



WASHINGTON STATE DEPARTMENT OF
Natural Resources

Peter Goldmark - Commissioner of Public Lands

North Puget Sound Aquatic Lands Restoration Program



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Program Goals

- To lead and support projects that aim to restore, enhance, create, or protect favorable biological and ecological conditions of freshwater, saltwater, and estuarine aquatic systems.



Program Background

- Restoration funding began in 2004 with \$200,000 statewide
- Creosote Program grew from local projects and partnerships with State Parks and the Northwest Straits Commission
- In 2006 \$2 million was provided through the Governor's Puget Sound Initiative



Current Program

- Puget Sound Corps
 - Veterans Conservation Corps
- \$2 million annual budget allows our program to perform and support a large variety of restoration activities.



What do we do?

Staff

North Sound

Chis Robertson
Restoration Manager

Kristian Tollefson
Restoration Technician

South Sound

Monica Shoemaker
Restoration Manager

Jordanna Black
Restoration Technician

Programs

- Creosote
- Large Debris
- Restoration
- Project funding
- Partnerships
- W.A.L.I.S



CREOSOTE



Impacts to Marine Organisms

- Decreased heart rate in developing herring embryos at 3ppb
- Up to 92% herring egg mortality rate if spawn on creosote piling
- Liver lesions in English Sole
- Accumulations in tissues of shellfish



Herring embryos in 0.75% creosote solution (From Shannon Point study)



Additional recent findings concerning effects of PAHs on salmon

- Exposure of fertilized salmon eggs to low levels (1-10 ppb in water; ~1000 ppb in oiled gravel) of total PAHs from weathered oil is linked to reduced adult returns 2 years after exposure--possibly due to **impaired cardiac function** (work of Rice, Short, Heinz, Incardona)
- Juvenile salmon migrating through urban estuaries show **reduced disease resistance** and increased PAH exposure, and similar results are seen with PAH exposed animals in lab studies.
- Juvenile salmon migrating through urban estuaries show **changes in growth and metabolism**, and similar results are seen with PAH exposed animals in lab studies. Fish at higher doses experience delayed mortality several months after exposure ended.

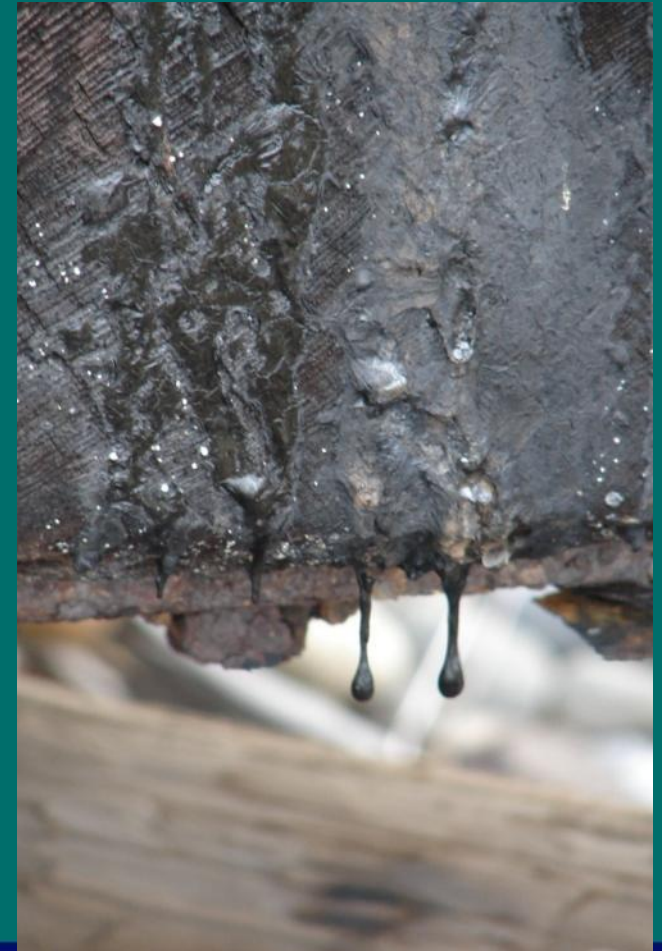


Identifying Creosote



How Does Creosote Get Into the Environment?

- Old broken pilings, derelict docks, telephone poles, RR ties wash up on beaches
- Leaching is activated primarily by the sun
- Wind, waves, and sand help with the transportation





Regulations:



- 🐟 No approved uses of creosote for residential use (EPA)

- 🐟 Washington State banned use in fresh water

- 🐟 Limited applications still permitted in the marine environment

- 🐟 Currently under EPA review for re-registration as a certified pesticide

- 🐟 Local shoreline management plans have outlawed creosote use



Creosote Identification

LOOK FOR:

- Black/Tar-like goo
- Rotting from the inside-out
- Blackened outer ring on the end
- Railroad ties
- Injection Marks
- Goo in the knots



Don't Be Tricked:



Look closely at the knots-this one has some oozing.

