

Management Strategies and Actions (MSAs) ODFW Draft Concepts

Rogue-South Coast Multi-Species Conservation and Management Plan (RSP)

Stakeholder Team Meetings July 22-23, 2020

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Desired and Conservation Status

Table 1. Proposed Desired and Conservation Status Metrics and Thresholds											
SMU	Stratum	Population	Adult Abundance			Juvenile Abundance			Site Occupancy (Juveniles)		
			Desired Status	Current/ Observed*	Conservation Status	Desired Status	Current/ Observed*	Conservation Status	Desired Status	Current/ Observed*	Conservation Status
Winter Steelhead	South Coast	Elk	**	**	**	<i>Parr (Age-1+) Index</i> 80,000	<i>Parr (Age-1+) Index</i> 63,645 (52,930)	<i>Parr (Age-1+) Index</i> 30,000	≥ 90%	97% (94%)	60%
		Euchre Cr	**	**	**						
		Hunter Cr	**	**	**						
		Pistol	**	**	**						
		Chetco	**	**	**						
		Winchuck	**	**	**						
		NADOTs									
	NF Smith										
				See note in metric description (Page 5)							
		Rogue	Lower Rogue			<i>Huntley Wild Half-Pounders</i> 1,000	<i>Huntley Wild Half-Pounders</i> 650 (988)	<i>Huntley Wild Half-Pounders</i> 200			
Illinois											
M Rogue / Applegate											
		Upper Rogue	**	**							
Summer Steelhead	Rogue	M Rogue / Applegate	<i>Late-Run</i> 11,000	<i>Late-Run</i> 7,681 (8,706)	<i>Late-Run</i> 3,250						
		Upper Rogue									
Coho Salmon	S Coast	Elk	800	267 (297)	100						
	Rogue	Illinois						**	**	**	
		M Rogue / Applegate	10,000	5,497 (5,746)	1,870				**	**	**
	Upper Rogue							**	**	**	
Cutthroat Trout	South Coast	Elk				<i>Age-1+ Index</i> 28,000	<i>Age-1+ Index</i> 18,469 (30,772)	<i>Age-1+ Index</i> 6,500	≥ 90%	94% (95%)	60%
		Euchre Cr									
		Hunter Cr									
		Pistol									
		Chetco									
		Winchuck									
		NADOTs									
	NF Smith										
				See note in metric description (Page 5)							
		Rogue	Lower Rogue								
Illinois											
M Rogue / Applegate											
		Upper Rogue									

* Current/Observed includes 50th percentile for data period used in Current Status assessment (**bold**) and most recent 5-year average (parentheses).

** Metrics that may be developed with additional proposed monitoring

A. Elements of status in native fish populations

Desired status

As outlined in the Native Fish Conservation Policy, each conservation plan should describe a desired status for the SMU that reflects the ecological, economic and cultural benefits to be sought from the naturally produced fish. This is the goal which management actions in the plan are trying to attain or maintain.

Abundance

Desired Status for abundance is the mean future wild abundance goal which actions across Management Categories in the RSP are trying to attain. Unless otherwise indicated, desired abundance is equivalent to the 75th percentile of the log-normal distribution of the metric for the data period used in the Current Status assessment, which is generally a 25-50% increase in the Current/Observed abundance for the same data period (**see Table 1 above**). Achieving desired abundance will strengthen populations, provide greater resiliency of the populations to future threats such as climate change, fluctuating ocean conditions, and development associated with human population growth or expansion, and provide consistent and improved fisheries.

Spatial Structure

Desired Status for spatial structure is the mean future site occupancy percentage for juvenile steelhead or cutthroat trout in randomly selected snorkel surveys in the South Coast Stratum. Percent site occupancy is determined using observed species presence in a site, but a species may be present in low numbers even when not observed by a surveyor. In addition, the sampling frame used to select random sites includes streams that may not have sufficient water or other habitat conditions to support juvenile rearing every year. Recognizing that observed site occupancy may not be 100% even when steelhead or cutthroat trout are utilizing all available habitat, Desired Status for spatial structure is 90% or greater site occupancy.

Progress toward Desired Status will be evaluated based on a 5-year running average for each metric. **For a given population or stratum to achieve Desired Status, the value of the metric must meet or exceed the threshold listed in Table 1 on average over a 5-year period.**

Ocean conditions/marine survival is a primary driver of fish returns, but this is not a manageable limiting factor. ODFW provided a list of manageable factors that limit fish production in the first stakeholder packet. Progress toward Desired Status will be pursued by implementing the management actions in the plan that address these limiting factors, most of which will be covered in the habitat section.

Current/Observed

Current/Observed values report the recently observed performance of the population, in metrics that are directly relevant to metrics included in the desired status statement. This is our starting point.

Current/Observed abundance is generally calculated as the 50th percentile of the log-normal distribution of the metric for the data period used in the Current Status assessment (**see values in bold in Table 1**).

For the Elk River coho salmon population, mean adult spawner abundance for the data period was used.

For spatial structure, current/observed values are average site occupancy for the data period used in the

Current Status assessment (2002-2019). The most recent 5-year averages for all status metrics are also presented in Table 1 (see values in parentheses).

Conservation Status

Measurable criteria are needed as indicators of a significant deterioration in SMU status. Conservation status is a low value below which long-term persistence becomes uncertain. Abundance and spatial structure levels at conservation status are intended to be high enough to allow time for management actions to be implemented to improve a population's status before risk becomes too great, but not too high that they unnecessarily constrain fisheries when viability is not at risk. Unless otherwise indicated, abundance levels are calculated as the 5th percentile of the log-normal distribution of the metric for the data period used in the Current Status assessment (see Table 1).

A two-year running average will be used to determine when an abundance or spatial structure metric has dropped to the Conservation Status threshold; forecasted metric values can be used for this average where they are estimated. The life history of steelhead and cutthroat trout and the monitored metrics of juvenile abundance and spatial structure will allow managers to respond promptly to expected critical adult abundance. For instance, Rogue winter steelhead status is measured by half-pounder abundance. Wild half-pounder counts that drop below the level that identifies conservation concern will occur two years prior to the adult return that appears to be at risk. As proposed, ODFW will have adequate time to implement management changes.

When any metric has reached Conservation Status, managers will use the weight of evidence approach with other metrics to evaluate management actions. If metrics indicate that a population or group of populations is at the conservation status, this would trigger, in order to improve performance, a modification of or renewed focus on management actions or strategies implemented as part of this conservation plan. Adaptive management will be employed by ODFW as a means to identify and implement temporary revisions to management strategies and actions. Revised strategies may be crafted to improve performance, or some strategies may be terminated and be replaced by management strategies that are determined to be more effective. Examples include, but are not limited to, (1) additional fishery enforcement; (2) additional monitoring; (3) transition of hatchery programs (primarily coho) to conservation releases with approval from NOAA; (4) additional fishery restrictions.

B. Desired and Conservation Status Metrics

Metrics used for Desired and Conservation Status are measurable criteria that: 1) were used in the current status assessment; and/or 2) are based on long-term monitoring expected to continue in the future as described in the [Research and Monitoring Strategies and Actions](#) section below.

The absence of status metrics for a stratum or population indicates that we do not currently have an adequate monitoring baseline and/or proposed monitoring to identify and track numerical targets. Nevertheless, the goal for all Species Management Units covered by this plan is to improve status and maintain viability of independent populations. As new [Research and Monitoring Strategies and Actions](#)

are implemented and have generated an adequate time series of data, additional relevant or population-specific Desired and Conservation Status metrics and thresholds may be added.

Additionally, if new analytical methods provide different historical data for any metrics, the thresholds in the table below will be revised accordingly at the time of plan re-assessment.

Abundance Metrics

1. South Coast Stratum Winter Steelhead Parr Abundance and Cutthroat Trout Abundance

ODFW annually calculates abundance indices for Age 1+ juvenile steelhead and Age- 1+ cutthroat trout in the South Coast Stratum based on visual underwater snorkel pool counts in randomly selected sites. The sites are located in wadeable streams within steelhead distribution, which does not include the entire distribution of cutthroat trout. Cutthroat trout counts include juvenile and adult fish due to the life history diversity of this species. This metric is paired with the site occupancy metric. The period from 2002-2019 (all years available) was used to calculate desired and conservation status thresholds for this metric (see **Figure 1** below). **Note:** NF Smith is not currently monitored within the sampling frame. Habitat conditions and remoteness of the NF Smith watershed currently do not warrant the additional monitoring effort, but ODFW and USFS staff have and will periodically monitor fish populations in the watershed as time and funding allow.

