

**Adult Salmonid Spawning
San Geronimo Creek Tributaries, Marin County, CA
2025-2026 Spawner Report
August 26, 2026**



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Overview:

The SPAWN 2025–26 Annual Salmonid Spawning Survey provides data on San Geronimo Valley tributaries. It continues a long-term, collaborative monitoring effort among three agencies to track the abundance and distribution of spawning salmonid species in the Lagunitas Creek Watershed (LCW), Marin County. The effort of Salmon Protection and Watershed Network (SPAWN) annual field data when combined with the Marin Municipal Water District (MMWD), and the National Park Service (NPS), provides a more complete data set for the Lagunitas Creek Watershed to correlate watershed health with adult spawning activity. Marin Water compiles data from all three partner organizations across the Lagunitas Creek Watershed, including the data presented here, to produce a watershed-wide report each season. This ongoing data collection and analysis is useful to understanding the effects of current and future restoration efforts within the LCW, with particular focus on stabilizing and rebuilding populations of the endangered California Central Coast (CCC) coho salmon and threatened CCC steelhead trout.

Lagunitas Creek Watershed:

Lagunitas Creek Watershed (LCW) is 103 mi² and supports one of the largest populations of endangered wild CCC coho salmon and threatened CCC steelhead trout. The watershed contains 56.32 km (35 mi) of ESA-listed salmonid-bearing streams and an overlapping 59.55 km (37 mi) of streams supporting CCC steelhead trout. The watershed extends 17.6 miles from Mount Tamalpais to Tomales Bay, with primary waterways including Lagunitas Creek, Devils Gulch, Olema Creek, and San Geronimo Creek. MMWD monitors spawning in Lagunitas Creek, Devils Gulch, and San Geronimo Creek. NPS monitors spawning in Olema Creek. SPAWN monitors the San Geronimo tributaries Arroyo Creek, Barranca Creek, Larsen Creek, Woodacre Creek, and Montezuma Creeks. This year's survey also included Willis Evans Creek.

San Geronimo Creek Watershed:

The San Geronimo Creek sub-watershed (SGV) is 23 km² (9 mi²) or approximately 9 percent of LCW area (figure 1), yet supports up to 50 percent of the annual spawning population in the SGV. These tributaries can account for up to 25% of the redds observed for all coho in the LCW though currently being the most urbanized portion of the LCW.

SGV tributaries covered in this report contain approximately 5.5 km (3.4 miles) of linear stream length. (Arroyo, Montezuma, Larsen, Woodacre, Willis Evans, Northfork SGC). This is roughly 10 percent of the total creek range in LCW.

The San Geronimo Creek (SGC) watershed is highly urbanized and faces ongoing threats from loss of riparian habitat, erosion, and water contamination. Although it represents only ~10% of

the total area of the Lagunitas Creek watershed, in some years it has accounted for 40–50% of total redds documented during the winter return (SPAWN 2014).

Coho and Steelhead Spawner Surveys in the Tributaries of San Geronimo Creek, Marin County, 2023-2024 Season
Salmon Protection and Watershed Network (SPAWN)

