



AGENDA ITEM SUMMARY

BACKGROUND

North Umpqua summer steelhead are a unique and important population, given that they are one of four natural summer steelhead populations on the entire Oregon coast. Their management is guided by the *Coastal Multi-Species Conservation and Management Plan (CMP)*, adopted by the Commission in 2014. At the time of that plan's development, the population was thoroughly assessed and considered viable based on salmonid population parameters. The CMP outlined several actions to further improve the status of wild summer steelhead but also allowed for adaptive management should circumstances change.

Since adoption of the CMP, a number of changes have occurred in the North Umpqua Basin that warrant adaptive management. Most importantly, North Umpqua summer steelhead returns in 2021 fell below the CMP-defined critical abundance level, to the lowest level observed since annual counts began at Winchester Dam in 1946. Additionally, the basin has been significantly impacted by climate change, a multiyear drought, intense fires, and warming rivers. This set of circumstances prompted the Oregon Department of Fish and Wildlife (ODFW) to initiate a new population status assessment in 2021 (Attachment 2). The goal of the assessment was to determine the factors most likely contributing to the downturn; quantify the population's current status and future vulnerability using the most recent data; and identify factors that may limit a population rebound. This included an evaluation of whether the Rock Creek Hatchery (RCH) summer steelhead program on the North Umpqua was contributing to the decline. Based on the results of this assessment, public input, and considerations associated with the rebuild of RCH after the 2020 Archie Creek Fire, ODFW is recommending adaptive management actions associated with the hatchery summer steelhead program.

PUBLIC INVOLVEMENT

ODFW conducted an in depth, multi-year public process for North Umpqua summer steelhead during [development of the CMP](#) in 2014. In the leadup to this agenda item, there have been multiple and varied opportunities for public involvement including:

- Informal comments from the public via email and personal conversation with District and Division staff.
- A [website](#) dedicated to North Umpqua summer steelhead with links to all available public engagement options (workshop registration, survey, webinar, population assessment etc.)
- An in-person workshop in Roseburg open to 100 participants led by a professional facilitator.
- An online survey.
- A [news release](#) describing engagement opportunities.
- Online access to the 2022 population assessment.
- A webinar discussing results of the 2022 population assessment, online survey and information gained at the in-person workshop.

- April 2022 Commission Meeting.

Additionally, several stakeholders have used the public forum portions of multiple Commission meetings.

ISSUE

Management of the North Umpqua Summer Steelhead Hatchery Program

ANALYSIS

In response to multiple events in the North Umpqua basin, the most recent being the lowest return on record of wild summer steelhead in 2021, ODFW is considering options for adaptively managing the summer steelhead hatchery program. To inform this decision, a broad ranging status assessment was completed by ODFW in April 2022 (see Attachment 2). The primary conclusions of this assessment were:

- The 2021 downturn in the North Umpqua was unprecedented, but was concurrent with downturns in other summer steelhead populations throughout Oregon (except Rogue), Washington, Idaho, and British Columbia.
- The primary cause of the downturn was low ocean survival due to poor marine conditions. A secondary cause was poor freshwater conditions (i.e., high temperatures) impacting survival during multiple years of juvenile outmigration and, likely, during 2021 when adults were returning to spawn.
- Additional potential contributors for the downturn include non-native fish predation on outmigrants (as exacerbated by stream temperature increases), disease, and thiamine deficiency.
- There was no evidence that the hatchery summer steelhead program negatively affected naturally produced summer steelhead, although there are likely more hatchery fish on natural spawning grounds than the CMP management threshold allows.
- A viability analysis indicated that the population remains viable and has the capacity to rebound if environmental conditions improve. In the near term ODFW expects some improvement in run size because ocean conditions have significantly improved. However, this expectation should be tempered in the longer term due to the ongoing drought and the potential for more frequent downturns in ocean conditions.
- The outlook for North Umpqua summer steelhead indicates changing environmental conditions with mixed outcomes. Existing data and models indicate that upper tributary freshwater habitat should be able to support juvenile steelhead even though instream flows and temperature are expected to decrease and increase, respectively. Migration

corridors will also have higher temperatures and less flow, affecting both juvenile outmigration and returning adults. Major fires will increase flows (but not enough to offset decreased flows due to climate change) and will increase stream temperature. Some ocean changes may benefit summer steelhead, while others will have a negative effect. Overall, there are significant challenges, but also indications that North Umpqua summer steelhead can be resilient.