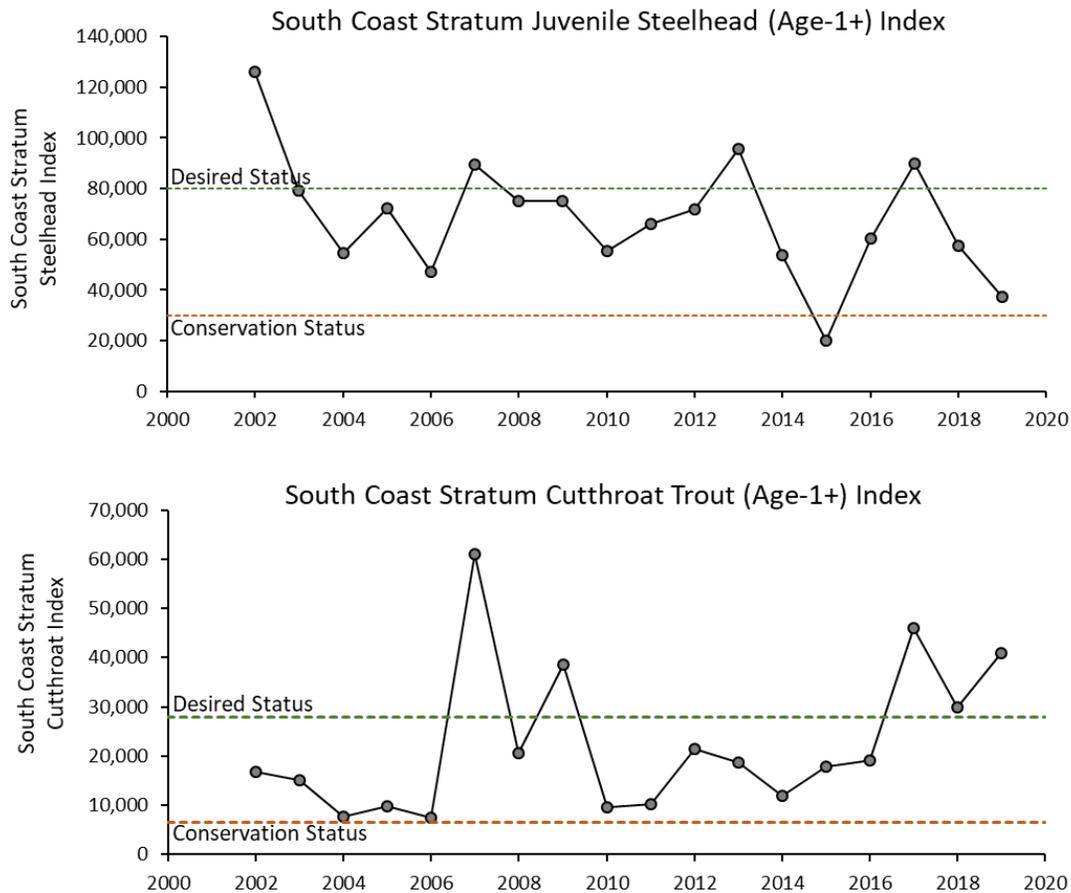


Figure 1. South Coast Stratum juvenile steelhead (age-1+) abundance index (top panel) and cutthroat trout (age-1+) abundance index (bottom panel) from 2002-2019.

2. Wild Half-Pounder Steelhead Count at Huntley Park

ODFW’s Huntley Park seining project captures steelhead half-pounders returning to the Rogue basin from July-October, and wild half-pounder count for the season is an index of total abundance. The index represents the aggregate of Rogue stratum populations. Historically, half-pounder counts at Huntley Park have been strongly correlated with wild winter steelhead counts at Gold Ray Dam (Upper Rogue population) 2-3 years later (see **Figure 2** below; Huntley count data prior to 1987 is not available). Although the half-pounder life history is less common in winter steelhead than summer steelhead, research in the Rogue basin found that approximately 30% of winter steelhead adults had previously made a half-pounder run ([ODFW 1990](#)). The period from 1999-2018 (most recent 20 yrs) was used to calculate desired and conservation status thresholds for this metric (bottom panel in **Figure 2**).

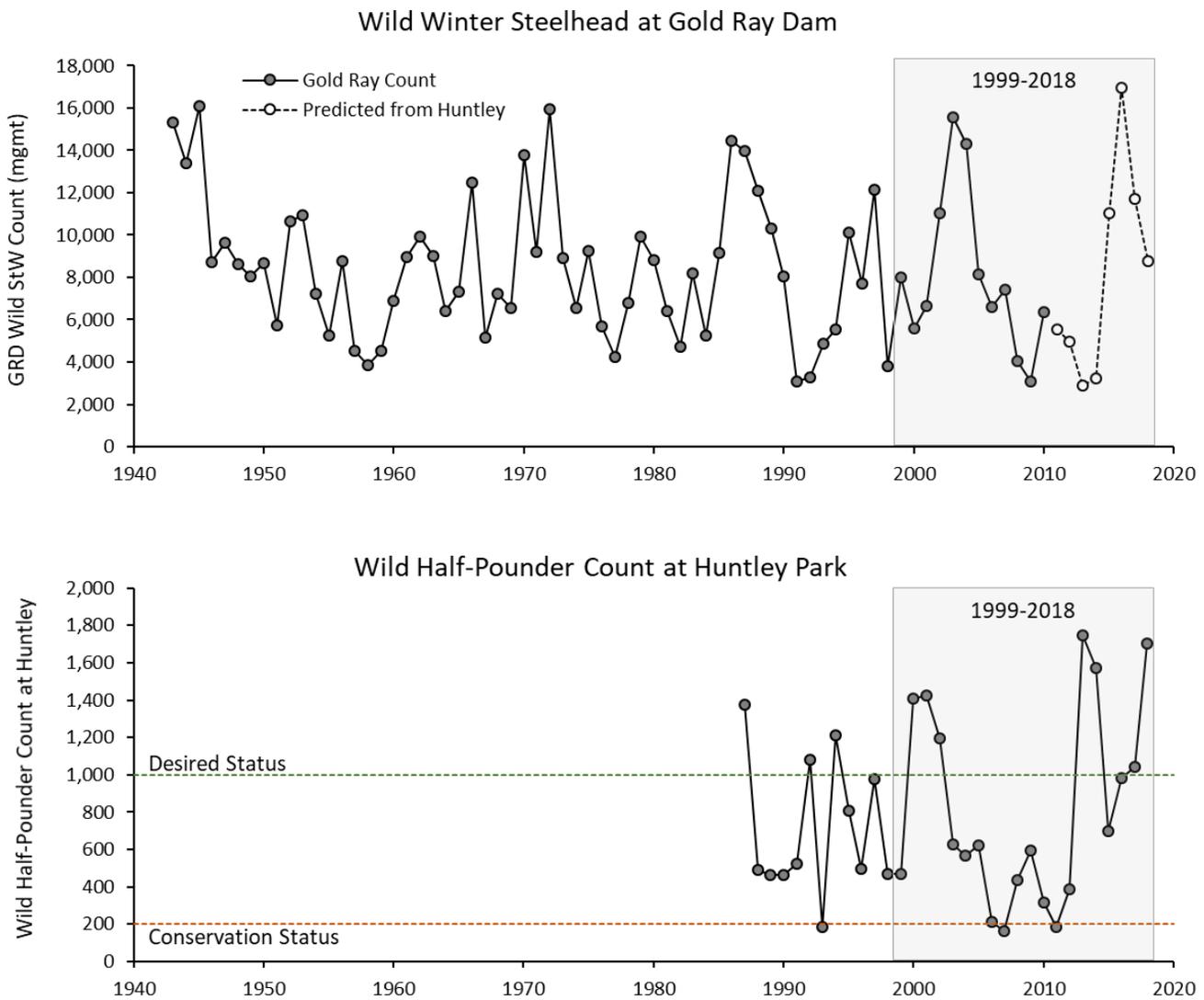


Figure 2. Counts of wild (unmarked) winter steelhead at Gold Ray Dam from 1942-2009 (top panel) and wild half-pounder counts at Huntley Park from 1987-2018 (bottom panel).

3. Late-Run Summer Steelhead Abundance at Huntley Park

ODFW annually estimates abundance of wild adult late-run summer steelhead returning to the Rogue Basin (July-October) based on Huntley Park seining project catch and a river flow-based expansion. The estimate is an aggregate of Middle Rogue-Applegate and Upper Rogue populations, but does not include early-run summer steelhead. Wild summer steelhead counts at Gold Ray Dam (which include early-run and late-run summer steelhead) were historically correlated with late-run summer steelhead estimates at Huntley Park (see **Figure 3** below). The period from 1999-2018 (most recent 20 yrs) was used to calculate desired and conservation status thresholds for abundance at Huntley Park (bottom panel in **Figure 3**).

