



NOAA
FISHERIES

West Coast Region

Sampling of West Coast Region Outreach Campaigns

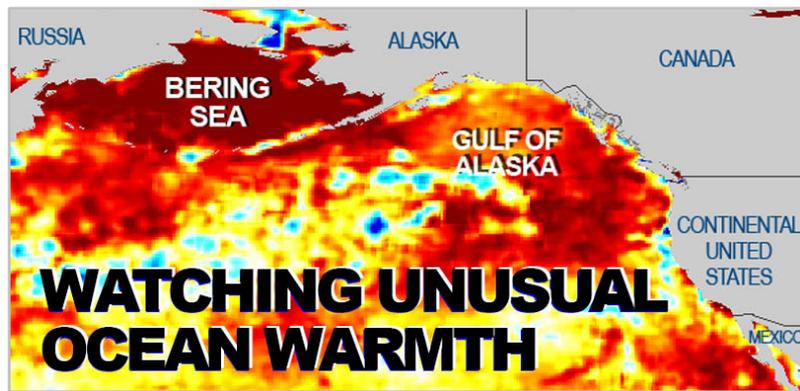
Katherine Cheney

April 26, 2016

Dynamic Oceans

Challenge

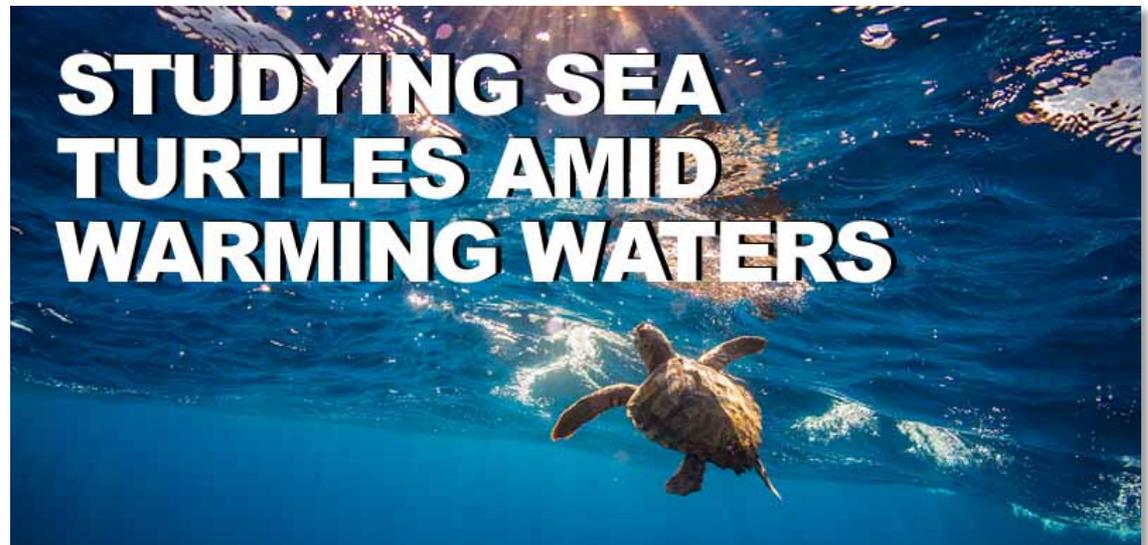
- Changing ocean conditions created unusual observations and reports, difficult to put into context
- Many NOAA entities involved in some aspect of research
- Translating the technical information into accessible language
- Connecting the ocean to people's daily lives



Dynamic Oceans

Audiences

- General public
- Ocean users, wildlife enthusiasts
- Media



Dynamic Oceans

Approach

- Reach out to all NOAA entities working on dynamic oceans to tell one, cohesive story
- Use website feature stories and incorporate technical graphics
- Develop monthly newsletter



Partnership with the Pacific Northwest College of Art

Challenge

- Need to communicate the complex environmental issues
- Need to inspire people to take action at a very individual level
- Many new channels and platforms
- Need to catch attention quickly with visual appeal

