

Coho Salmon South of San Francisco Bay: Indigenous or Not?

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Are coho salmon native to Santa Cruz Mountain streams or not? Do we find them in our streams due only to hatcheries, or were coho resident here before extensive logging, mining, road construction, grazing and damming of rivers irrevocably changed their habitat. Scientists believe coho salmon distribution is coincident with California's coastal redwood, rain or fog forest and historically extends as far south as the Monterey Bay, perhaps farther.¹ The Central Coast Forest Association (CCFA), however, claims the coho salmon are aliens, planted by humans in our neck of the woods.

The CCFA 2002 Petition to Delist the Coho Salmon south of San Francisco is based on three tenets: 1) a lack of archaeological evidence of their presence, 2) historic observations that they are not native, and 3) physical reasons our streams do not support permanent coho populations. Their petition presents the case for delisting based on coho not being native. Below, is a different story.

Archaeology

"We must, however, be cautious because the absence of evidence cannot be construed as evidence of absence."² With these words, Dr. Kenneth Gobalet concluded his report, *Prehistoric Status of Steelhead and Salmon in Coastal Streams from San Francisco to San Diego*. This report was "commissioned by Bob Briggs and his associates, a group of small timberland owners on the central coast."³ These are the folks behind the Petition to Delist.

The purpose of Dr. Gobalet's limited archaeological study of eight middens in Santa Cruz and San Mateo counties was to see if these Native American sites would offer up steelhead and/or coho remains. A positive identification would confirm the indigenous presence of coho and steelhead in our coastal streams. The lack of identified coho remains (steelhead remains were recovered) only indicates that such remains were not recognized in this small sample. This indication is not conclusive proof of coho absence as Dr. Gobalet, himself, states. "Because steelhead are closely related to coho salmon and Chinook (king) salmon (*O.tshawytscha*), **it is extremely difficult to distinguish steelhead bones from those of coho salmon** or any of the ten North American members of the genus *Oncorhynchus*..."⁴ (emphasis added)

Further review of Dr. Gobalet's study reveals the following tasty tidbits. While no salmon remains have been reported from coastal archaeological sites south of San Francisco, Dr. Gobalet notes that "salmonid remains are rare in the archaeological record and large samples are necessary to find them at all."⁵ Interestingly, while it is believed that "some native groups may have had annual per capita consumption as high as 365 pounds per year (see Yoshiyama 1999)"⁶ in the California Central Valley, no salmonid remains were found in three different archaeological studies by different researchers in the San Joaquin Valley or in Kern County.

Dr. Gobalet notes that this "inconsistency between the archaeological record and the ethnographic record is perplexing"⁷ He cites the "highly cartilaginous skeletons that are fragile when dry and the cartilage is gone"⁸ as one possible reason that "coho salmon have rarely been documented within their extant range."⁹ He also discusses the fact that "until recently, the comparative collection at California State University, Bakersfield had only single specimens of large coho and Chinook salmon and two specimens of steelhead." By and large, "investigators will be frustrated

with fragmentary materials that preclude making an authoritative identification”¹⁰ from among the various salmonids and will often end up settling on the general genus, *Oncorhynchus*. Or, in other words, figuring out just which fish you have is quite tough using small bone fragments found in a prehistoric garbage dump after being sifted through a screen. And with just one or two sample fragments available for comparison.

But there could also be other explanations for why archaeologists are having a hard time finding coho remains in middens. Dr. Peter Moyle, U.C. Davis, also notes that, “Chinook salmon remains are amazingly scarce in middens in the Central Valley even though there were hundreds of thousands of fish coming up every year and we know they were used. Best guess is that heads, etc. were removed upon catching and the vertebrae were cooked and eaten. Not much was wasted. Other fishes had hard parts that were harder to eat. Also given the abundance of ocean fishes and shellfishes, it may simply be that the tribal peoples just didn’t bother to go after coho very often, a relatively scarce and highly seasonal fish.”¹¹

The ethnological record shows that some native peoples had a custom of returning salmon bones and skin to the river mouth, a practice most likely based on a spiritual relationship to these anadromous fish, which could also account for a lack of coho and other salmon bones in middens. “As soon as they finish cutting up the speared salmon the woman gathers the slime, and everything that comes from the salmon, puts it in a basket and she goes and pours it into the water at the mouth of the river.”¹² And further, “after the man has finished eating, his wife gathers the bones and skin left by the guests, puts them on a mat and throws them into the sea.”¹³

Why would these women do such a thing? Tsimshian mythology may shed some light, with the following instructions from the salmon about salmon taboos, “Also, eating it (the salmon) let them pick up all the bones and pieces of skin and throw them into the salt water. Then we can come home again. If they do not do that, we can not come to life again.”¹⁴ This is a very different relationship to the fish that nourished a people than we have today, where additional protections for struggling fish populations are perceived as “an unnecessary devaluation of (human) property, loss of freedom...and general deterioration of (peoples’) quality of life”¹⁵.