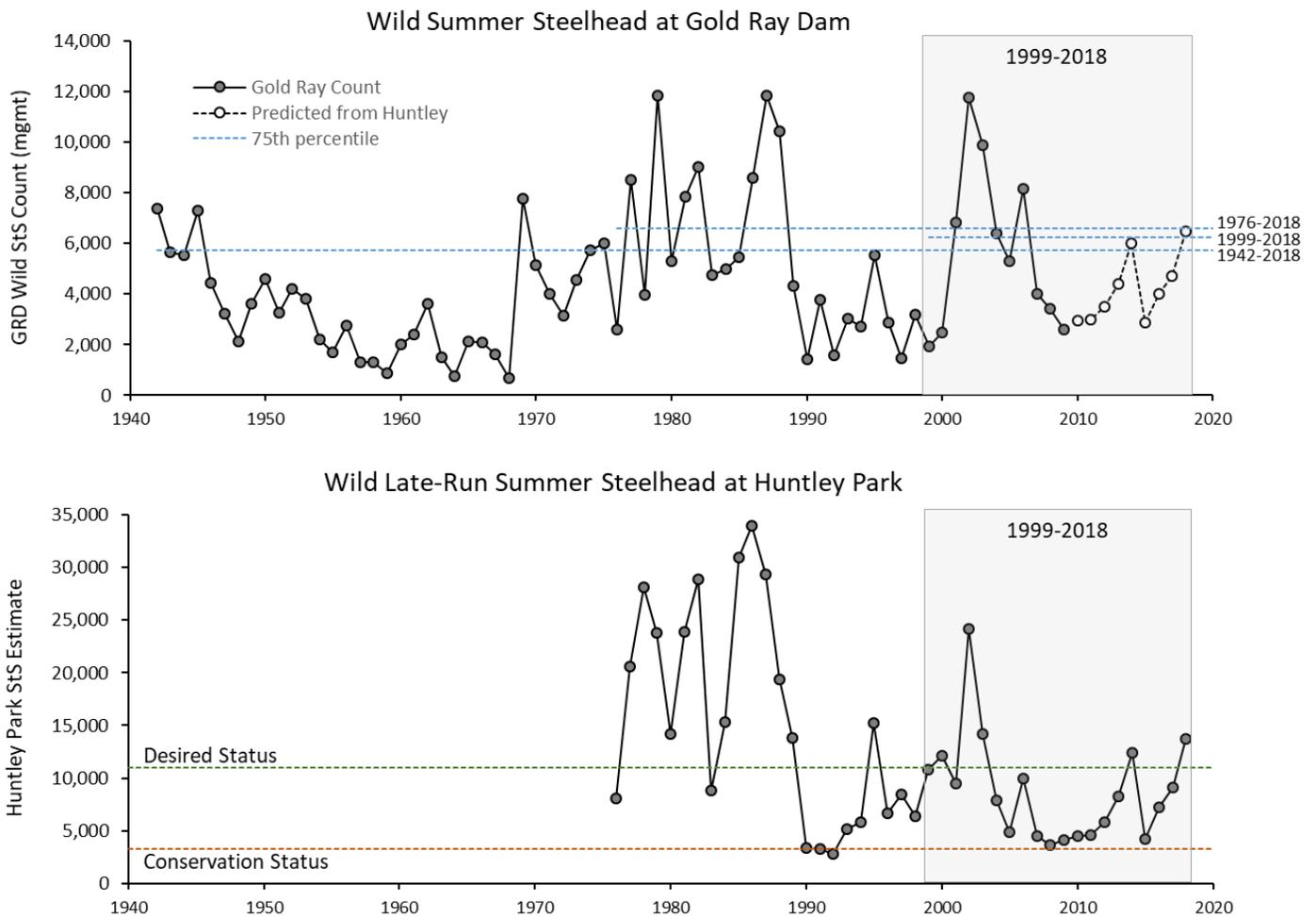


Figure 3. Counts of wild (unmarked) summer steelhead at Gold Ray Dam from 1942-2009 (top panel) and estimates of wild late-run summer steelhead at Huntley Park from 1976-2018 (bottom panel).

4. Adult Coho Abundance at Huntley Park

ODFW annually estimates abundance of wild coho salmon returning to the Rogue Basin based on the ratio of wild and hatchery coho captured at Huntley Park, and hatchery coho returns to Cole Rivers Hatchery. The Huntley Park estimate represents the aggregate of Illinois, Middle Rogue-Applegate, and Upper Rogue populations. Wild adult coho salmon counts at Gold Ray Dam were historically correlated with wild coho estimates at Huntley Park (see **Figure 4** below), although a comparison of the two indicates that Huntley Park methods may underestimate total abundance in some years. The period from 1996-2018 was used to calculate desired and conservation status thresholds for abundance at Huntley Park (bottom panel in **Figure 4**). The 10th percentile of the log-normal distribution of the metric was used to calculate the conservation status threshold, which is likely comparable to average abundance in the 1950s through 1970s. A slightly longer time period (23 years instead of 20 years for steelhead) was included for this metric because this captured the entire period that was recently revised for the stock-recruit analysis in the current status assessment.

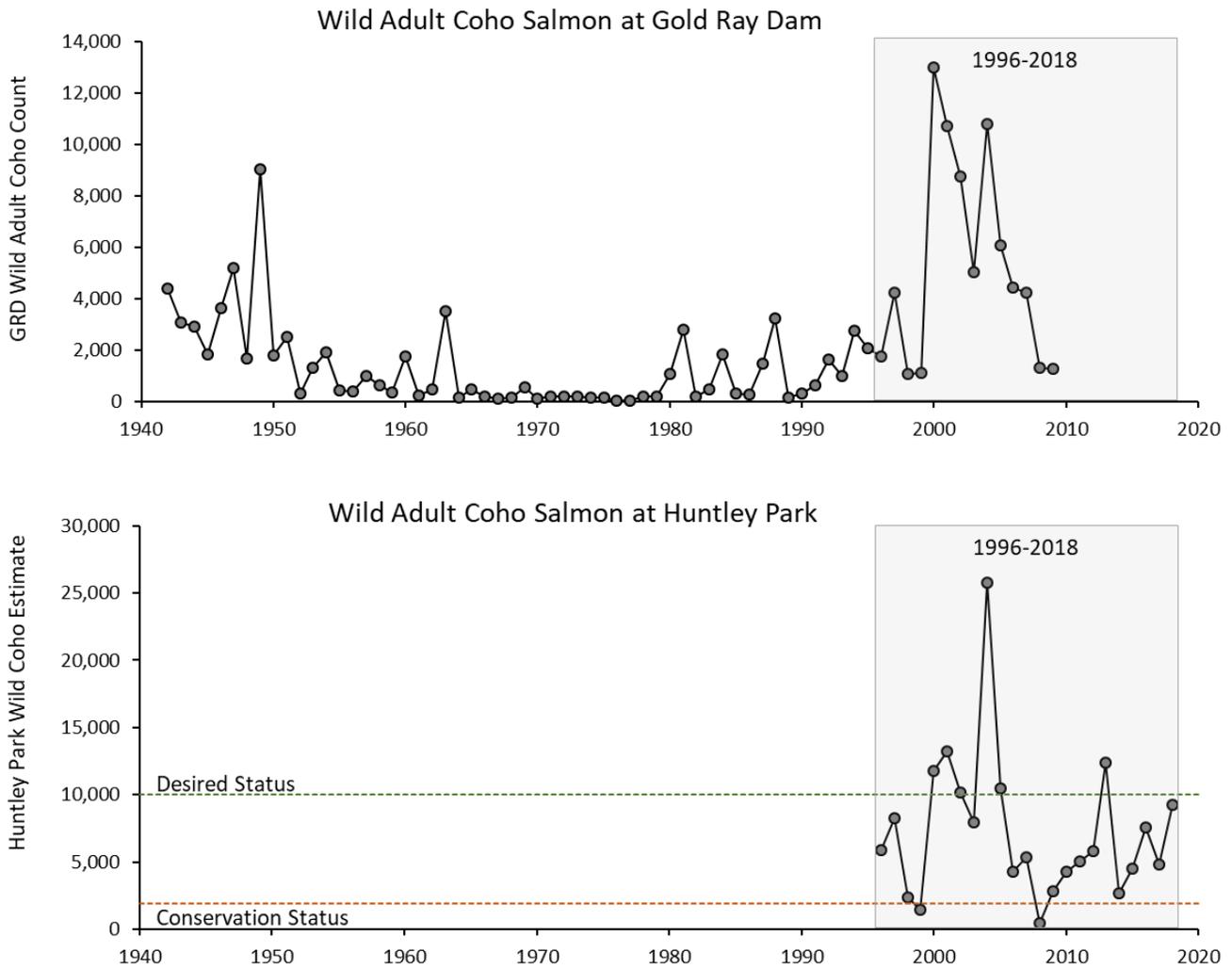


Figure 4. Counts of wild (unmarked) adult coho salmon at Gold Ray Dam from 1942-2009 (top panel) and estimates of wild adult coho salmon at Huntley Park from 1996-2018 (bottom panel).

