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TO: Thurston County Planning Commission

FROM: Claire Swearingen, Associate Planner

DATE: April 15, 2026

SUBJECT: CAO Update – Fish and Wildlife Habitat Conservation Areas (Stream, Aquatic and Riparian) Best Available Science and Concepts

Introduction

Fish and Wildlife Habitat Conservation Ares (FWHCAs) are various parts of the environment that provide habitat for animals and plants, and for which protection is mandated by state laws addressing critical areas. WAC 365-190-030 defines FWHCAs as follows:

> *"'Fish and wildlife habitat conservation areas' are areas that serve a critical role in sustaining needed habitats and species for the functional integrity of the ecosystem, and which, if altered, may reduce the likelihood that the species will persist over the long term. These areas may include, but are not limited to, rare or vulnerable ecological systems, communities, and habitat or habitat elements including seasonal ranges, breeding habitat, winter range, and movement corridors; and areas with high relative population density or species richness. Counties and cities may also designate locally important habitats and species.*
>
> *'Habitats of local importance' designated as fish and wildlife habitat conservation areas include those areas found to be locally important by counties and cities.*
>
> *'Fish and wildlife habitat conservation areas' does not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of, and are maintained by, a port district or an irrigation district or company."*

FWHCAs generally protect the habitats and species on the Washington Department of Fish and Wildlife's (WDFW) Priority Habitats and Species List. This list, which includes federally listed species, includes habitats, fishes, mammals, birds, reptiles, amphibians, and invertebrates that need protection in Washington state. Thurston County is home to 97 of these priority habitats and species, though some of these inhabit the Puget Sound, so the Critical Areas Ordinance is not as central to their protection. In addition, the four federally listed species that are covered by the Habitat Conservation Plan (HCP) (Mazama Pocket Gopher, Oregon Spotted Frog, Taylor's Checkerspot Butterfly and Vesper Sparrow) are managed only by the HCP; the CAO defers to the HCP for these species, though prairie habitat that supports other State-listed species is still covered by the CAO.

A major component of protecting FWHCAs is protecting streams and the areas around them, called riparian areas. While larger rivers, lakes, and Puget Sound also have riparian areas associated with them, these areas are typically managed by the Shoreline Master Program (SMP), so most FWHCAs governed by the CAO fall along waterbodies that are not considered shorelines. This memo will focus on streams and riparian areas, and a future memo will cover dryland habitats, especially those associated with prairies and oak savannahs.

Riparian Areas

Riparian areas are places where waterbodies like streams, lakes, and rivers, meet and interact with dry land. In these areas, the land and the water help each other function ecologically by exchanging nutrients, plant matter, shade and other functions. Protecting riparian areas helps protect habitat both on the land and in the water, and keeps streams and rivers cool and clean. Protecting riparian areas is a key aspect of regulating FWHCAs. WDFW has published with new science and recommendations for protecting riparian areas. According to this guidance, riparian areas include the channel migration zone (CMZ), and the nearby land that contributes ecological functions to the stream (i.e. shade for cooling, plants or soils that filter pollutants, or trees that drop branches into streams). The following sections discuss how these functions occur and how this concept gets translated into functional regulatory tools like buffers or riparian management zones.

Functions and Values

Riparian areas help support healthy aquatic and streamside habitat for many different species, and help keep water clean and cool. These areas often overlap with other critical areas like wetlands and floodplains, and perform similar functions such as catching and slowing down flood waters, filtering surface water and runoff, trapping excess nutrients and carbon, and providing important habitat features.

Riparian areas contribute to healthy stream morphology by providing necessary sediment through natural erosion processes, promoting bank stability via plant and tree roots, and contributing large woody debris (fallen trees or branches) into streams, which creates more varied morphology and supports fish habitat. Healthy riparian areas also help keep streams cool, especially by providing shade. Salmonid species (which include various kinds of salmon and trout) need cold water in streams to survive. Woody debris can also lower stream temperature by creating deep pools in the stream. Natural nutrient exchange also happens in riparian areas. Salmon carcasses provide nutrients to the plants and animals that live near streams, and riparian forests drop organic material like leaf litter into streams, providing an appropriate level of nutrients for stream environments. Too many nutrients in a stream can negatively impact stream health and the ability of fish to survive, and these excess nutrients often come from manmade fertilizers and wastewater systems.