Although the assessment found no evidence that the hatchery program was negatively impacting naturally produced summer steelhead, the proportion of hatchery fish on spawning grounds was above the allowed threshold identified in the CMP. ODFW has established thresholds for the allowable proportion of hatchery fish spawning in the wild (pHOS) in several plans, including the CMP. The 10% pHOS threshold is a conservative level intended to minimize the risk to natural production associated with the hatchery program. This risk is based on a number of studies that have shown the offspring of hatchery fish that spawn in the wild produce fewer returning adults than do their wild counterparts. As a result, interbreeding on the spawning grounds can depress productivity in the long term. The magnitude of the effect varies among species, basins, and among hatchery programs. For example, programs that utilize 100% natural origin brood pose less risk than those that utilize 100% hatchery origin brood, assuming there is equal interaction on the spawning ground, which is often not the case.

Prior to CMP adoption, activities to manage pHOS by removal of adult hatchery origin summer steelhead were limited to broodstock collection events and angler harvest. After CMP adoption, removal efforts increased and included trapping at a facility above RCH. However, due to limited staffing, these efforts have not been sufficient to reduce pHOS to desired levels. In reaching a recommendation regarding the future management of the program, ODFW considered several options to reduce pHOS to below the 10% threshold, including:

1. Discontinue the hatchery program. This would eliminate interaction between hatchery and wild summer steelhead and reduce pHOS to 0% within two to four years, assuming there are no hatchery origin adults entering the North Umpqua from other basins.

Benefit to wild fish. Although the assessment did not identify hatchery origin summer steelhead as a limiting factor to wild populations, this action would eliminate any risk to the wild population in non-core areas where there is currently overlap during spawning (Upper and Lower North Umpqua and Rock Creek).

Impact to fishery. Among the options discussed here, this has the most impact on the North Umpqua fisheries, as it would eliminate one of only two harvest fisheries in the North Umpqua and decrease the number of fish available for catch and release anglers.

- *Practicality:* This option could be implemented by ODFW immediately.

2. Increase hatchery fish removal efforts in Rock Creek. Removal of sufficient hatchery origin summer steelhead to attain a pHOS of less than 10% within the Rock Creek sub-basin would achieve a basin-wide pHOS of approximately 10%.

- *Benefit to wild fish:* Although the assessment did not identify hatchery origin adult summer steelhead as a limiting factor to wild populations, this action would further reduce basin-wide risk to the wild population.
- *Impact to fishery:* This option would have no impact on the fishery.
- *Practicality:* This option cannot be immediately implemented to reduce pHOS. The ability to achieve pHOS reductions through removal of hatchery origin steelhead in Rock Creek is dependent on: 1) timing of restoring complete operability of the hatchery's trap and 2) sufficient staffing for operation of the trap. ODFW is restoring partial operability of the trap in 2022 and further repairs will be contingent on the outcome of the RCH rebuild process. For this option, ODFW estimates that the equivalent of two full-time (3 part time) seasonal positions for up to six months per year would be needed to operate the trap. Although permanent resources do not currently exist, some of the options being considered for rebuild of Rock Creek hatchery would include staffing to operate the trap.

3. Reduce the number of smolts released. ODFW analysis indicates that a reduction from current average release size to 30,000 per year would likely lower pHOS levels to CMP goals of less than 10% in the North Umpqua Basin at the time these fish return.

- *Benefit to wild fish:* Although the assessment did not identify hatchery origin adult summer steelhead as a limiting factor to wild populations, this action would reduce basin-wide risk to the wild population.
- *Impact to fishery:* The program goal in the CMP is an annual smolt release of 165,000. However, releases have averaged approximately 70,000 over the last ten years. Therefore, a reduction to 30,000 would likely reduce the current fishery by >50% with a lower number of returning adults available for both harvest and catch and release opportunities.
- *Practicality:* This action could be implemented immediately. However, it is unclear whether releasing 30,000 smolts would return sufficient broodstock in future years to maintain a program given recent poor returns.

4. A combination of increased removal of adult hatchery origin summer steelhead from Rock Creek (option 2) and program reduction to 30,000 smolts per year (option 3). The benefits and practicality of this option are the same as those in options 2 and 3

5. No change

- *Benefit to wild fish:* The assessment did not identify hatchery origin adult summer steelhead as a limiting factor to wild populations, but this option does not provide any additional precautionary benefits to wild fish and may increase risk if release size was increased in future to the allowable 165,000 threshold.
- *Impact to fishery:* This option would have no immediate impact on the fishery and may increase harvestable returns to the fishery in the future if releases are able to be made at the approved program size of 165,000 smolts.
- *Practicality:* This option would result in continued exceedance of CMP pHOS thresholds.

STAKEHOLDER INPUT

To further inform the decision about hatchery summer steelhead program management, ODFW worked with faculty from the USGS Cooperative Unit at Oregon State University to evaluate public values, concerns, and beliefs surrounding the hatchery and wild summer steelhead in the North Umpqua basin through an online survey and in-person workshop (Attachment 3).