Note: Many comments appeared to presuppose that Rogue populations are in decline or at a very low level of abundance compared to the early years of fish management. In reality, coho salmon and summer steelhead improved from low periods of abundance decades ago, and the upper Rogue winter steelhead population cycled within a similar range for decades, as shown above. Gold Ray Dam counts of upper Rogue coho began in 1942, and the upper Rogue population averaged about 3,964 wild coho in the 1940s. The upper Rogue provides 37% of the IP habitat in the interior Rogue according to the recovery plan, so assuming the populations co-vary, total abundance of wild coho in the Rogue likely averaged 10,000-11,000 in that decade.

5. Elk River Adult Coho Spawner Abundance

ODFW conducts annual spawning ground surveys for Chinook and coho salmon in Elk River. Using peak counts of coho salmon in these standard surveys and a habitat-based expansion, coho abundance can be estimated for the population. The estimate is best viewed as an index of abundance because survey frequency varies among sites, and sampling does not occur in all areas where coho spawn. In the [Research and Monitoring](#) section, there is a proposal to further investigate spawner abundance in Elk River. Desired Abundance is a three-fold increase in spawner abundance (see **Figure 5** below), consistent with the Strategic Action Plan (SAP) for the Recovery of the Elk River Population of Wild Coho. The period from 1999-2018 (most recent 20 yrs) was used to calculate the conservation status threshold for abundance. The 25th percentile of the log-normal distribution of the metric during this period was used due to the small number of spawners in this population.

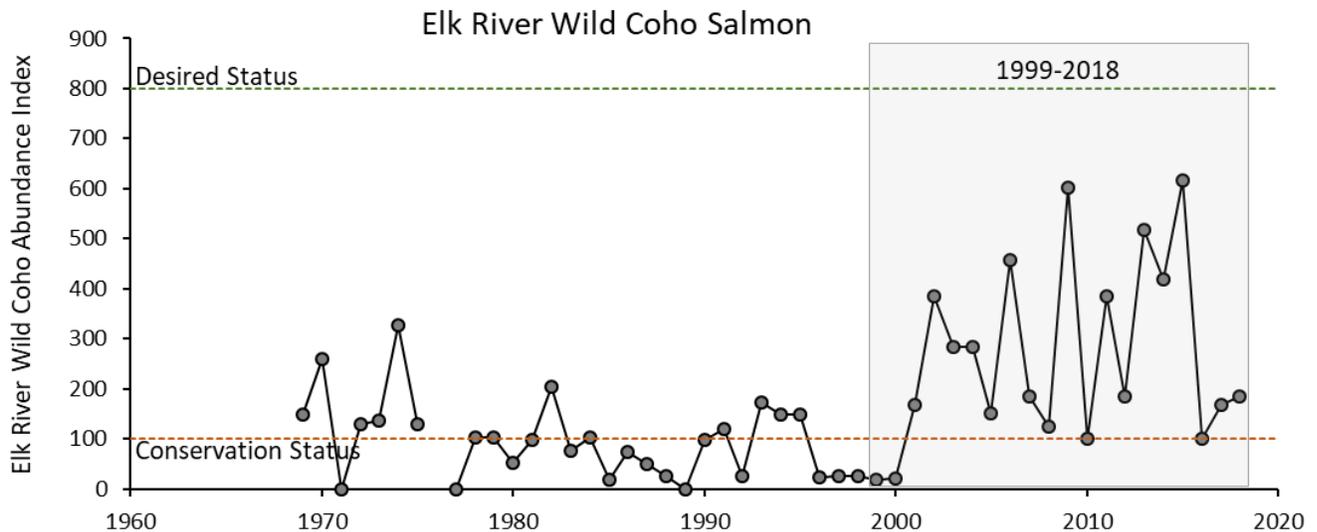


Figure 5. Wild adult coho salmon spawner abundance index in Elk River from 1969-2018.

Spatial Structure Metric

1. Site Occupancy

Site occupancy is the percentage of South Coast Stratum randomly selected snorkel survey sites (same sites used for abundance indices described above) with observed presence of Age-1+ juvenile winter steelhead or Age-1+ cutthroat trout. This metric measures the loss of steelhead or cutthroat distribution due to fish passage barriers, habitat loss (including habitat loss associated with climate change), and low abundance. **Figure 6** below shows observed site occupancy for Age-1+ juvenile winter steelhead or Age-1+ cutthroat trout from 2002-2019 (all years available).

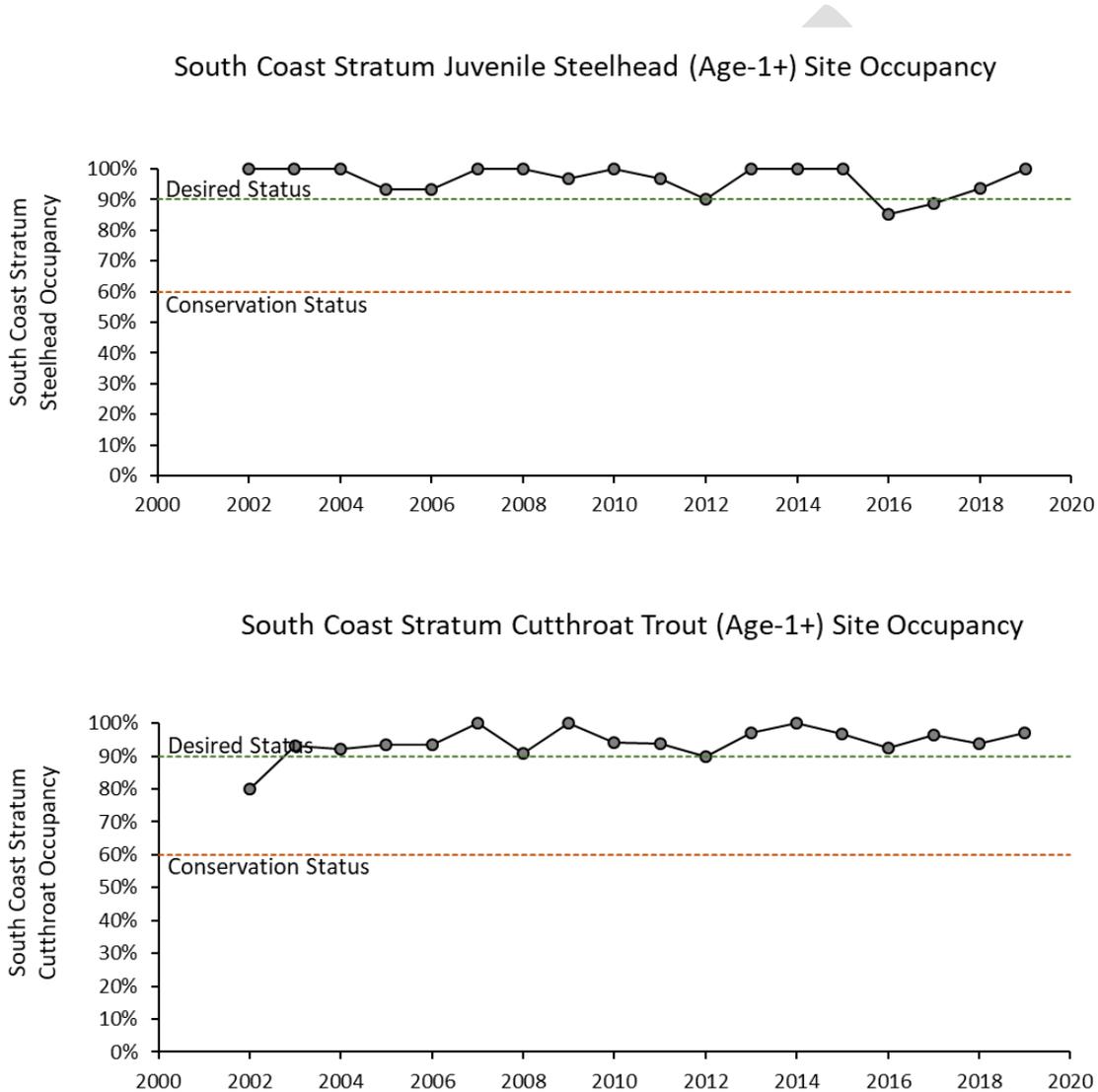


Figure 6. South Coast Stratum juvenile steelhead (age-1+) site occupancy (top panel) and cutthroat trout (age-1+) site occupancy (bottom panel) from 2002-2019.