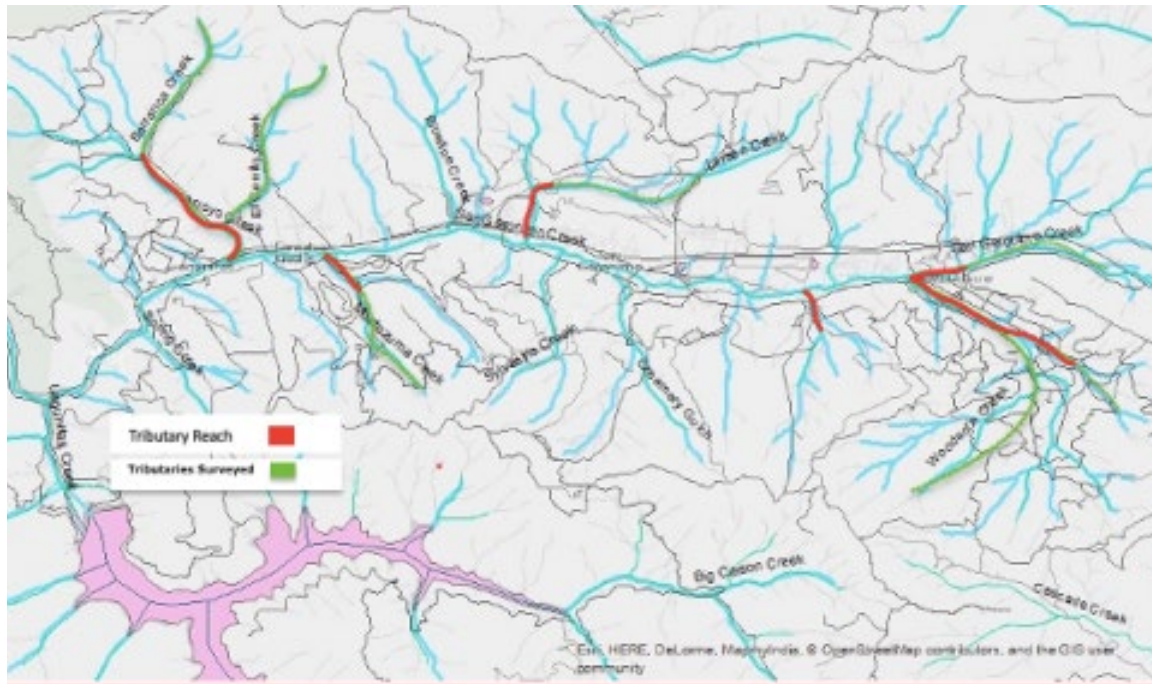


Figure 1. ArcGIS map showing the distribution of redds identified within the San Geronimo Creek watershed. Green highlights indicate the tributary reaches SPAWN surveyors walk annually. Red highlights indicate the reaches walked in 2026. Solid blue lines represent creeks; solid black and gray lines represent roadways (map by Neely Evanoff.)

This report presents adult spawner data collected during winter 2025–26 and compares current-year results with data from previous years. Marin Water compiles data from all three partner organizations across the Lagunitas Creek Watershed, including the data presented here, to produce a watershed-wide report each season.

Methods:

Adult salmon and steelhead abundance was measured through visual identification of fish, redds, and carcasses within the tributaries of San Geronimo Creek from late-December 2025 through February 2026 across the indicated creek stretches.

Surveys presented in this field report were conducted by SPAWN staff and volunteers.

To minimize disturbance to habitat, surveyors walked along creek banks whenever possible, avoided walking over riffles, and crossed only through pools. Surveyors entered the creek channel directly only when no bank was available and no redds present or previously marked redds were present. Redd sizes were also determined by visual estimation rather than direct measurement, a change from previous seasons,

to ensure that monitors did not unintentionally disturb any part of a redd or egg deposit, as redds can be difficult to distinguish in the smaller creek tributaries, with narrower banks and fewer vantage points.

Surveys were conducted weekly on a rotating basis, provided that weather and water clarity allowed for clear visibility of the substrate. Data were recorded along the entire reach of each creek, with the exception of approximately six residential lots where SPAWN was unable to obtain landowner consent to access the creek where it crosses private property. In these cases, surveyors exited the creek, walked around the property, and re-entered at the next available access point.

Because coho spawn during the winter rainy season, rainfall can hinder visibility of redds. During the 2025–26 season, approximately four weeks of surveying were precluded by winter storm conditions (see Table 2.)

Each redd observation was assigned a record number consisting of a numeric code beginning with the year, month, and day, followed by an abbreviated creek name, flag/site number, a descriptor of the species observed or redd type (e.g., “redd/unkn”), redd size, and location within the creek (e.g., right bank, or similar). This information was also recorded in a field journal, along with additional details describing the observation, visual cues for relocating the site, and other relevant context. GPS coordinates were recorded for each observation.

When a live fish was observed, surveyors recorded a species code along with information on sex and condition (i.e., coloration, overall wear, and activity level). Fish and redd locations were marked with green flagging tape tied to an adjacent tree or structure to prevent redds from being counted more than once. If a fish was present on a redd, only the location was marked for later measurement. Survey teams walked up hillsides and around occupied redds to avoid disturbing the fish, and redds were measured once spawning activity was complete and no fish remained present. If no fish was present, the redd was marked “UNK” (unknown) on the data sheet, and its dimensions were estimated visually. Where possible, surveyors documented observations with photographs of redds, fish, and carcasses.

To determine the likely species responsible for a redd where no fish were present, surveyors relied primarily on seasonal timing and the presence of species observed to be active in that creek during the same period. Approximated redd size, shape, pot characteristics were also considered.

Results

Surveys for the 2025–2026 spawning season began after the first significant rainfall of the season, which occurred the week of December 21–25, 2025, and continued through the last significant rain event in late February 2026.

