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**Topic Title: P. Stream assessment for High Priority**

**Context:** The stated goal of ODFW’s instream water right policy is to obtain an instream water right (ISWR) on every waterway exhibiting fish and wildlife values (OAR 635-400-0005). However, it is estimated that 1500-2000 sites do not have either an ISWR or other existing flow recommendations (information in a Basin Investigation Report, Persistence Flow Determination, or other known flow study) to be used to apply for an ISWR. As part of implementing the Integrated Water Resource Strategy, ODFW is completing instream flow studies to gather data that will be used to apply for new instream water rights. Given the extensive time constraints to conduct stream flow assessments, ODFW has prioritized stream assessments for the next 2-3 years based on existing downstream protection, number of different recovery plans in action, presence of sensitive, threatened or endangered fish species, and presence of critical habitat.

Further prioritization is essential, so that valuable time and resources can be devoted to the most important streams first. In 1997 and 1998, the Water Resources Department and ODFW jointly identified priority areas for streamflow restoration in basins throughout the state. These priority areas represented watersheds in which there is a combination of need and opportunity for flow restoration to support fish recovery efforts under the Oregon Plan for Salmon and Watersheds. These priority areas are now over 15 years old, and data, science, ESA listings, physical habitat, and human impacts have changed. Additionally, these original prioritization efforts did not include the impacts of a changing climate.

***To implement this recommendation:***

- Administrative: ODFW should update and enhance previous prioritization effort in order for it to be relevant and used in decision-making (see Topic x- Conduct more scientific studies evaluating instream flow needs with climate change, for further explanation).

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**Topic Title: X. Conduct more scientific studies evaluating instream flow needs with climate change:**

**Context:** One objective of the Integrated Water Resource Strategy is to understand Oregon’s instream and out-of-stream needs. In pursuit of this objective, the state conducted a Statewide Long-Term Water Demand Forecast in 2015, building upon the 2008 Statewide Water Needs Assessment. This assessment focused on agricultural, municipal, and industrial demand changes, but did not consider instream flow needs for fish and wildlife. In order for the state and water users to understand and address current and future water challenges, a complete picture of water need is necessary- one that includes instream flow needs. This information will allow for clear messaging of long-term, instream requirements to all water users, aid in identifying high priority areas for future research, and set strategic objectives for restoration into the future. In addition, this effort will provide a framework for a state-wide, coordinated approach to instream work (both flow and habitat restoration).

Building on the streamflow prioritization efforts of the late 1990s (see Topic Title: P. Stream assessment for High Priority), instream flow needs should be identified at the reach level by analyzing fish stock status, life history habitat utilization, and stream flow conditions within the context of climate change. Through this evaluation, unmet instream flow needs can be assessed based on status of protection and potential future impacts, and priority reaches within and among basins for statewide stream assessments and stream flow restoration and enhancement can be identified.

Once priorities are established identifying where additional water is critically needed, strategies to inform funding entities and work with water right holders for flow restoration will be developed. Additionally, species, habitat, and resource priority information used in the assessment will be available to the general public. As flow studies and restoration work are prioritized and implemented across the state, this effort will support improved natural fish production.

***To implement this recommendation:***

- Administrative: ODFW should develop flow study and restoration priorities within and among basins.
- Legislative: In order to update flow study and restoration priorities, ODFW will need to conduct new, complex analyses that utilize a variety of data from different sources. These data include various metrics of fish and wildlife population health, remote-sensed geomorphology, and current and projected environmental conditions (e.g., temperature, flow). In order to expediently gather these data, conduct the analyses, and manage these data into the future as effectiveness is assessed and analyses are updated, ODFW should hire additional staff (~\$210,000/biennium for one biologist).

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**Topic Title: ZG. Fishing Regulations during drought**

**Context:** Drought can cause a number of environmental conditions that affect fish, including low stream flows, reduced lake and reservoir pools, elevated water temperatures, depleted oxygen levels, blue-green algae blooms, and wildfires. Some of the negative effects these environmental conditions have on native, game, and hatchery fish of all freshwater life stages include stress, disease, pre-spawning mortality, inaccessible habitat, excessive vulnerability to angling, predation, and poaching/snagging, and range expansion of invasive species (e.g., if they are more tolerant of warmer water).

Oregon has a wide variety of water body types and there are many factors that influence decisions before taking specific action to mitigate for the impacts of drought. For example, stream basins that are snow pack driven, spring-dominated, are located in the tailwater areas of a dam or hydro project, or tidally influenced may see reduced effects of drought. Additionally, ODFW has worked proactively through the years to secure instream water rights, which may benefit fish during drought conditions. In many cases, fish populations be adapted to common lower flows and higher temperature conditions and may only be impacted in extreme or prolonged situations. Different native fish species or species groups may also react differently to these conditions, and often co-reside with each other within the same system. These and other factors add to the complexity of fish management and require flexibility in decision making during a drought.

ODFW currently utilizes a variety of strategies and actions to minimize the negative effects on fish and fisheries due to impacts from drought. These strategies include partially or completely closing a fishery or area during a portion of the day or season or encouraging anglers to voluntarily reduce fishing effort when water temperatures and flows are significantly outside the normal range for a certain time of the year. The intent is to reduce handling stress on native fish. Actions such as these, in most cases, are not broadly implemented, but rather are targeted in specific areas with vulnerable native fish populations (e.g. trout, salmon, steelhead, and sturgeon) on an as-needed basis.

Another fishery strategy which ODFW utilizes is to provide public opportunities to harvest game fish that would likely experience significantly increased mortality during drought. The fish that are the target of such action are non-native fish and hatchery trout. This action is considered during times of decreased water levels and/or increased water temperatures, and typically occurs in ponds, reservoirs, and lakes without native fish concerns. The use of such regulation is also determined on a case-by-case basis and based upon the unique drought effects that are present in the basin.

ODFW is in the process of developing a framework of strategies and actions for use statewide. This framework will consider geographic vulnerability of water bodies (e.g. native fish in certain parts of the state are inherently more or less vulnerable to negative effects during a drought),

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as well as area-specific conditions that will be linked to key strategies and actions. It is anticipated that multiple levels of response, ranging from advisory up to and including complete prohibition, will be associated with appropriate responses on a case-by-case basis. This framework will provide a more transparent approach to managing fisheries during a drought.