

Historical Fish Accounts in Streams and Waterbodies in Golden Gate National Recreation Area.

The following excerpts detail fish population information in the words of the cited authors. Descriptions are organized first by location and then by date. Citations are preceded by specific locations, date of observation, and the name and affiliation of the observer. Any comments within the quoted text are enclosed in brackets. Editorial comments following the excerpts are prefaced by the magic word, "-Note: ."

Olema, Hatchery, Paper Mill, and Nicasio Creeks, 1897. N.B. Schofield, California Fish Commission.

"The species of fish found in these streams are limited to four. the most important is the steelhead (*Salmo gairdneri*), which runs in from salt water each winter and spawns in the streams, keeping them well stocked with young trout. About the most abundant fish is the "chub" (*Rutilus symmetricus*) [California roach, *Hesperoleucus symmetricus*]. The "stickle-back" (*Gasterosteus cataphractus*) [threespine stickleback, *Gasteroseus aculeatus*] and "blob" (*Cottus gulosas*) [possibly inclusive of other sculpin species] are fairly abundant. Occasionally the dog salmon (*Oncorhynchus keta*) enters these streams and spawns." (Schofield, 1899a, p. 54)

Upper Olema Creek (0.25 mile reach), June 16, 1897. N.B. Schofield, California Fish Commission.

"The fourth haul was through a hole ten feet across and two feet deep, with roots of an old stump at the edge, under which they could hide. Here we caught 165 steelheads, 7 stickle-backs, and 10 blobs. [sculpin, possibly riffle sculpins, *Cottus gulosus*]...In one-fourth mile seined we caught 578 steelheads, all under three inches in length. There are twelve miles of the stream in which they are just as plentiful, which would make about 37,000 young steelheads for the stream. The number in Paper Mill Creek would be from five to seven times this amount, and the number in Nicasio and Hatchery creeks would, for each, be about one fourth the number in the Olema." (Schofield 1899b, p. 64)

-Note: sampling was conducted with a thirty foot seine of unknown depth or mesh size. Interestingly, there was no mention of juvenile coho salmon found in their sampling efforts.

Lower Lagunitas Creek (mouth), June 1897. N.B. Schofield, California Fish Commission.

"During June, while seining for young salmon in brackish water near the mouth of Paper Mill Creek, young

steelheads were caught in considerable numbers, ranging from 5 1/2 to 6 1/2 inches in length." (Schofield 1899b, p. 64)

Literature Cited

Schofield, N.B. 1899a. A report on the planting of Quinnat [Chinook] salmon fry in the short coast streams of Marin County, California. Appendix to the journals of Senate and Assembly of the 33rd session of the legislature of the state of California. G.H. Springer, State printer, pp. 49-62.

Schofield, N.B. 1899b. Notes on the movements of the young of the steelhead trout (*Salmo gairdneri*, Richardson) in Marin County streams. Appendix to the journals of Senate and Assembly of the 33rd session of the legislature of the state of California. G.H. Springer, State printer, pp. 63-65.

Historic Description of Riparian and Stream Conditions in
Streams within Golden Gate National Recreation Area

Format:

- A. Why describe historic character of riparian/creek systems?
 - template for restoration.
 - evaluation of project impacts.
 - evaluate temporal changes.
- B. Previous work
 - Platts, Sedell, etc. describing woody debris
- C. Annotated excerpts organized by location.
- D. Historic maps of the area.

Various authors have used the historical record to document historic riparian and channel conditions (Ohmart et al. 1977, Platts et al., 1987, and Sedell and Luchessa 1982). Platts et al. 1987 recommend the use of historic descriptive accounts, maps, early photographs, and case studies done on related issues as potential sources of information. In practical applications, Phillip Williams and Assoc. have used early Coast and Geodetic Survey maps to determine the historic configuration of Big Lagoon, Marin County (PWA 1994). Historic information regarding Mountain Lake in the Presidio was compiled from various diary accounts of early explorers (Codemo et al., 1995).

Problems regarding the accuracy of written accounts.

The following excerpts detail riparian conditions, channel characteristics and water temperatures in the words of the cited authors. Descriptions are organized first by location and then by date. Citations are preceded by specific locations, date of observation, and the name and affiliation of the observor. Any comments within the quoted text are enclosed in brackets. Editorial comments following the excerpts are prefaced by the magic word, "-Note: ."

Olema Creek Watershed

Olema Creek, 1897. N.B. Schofield, California Fish Commission

"Olema and Hatchery creeks rise to the west of the main Paper Mill [Lagunitas Creek], and flow almost parallel to it, emptying into it near together about one mile below upper tide-water mark. Olema Creek is about the size of Nicasio, but carries more water during the dry season. The water, too, is much cooler, and the upper stream has more of the character of the upper Paper Mill. The banks are thickly grown with brush and trees. The last two miles of the creek runs through low swampy land, with its

banks most of the way heavily lined with willows. The average maximum temperature for lower Olema was 63° [F], and the upper stream averaged but one degree colder." (Schofield, 1899, p. 54)

-Note: the citation did not specify the season during which temperatures were recorded. It only mentioned that water temperatures were recorded during the six months after planting of chinook fry and it appeared that water temperatures for all the creeks were recorded over the same time period. Later text indicates that planting occurred in March.

Lagunitas Creek Watershed (excluding Olema Creek)

Hatchery Creek, 1897. N.B. Schofield, California Fish Commission

"Hatchery Creek is very much smaller than Olema Creek, and is not nearly so long. At first fed by springs and running through cool shady woods, the water is quite cold, but on gainging the open valley and running through two miles of marshy lowlands, with but little shade, it becomes, on reaching Paper Mill Creek, even warmer than the water in Olema Creek. The average maximum temperature of the upper Hatchery Creek was 54° [F], while at the lower end the average was 64° [F]. (Schofield, 1899, p. 54).

