

Oregon Department of Fish and Wildlife Residential Dock Guidelines

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Purpose of Guidelines – The mission of the Oregon Department of Fish and Wildlife (ODFW) is to protect and enhance Oregon’s fish and wildlife and their habitats for use and enjoyment by present and future generations. As part of this mission, ODFW has developed guidelines for residential docks to reduce the adverse effects of these structures on Oregon’s waterways. The Residential Dock Guidelines (guidelines) are designed to assist the public in minimizing potential impacts to fish, wildlife, and habitat resources. Many of the adverse impacts associated with docks can be minimized by following the ODFW recommended dock guidelines. This includes minimizing the footprint of the structures and using light penetrable grating to allow for natural light to filter through.

Using the Residential Dock Guidelines – These guidelines provide the public with knowledge of aquatic resource impacts associated with docks, and provide a tool to assist in developing residential dock proposals that minimize impacts on fish, wildlife, and habitat resources. ODFW will use these guidelines as a basis for providing recommendations on planning, permitting, and regulatory processes that involve residential docks. This includes the permitting of new or modified residential dock construction. The guidelines are not intended for public boarding docks, including those designed or funded by the Oregon State Marine Board.

There may be limited situations where modification of residential dock guidelines is warranted. ODFW may consider new information, the need for greater detail, or other factors that would improve the quality and usefulness of these guidelines. ODFW staff, through the appropriate Watershed District office, may clarify dock guidelines based on site-specific conditions as appropriate with the permitting entities. Statewide updates to guidelines will occur on a periodic basis, as needed.

Developing the Guidelines – The guidelines were developed based on scientific literature, ODFW biologists’ recommendations, and coordination with the Oregon Department of State Lands, Oregon State Marine Board and the National Marine Fisheries Service (NMFS).

Impacts to Fish, Wildlife, and Habitat – Overwater structures, such as docks, ramps and boathouses have been shown to alter fish assemblages, behavior, predator/prey relationships, and diminish habitat function (Jennings et al 1999, Lange 1999). The continued development and proliferation of residential boat docks and associated infrastructure, such as boathouses in waters of the state may reduce recovery efforts for species listed under the federal Endangered Species Act (e.g., Oregon Coast coho salmon) and lead to cumulative impacts on aquatic species, habitats, and public use. The rapid increase in numbers and cumulative effects of shoreline docks and boathouses in Oregon may lead to reduced waterfowl usage due to human disturbance and activity, and may prevent waterfowl from accessing preferred foraging areas (Korschgen et al 1992). Shoreline structures such as docks may also change water flow patterns and disrupt natural sediment transport along the shoreline (Kahler et al 2000). See Appendix A for additional details on impacts from overwater structures, including predation, aquatic vegetation, public access, water quality and float pollution.

Recommended Residential Dock Guidelines

ODFW encourages the use of public facilities, community docks and boat ramps, mooring buoys, and dry land storage to reduce impacts to fish and wildlife habitats. These guidelines were developed using the best available science to provide a tool for landowners to use when proposing new or modifying existing residential docks and consider the functions, values, and needs of the fish, wildlife, and habitats that may be impacted by such structures.

Size:

- Total area of dock on water should not exceed 144 square feet (recommended maximum size should be no wider than 6 feet and no more than 24 feet long) and no part should be covered or enclosed. ODFW recommends 144 square feet to accommodate a recreational boat and minimize the footprint and shade impact on aquatic resources.
- Docks serving two or more adjacent home owners can be 6 feet x 48 feet in size.

Light Penetration:

- Docks should have at least 50% of the float surface composed of grating containing at least 60% open space surface.
- The ramp/gangway out to the dock should be 100% grated to allow light to pass through. Ramp width should not exceed 5 feet. Ramp square footage is not included in the total dock area square footage.
- Grated surfaces on the docks should not be used for storage (e.g., boats, benches, kayaks, fish cleaning stations, etc.) or other purposes that will reduce natural light penetration through the structure.

Materials:

- Treated wood should not be used in the construction materials for docks or ramps¹.
- Oregon law requires encapsulation of expanded polystyrene foam floatation used in state waters. Encapsulation methods and materials must be approved by the Oregon State Marine Board prior to installation of foam floatation. Additional information and application forms are available at:
http://www.boatoregon.com/OSMB/Clean/foam_encapsulation/FoamApplication.shtml.
For more information call the OSMB Environmental Programs Coordinator at (503) 378-2611.

¹ "Treated wood" means lumber, pilings, and other wood products preserved with alkaline copper quaternary (ACQ), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), copper naphthenate, chromated copper arsenate (CCA), pentachlorophenol, or creosote.

Other Guidelines and Considerations:

- All work should be completed in accordance with the ODFW Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources².
- All pilings should be fitted with devices to prevent perching by piscivorous birds.
- There should be minimal disturbance to any buried, submerged, or floating woody debris removal during construction.
- There should be minimal disturbance to riparian vegetation and associated banks in the development of the structures.
- Ramps and their attendant docks should not extend out in to the stream more than 10% of the width of the stream (measured from Ordinary High Water). Docks on the Columbia River and the main-stem Willamette River may extend out into the river farther and may have a minimum water depth requirement (see alternative criteria below).
- The boat dock should not include any part that is covered or enclosed, such as but not limited to boat houses, sheds, fish cleaning stations, kayaks, canoes, hot tubs and benches.
- ODFW encourages landowners to coordinate with other local, state, and federal agencies where approvals or permits may be necessary for dock and associated structures.
- For piling removal, dislodge the piling with a vibratory hammer, when possible, to avoid a pile break by twisting or bending. A floating surface boom may be necessary to capture floating surface debris.