PNCA
Pacific Northwest College of Art



Partnership with the Pacific Northwest College of Art

Audiences

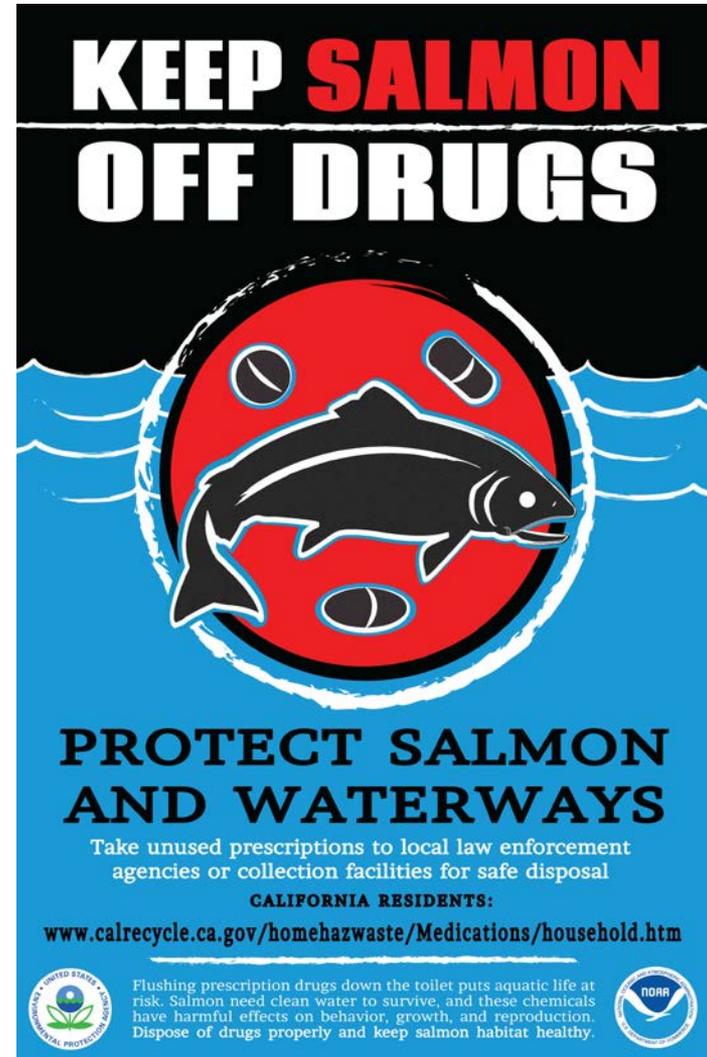
- Individuals
- Millennials, Gen-X



Partnership with the Pacific Northwest College of Art

Approach

- Partner with Pacific Northwest College of Art to bridge environmental science and conservation with art.
- Challenge art students to relay scientific information and call-to-action messages



Fish Passage

Challenge

- Technical and complex information
- Site-specific variations and considerations
- Emotionally charged
- Critical for salmon recovery



 **NOAA Fisheries West Coast - Science & Management**
June 24, 2014 · 🌐

In case you missed it, Washington's Baker River salmon runs are smashing records. A staggering ONE MILLION sockeye and coho are headed to the Pacific Ocean this season, a remarkable feat considering the sockeye population was nearly extinct as recently as the 1980s. The booming numbers are the result of partners coming together to design solutions to move fish downstream successfully.

CHECK OUT the technology and collaboration that made these records a reality:
http://www.westcoast.fisheries.noaa.gov/.../23_06232014_baker...



Washington's Baker River reaches all time record—one million salmon are on their way to the...

"We knew we'd get large numbers, but to break a million was a surprise to everybody," says Doug Bruland, Fisheries Supervisor at Puget Sound Energy....

WESTCOAST.FISHERIES.NOAA.GOV

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 **NOAA Fisheries West Coast - Science & Management**
November 5, 2013 · 🌐

Can you tell what's making a splash? A spawning Chinook salmon, that's what! We have some good news to report on this front. In Oregon's North Umpqua River, just above Soda Springs Dam, spawning surveys identified 260 spring Chinook redds. Why is this so remarkable? Because Chinook are spawning in newly accessed historical habitat—habitat they haven't seen in over 60 years!

