Oregon Department of Environmental Quality

Issue Paper: Aquatic Life Use Definitions Clarification

Aquatic Life Use Updates Rulemaking

Background

DEQ is proposing to revise the definitions for “cold-water aquatic life” and “cool water aquatic life” in the general water quality standards definition rule at OAR 340-041-0002. DEQ adopted these definitions when it revised the temperature standard in 2003, however these exact terms are not used in the temperature standard. The terms are used in the dissolved oxygen (DO) standard (OAR 340-041-0016), which was adopted in 1996. These terms are used to describe two of the aquatic life use subcategories in the DO standard and are defined in Table 21 (provided below). DEQ has applied the DO standard using Table 21 since it was adopted in 1996. DEQ is proposing to clarify the terms in the general definitions (OAR 340-041-0002) to remove the inconsistency with the definition specifically in the DO standard (OAR 340-041-0016, Table 21) and to avoid any potential confusion. Table 1 below shows the terms are used in each rule and how they are defined.

Biologists commonly classify aquatic species as cold, cool or warm water species, which indicates their relative thermal tolerance and the types of aquatic habitats they tend to occupy. Both the dissolved oxygen and temperature issue papers developed for the 1996 rulemaking identify which species present in Oregon, whether native or introduced, are classified as cold, cool or warm water species. These commonly used classifications may be found in many scientific publications.

DEQ is currently conducting rulemaking to designate the DO use subcategories in rule, which will determine where the criteria for the three year-round aquatic life use subcategories apply. DEQ is also identifying in rule where and when the salmonid spawning use is designated and, therefore, where and when the DO spawning criteria apply.

Proposed rule amendments

The rulemaking proposes to amend OAR 340-041-0002(9) and (12) as shown here:

> (9) "Cold-Water Species~~Aquatic Life~~" means aquatic organisms that are physiologically restricted to cold water including, but not limited to, native salmon, steelhead, mountain whitefish, char including bull trout, and trout.
>
> (12) "Cool Water Species~~Aquatic Life~~" means aquatic organisms that are physiologically restricted to cool waters including, but not limited to, native sturgeon, Pacific lamprey, suckers, chub, sculpins and certain species of cyprinids (minnows.)

Rationale

All Oregon waters (except one) are designated for Fish and Aquatic Life Use. This meets the Section 101a2 water quality goal of the Clean Water Act to provide for the protection and propagation of fish, shellfish and recreation in and on the water, wherever attainable. Fish and Aquatic Life is a very broad use, however, as different species are native to and will thrive in different habitats. Federal regulations allow states to establish use subcategories with different criteria based on the tolerances and needs of those communities or species. Oregon's temperature standard includes use subcategories that are species and life stage based. There are several year-round uses for specific salmonid species groups (i.e., Salmon & Trout Rearing and Migration, Bull Trout and Redband & Lahontan Cutthroat Trout) and there is a more general use subcategory for "Cool Water Species," which are non-salmonid species. Oregon's dissolved oxygen standard includes three year-round use subcategories, which are aquatic life community based: cold-water, cool-water and warm-water aquatic life. The aquatic life community includes fish and other aquatic species. The three aquatic life use subcategories are defined in Table 21.

The definitions of cold-water and cool-water aquatic life in OAR-340-041-0002 were adopted when Oregon adopted revisions to the temperature standard in 2003. They were meant to provide information about which species are typically classified as cold or cool water species in Oregon. They were not intended to narrow or change the community-based definitions of these terms when used for use subcategories in the DO standard, which are defined in OAR 340-041-0016 Table 21. The DO standard was not being revised at this time, other than a change of the IGDO value in response to ESA consultation.

To avoid any potential confusion, DEQ is proposing to correct the terms in OAR-340-041-0002 to better match the definitions, and to avoid using the same terms used in the DO standard, which have a different meaning. These revised terms identify examples of fish species typically classified as "cold water species" and "cool water species." This amendment will provide more clarity and consistency in how the terms "species" versus "aquatic life" are used in the Division 41 water quality standards rules.

Impact of the Rulemaking

Revising the two definitions by changing the terms in OAR 340-041-0002 (9) and (12) will remedy the potential inconsistency between these definitions and the Table 21 definitions of the same terms used in OAR 340-041-0016. Revising these terms will not affect how and where DEQ applies the dissolved oxygen criteria for cold-water, cool-water, and warm-water aquatic life, which was first documented in a memo to EPA in 1998 and is now also documented in DEQ's 2019 Dissolved Oxygen Interpretation Guidance.[1] In addition, DEQ is conducting rulemaking to designate the DO use subcategories in rule, which will specify the waterbodies where each DO use subcategory and criteria apply.