Additional Notes on Status Metrics

Several stakeholder expressed interest in adding spatial structure to Rogue status elements. ODFW believes that genetics may facilitate a measure of spatial structure based on existing monitoring projects. The Rogue Basin Population Structure research project proposes to investigate the genetic population structure of salmon and steelhead in the Rogue basin. Results could potentially be used to assign summer steelhead, coho, and fall Chinook caught at Huntley to individual populations, providing abundance estimates that are currently lacking and support development of population-specific status metrics in an efficient and cost effective manner. In another research project, ODFW proposes to investigate the opportunity to add value to ongoing surveys (fry trapping, smolt trapping, volunteer and federal agency spawning surveys) by adapting/improving for use in population/abundance monitoring. It may be possible to capitalize on this effort for use in developing a spatial structure metric.

Of specific interest among some stakeholders (as well as ODFW) is the early-run summer steelhead. Similar to coho, the abundance of early summer steelhead declined in the 1950s-1970s. Also similar to coho, early-run summer steelhead bounced back from this low point. Early-run summer steelhead are fish of the upper Rogue, so the Gold Ray count was considered the count of early-run summers even though it included late run fish as well. The upper Rogue population averaged about 4,910 wild fish in the 1940s. The average run from 1950-1970 was 3,504, but between 1954 and 1968 the average dropped to 1,803 fish. The fact that this time period pre-dated basic environmental law is an interesting association in time. The upper Rogue population averaged about 5,364 wild fish 1980-2009. In the 60+ years of data collection at Gold Ray Dam, the three highest counts of wild summer steelhead were not observed in the 1940s, but more recent decades: 1987, 1979 and 2002.

A likely and unfortunate fact is that the mainstem dam count was probably the best way to monitor the abundance of early-run summer steelhead, and even that relied on an arbitrary cut off date. One stakeholder recommended seining at Huntley Park earlier than July. Seining was attempted as early as May in the lower Rogue during the summer steelhead research project of the 1970s, but never early enough to catch the bulk of the early run summers which may enter the river as early as mid-March. While development of measurable criteria specifically for the early-run component may not be feasible, it is also the case that spawn timing of early and late-run fish overlaps and they are not considered to be separate “populations”. The genetic basis for run timing remains an area of active research. ODFW plans to investigate potential pilot projects to measure early-run summer steelhead abundance, that may eventually facilitate development of status metrics.

Comments were also received about the lack of monitoring metrics for cutthroat trout in the upper Rogue. The fluvial populations of cutthroat trout in the middle and upper Rogue not only appear to be on an increasing trend (Elk Creek trap data; snorkel survey data; angler observations), but there is also no harvest allowed. This prohibition on the harvest of wild trout is unique to the Rogue, and is part of ODFW’s long standing angling regulation framework that protects wild steelhead. Given the myriad management changes and projects to complete as part of this plan, ODFW does not have the resources for additional monitoring. Cutthroat trout will be recorded during surveys targeting other species, and a research project on cutthroat is proposed.

Management Strategies and Actions

I. Research and Monitoring Strategies and Actions

Stratum	Population	River Seine	Fall Spawning Surveys	Juvenile Surveys	Habitat
South Coast	Elk	---	CCRMP Surveys	Annual random site surveys (stratum)	Annual random site surveys (stratum)
	Euchre Cr		District Surveys		
	Hunter Cr				
	Pistol				
	Chetco				
	Winchuck				
	NADOTs				
NF Smith	---	---	---		
Rogue	Lower Rogue	Huntley Park	District Surveys	Annual random site surveys (stratum)	Annual random site surveys (stratum)
	Illinois		---		
	Mid Rogue/Applegate		---		
	Upper Rogue		ChS Carcass Survey		
	Field Staff	4	5 + District	6	
	Purpose	status/trend; Fall Chinook management	Spring and Fall Chinook management; Coho trend	juvenile salmonid status/trend	instream physical habitat status/trend
	Species/Timing	Fall Chinook, Coho, Summer Steelhead, Half-pounders	Spring Chinook, Fall Chinook, Coho	Coho, Steelhead, Cutthroat Trout	summer

A. Proposed Research and Monitoring – South Coast Stratum

Population	Fall Spawning Surveys	Adult Count Station	Winter Steelhead Spawning Surveys	Harvest Monitoring	Juvenile Surveys	Habitat
Elk	CCRMP surveys	---	Rotating basin surveys (non-Chetco); Annual pHOS monitoring in Chetco	---	Annual random site surveys (stratum)	Temp/flow monitoring (stratum)
Euchre Cr	District surveys	---		---		
Hunter Cr		---		---		
Pistol		---		---		
Chetco		Sonar		Creel survey		
Winchuck		---		---		
NADOTs		---		---		
NF Smith	---	---	---	---	---	
Field Staff	3 + District	2	1 + District	2	2	
Species	Fall Chinook Coho	Winter Steelhead	Winter Steelhead	Winter Steelhead	Winter Sthd Coho Cutthroat	All
Additional Funding Needed	---	\$200,000 start-up + \$80,000/yr	---	\$60,000/yr	---	---

1. South Coast Stratum Monitoring

Project descriptions below provide brief details and purpose, and are arranged in order of priority (**● = currently funded; ○ = not currently funded**).

- **Fall Salmon Spawning Ground Surveys (Fall Chinook, Coho)**

Monitor Fall Chinook status metrics for *Rogue Fall Chinook Conservation Plan*. Monitor Elk River Coho Salmon abundance status metric for RSP. Monitor coho spawner abundance in dependent/ephemeral populations.

- **Summer Juvenile Snorkel Surveys (Winter Steelhead, Coho, Cutthroat Trout)**

Monitor juvenile winter steelhead and cutthroat trout abundance and spatial structure status metrics.

Note: Sea-run cutthroat trout monitoring will be incorporated into snorkeling protocols (separate enumeration for sea-run and resident cutthroat trout). Counts will be tracked as an index of abundance, and potential status indicator.

- **Temperature and Flow Monitoring**

Improve annual temperature and flow monitoring with additional sites maintained by ODFW or partners. Develop indices to track annual variation and long-term trends in freshwater rearing conditions. Investigate relationships with juvenile abundance and adult returns to improve forecasts (winter steelhead and coho salmon) and/or trigger additional conservation measures.

- **Chetco pHOS Surveys (Winter Steelhead)**

Conduct snorkel surveys annually on NF Chetco, Emily Creek, and SF Chetco to monitor pHOS within and above the Chetco MEA.

- **South Coast Stratum Winter Spawning Surveys (Winter Steelhead)**

Survey coastal basins (Elk, Euchre, Hunter, Pistol, Winchuck) on a rotating basis to estimate spawning escapement and harvest rate.

- **Chetco Creel Survey (Winter Steelhead)**

Conduct statistical creel survey of Chetco winter steelhead fishery River within three years of plan adoption to determine current baseline for catch and effort, validate harvest data collected through ODFW's Electronic Licensing System (ELS), and potentially collect scale and genetic samples. Additional creel surveys may be conducted in future years to validate and refine ELS harvest estimates.

- **DIDSON Sonar Counting Station in Lower Chetco River (Winter Steelhead)**

Use sonar to estimate winter steelhead abundance and harvest rate in the Chetco River.

2. South Coast Stratum Research

Project descriptions below provide brief details and purpose, and are arranged in order of priority (● = currently funded; ○ = not currently funded).

- **Winter Snorkel Surveys for pHOS Monitoring (Winter Steelhead)**

Investigate whether annual snorkel surveys in select holding and spawning reaches can provide more robust information about hatchery/wild ratios than traditional spawning surveys, which often result in few observations.

- **Marine Survival Indicators**

Identify and track environmental indicators of marine productivity (e.g. upwelling) that can improve forecasts of adult returns (winter steelhead and coho salmon) and/or trigger additional conservation measures. Look for opportunities to share resources and data with California.

- **Elk River Coho Salmon Abundance**

Estimate total coho spawner abundance in Elk River using a census or randomized survey design to evaluate accuracy of current abundance estimate based on standard surveys. Results could potentially be used to calibrate standard survey estimates.

- **Coho Salmon Population Structure**

Investigate genetic relationships between coho salmon in South Coast Stratum basins, the Rogue basin, and other populations to the north and south. Results could clarify status and identify donor populations for Elk River and dependent/ephemeral populations.

- **Genetic Status Monitoring (Winter Steelhead, Coho)**

Investigate emerging methods for measuring population size and diversity and determine if genetic monitoring can provide cost-effective alternatives to traditional population monitoring. Look for opportunities to share resources and data with California portion of Klamath Mountains Province Steelhead DPS or SONCC Coho ESU.

- **Genetic pHOS Monitoring (Winter Steelhead)**

Coordinate with research partners to investigate efficacy of genetic methods (e.g. parentage-based tagging) for measuring introgression between hatchery and wild fish.