Throughout the season, a total of 28 coho redds and 4 steelhead redds were identified. A total of 30 live coho salmon and 4 live steelhead trout were observed.

- In Arroyo Creek, surveyors documented 7 coho sightings, 12 coho redds, 4 steelhead sightings, and 2 steelhead redds.
- In Larsen Creek, 1 coho redd was identified.
- In Montezuma Creek, 9 coho and 7 redds were identified.
- North Fork was surveyed later in the season, when 2 steelhead redds were identified.
- Woodacre Creek had a total of 14 coho identified and 8 coho redds observed during the season.

Successful spawner observations are shown alongside streamflow (cubic feet per second or CFS) for the Lagunitas watershed (Figures 3 and 4). Findings are summarized in the table below and include redd and fish-sighting data from all surveyed sites; tributaries surveyed with no identified activity were excluded from the results.

With the exception of jacks, this cohort of coho spawners are the progeny of the 2022–2023 adult class, shown in Figure 2 alongside historical spawning data for the San Geronimo tributaries. Returning numbers showed a slight increase over the previous class, continuing an upward trend since the 2019–2020 season, when drought conditions reduced spawning activity in the tributaries.

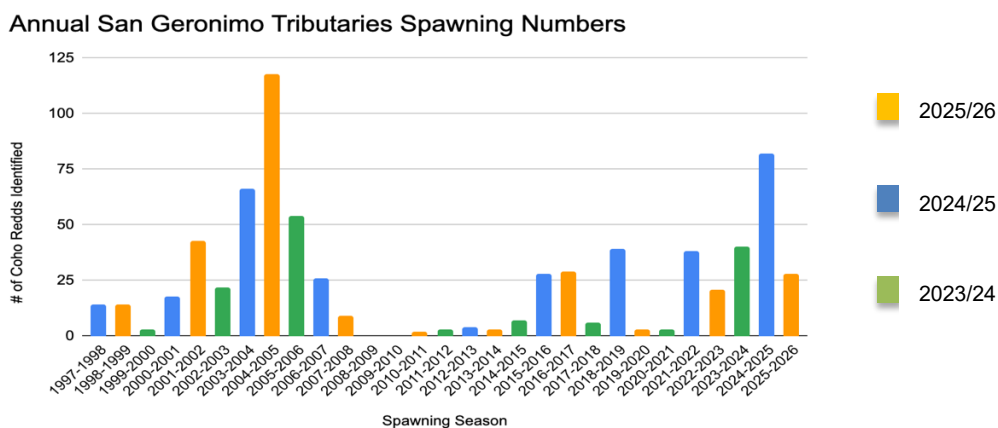


Figure 2. Historical spawning survey activity in the San Geronimo tributaries, from the 1997–1998 season through the most recent 2025–2026 season. Orange bars indicate the coho cohort from the current season. A sharp decline in the salmon population occurred in 2008. In 2019 and 2020, drought conditions limited access and reduced spawning activity in the San Geronimo watershed.

Table 1. Salmonid Survey Totals by Tributary, 2025–2026

Tributary	# of CO	# of CO Redd	# of SH	# of SH Redd	Estimated Length of Reach (meters)
Arroyo	7	12	4	2	1,410
Larsen	-	1	-	-	751
Montezuma	9	7	-	-	508
North Fork	-	-	-	2	931
Woodacre	14	8	-	-	1,555
Willis Evans	-	-	-	-	346
Total	30	28	4	4	5,501