For the Columbia River and mainstem Willamette River, the following alternative dock recommendations are intended to provide consistency with criteria identified by the National Marine Fisheries Service (Standard Local Operating Procedures for Endangered Species to Administer Actions Authorized or Carried Out by the U.S. Army Corps of Engineers (SLOPES IV In-water Over-water Structures, dated April 5, 2012³).

- Any new or replacement float must be placed at least 50 feet from the shoreline (100-feet from the shoreline in the Columbia River) as measured at ordinary low water or mean lower low water and may not be placed in an estuarine area with submerged aquatic vegetation.
- Docks less than or equal to 6 feet in width should have greater than 20 feet of water depth below the float (both criteria measured at mean low water).

² http://www.dfw.state.or.us/lands/inwater/Oregon_Guidelines_for_Timing_of_%20InWater_Work2008.pdf

³ http://www.nwp.usace.army.mil/Portals/24/docs/environment/SLOPES-IV/2012_04-05_SLOPES_IV_in-over-water.p

- Docks over 6 feet in-width should have 50% of the dock surface grated (allowing 60% light transmission) and be located in water that maintains a flow velocity of at least 0.7 feet per second.

Appendix A- Rationale

Predation – ODFW recommends guidelines on dock size and light penetration to reduce the loss of habitat and to limit the creation of favorable conditions for predators. Some studies suggest overwater structures can alter predator prey relationships by improving predator success. This includes created favorable habitat for predators that provides ambush cover and low light intensities. For example, predators may use sheltered areas that provide slack water to ambush prey in faster currents (Laufle 2010, NOAA 2002). Overwater structures may also affect salmonid behavior. Celedonia et al (2008) showed that salmonids will avoid and move around overwater structures. Salmonids will swim towards deeper water to migrate around the structure and this may increase fish predation (Nowak and Quinn 2002, Fresh et al 2001). Avoidance of overwater structures increases migration time, and energy usage needed for survival. Warm water fish species (e.g., largemouth bass) have also been shown to occupy shallow and deep water habitats (Ward et al. 1994). Studies have demonstrated overwater structures can create a light/dark contrast, which can create simplified habitat that limits function for salmonid rearing or foraging, alter the behavior of juvenile fish moving along the shoreline and provides an increased opportunity for predation on coho salmon by predatory fish and birds (Jennings et al 1999, Lange 1999, Kahler et al 2000). Light plays an important role for prey to escape from predation. Shade provided by dock structures has been shown to improve the visibility to shaded objects under the dock while simultaneously minimizing the visibility of unshaded objects outside of the dock (Helfman 1981). This light/dark interface allows ambush predators like bass to hide in the darkened area while prey migrates through the bright background, leaving the prey more vulnerable to predation (NOAA 2002). The negative environmental conditions created by boat docks that can contribute to increased predation on salmonids, such as increased shading, can be avoided or minimized by using the recommended guidelines.

Aquatic Vegetation – ODFW recommends guidelines on light penetration to minimize impacts on aquatic plants. Docks, boathouses, and other overwater structures shade lake, river, and estuarine beds preventing sunlight from reaching plants, animals, and limit aquatic macrophytes, epibenthic algae, and phytoplankton primary production (Nightengale and Simenstad 2001; Simenstad et al. 1999; Fresh et al 1995, 2001, 2006; Burdick and Short 1995). Aquatic plants are the foundation for most aquatic food webs. Reducing plant diversity and productivity can have adverse effects to higher organisms (e.g., invertebrates, fishes, amphibians, birds and various terrestrial animals).

Public Access – ODFW recommends guidelines on dock size to minimize the potential impact to public trust values, such as fishing and recreation. The submerged and submersible land underlying all navigable and tidally-influenced waters of the state is public trust for Oregonians. This allows the public to utilize waters of the state for recreation, fishing, and navigation. When overwater structures are developed in waters of the state, the associated public land and resources it contains may become inaccessible to the public. Potential impacts to these public trust values in waters of the state, such as navigation, fishing, and public recreation should be considered when developing residential dock structures. Limiting the extent that ramps and their

attendant docks can extend out into waterways to 10% of the stream width is necessary to reduce adverse impacts to public access along waterways. Measurement should be from Ordinary High Water or other jurisdictional boundary as determined by the Department of State Lands. Additional information on the Public Ownership of Oregon's Waterways is available here: <http://www.oregon.gov/dsl/NAV/Pages/index.aspx>

Other Impacts to Aquatic Organisms – ODFW recommends guidelines for materials used in construction to minimize adverse impacts on fish and wildlife resources. Certain materials that may be used for constructing docks and other overwater structures may release toxic metals or polycyclic aromatic hydrocarbons into the environment through leaching by rainwater and direct contact with fresh/salt water. If not properly sealed, float material associated with these structures may be ingested by wildlife. Seabirds will ingest foam pellets and feed them to their young. If chicks are fed too much plastic, they are likely to suffer physiological stress from blockage and satiation that can result in their death. ODFW recommends the floatation materials be limited to properly encapsulated expanded polystyrene (EPS) or extruded polystyrene (XPS).

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