[1] Oregon DEQ. 2019. Oregon's Dissolved Oxygen Water Quality Standard: Interpretation and Application Procedures. Portland, OR. 72 pp.

Table 1. Comparison of terms and definitions found in OAR 340 Division 41.

OAR-340-041-0002 "Definitions"	OAR-340-041-0016 Table 21 "DO Rule"	OAR-340-041-0028 "Temperature Rule"
(9) **"Cold-Water Aquatic Life"** means aquatic organisms that are physiologically restricted to cold water including, but not limited to, native salmon, steelhead, mountain whitefish, char including bull trout, and trout.	**Cold-water aquatic life** Principally cold-water aquatic life. Salmon, trout, cold-water invertebrates, and other native cold-water species exist throughout all or most of the year. Juvenile anadromous salmonids may rear throughout the year. No measurable risk level for these communities.	*Not used and not defined.*
(12) **"Cool Water Aquatic Life"** means aquatic organisms that are physiologically restricted to cool waters including, but not limited to, native sturgeon, Pacific lamprey, suckers, chub, sculpins and certain species of cyprinids (minnows.)	**Cool-water aquatic life** Mixed native cool-water aquatic life, such as sculpins, smelt, and lampreys. Waterbodies includes estuaries. Salmonids and other cold-water biota may be present during part or all of the year but do not form a dominant component of the community structure. No measurable risk to cool-water species, slight risk to cold-water species present.	**(9) Cool Water Species** *Not defined. In older rules called "non-salmonid" use.*
(68) **"Warm-Water Aquatic Life"** means the aquatic communities that are adapted to warm-water conditions and do not contain either cold- or cool-water species.	**Warm-water aquatic life** Waterbodies whose aquatic life beneficial uses are characterized by introduced, or native, warm-water species	*Not used and not defined.*

Figure 1. Dissolved Oxygen Standard Table 21

OAR 340-041-0016 - TABLE 21

DISSOLVED OXYGEN & INTERGRAVEL DISSOLVED OXYGEN CRITERIA (Applicable to All Basins)

Class	Concentration and Period[1] (All Units are mg/L)				Use/Level of Protection
	30-D	7- D	7- Mi	Min	
Salmonid Spawning		11.0[2,3]		9.0[3]	Principal use of salmonid spawning and incubation of embryos until emergence from the gravels. Low risk of impairment to cold-water aquatic life, other native fish and invertebrates.
				8.0[4]	
Cold Water	8.0[5]		6.5	6.0	Principally cold-water aquatic life. Salmon, trout, cold-water invertebrates, and other native cold-water species exist throughout all or most of the year. Juvenile anadromous salmonids may rear throughout the year. No measurable risk level for these communities.
Cool Water	6.5		5.0	4.0	Mixed native cool-water aquatic life, such as sculpins, smelt, and lampreys. Waterbodies includes estuaries. Salmonids and other cold-water biota may be present during part or all of the year but do not form a dominant component of the community structure. No measurable risk to cool-water species, slight risk to cold-water species present.
Warm Water	5.5			4.0	Waterbodies whose aquatic life beneficial uses are characterized by introduced, or native, warm-water species.
No Risk	No Change from Background				The only DO criterion that provides no additional risks is "no change from background". Waterbodies accorded this level of protection include marine waters and waters in Wilderness areas.

Note:
Shaded values present the absolute minimum criteria, unless the Department believes adequate data exists to apply the multiple criteria and associated periods.

[1] 30-D = 30-day mean minimum as defined in OAR 340-41-006.
7-D = 7-day mean minimum as defined in OAR 340-41-006.
7-Mi = 7-day minimum mean as defined in OAR 340-41-006.
Min = Absolute minimums for surface samples when applying the averaging period, spatial median of IGDO.

[2] When Intergravel DO levels are 8.0 mg/L or greater, DO levels may be as low as 9.0 mg/L, without triggering a violation.

[3] If conditions of barometric pressure, altitude and temperature preclude achievement of the footnoted criteria, then 95 percent saturation applies.

[4] Intergravel DO criterion, spatial median minimum.

[5] If conditions of barometric pressure, altitude, and temperature preclude achievement of 8.0 mg/L, then 90 percent saturation applies.

Contact

Debra Sturdevant, Water Quality Standards Program
Debra.sturdevant@deq.oregon.gov
503-229-6691

Translation or other formats

Español | 한국어 | 繁體中文 | Русский | Tiếng Việt | العربية
800-452-4011 | TTY: 711 | deqinfo@deq.oregon.gov

Non-discrimination statement

DEQ does not discriminate on the basis of race, color, national origin, disability, age or sex in administration of its programs or activities. Visit DEQ's Civil Rights and Environmental Justice page.