Did the Ohlones, the native people in our region, treat salmon with the same reverence? Perhaps. Or maybe they used recipes similar to those used by the Kwakiutl for “Soaked backbones, boiled or blistered (roasted by fire), Fins and Tails, Roasted salmon-tails, Salmon-Cheeks, Fresh Salmon Heads, Preserved Salmon-Heads, and Steamed Salmon Heads.”¹⁶ Dr. Ronald Yoshiyama, U.C. Davis, states, “Many Native American tribes in California, even in the salmon-rich Central Valley, routinely ground up the salmon bones with the dried flesh for winter storage and consumption, so the paucity or absence of coho salmon bones in middens shouldn’t be all that surprising. That would be especially expected on the coast since the salmon populations in the coastal streams were relatively small, and I’d expect the native people to use the fish as efficiently as possible.”¹⁷ Certainly, absence of bones cannot be presumed to mean an absence of fish.

History

But just for the moment, let’s leave archaeology and ethnology behind. Let’s take a peek at the historical record, instead. Dr. Yoshiyama provides us with the following historical information:

“The earliest salmon hatcheries on the Pacific Coast and in California were more concerned with Chinook salmon than coho salmon. This is certainly true of the very first salmon hatchery—the U.S. Fish Commission’s Baird Station on the McCloud River, upper Sacramento Valley. That station was established in 1872 and handled Chinook

salmon exclusively, primarily for sending the eggs to the Eastern seaboard and overseas. Only a small portion of the eggs were kept for hatching and local plantings—in the upper Sacramento tributary streams such as the McCloud and Upper (Little) Sacramento River. The activities at Baird Station were described by the superintendent, Livingston Stone in his annual “Report of Operations” published in the Report of the U.S. Commissioner of Fish and Fisheries (a federal publication series) and summarized in my paper (Yoshiyama and Fisher 2001). Even the State of California did not have a salmon hatchery until they built Sisson Hatchery (also called the Mount Shasta Hatchery) on the Upper Sacramento branch in 1888, and at least for 1888 and 1889 they handled only Chinook salmon (reported in the 11th Biennial Report of the State Board of Fish Commissioners of the State of California).”¹⁸

Yoshiyama concludes from this and other data that “Therefore, there is no evidence that I know of that coho salmon were being artificially hatched and transported in non-natal streams in the 1870s (or even the 1880s).”¹⁹

If historical records of coho south of San Francisco prior to hatchery plantings were non-existent, then proving their native status might still be difficult. However, there are reports of silver salmon (coho) in streams south of San Francisco as early as 1870. The earliest written documentation appears to have come from a "Captain E. Wakeman," apparently a temporary agent of the California State Board of Fish Commissioners.

Wakeman wrote (excerpted):

"San Gregoria (San Gregorio Creek)-- . . . four miles from Tunis (Tunitas Creek), and connects with the ocean about one mile below the San Gregoria House. At full sea, the salmon, of from fifteen to twenty pounds, and the silver salmon, from two to fifteen pounds, enter this stream during their spawning season,. . .”²⁰

"Pescadero stream-- . . . three miles from Pompona (Pompino) Creek, and is a fine clear water trout stream . . . For six miles this makes a fine resort for the salmon and silver salmon from the sea which frequent these waters, with other lesser sea fish, for the purpose of spawning. From October to March a wagon load of these beautiful fish, weighing from two to thirty pounds, are taken daily and sold all along the road, as high up as Spanishtown, at seventy-five cents per pound. These fish are only taken during the spawning season, they being a deep water fish and go out to sea in March.”²¹

Sometime after 1898 “the Fisheries Commission authorized the planting of some of the fry produced at their Sisson (now Mount Shasta) Fish Hatchery, which were shipped to Santa Cruz by rail car”²² But this was nearly 20 years post Captain Wakeman’s documentation of silver salmon south of San Francisco, and the species of fry planted were not identified. The first local hatchery was not established till even later. “In 1904 the Brookdale Hatchery and Scotts Creek Egg Taking Stations were built by the County of Santa Cruz and began operation in January 1905”²³, “In 1926 the Big Creek Hatchery was built and began operation in 1927.”²⁴ According to Streig, the only records available to date show the only coho planted in Santa Cruz streams prior to 1913 (a single planting was made in 1909) were “Scotts Creek stock from either Big Creek or Brookdale Hatchery.”²⁵