Climate Change

Streams and riparian areas are sensitive to the effects of climate change. Hotter, drier summers and decreases in mountain snowfall lead to warmer stream temperatures which threaten salmonids and other species that rely on cool water. Loss of riparian vegetation compounds this issue, since vegetation provides necessary shade for cooling. Vegetation loss also decreases other ecological functions like pollution removal and woody debris recruitment. More extreme rainfall events and overall hydrologic and weather changes can increase fast-flowing and intense flood events, which can disrupt habitat and morphology, and cause excess erosion.

Protection Strategies

Riparian buffers help ensure that riparian areas can reduce the amount of pollution that enters streams. Width is the most important factor for pollution removal, followed by vegetation composition. The distances required to achieve pollution removal depend on site details and on the specific chemical being measured, but about 95% of pollutants are removed by buffers ranging from 56 to 251 feet in width. Many other functions like leaf litter input, shade, and woody debris contribution are functions of the height of trees in riparian areas. Because many important functions are related to tree height, WDFW has recommended a new framework for understanding the width of functional riparian areas; site potential tree height (SPTH). SPTH takes into consideration the average height that the dominant tree species in a given area would reach after 200 years. According to WDFW guidance, the riparian buffer established by SPTH should be measured from the edge of the channel migration zone, not the edge of the stream (ordinary high water mark). This combination of a riparian buffer and channel migration zone form a riparian management zone (RMZ). RMZs should also contain any delineated wetlands associated with the waterbody. A checklist outlining riparian management recommendations from WDFW is included with this memo.

Buffers vs. Riparian Management Zones

With the introduction of the SPTH framework, there are now two main ways through which streams and riparian areas could be protected: buffers and riparian management zones (RMZs). The RMZ framework is particularly useful for identifying areas for restoration and for using monitoring and adaptive management frameworks, while prescriptive buffers are simpler to implement both for county staff and applicants. These two frameworks are not mutually exclusive, each could be applied in different scenarios, or the BAS that supports the use of RMZs could be used to help determine the widths of prescriptive buffers. Regardless of the methods used, guidance from WDFW recommends a minimum buffer or riparian designation of 100 feet, measured from the edge of the channel migration zone if one exists. This minimum is primarily meant to be applied in non-forested areas or areas where the SPTH of the dominant tree species would be less than 100 feet. This minimum accounts for many functions derived from vegetation, like pollution removal, and does not capture the full range on functions in most forested riparian areas, particularly in western Washington. If SPTH is not used to determine buffer width, it may still indicate an area where pollution or stormwater best management practices (BMPs) like those in the Drainage Design and Erosion Control Manual (DDECM), Ecology's Stormwater Management Manual, or Ecology's Clean Water Guide for Agriculture are required for certain project types. This is just one example of how these tools could be implemented.

County staff have received a grant to research the impacts of and build resources for the use of SPTH. This work won't be complete until 2027, and this work may produce recommended changes to the code.

Stream Typing

WDFW recommends that the same protection frameworks apply to all streams, regardless of whether they are fish-bearing. According to WDFW, non-fish-bearing streams:

- *"Support a unique community of aquatic and riparian-obligate wildlife;*
- *Provide movement corridors for wildlife, particularly in the face of changing climate conditions;*
- *Provision fish-bearing streams with matter and energy; and*
- *Provide cool water to downstream reaches. Washington State has already experienced increased stream temperatures due to climate change and expect further increases, which have direct implications for the persistence of fish."*

Regardless of how standards are applied, it is important to use a consistent and up-to-date stream typing system. WAC 222-16-030 defines stream types, and the CAO should reflect how these types are designated in the WAC.

Discussion Points

- How should the county approach implementation of WDFW recommendations?
- How should different stream types be considered?
- What implementation resources should accompany the changes made in the update?
- Should the county designate any additional species of local importance?

References

For additional references, please see the attached annotated bibliography.

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