Oregon Department of Environmental Quality

DRAFT: Aquatic Life Use Definitions Clarification

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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 the exact terms are not used in the temperature standard. The terms are used in the dissolved oxygen (D.O.) standard (OAR 340-041-0016) and associated Table 21, which were adopted in 1996, where they refer to two of the aquatic life use subcategories in that rule. The definition for these terms in Table 21 defines what types of waters where the different criteria apply under the D.O. standard. DEQ has applied the D.O. standard using Table 21 since 1996. The U.S. Environmental Protection Agency requested that DEQ resolve the inconsistency between the definitions in the general definitions rule (OAR 340-041-0002) and the D.O. standards rule (OAR 340-041-0016). DEQ agreed to clarify the terms in the general definitions rule (OAR 340-041-0002) to remove the inconsistency and avoid potential confusion.

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 conducting rulemaking to designate the D.O. use subcategories, which will determine where the criteria for the three year-round aquatic life use subcategories (as defined in Table 21) apply. DEQ is also identifying in rule where and when the salmonid spawning use is designation and, therefore, where and when the D.O. spawning criteria apply.

Proposed rule revisions

The rulemaking proposes to revise OAR 340-041-0002(9), (12) and (68) 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

Nearly all Oregon waters 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 uses (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," or non-salmonids. Oregon's dissolved oxygen standard includes three year-round use subcategories that are aquatic life community based: cold-water, cool-water and warm-water aquatic life. The aquatic life community includes fish and other aquatic species. These 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 D.O. standard, which are defined in OAR 340-041-0016 Table 21.

DEQ generally avoids putting scientific terms and definitions, which can be readily found in other publications, for informational purposes in the administrative rules. Usually only regulatory terms are defined as part of the administrative rules, when necessary. The definitions in OAR-340-041-0002 (9) and (12) were intended to be informative, not regulatory. They are examples of scientific classifications used by biologists.

To avoid any potential confusion, DEQ is proposing to revise the definitions in OAR-340-041-0002 to make it clear that they identify examples of fish species typically classified as cold- and cool-water species. This 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 Rulemaking

Revising the two definitions by changing the terms in OAR 340-041-0002 (9) and (12) will remedy the apparent inconsistency between these definitions and the Table 21 definitions of the same terms as used in the dissolved oxygen standard at OAR 340-041-0016 (Table 21). Revising these terms will not affect how and where DEQ applies its 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 D.O. use subcategories in rule, which will designate the specific waterbodies where each D.O. use subcategory and criteria apply.

Table 1 Occurrence of terms related to 'Cold Water Aquatic Life' and 'Cool Water Aquatic Life' in OAR-340 Division 41.

OAR-340-041-0002 "Definitions"	OAR-340-041-0016 Table 21 "D.O. Rule"	OAR-340-041-0028 "Temperature Rule"
(9) "Cold-Water Aquatic Life"	Cold-water aquatic life	*Not used.*

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

(12) "Cool Water Aquatic Life"	Cool-water aquatic life	(9) Cool Water Species
(68) “Warm-Water Aquatic Life”	Warm-water aquatic life	*Not used.*

Table 2 Textual comparison of definitions for related to ‘Cold Water Aquatic Life’ and ‘Cool Water Aquatic Life’ in OAR-340 Division 41.

Definitions		
OAR-340-041-0002 "Definitions"	**OAR-340-041-0016 Table 21 "D.O. 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. Previously “non-salmonid.”*
(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.*

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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.

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Alternate formats

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