Most participants expressed that they highly value the wild population and are extremely concerned for its future. Participants generally responded that warming rivers and habitat degradation were the most important factors contributing to the decline, while ocean conditions ranked in the middle of limiting factors. This is somewhat consistent with ODFW's analysis though participants are likely underestimating the influence of marine conditions. However, participants were split about whether too many hatchery fish were a contributing factor to the recent decline and equally split on whether eliminating or pausing the program versus maintaining/increasing the program was the appropriate action to improve the wild population.

ODFW CONCLUSION

The status assessment found no evidence that the hatchery program contributed to the current decline or was impacting the long-term viability of the wild fish, though acknowledges that there are uncertainties associated with some of the analyses. However, the assessment also concluded that pHOS thresholds are being exceeded. Given these findings, and the low run size ODFW believes a precautionary approach is needed to reduce interactions between wild and hatchery fish. There was no public consensus about whether the hatchery program contributed to the decline or whether it should be increased, decreased, eliminated, or paused. Given this lack of consensus and the findings of the assessment, ODFW concludes that there is not a strong case to completely eliminate the program.

Per option 4 above, ODFW proposes to immediately (2022) reduce the annual release size to 30,000 smolts and immediately (2022) begin working to increase removal of additional hatchery

fish at RCH. This proposal would be utilized as a temporary measure to reduce pHOS while the trapping infrastructure and rebuilding plans at RCH are being addressed. ODFW will continue to monitor pHOS and adaptively manage release size and trapping effort to remain below 10%.

WILD FISH ACTIONS

ODFW's assessment suggests there will likely be minimal benefits from changes in hatchery management, though it is prudent and required to meet CMP pHOS targets and requires the risk reduction measures outlined above to do so. Additionally, ODFW will be focusing efforts in the following areas to address limiting factors identified in the assessment. Some of these can be addressed immediately and others will require additional state and federal funds.

- Maintaining, and where possible increasing, efforts to protect and restore critical juvenile rearing and adult holding habitats throughout the Umpqua Basin. Forecasts for stream temperatures in the North Umpqua basin suggest a continued warming trend and so these actions are particularly important given this population's dependence on the mainstem as a migratory corridor and the cold water refugia in the upper North Umpqua watershed during the summer months. Actions include securing instream water rights and instream flow restoration, education about recreational impacts, and implementation of habitat improvement projects.
- Conducting research related to the impacts of predation on summer steelhead, particularly out-migrating juveniles, to help address existing data gaps. Studies focused on population trends and diets of smallmouth bass and striped bass could help inform potential future fisheries management actions.
- Understanding impacts of warm water events, particularly in the Mainstem Umpqua, on adult summer steelhead survival. River temperatures in 2021 exceeded 80°F as early as June and likely contributed to some loss of returning summer steelhead adults. Monitoring efforts to estimate this impact could help determine the cause of potential future downturns in the population.
- Evaluation of disease prevalence and incidence of thiamine deficiency in the North Umpqua summer steelhead population. Currently there is a lack of information on these subjects, but according to the assessment, they represent potential limiting factors.

ODFW will also continue to refine management of fisheries to further reduce any incidental impacts. Actions may include:

- A continuation, and possible expansion, of protective angling regulations, including:
 - Continued closure to angling at the mouths of tributaries where adult summer steelhead hold during the summer months as they seek cold water refugia in both

the Mainstem Umpqua and North Umpqua. These fish are highly vulnerable in these areas and such regulations help ensure their protection.

- Continued development of a statewide framework for constraining fisheries during high temperature and/or low flow periods.
 - Development of a decision framework to inform in-season closures of fisheries during low run years.
 - Further investigate development of predictive estimates of summer steelhead run size to pro-actively inform decisions regarding angling regulations.
- Increasing creel information for the fishery to better understand the level of angler participation and harvest for the hatchery program as well as help refine catch and release mortality estimates of wild origin summer steelhead.

OPTIONS

1. Discontinue hatchery program entirely.
2. Increase removal of hatchery origin adult summer steelhead in Rock Creek.
3. Immediately reduce program releases to 30,000
4. Immediately reduce program releases to 30,000 smolts, work to increase adult trap removal efforts, and adaptively manage to remain below 10% weighted basinwide pHOS.
5. No change to current smolt releases and hatchery origin adult removal efforts.

STAFF RECOMMENDATION

1. Option 4

DRAFT MOTION

I move that the release goal for the summer steelhead program at Rock Creek Hatchery be reduced to 30,000 smolts beginning with the release in 2022 and for the department to adaptively manage to to remain below 10% weighted basinwide pHOS.

EFFECTIVE DATE: Upon Approval