- **Investigate marine distribution of steelhead (Winter Steelhead)**

Explore whether there are opportunities to learn more about ocean distribution of steelhead, which could help identify or refine marine survival indicators. Look for opportunities to share resources and data with California.

B. Proposed Research and Monitoring – Rogue Stratum

Table 4. Overview of Proposed Monitoring – Rogue Stratum (Bold = Not Currently Funded)							
Population	River Seine	Fall Spawning Surveys	Adult Count Station	Winter Spawning Surveys	Harvest Monitoring	Juvenile Surveys	Habitat
Lower Rogue	Huntley Park	District surveys	---	---	Creel survey	TBD	Rotating physical hab surveys; temp/flow monitoring
Illinois		---	---	---	Effort survey		
Mid Rogue/ Applegate		---	---	pHOS monitoring	---		
Upper Rogue		ChS carcass survey; StS/Coho Surveys	Little Butte Cr adult trap; Sonar - Upper Rogue trib	Annual random site surveys	---		
Field Staff	4	2 + District	2	2 + District	2	2	
Species/ Timing	Fall Chinook Coho Summer Sthd Half-pounders	Spring Chinook Fall Chinook Coho Summer Sthd	Winter Steelhead	Winter Steelhead	Winter Steelhead	TBD	summer
Additional Funding Needed	---	\$52,000/yr	trap: TBD sonar: \$200,000 start-up + \$80,000/yr	---	\$60,000/yr	---	---

1. Rogue Stratum Monitoring

Project descriptions below provide brief details and purpose, and are arranged in order of priority (● = currently funded; ○ = not currently funded).

● **Huntley Park Seining Project (Fall Chinook, Coho, Summer Steelhead, Half-pounders)**

Monitor status metrics for *Rogue Fall Chinook Conservation Plan*. Monitor Summer Steelhead, coho salmon, and steelhead half-pounder status metrics for RSP. Collect tissue samples for genetic research projects, and scale samples from wild summer steelhead for age determination.

● **Fall Salmon Spawning Ground Surveys (Spring Chinook, Fall Chinook, Coho)**

Monitor Spring Chinook status metrics for *Rogue Spring Chinook Conservation Plan* and Fall Chinook status metrics for *Rogue Fall Chinook Conservation Plan*. Monitor abundance of coho salmon in Lower Rogue standard surveys.

Note: ODFW will look for funding to add spawning surveys for coho and summer steelhead (survey design TBD), combining with spring chinook spawning survey positions to create contiguous 8-9 month seasonal positions. This could be an alternative to Didson for community funding.

● **Upper Rogue Winter Spawning Surveys (Winter Steelhead)**

Conduct spawning surveys in Upper Rogue population to estimate spawner escapement, track relationship with Huntley Park half-pounder count (validate status metric), and estimate harvest rate. Elk Creek will be a focal area (history of extensive monitoring and use for monitoring pHOS).

- **Temperature and Flow Monitoring**

Improve annual temperature and flow monitoring with additional sites maintained by ODFW or partners. Develop indices to track annual variation and long-term trends in freshwater rearing conditions. Investigate relationships with juvenile abundance and adult returns to improve forecasts (winter steelhead and coho salmon) and/or trigger additional conservation measures.

- **Physical Habitat Monitoring**

Conduct physical habitat surveys using ODFW protocols in each Rogue stratum population on a rotating basis (design TBD).

Note: Juvenile fish snorkel surveys will occur at all or a subset of these sites. Index sites for coho may be developed and could be used to develop a spatial structure status metric for juvenile coho.

- **Middle Rogue pHOS Monitoring (Winter Steelhead)**

Conduct winter spawning surveys annually in streams near steelhead acclimation sites to track pHOS.

- **Rogue Creel Survey (Winter Steelhead)**

Conduct statistical creel survey of the Lower Rogue winter steelhead fishery within three years of plan adoption to determine current baseline for catch and effort, validate harvest data collected through ODFW's Electronic Licensing System (ELS), and potentially collect scale and genetic samples. As part of project, investigate use of creel surveys in lower Rogue for abundance monitoring of wild steelhead (CPUE and mark:capture estimate with hatchery returns).

Note: Depending on funding availability, may be expanded to Applegate for abundance monitoring of wild steelhead (CPUE and mark:capture estimate with hatchery returns in Applegate; compare both with past estimates).

- **Illinois Effort Survey (Winter Steelhead)**

ODFW will partner with the USFS and others to develop and implement protocol for estimating angler effort in the winter steelhead fishery between Briggs Creek and Pomeroy Dam. Compare to previous surveys and monitor trend. May include creel checks and/or collection of scale and genetic samples.

- **Upper Rogue Adult Trapping (Winter Steelhead)**

ODFW proposes to construct an adult trap in Little Butte Creek to evaluate efficacy as an abundance monitoring tool. May collect scale and genetic samples for age and genetic information. *Requires funding of infrastructure.

- **DIDSON Sonar Pilot Project for Upper Rogue (Winter Steelhead)**

Evaluate the efficacy of using sonar to estimate abundance of winter steelhead entering upper Rogue tributaries through a three year pilot project if funding available. May be combined with Elk Creek spawning surveys. If successful, may be applied to other Rogue tributaries and/or expanded to other species. Requires additional positions or funding to allow ODFW to hire contractor. Workload may not allow concurrent DIDSON surveys and adult trapping.

2. Rogue Stratum Research

Project descriptions below provide brief details and purpose, and are arranged in order of priority (**● = currently funded; ○ = not currently funded**).

- **Huntley Hatchery Coho Marking Study**

Investigate key assumption about hatchery coho harvest and hatchery return rate that determines Huntley Park wild coho estimate, and implement changes if applicable. Mark hatchery coho captured at Huntley Park (e.g. opercle punch, floy tag) and record marked fish at Cole Rivers Hatchery.

- **Rogue Basin Population Structure (Winter Steelhead, Summer Steelhead, Coho, Fall Chinook)**

Investigate genetic population structure of salmon and steelhead in the Rogue basin. Results could potentially be used to assign summer steelhead, coho, and fall Chinook caught at Huntley to individual populations, providing abundance estimates that are currently lacking and support development of population-specific status metrics.

- **Half-Pounder Genetics Study (Winter Steelhead, Summer Steelhead)**

Investigate potential use of genetic run-timing markers to determine contribution of summer- and winter-run steelhead to wild half-pounder abundance at Huntley Park. Preliminary work has begun on this project. If successful, could be monitored over time as a status indicator and/or harvest management trigger.

- **Marine Survival Indicators**

Identify and track environmental indicators of marine productivity (e.g. upwelling) that can improve forecasts of adult returns (winter steelhead, summer steelhead, and coho salmon) and/or trigger additional conservation measures. Look for opportunities to share resources and data with California.

- **Huntley Marking/Tagging Project (Summer Steelhead, Coho, Fall Chinook)**

If individuals captured at Huntley Park cannot be genetically assigned to populations, a multi-year marking/radio tag study for summer steelhead and/or coho could be used to estimate contribution of each population to total abundance. Compare/investigate changes in summer steelhead distribution compared to 1970s data (Everest).

- **Additional Abundance Index Surveys**

ODFW proposes to investigate the opportunity to add value to ongoing surveys (fry trapping, smolt trapping, spawning surveys) by adapting/improving for use in abundance monitoring. May include addition of PIT tagging, monitoring to meet KMP population health goals, agency biologists, and STEP volunteer assistance. Some of these surveys are conducted as part of long-term dam removal effectiveness monitoring.

- **Early-Run Summer Steelhead investigations**

Investigate pilot projects for monitoring early-run summer steelhead. Ideas include guide log books for CPUE in upper Rogue June-September; tracking wild swim-in early-run summer steelhead at Cole Rivers Hatchery; and investigating spawning survey data for counts that correlate with the Gold Ray count.

- **Steelhead Reintroduction Above Dams**

Investigate possibility of restoring natural production of summer and winter steelhead (possibly other native migratory fish species) above large dams using releases of differentially marked hatchery fish. Pilot project is hatchery winter steelhead pre-smolt release above Applegate Dam, which is providing information about ability of smolts to successfully migrant downstream through dam and survive to adulthood. May be expanded to similar study with hatchery summer steelhead above Emigrant Dam. Releases are temporally-limited and specifically for research/reintroduction purposes. Utilization of cold water habitat remaining above dams may become a need under various climate scenarios.

- **Genetic Status Monitoring (Winter Steelhead, Summer Steelhead, Coho)**

Investigate emerging methods for measuring population size and diversity and determine if genetic monitoring can provide cost-effective alternatives to traditional population monitoring. Look for opportunities to share resources and data with California portion of Klamath Mountains Province Steelhead DPS or SONCC Coho ESU.

