and not allow the shellfish industry to place plastics into Puget Sound that threaten the health and the native species that are public resources. According to the Shoreline Management Act, aquaculture is not a preferred use of the shorelines if it increases pollution.

Relevant Marine Plastic Pollution Science Provided by Charles Moore

1. Fatal ingestion of floating net debris by two sperm whales
Jeff K. Jacobsen, Liam Massey, Frances Gulland
2. Transport and release of chemicals from plastics to the environment and to wildlife
Emma L. Teuten, Jevita M. Saquing, Detlef R. U. Knappe, Morton A Barlaz
<http://mc.manuscriptcentral.com/issue-ptrsb>
http://www.caseinlet.org/uploads/Moore-PlasticChemTrasportWildlife_1_.pdf
3. Invasion by marine life on plastic debris
Nature/Vol 416/25 April 2002/www.nature.com
http://www.caseinlet.org/uploads/Moore-Invasion_of_Debris-Barnes_article_1_.pdf
4. Plastic Ingestion by planktivorous fishes in the North Pacific Central Gyre
Christiana M. Boerger, Gwendolyn L. Lattin, Shelly L. Moore, Charles J. Moore; Marine Pollution Bulletin
http://www.caseinlet.org/uploads/Plastic_ingestion_by_fish_1_.pdf
5. Plastic resin pellets as a transport medium for toxic chemicals in the marine environment
Yukie Mato, Tomohiko Isobe, Hideshige Takada, Haruyuki Kanehiro, Chiyoko Ohtake and Tsuguchika Kaminuma
http://www.caseinlet.org/uploads/Moore-Plastic_Resin_1_.pdf
6. Quantification of persistent organic pollutants absorbed on plastic debris from the Northern Pacific Gyre's "eastern garbage patch," Lorena M.Rios, Patrick R. Jones, Charles Moore and Urja V. Narayan; The Royal Society of Chemistry 2010
http://www.caseinlet.org/uploads/Moore-Rios_et_al__2010_1_.pdf
7. Synthetic polymers in the marine environment: a rapidly increasing long-term threat—
Charles James Moore, Fernanda E. Possatto, Mario Barletta, Monica F. Costa, Juliana A. Ivar do Sul, David V. Dantas; Marine Pollution Bulletin Envir. Res. Plastic Oceans 2008
http://www.caseinlet.org/uploads/Moore--_Env_Res_Plastic_Oceans_2008_1_.pdf
8. The Pollution of the Marine Environment by Plastic Debris: a review
Jose G.B. Derraik; Marine Pollution Bulletin
http://www.caseinlet.org/uploads/Moore--Derraik_1_.pdf
9. Biological Performance Bio Plastic: Mirel
Barry E. DiGregorio; Chemistry and Biology 16, January 30, 2009
http://www.caseinlet.org/uploads/Moore-Biobased_Performance_Bioplastic_-_Mirel_1_.pdf
10. Plastic debris ingestion by marine catfish: An unprecedented fisheries impact
Fernanda E. Possatto, Mario Barletta, Monica F. Costa, Juliana A. Ivar do Sul, David V. Dantas, Marine Pollution Bulletin, 2011
http://www.caseinlet.org/uploads/Plastic_debris_ingestion_by_marine_catfish_An_unexpected_fisheries_impact_1_.pdf