Daily CFS vs. Surveying Dates

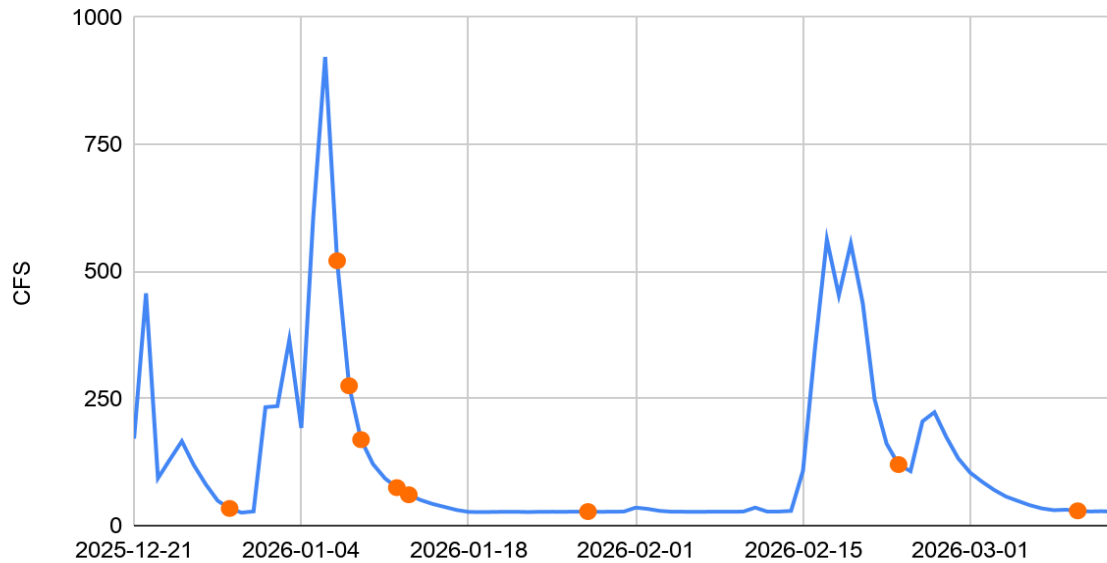


Figure 3. Mean daily streamflow (CFS) recorded by a USGS sensor at Samuel P. Taylor State Park (downstream of San Geronimo Creek) throughout the monitoring season. Orange data points indicate survey dates on which a new redd was identified (12/29/25, 1/7/26, 1/8/26, 1/9/26, 1/12/26, 1/13/26, 1/28/26, 2/23/26, 3/10/26).

Daily CFS vs. Fish Observed

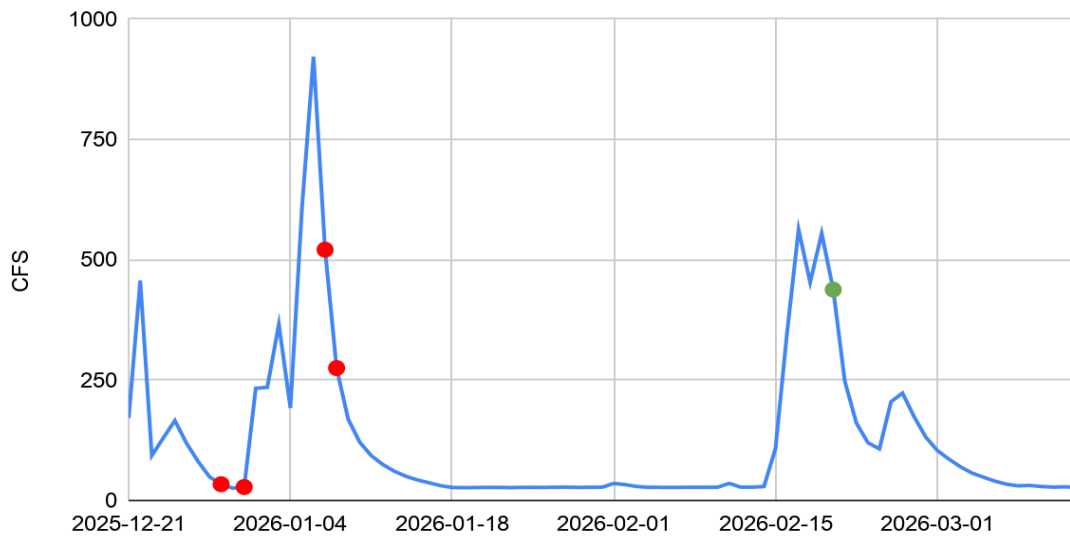


Figure 4. Mean daily streamflow (CFS) recorded by a USGS sensor at Samuel P. Taylor State Park (downstream of San Geronimo Creek) throughout the monitoring season. Marked points indicate the presence of salmonids on survey days: red dots represent coho identified (12/29/25, 12/31/25, 1/7/26, 1/8/26) and the green dot represents steelhead identified (2/20/26).

Table 2. Survey Dates and Newly Documented Salmonid Redds

Survey Dates	Tributary	Coho Redd Documented	Steelhead Redd Documented
12/29/25	Montezuma	7	-
	Larsen	1	-
1/7/26	Woodacre	1	-
	Montezuma	-	-
1/8/26	Woodacre	2	-
	Arroyo	1	-
1/9/26	Arroyo	5	-
	Montezuma	-	-
1/12/26	Woodacre	4	-
1/13/26	Arroyo	6	-
	Montezuma	-	-
1/28/26	Woodacre	1	-
	North Fork	-	1
2/23/26	Arroyo	-	2
	North Fork	-	-
3/10/26	North Fork	-	1
	Total	28	4

Discussion

San Geronimo Creek joins the main stem of Lagunitas Creek at a series of cascading pools known as “the Inkwells.” This feature represents a significant limiting factor for spawning fish attempting to reach San Geronimo Creek and its tributaries, since sufficient rainfall-driven streamflow is required for fish to pass upstream through the pools. From there, salmonids move into the tributaries of San Geronimo Creek shown in Figure 1, each of which has distinct levels of accessibility associated with culverts and hydrological features. Several of these tributaries similarly require a minimum streamflow for fish passage.