- **Genetic pHOS Monitoring (Winter Steelhead, Summer Steelhead, Coho)**

Coordinate with research partners to investigate genetic methods (e.g. parentage-based tagging) for measuring introgression between hatchery and wild fish.

- **Investigate marine distribution of steelhead (Winter Steelhead, Summer Steelhead)**

Explore whether there are opportunities to learn more about ocean distribution of steelhead, which could help identify or refine marine survival indicators. Look for opportunities to share resources and data with California.

- **Rogue Cutthroat Trout Distribution and Diet Study (Cutthroat Trout)**

Investigate the extent of sea-run cutthroat trout distribution in the Rogue basin with a marking/tagging study. Investigate the diet of cutthroat trout in the lower Rogue River and estuary to evaluate potential predation impacts on other salmonid species.

Note:

Adaptive management is an acknowledged key component of this conservation plan. Survey plans may be modified as new techniques or other improvements become available, under the principle of adaptive management. ODFW will also coordinate with other entities conducting monitoring work in RSP watersheds to better align efforts, as described above.

II. Outreach / Enforcement Strategies and Actions

A. Angler Stewardship

Proposed Actions

1. Informational outreach to reduce catch and release stress and mortality.

- a. Develop and distribute video clips on proper catch and release techniques via social media
- b. Work with agencies, cities, counties, and non-profit conservation organizations to place educational signage at popular angler access sites and seek funding opportunities to support initiatives
- c. Encourage use of fish friendly landing nets. Consider seeking grant funding to provide rubber nets to the Port of Gold Beach for use on loan during the coho fishery.
- d. Explore use of advisories during periods of low Rogue Coho abundance asking anglers to change practices, with a focus in the estuary fishery
- e. Track research on fish handling impacts and best practices, and communicate relevant results to public through social media
- f. Research best practices for changing angler behavior and revise informational outreach strategies to reflect methods proven to be effective
- g. Update catch and release guidelines in ODFW Sport Fishing Regulations as conservation concerns develop

2. Reduce disturbance of spawning salmon and steelhead.

- a. Partner with tackleshops, angling groups and guides to educate anglers on avoiding spawning fish. ODFW believes that disturbance of fish in the act of spawning may put production in mainstem habitats at more risk in some circumstances, compared to recreation activities after spawning is completed
 - i. Spring Chinook spawning in the upper Rogue in September is a primary focal area. Explore use of advisories asking anglers to change practices in September between Dodge Bridge and Cole Rivers Hatchery
 - ii. Fall Chinook in the middle Rogue near Grants Pass is another focal area
- b. ODFW will work with Oregon State Marine Board to restrict motor use on Hunter Creek

B. Distribution of Fish Management Information to Public

Proposed Actions

- 1. Provide link to Rogue and South Coast data (fish counts, etc) in ODFW Recreation Report and social media posts.**
- 2. Investigate sending annual informational updates by email or social media to license holders.**
- 3. Implement Rogue District Update e-newsletter on monthly/quarterly basis.**
- 4. Provide staff at outreach events to host a booth to answer management questions and concerns.**
- 5. Utilize local Chamber of Commerce to help and encourage merchants and motels to allow informational fliers and pamphlets for anglers.**

- 6. Develop RSP messaging that makes key take-aways and important regulations understandable for a general audience.**
- 7. Explore additional opportunities to provide information on fish and ODFW actions to produce more fish, including Rogue website development.**

C. Improve Data Collection from ODFW’s Electronic Licensing System

Proposed Actions

- 1. Encourage use of e-tagging through outreach to POS agents and the public.**
- 2. Explore possible incentives to increase adoption of e-tagging.**
- 3. Investigate options for using ELS to collect angler effort and catch data (fish harvested and released)**
- 4. Align tag location codes with Management Areas where practical.**
 - a. ODFW will evaluate harvest within the planning area to simplify regulations, improve data collection, and align with management areas
 - b. An additional harvest tag code will be added to the Chetco River. The proposed new harvest code will be from Nook Creek to Headwaters. This will allow ODFW to monitor hatchery steelhead harvest and pHOS in the WFEA, and will provide insight into wild steelhead harvest in the WFEA. As proposed by several stakeholders, ODFW considered a management area/location code from SF Chetco to Headwaters, but based off historic creels very few anglers fish in this area and the new harvest code would provide little information about hatchery and wild steelhead harvest.

D. Continue Outreach to Enlist Public Help with Enforcement

Proposed Actions

- 1. Work with guides and angling groups to thank prosecutors and judges for help with enforcement.**
- 2. Encourage guides and angling groups to contact OSP with observations of illegal behavior and concerns about enforcement.**
- 3. Encourage anglers to report observations of illegal behavior and be willing to testify.**
 - a. Post signs at tackle stores
 - b. Social media outreach - observe, report, and be willing to testify if needed
 - c. Coordinate with OSP to develop materials that explain the reporting and investigation process
- 4. Continue working with OSP to enforce snagging rules.**
- 5. Continue to participate in annual Cooperative Enforcement Program team meetings with ODFW and OSP to prioritize enforcement within the South Coast and Rogue stratum.**
- 6. Continue to support Oregon State Marine Board, Sheriff Departments, OSP, and fishing guides to monitor illegal guiding.**

E. Habitat Protection and Restoration Outreach

Proposed Actions

- 1. Implement targeted outreach on fish needs and stewardship to planning and road department staff in all municipalities, landowners, as well as specific businesses.**
 - a. Examples where information sharing would be focused in the interior Rogue include arborists, culvert installers, irrigation suppliers, and well drillers
 - b. Partner with a variety of agencies and entities to direct outreach to private landowners

- 2. Continue and strengthen outreach on the importance of riparian vegetation in the interior Rogue.**
 - a. Partner with a variety of agencies and entities to share information on the multiple benefit of native trees and shrubs in riparian areas (*keeping streams clean and cool, reducing impacts of non-local invasive minnows, reducing risk of erosion, encouraging beavers and beaver dams by providing food source, promoting wildlife diversity, growing future large woody debris for structure and channel diversity, etc.*). Intact and diverse riparian habitat will improve channel structure and diversity as it matures over time and falls into streams
 - b. Continue to recruit STEP volunteers to participate in the Small Stream, Urban Stream, Intermittent Stream project to create awareness of fish use in streams that are too often ignored
 - c. Develop and implement recognition award recognizing good stewardship of riparian habitat by private landowners (STEP)
 - d. Look for opportunities to promote other existing programs that foster good stewardship practices
 - e. Explore ways to encourage citizen involvement in implementation and enforcement of riparian land use law

- 3. Working with partner agencies/entities, develop or encourage the development of training on proper culvert sizing and construction for use by homeowners, contractors, and developers.**

- 4. Explore the development of agricultural stewardship symposium/publications**
 - a. Cannabis/hemp stewardship – partner with Oregon Sun growers Guild or similar organization
 - b. Continue working with Oregon State Extension Service on agricultural or land stewards outreach programs and/or symposia as a STEP project
 - c. Partner with soil & water conservation districts to direct outreach to private landowners
 - d. Look for opportunities to promote other existing programs that foster good stewardship practices

- 5. Implement STEP project in the Rogue District promoting beavers and beaver dams.**
 - a. Advocate for riparian habitat diversity as the best way to encourage beavers in a stream (build it and they will come)
 - b. Help landowners learn to live with beavers

- c. Concentrate outreach in specific watersheds – beaver emphasis areas. Work has begun on Elk Creek in the upper Rogue, including a mailing that was sent to all private addresses in the Elk Creek subbasin. Rolls of woven wire caging have been purchased to provide to landowners suffering from beaver damage. At least three beaver emphasis areas are planned.
- 6. Implement targeted outreach on habitat and habitat restoration planning to Rogue fishing guides on at least an annual basis. Many guides are not aware of the extent and variety of work being done to produce more fish, or how to get involved. In the interior Rogue the biggest need is to help juvenile fish survive 1-3 years in freshwater to reach the smolt stage, in order to have the best chance to survive in the ocean. The Rogue District has developed outreach signs to convey the message: “Want more fish? Help grow survivors!”**

Note:

Several stakeholders had comments about habitat protection. One implied that ODFW does not coordinate with other agencies, while the other seemed to imply that ODFW enforce rules over which it has no authority. Rogue District staff allocate a tremendous amount of staff time to habitat protection. Most of the work involves tirelessly providing information to regulatory agencies and following up to help ensure enforcement takes place. ODFW also takes the lead in providing information to the general public on the rules that are in place to protect habitat, and who enforces those rules.

District staff initiated a bi-weekly conference call for regulatory agencies to share information and facilitate enforcement. We are regularly communicating with Oregon Water Resources Department, the Department of State Lands, the Department of Environmental Quality, the Corps regulatory section, county code enforcement officers, etc. This communication is required because ODFW has very little regulatory authority. Oregon’s fish and wildlife species depend on the habitat provided by landowners and protected by basic regulations enforced by a wide variety of agencies. ODFW would like to see stakeholders, river guides and others get involved in habitat protection. This includes land use planning that takes place at planning commission hearings; removal-fill permitting; and response to water quality violations.

