Russian River Salmon and Steelhead Monitoring

Update 2021

For nearly two decades, California Sea Grant's Russian River Salmon and Steelhead Monitoring Program at the University of California has been monitoring endangered and threatened fish populations in order to support species recovery efforts and provide science-based information to all stakeholders.

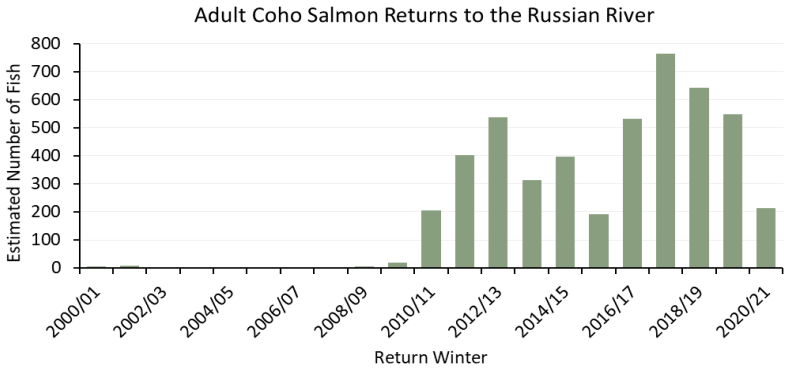
Despite ongoing pandemic restrictions over the past year, we were able to successfully complete all of our monitoring activities, restart our internship program, and even hire a new program manager. For more detailed information on all of our efforts, please visit our website.

Our fish and habitat monitoring was completed collaboratively with Sonoma Water. This work would not be possible without the support of all of our amazing partners, including public resource agencies, non-profit organizations and thousands of private landowners!

Special thanks to the streamside landowners who enable this work by granting us access to streams across the watershed and to our funders, including the US Army Corps of Engineers, California Department of Fish and Wildlife, NOAA Fisheries, National Fish and Wildlife Foundation, the Wildlife Conservation Board and Sonoma Water.

Winter 2020/2021: Adult Returns

The severe drought conditions that hit our watershed hard over the 2020 dry season rolled into the winter and spring of 2020/21, resulting in notably poor stream conditions for returning adult salmon and steelhead. The late, low rainfall significantly delayed migratory access into the tributaries and reduced the number of streams open to fish during their spawning window. In some cases, low streamflows also caused redds (nests) to dry and adult fish to become stranded.



Estimated annual adult hatchery coho salmon returns to the Russian River since 2000. Estimation methods vary between some years.

Using PIT tag detection data, we estimated that 214 adult coho salmon from the Conservation Hatchery Program returned to the Russian River watershed—the second lowest number in ten years.

Biweekly spawner surveys were conducted in 50 streams. Adult coho and/or their redds were seen in just one quarter (24%) of the 33 streams that provide suitable coho habitat—

less than half of the previous five-year average (56%). We estimated a total of 136 coho redds basinwide—similar to the previous five-year average of 140. The distribution of spawning steelhead was also limited, with adults and/or their redds observed in just half of the streams sampled. There were an estimated 1,054 steelhead redds basinwide.

Spring 2021: Outmigrating Smolts

Due to the low rainfall, many streams disconnected during the spring smolt outmigration window, leaving fish cut off from their route to the ocean. Smolt trapping streams, which include Willow, Dutch Bill, Green Valley and Mill creeks, became disconnected earlier than previously observed, and we had to release trapped smolts downstream of disconnection points in April and May.

Despite intense damage to the Mill Creek watershed from the 2020 Walbridge Fire, 195 wild coho salmon smolts were counted migrating out of the stream in the spring—a hopeful indicator of resilience!

Learn more: *See the salmon and steelhead yoy counts by stream on our website.*

California Sea Grant biologists conduct a snorkel survey.

Program Specialist Mariska Obedzinski nets fish out of the Green Valley Creek smolt trap.

Adult steelhead digging a redd. Photo: Keane Flynn, Sonoma Water.

Summer 2021: Young-of-the-Year

In the early summer of 2021, we snorkeled pools in 43 Russian River tributaries to document spawning success from the previous winter and the distribution and relative abundance of juvenile salmonids.

Naturally-spawned coho salmon young-of-the-year (yoy) were observed in just 40% of all surveyed streams, with a rough, expanded estimate of 4,366 fish. In a stream where fish were released from an experimental streamside incubator, 896 additional coho yoy were counted, bringing the total number to 5,262. This expanded estimate of coho yoy is notably low, at about half (52%) of the previous five-year average (though streams, length sampled and timing varied between years). Naturally-spawned steelhead yoy were seen in 63% of surveyed streams, with an expanded estimate of 12,717 fish—just one quarter of the previous five-year average.

The relatively low number and distribution of salmonid yoy was not surprising given the poor spawning conditions of the preceding winter. The offspring of fish that were able to spawn successfully had to survive the summer through the worst drought in recent record and many of them perished due to stream drying and poor water quality as a result of insufficient flow.

Widespread Drying Devastates Stream Ecosystems

Exceptional drought conditions plagued the Russian River watershed and much of the state in 2021. Low streamflows caused widespread stream drying and water quality impairment, resulting in mortality and extreme stress for fish. We conducted late-summer wet/dry mapping on 120 miles of stream in the lower basin and found that only half (51%) of the salmon and steelhead rearing habitat sampled remained continuously wet and connected through the dry season. This left far too many fish out of water! The increased severity and frequency of drought and the groundwater depletion associated with climate change and human impacts pose a significant threat to our keystone salmon and other native species.

Learn more: *Visit SaveOurWater.com and DailyActs.org for water conservation tips, and CohoPartnership.org to learn about actions you can take to increase water security.*

Small Act, Big Impact

Since 2015, the Camp Meeker Recreation and Parks District has worked with community members, local nonprofits and resource agencies to release cold, clean water from their municipal system into Dutch Bill Creek during the driest summer months. During the 2021 drought, this small augmentation of about 35 gallons/minute was an incredibly valuable contribution to the stream ecosystem, helping to maintain flow and water quality for the benefit of salmon, steelhead and other organisms in the stream.

Welcome Laura!

We are delighted to welcome Laura Slater, who joined our team this past summer as our new Program Manager. Her expansive knowledge and leadership skills have already proven to be tremendous assets to our program.

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Learn more:

The Winter 2021 Webinar is available on our YouTube channel. Check out the video to learn more about who we are and what we do.