

# Docks and Piers



**Bottom Line:** Docks and piers cause overwater shading which harms habitat and disrupts movement of juvenile fish, such as salmon. Docks and piers should be as small as possible and be constructed with grating or other methods to let light through. For residential use, shared docks are best.

## The requirements

WAC 173-26-231(3)(b): ...Pier and dock construction shall be restricted to the minimum size necessary to meet the needs of the proposed water-dependent use.



## Are new piers and docks allowed?

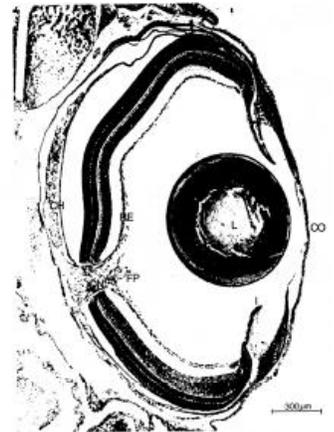
New piers and docks must be tied to water dependent use which would include such things as maritime industry or fishing. A pier or dock associated with a single-family residence that provides access to watercraft is defined as a water-dependent use. Piers and docks may be prohibited in areas they will hurt habitat, impede or interfere with navigation or have a negative aesthetic effect.

DNR requires overwater structures on state-owned aquatic lands to allow sunlight to pass through or under them for aquatic vegetation and species that depend on the nearshore environment. *Photo: Jim Guy*  
<http://washingtondnr.wordpress.com/category/lakes-rivers-puget-sound>

## Why overwater shading matters<sup>1</sup>

**Reason #1: Salmon eyes are different than ours.** While it takes a human eye a seconds to a few minutes to adjust from light to dark, it can take 20-40 minutes for a salmon eye to adjust. Juvenile salmon, therefore, are afraid to go into the dark shadow that is cast by a pier or dock and instead will swim out around the structure, thus traveling into deeper water where there is a greater risk of predation. This is a problem because baby salmon hug the shore edge as they migrate out to the Pacific through Puget Sound – they are seeking safe shallow water where predators can't come and where it is more sheltered.

**Reason #2: In-water vegetation needs light.** Critical habitat such as eelgrass needs light to survive and thrive – docks and piers block the light. These sea grasses are important as a rich feeding area for marine birds and fish, and sheltering for species such as Dungeness crab, salmon and herring. Research shows that areas with low light levels have limited aquatic vegetation while lighted areas support rich and diverse amounts of vegetation, including seaweeds such as green, brown, and red macroalgae, and eelgrasses.



*Transverse section through the eye of a juvenile chum salmon (From Ali and Anctil 1976) in Simenstad, C.A. et. al., 1999*

<sup>1</sup> Much of the information in this fact sheet is from information summarized in Rondorf, D.W., et.al., 2010. Minimizing effects of over-water docks on federally listed fish stocks in McNary Reservoir: A literature review for criteria. U.S. Army Corps of Engineers, December 2009, Report No. 2009-W68SBV91602084. And Simenstad, C.A., et. al., 1999. Impacts of Ferry Terminals on Juvenile Salmon Migrating along Puget Sound Shorelines – Phase I: Synthesis of State of Knowledge. Washington State Transportation Center (TRAC) Research Report WA-RD-472.1, Seattle, Washington.

**Reason #3: Sediment needs to move around.** Sediment such as sand and silt moves around naturally by the currents. Pilings associated with docks and piers disrupt the natural patterns and can cause build up of sediment in some places and less sand for down-current beaches. These changes can cause loss of places for fish to spawn and feed.

## It adds up

Many residential properties in Puget Sound and the watersheds have individual docks. Urban bays have active piers and there are a number of dilapidated piers with pilings still in place. The cumulative impact of multiple docks and piers add up.

### What you can do instead - Do it with your neighbor!

SMPs are supposed to require two or more dwellings to share a dock, if feasible. Joint docks allow for watercraft access with essentially half the environmental impact.



## Salmon movement

The youngest salmon hug the shoreline, staying in water that is less than 6 feet deep. Shallow water with slower water and lower slopes provide safety from predatory fish that may be too large to come into shallow water. The nearshore area also has the highest number of terrestrial insects which is a preferred food for subyearling Chinook salmon. As they get larger, they begin to move offshore.



In order to track juvenile salmon's pathway in watersheds and in Puget Sound, tiny tags are implanted surgically in individual fish. Detectors then pick up signals that show the fish's movement. This photos shows different types of tags (radio, acoustic, PIT) Photo: Michael Melnychuk, University of Washington [http://science.calwater.ca.gov/publications/sci\\_news\\_0610\\_tags.html](http://science.calwater.ca.gov/publications/sci_news_0610_tags.html)

## Artificial light

Lighting at night on piers, docks and shore-edge structure may disorient migrating juvenile salmon and the vertical migrations of some zooplankton and invertebrates.



Photo: Being Michael, Flickr

### Reducing Dock & Boat Impact

(From <http://www.ecy.wa.gov/programs/sea/pugetsound/building/docks.html>)

*Share a dock or float with neighbors.*

*Build a smaller, floating dock which does not shade as much nearshore aquatic habitat.*

*Consider smaller paddle-powered boats; many do not need docks.*

*Haul out boats for hull cleaning.*

*While boating, reduce wakes, don't dump litter, sewage, or toxic materials. Keep a good distance from breeding birds, seal haul outs, and other wildlife.*