One stakeholder has commented on wastewater treatment plant permitting a couple times. Water quality permits for wastewater plants are issued by DEQ. Permitting has evolved to allow operators to do riparian planting to mitigate the temperature impacts from effluent. This is considered to be a “green” alternative compared to having operators install cooling towers, because cooling towers require substantial energy to operate. One of the first permits in the state was issued to the city of Medford. Unfortunately the details of the program allowed much of the planting to be done on mainstem areas. ODFW believes that riparian planting on smaller streams, where riparian habitat can measurably cool water, can adequately mitigate the temperature impacts of effluent. ODFW has communicated this to DEQ. It is ODFW’s understanding that the city of Ashland will do the planting for its permit in upper Bear Creek and tributaries, where it should take place and should be very successful.

F. Rogue-South Coast Angler Survey

Proposed Actions

1. Repeat online survey conducted in 2019 on a regular basis (approximately every 5 years) to understand angling practices and preferences, and gauge angler satisfaction with fishing opportunities.
2. Consider ways to survey Oregon anglers outside of SW Oregon who travel to the Rogue-South Coast area to fish.
3. Refine survey questions to better understand angling practices and preferences.

G. Plan Implementation Reporting and Review

Proposed Actions

1. Complete annual reports and post them on the RSP website or other Rogue-specific website.
 - a. Reports will consist of *Wild Fish Monitoring Summaries* (including metrics for Desired and Conservation Status), *Hatchery Program Summaries*, and updates on implementation of management actions
 - b. Track and report status of proposed research and monitoring projects and completed management actions
 - c. Create an internal database to more efficiently aggregate status metrics and develop reports
2. Consolidate Rogue and South Coast annual reporting for all conservation plans.
3. The first re-assessment of status and review of the plan will be scheduled for 12 years following plan approval by the Commission (evaluation and adaptive management will be ongoing).

III. Facilities Strategies and Actions

A. Hatchery Infrastructure Improvements

1. Improve Rogue mitigation hatchery infrastructure.

Proposed actions

- a. Renovate hatchhouse and hatchhouse water supply at Cole Rivers Hatchery
- b. General repairs and renovation at Cole Rivers Hatchery
- c. Upgrade collection facility at Applegate Dam
 - i. Add ability to acclimate smolts and sort adults onsite
- d. Improve infrastructure or support needed to grade summer steelhead
- e. Purchase new liberation truck to improve handling of adults and juveniles

Rationale

The most urgent infrastructure need in the Rogue watershed is repair and renovation at Cole Rivers Hatchery. This action has nothing to do with native fish conservation or achieving desired status in the plan. This action is about ensuring that mitigation obligations associated with two large dams are met and continue to be met for all species, and that the mitigation hatchery programs continue to operate in a manner consistent with native fish conservation.

The hatchhouse is a significant bottleneck for hatchery production at this facility. We think that water quality problems are affecting return rates for hatchery fish. ODFW will coordinate with the US Army Corps of Engineers (USACOE) to identify key hatchery renovations needed to meet mitigation requirements and improve return rates, recognizing that USACOE is responsible for implementing these renovations.

2. Infrastructure improvement at Middle Rogue acclimation sites.

Proposed actions

- a. Various actions are needed to facilitate acclimation at existing sites (Greens, Skunk) and potential new sites
- b. May include signage or map of acclimation sites, and available access points to help anglers target returning fish (distribute to tackle shops)

Rationale

ODFW is pursuing acclimation of hatchery smolts in the Middle Rogue to increase angler access to and harvest of hatchery winter steelhead from existing hatchery mitigation production. We think this is the best approach to increase harvest compared to other proposals like hatchboxes.

3. Elk River Hatchery upgrades.

Proposed Actions

- a. Refurbish adult holding raceway
- b. Mark Chetco winter steelhead smolts with coded wire tags (CWT) prior to release
- c. Purchase UTV to transport supplies, spawning equipment, and steelhead eggs
- d. Support innovative approaches and associated costs to improve rearing strategies for fry, such as indoor rearing pond, shade cloth, and egg treatments

Rationale

Minor renovations of the adult holding raceway could reduce pre-spawn mortality of adult winter steelhead from the Chetco River held at Elk River Hatchery, resulting in more fish being released back into the Chetco after spawning. Marking steelhead smolts with coded wire tags will assist with monitoring survival and stray rates, and may provide information on ocean distribution.

B. Expand Port of Gold Beach Fish Cleaning Station Carcass Program

Proposed Actions

- 1. Outreach to private fish cleaning facilities in Lower Rogue.**
 - a. Encourage businesses to work with the Port of Gold Beach to assist with the disposal of salmon and bottomfish carcasses.
 - b. Encourage businesses to install carcass grinders

- 2. Educate anglers about carcass disposal at dispersed boat ramps attracting pinnipeds.**

Rationale

Actions are identified to align with the conditions of the Rogue River sea lion hazing program. The program addresses the issues that contribute to increased interactions between anglers and pinnipeds. Cleaning salmon and steelhead along streams is legal, but often times habituates pinnipeds to areas where salmon and steelhead are more vulnerable to predation. Signs can be placed at high use areas asking anglers to not clean or dispose of carcasses streamside.

C. Angler Access and Opportunity

Proposed Actions

- 1. Improve existing middle and upper Rogue river access properties**
 - a. Improve boat access and/or road surface at Doughten Falls and Sardine Creek ODFW properties
 - i. Work to facilitate development of Doughten Falls through agreement with Jackson County Parks
 - b. Investigate improvements at other ODFW river access properties
 - c. Work with Marine Board and State Parks to improve boat ramp at Touvelle State Park
 - d. Develop partnerships with local groups to help with volunteer maintenance of river sites

- 2. Develop new universal access sites as time and funding allows.**
 - a. Continue to implement projects at Expo Pond (Jackson County Fairgrounds)
 - b. River Bridge Campground on upper Rogue
 - c. Investigate improvements at other river access sites
 - d. Work with I&E to publicize sites

- 3. Encourage acquisition of old Savage Rapids Park property by Oregon State Parks or Jackson County Parks, and develop bank fishing access.**

- 4. Pursue land acquisition or easement on Pistol River.**

Rationale

This watershed is primarily private with limited access. Land acquisition or an easement would improve boat and bank access, increase angler utilization, and provide wildlife viewing opportunities.

5. Develop new Elk River boat ramp.

Rationale

The watershed is private from Elk River hatchery downstream to ODFW's Ironhead boat ramp, approximately 8 river miles. Additional boat access midway between Elk River Hatchery and Ironhead boat ramp would increase harvest of hatchery Chinook salmon and reduce hatchery Chinook impacts on wild salmon. This action was also identified in the *Coastal Multi-Species Conservation and Management Plan (CMP)*.

6. Develop Port of Port Orford recreational angler boat ramp

Rationale

ODFW maintains a state waters terminal Chinook fishery off the mouth of Elk River to encourage the harvest of hatchery fall Chinook. This fishery takes place most years when the forecasted number of fall Chinook reaches a high enough level. Recreational boat anglers can only access this fishery from the Port of Port Orford commercial dock by boat lift. This severely limits access. The proposal in this plan is to support efforts to improve boat launching at the Port, which would increase fishing opportunity and reduce hatchery impacts on the spawning grounds by increasing harvest of hatchery Chinook salmon. This action was also identified in the *Coastal Multi-Species Conservation and Management Plan (CMP)*.

7. Bank access on the Chetco River.

- a. ODFW will continue to maintain and legally retain the right to current angling easements at Willow Bar and Piling Hole
- b. ODFW will work with the city of Brookings to maintain angler access at the mouth of the NF Chetco
- c. ODFW will partner with intenties on any potential land aquisitions that would improve bank angling opportunity

8. Bank access at the mouth of Indian Creek (Rogue estuary).

- a. ODFW will work to maintain access to the Rogue estuary for bank anglers near the mouth of Indian Creek. This is the only good bank angling area for anglers fishing for fall chinook and coho salmon. Indian Creek Hatchery fall chinook stage in this area in October and provide additional opportunity for bank anglers

D. Infrastructure for Research and Monitoring

Proposed Actions

1. Pursue funding for facilities and equipment to facilitate Research and Monitoring.

Rationale

Infrastructure needs include DIDSON sonar sites on lower Chetco River and potentially in the upper Rogue, adult trapping sites, infrastructure to facilitate monitoring at irrigation diversions or fry trapping sites, and equipment for genetic analysis and/or scale analysis. ODFW will work with partners to explore funding opportunites, including fundraising events.