Following the first significant rain event of the 2025–2026 season, fish and their redds were observed throughout the San Geronimo tributaries. Figure 4 (above) identifies survey dates on which fish were seen, typically within days of larger rain events.

Historical spawning numbers for the San Geronimo Creek tributaries (Figure 2, above) indicates a slight increase in spawning activity relative to this cohort’s parent season (2022–2023). Although this spawner class appears to be the smallest of the three brood-year classes, the higher return rate is a promising sign.

Based on redd counts, Arroyo Creek had the highest level of spawner activity this season, likely due to removal an installed fish-friendly culvert design in 2010, and being the first barrier-free tributary in the SGV—an open-bottomed arched structure with a natural substrate channel.

Woodacre Creek had second highest number of redds this season. It has a partially modified culvert structure at the confluence, installed in 2007, which includes a downstream roughened ramp to improve access and modification inside the concrete culvert to improve downstream passage of juveniles (Marin County Fish Passage Projects, n.d.) Additional culvert improvements were made at other road crossing upstream.

The creek channel and riparian zone is highly disturbed by housing development inside the 100-ft stream conservation area zone. One house, for example, is built directly over the creek. Several road failures in the past two decades have resulted in portions of the road sliding into the creek, followed by installation of rip-rap installed to repair and provide some protection for the roadway.

Woodacre Creek coho recovery could benefit significantly from future reduction of these current impacts to streambanks and riparian enhancement.

Montezuma Creek, the third most successful tributary, showed activity only after the earliest rain event during the week of December 21–25 (Table 2, above). Access to the creek for salmonids is highly constrained by a high perched undersized culvert just upstream to the confluence with San Geronimo Creek and high levels of urbanization within the 100-foot stream conservation area.

Montezuma Creek coho recovery could benefit significantly from future a fish-friendly culvert replacement and reduction of current impacts to streambanks and riparian enhancement to allow passage into recently improved (and additionally currently planned) habitat enhancement upstream.

Salmonid spawning is also impacted by a road culvert under Guadalupe Avenue just upstream of the confluence with San Geronimo Creek, that reduces salmonid access. Salmonid populations would benefit from a fish-friendly culvert replacement. Impacts from development along this creek are lower in Montezuma Creek as it has much lower density of housing and roads and are public owned (Lagunitas School district and Marin County Open Space). The upper portion of this creek runs through the former San Geronimo Golf Course and significant portions of the historical riparian zone had been replaced with golf fairways, golf ponds, underground culverted sections and possible pollution from pesticides. Its recent purchase by Marin County as a Park (Halstead, R. 2023) is expected to improve; habitat and restoration plans are under development.

Larsen Creek headwaters begin in Roy's Redwoods County Park, which has also gone through a \$3.7 million restoration in 2024 (Marin County Redwood Restoration, n.d.) to restore the hydrologic function of the alluvial valley, improve redwood forest and wetland habitat, and reduce visitor impacts created by large numbers of social trails that have been removed, which should improve water quality entering the creek.

Culvert replacement with fish-friendly designs should be a high priority for providing salmonids with better access to spawning habitat.

References

Hayes, A. AND N. Hong. Adult Salmonid Spawning-San Geronimo Creek Tributaries 2023-2024 Spawner Season. Salmon Protection & Watershed Network.

Marin County Fish Passage Projects. <https://flooddistrict.marincounty.gov/fish-passage-projects/>

Marin County Redwood Restoration. n.d.
<https://parks.marincounty.gov/projectsplans/roys-redwoods-restoration>

Halstead, R. 2023. Marin County finalizes purchase of former San Geronimo Golf Course. <https://www.marinij.com/2024/04/03/marin-county-finalizes-purchase-of-former-san-geronimo-golf-course/>

Prunuske Chatham, Inc. (2010). *San Geronimo Valley Salmon Enhancement Plan, Final – February 2010*, prepared for the Marin County Watershed