Last year, PacifiCorp, owner and operator of the North Umpqua Hydroelectric Project, completed a fish ladder for upstream passage of adults and a fish screen and bypass facilities for downstream passage of juveniles. Thanks to newly designed fish passage with support from NOAA Fisheries' own engineers, as well as habitat restoration and flow mitigation measures, fish are indeed returning!

Learn more about fish passage solutions:
<http://www.westcoast.fisheries.noaa.gov/.../soluti.../index.html>



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Fish Passage

Audiences

- Fish passage engineers
- Salmon recovery partners
- General public
- NGOs

Designing Solutions That Work

Dams, culverts, and tidegates, among other barriers, can impede fish from migrating both downstream and upstream. NOAA Fisheries works with its partners to design passage technology to meet the biological and physiological needs of fish. Some of these solutions are shown here.

Surface Passage Structures
Spillways can be the safest route for juvenile fish to pass a dam, but they may have difficulty finding their way. Most juvenile salmonids like to stay in the top 20' of the water column. Spillway openings may be 50' or more below the surface, too deep for the fish to easily find. Some dams have been equipped with spillway weirs. These are movable gates on the upriver side. When juvenile fish are migrating, water flows over the top of the weir and out through the spill gate. Since fish do not have to dive to find the spillway entrance, more fish are migrating, water flows over the top of the weir and out through the spill gate. And since the fish quickly find passage, they also may escape predators.

Culverts
Large pipes pass water under roads to protect against erosion or flooding. Culverts, especially popular for small streams or in remote areas, do not always allow fish passage. The downstream end may be too high for upstream migrating fish to enter; or water in the culvert may be too shallow, or moving too swiftly for fish to pass in either direction. Culverts also collect debris, blocking fish passage and water.

To improve fish passage, culverts can be replaced with bridges or "bottomless" culverts that simulate a natural stream on the bottom and are wide enough for fish, water, and debris to pass through. In some cases, existing culverts are improved by lowering the downstream end, reducing the steepness, and making other modifications to reduce water velocity and increase water depth.

Juvenile Bypass Systems
Juvenile bypass systems take advantage of existing dam structures. A long, narrow slot above each turbine intake is known as a "gatewell." Scientists noticed that some juvenile fish swim up the gatewells rather than through the turbines. Now, screen systems divert fish from turbine units into gatewells and collection channels to pass them downstream of the dam.

Floating Surface Collectors
Water flowing into the entrance of the surface collector attracts juvenile fish. The fish enter and are held for transport around the dam by truck or barge, or guided into a pipe that carries them downstream of the dam.

Fish Ladders
Adult fish typically pass dams through fish ladders, water-filled structures that allow fish to pass up and over in a series of steps. Migrating fish are attracted to current at the base of an extended concrete stairway. The fish swim or jump from step to step.

Tide Gates
Tide gates and dikes drain estuary land for agricultural or other uses. A large pipe in the dike has a hinged door on the tidal side. When water on the draining side rises, the door allows freshwater to escape into the bay or estuary. When the tide rises, the door closes so brackish water does not flow back. Drained areas often have habitat for small fish in streams or marshes. With traditional tide gates, fish passage can be limited. Access to the habitat may be blocked, and the fish trapped or injured by the hardware. Newly designed tide gates stay open longer--until the freshwater reaches a particular level. The water level and the extra time make it easier for fish to make use of quality habitat in the drained area.

Fish Screens
Fish screens physically exclude fish from pipes, canals, or other structures that collect water from their habitat. Properly functioning screens must:

- Include holes small enough to prevent fish from passing through the screen, or becoming stuck;
- Allow sufficient water to pass to serve its purpose;
- Provide a slow current so fish are not pulled into the screen; and
- Provide flow along the face of the screen to guide fish away from the screen and back to the river.

Fish Passage

Approach

- Series of infographics to highlight technology
- Website series on case studies, including site-specific considerations
- Communicate before construction, during and results after completion
- Partner with World Fish Migration Day for international platform