- Old cedar and doug Fir (peel off a piece – does it look like wood?)
- Burned pieces
- Stuff with stakes (may just be old)
- Unmilled, knotty wood



Other Treated Wood

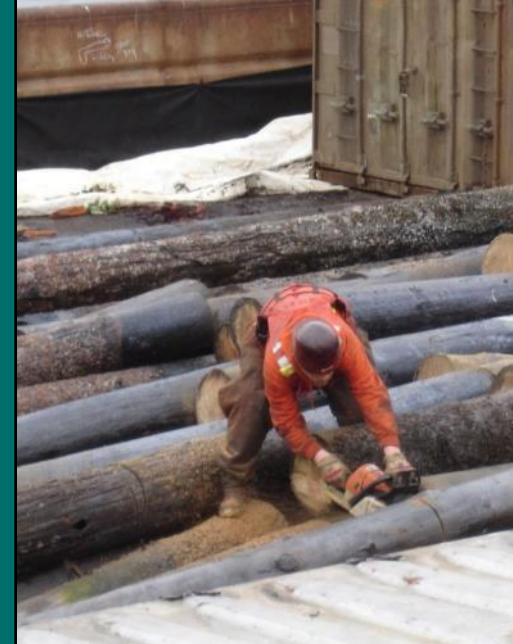


- ACZA = Ammoniacal copper zinc arsenate
- CCA Type C = Chromated copper arsenate
- No longer available for sale
- Newest type on the market = ACQ



Piling Removal Methods

- Vibratory hammer preferred method
- Piles are cut on barge or on land as needed
- Transfer into containers
- Work area is boomed to capture debris and creosote
- Divers may be used to cut piles too deteriorated to pull



Boots on the Ground



Removal Methods

Determine based on:

- 🐟 Proximity to roads
- 🐟 Concentration
- 🐟 Size of site
- 🐟 Available budget
- 🐟 Regulatory issues/impacts





Large Debris





Fast Response



Fast Response!!



Fast Response!!!!



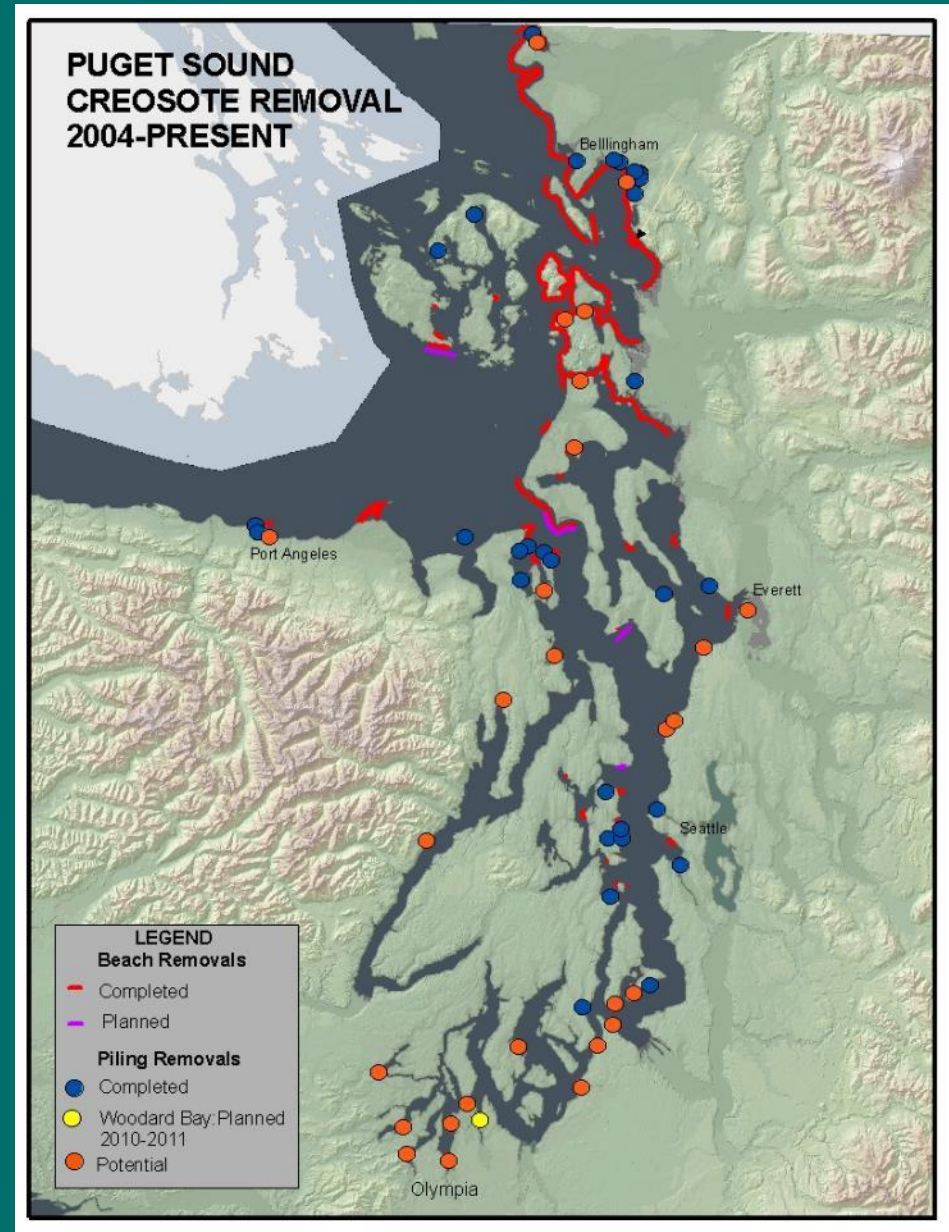
Fast Response!!!!



Accomplishments

**From 2004-present,
DNR has removed:**

- 2,154 tons of beach debris
- 12,552 tons of pilings
- 13,200 pilings
- 278,339 square feet of overwater structure
- Grand total ~ 176,000 tons of debris removed



Partnerships

- Friends of the San Juan's
- Samish Indian Nation
- Swinomish Indian Nation
- Whidbey Camano Land Trust
- North Olympic Salmon Coalition
- Northwest Straits Foundation
- Lower Elwha Tribe
- Kitsap County
- Puget Sound Restoration Fund
- Pacific Northwest National Laboratory
- WDFW
- WA DOT
- Port Gamble S'Klallam Tribe