Lagunitas Creek, 1897. N.B. Schofield, California Fish Commission

"Paper Mill Creek is formed by the junction of the San Geronimo and Lagunitas, each of which is quite small, the water cold and swift, running over a rough rocky bottom, and everywhere overhung with trees and bushes. After uniting to form the main stream, the water frequently runs over quiet stretches of gravelly bottom, but for the most part the bed is rough and rocky and there are many cascades and deep rocky pools. The stream for nearly its entire length is well shaded with overhanging trees. The width of the stream in its normal state is about fifty feet, and its depth averages about feet, but its size is increased enormously after each heavy rain. The water in the upper end of Paper Mill Creek during the six months after planting the fry had an average maximum temperature of 64° [F], while at the lower end in tide water the average was 71° [F]." (Schofield, 1899, p. 54).

Lower Lagunitas Creek, 1897. N.B. Schofield, California Fish Commission

"Tomales Bay, nowhere deep, grows very shallow at its upper end, where it receives Paper Mill Creek [Lagunitas

Creek]. No bar ever forms across the mouth of the creek, as is the case in most of the small coast streams, but is always open for fish to run either in or out." (Schofield, 1899).

Nicasio Creek, 1897. N.B. Schofield, California Fish Commission

"Nicasio Creek rises to the east of Paper Mill Creek, and flows into it about five miles above tide water. Nicasio Creek is very much smaller than the Paper Mill, being only about twenty feet wide, with an average depth of six inches. throughout its length it flows over flat, gravelly beds, with few trees or bushes to shade the water. The sun has full sweep at it and heats the water each day during the summer to a temperature of 75° or 80° [F]." (Schofield, 1899, p. 54).

Literature Cited

Ohmart, R.D., W.O. Deason, and C. Burke. 1977. A riparian case history: The Colorado River. Pages 35-47. In Johnson, R.R. and D.E. Jones, tech. coords. Importance, and preservation and management of riparian habitat. USDA Forest Service General Technical Report RM-43.

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Sedell, J.R. and K.J. Luchessa. 1982. Using the historical record as an aid to salmonid habitat enhancement. In: Armantrout, N.B. ed. Proceedings of a symposium on acquisition and utilization of aquatic habitat inventory information. Western Division of American Fisheries Society. pp. 210-233.

Historical Stocking of Fish in Streams and Waterbodies in Golden Gate National Recreation Area.

Outline

-check with Dewey Livingston.

I. Issue.

- a. Historic importance of salmon and steelhead
- a. Unclear if any streams have "untainted" coho or steelhead stocks.
- b. Literature search was done to find out when and where fish came from.

II. Excerpts from Reports.

- a. Table showing Location, Date of stocking, species, brood stock, and quantity.

Salmon have been appropriately called the "King of Fish." Historic records point to the importance of salmon to native Californians and Anglo-Americans (term?). For example, archaeological sites near the entrance of the San Francisco Bay were investigated by the California Academy of Sciences. They concluded that surf perch, king salmon (*Oncorhynchus tshawytscha*), and bat rays were among the most commonly found fish at the archeological sites (Eschmeyer and Schonewald 1981). Furthermore, salmon were second only to surfperches in frequency of occurrence (Eschmeyer and Schonewald 1981).

The Commissioners of Fisheries for the State of California were established under an act from the state legislature in 1870 to "provide for the restoration and preservation of fish in the waters of this State." The Commissioners were faced with declining numbers of salmon and trout that they attributed to creek disposal of mill wastes, barriers to upstream migration caused by dams, and loss of spawning gravels from mining sediments (Commissioners of Fisheries of the State of California, 1872, pp. 6-8). Inspired by the successes of the Acclimatization Society of San Francisco and individuals near the town of Truckee to artificially rear trout, the Commissioners contemplated the future rearing and release of trout:

"If authorized, we will expend a portion of the appropriation in purchasing young fish to be distributed to restock streams, or to place in streams and lakes which have no trout in them." (Commissioners of Fisheries of the State of California, 1872, pp. 11)

Active programs were established for the acquisition, transportation, and release of non-native fishes into

California by the California Commissioners of Fisheries. A variety of eels from the Hudson River and waters near Martha's Vineyard (New Hampshire??), variety of catfish and other freshwater fishes from the east were transported across country via tanker cars and deposited in the Sacramento River (Commissioners of Fisheries of the State of California, 1874, pp. 6-7). The approximate release sites, species information is included on Table 1.

Introduction of non-native species was not a one way street. The United States Fish Commissioner secured salmon from the Pacific coast for release back east (Commissioners of Fisheries of the State of California, 1874, p. 1).

Stocking of salmon native to California occurred in streams that historically lacked them. In the late-1800s, the California Fish Commission planted chinook fry in several Marin County streams. Although chinook salmon are known to occur in the Sacramento-San Joaquin system and large coastal streams north of the Russian River, no natural, sustaining runs of chinook salmon were known from coastal Marin County streams (Schofield-Commissioners of Fisheries of the State of California 1899, /Leidy). The Commission reasoned that:

"Paper Mill Creek [Lagunitas Creek] and its tributaries are exceptionally rich in aquatic insect life, affording an abundance of food for the fry; and the absence of predaceous fishes, excepting the trout and blob, make them apparently better streams for the rearing of young salmon than the Sacramento. It was thought that if the fry could thrive in these streams and pass successfully into salt water, it would be of advantage to utilize coast hatcheries and plant in the smaller streams where the young salmon would not be subjected to their enemies like they are during the long journey from the upper Sacramento to the sea." (Schofield 1899, p. 49)

1873. San Andreas Reservoir Eastern red-speckled trout (*S. fontinalis*)

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