Physical Evidence

Finally, let’s take a look at the issue of the physical nature of our streams. The CCFA Petition cites “natural hazards of climate and geography” as reasons the Santa Cruz Mountains “probably” never supported permanent indigenous coho salmon colonies.”²⁶ However, harsh conditions are

not in and of themselves a barrier to successful fish populations. (Current stream conditions in Santa Cruz and San Mateo are not dramatically different from other streams where coho still persist in Marin, Sonoma and Mendocino Counties.) Add to these natural hazards the hardships imposed by human activity, and coho salmon with their very specific habitat needs **will** find it difficult to survive in all California coastal streams. “Timbering and milling practices between 1850 and 1900 virtually ruined a number of fine coastal streams in Santa Cruz and San Mateo counties insofar as their use by salmon and steelhead was concerned.”²⁷ Logging and agriculture changed stream canopy and stream flows, as well as pool depth and other factors. Recent studies in Mendocino County (6 years of data from 40 locations) showed that “warm water locations did not have coho, cool water locations do.”²⁸ Substantial habitat degradation had occurred in the coastal streams even by the 1870s and extensive over-fishing further diminished fish populations.

“The distribution of coho is pretty much coincident with coastal rain forest (better called fog forest) and redwoods in California....Given the nature of the streams and forests in Santa Cruz County, it would have been surprising if the creeks had been without coho. Coho are on the southern end of their range so presumably would have not been there during eras (thousands of years ago) when the climate was warmer and drier. But the coastal rain forests would not have been there as well.”²⁹

The CCFA Petition bases its historical denial of native coho in our local streams on two early scientific reports of fish census in Central California streams: “The first of these by preeminent biologist, David Star Jordan (Jordan and Everman, 1896) is a scrupulously researched four-volume description of every known fish in northern and Central America....This study concludes that the coho (*Oncorhynchus kisutch*) habitat range is “from San Francisco northward, especially in Puget Sound and the Alaskan Fjords”.”³⁰

However, this quote, found in the Petition, is deliberately misleading—because of the “sin of omission”. “What Jordan and Evermann (p.481) wrote was: ‘*Abundant* from San Francisco northward, especially in Puget Sound and the Alaskan fjords; south on the Asiatic coasts to Japan.’ (emphasis added) The key word is ‘Abundant’; their statement says nothing about coho salmon south of San Francisco where they could have been, and probably were, present in some numbers.”³¹

Once again we are reminded that “the absence of evidence cannot be construed as evidence of absence.” Missing words and missing bones can prove to be misleading.

¹ Moyle, Peter B., Dept. of Wildlife, Fish and Conservation Biology, UC Davis, personal email, 2002

² Gobalet, Dr. Kenneth, Prehistoric Status of Steelhead and Salmon in Coastal Streams from San Francisco to San Diego, California State University, Bakersfield, 2002, p. 11

³ *ibid*, p. 1

⁴ *ibid*, p. 3

⁵ *ibid*, p. 7

⁶ *ibid*, p. 7

⁷ *ibid*, p. 8

⁸ *ibid*, p. 8

⁹ *ibid*, p. 8

¹⁰ *ibid*, p.10

¹¹ Moyle, Peter B., Dept. of Wildlife, Fish and Conservation Biology, UC Davis, personal email, 2002

¹² Thirty-Fifth Annual Report of the Bureau of American Ethnology 1913-1914, p. 304:45

¹³ *ibid*, p. 325:80

¹⁴ Boas, Franz, Thirty First Annual Report, Tsimshian Mythology, 1909-1910

¹⁵ CCFA, Petition to Correct the Southern Boundary of the Central California Coho ESU, 2002

¹⁶ Thirty-Fifth Annual Report of the Bureau of American Ethnology 1913-1914, p.325-339

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- ¹⁷ Yoshiyama, Ronald M., Dept. of Wildlife, Fish and Conservation Biology, UC Davis, per personal email 2002
- ¹⁸ *ibid*
- ¹⁹ *ibid*
- ²⁰ 1st Report of Commissioners of Fisheries of the State of California for the years 1870 and 1871, reprinted in California Fish and Game Volume 19 (No. 1) January 1933).
- ²¹ *ibid*
- ²² Streig, Dave, History of Fish Cultural Activities in Santa Cruz County with Reference to Scotts and Waddell Creeks, 19??, p. 1
- ²³ *ibid*
- ²⁴ *ibid*
- ²⁵ *ibid*, p.4-7
- ²⁶ CCFA, Petition to Correct the Southern Boundary of the Central California Coho ESU, 2002
- ²⁷ Skinner, John E. 1962. An Historical Review of the Fish and Wildlife Resources of the San Francisco Bay Area. Water Projects Branch Report No. 1. California Dept. of Fish and Game. June 1962. (68pp)
- ²⁸ Ambrose, Jonathan, National Marine Fisheries Service, personal email, 2002
- ²⁹ Moyle, Peter B., Dept. of Wildlife, Fish and Conservation Biology, UC Davis, personal email, 2002
- ³⁰ CCFA, Petition to Correct the Southern Boundary of the Central California Coho ESU, 2002, p. 2
- ³¹ Yoshiyama, Ronald M., Dept. of Wildlife, Fish and Conservation Biology, UC Davis, per personal email 2002

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