

# **Final Report**

**Spawning Ground Surveys, 2003-2004 Season**

**Mattole River Watershed**

*Contractor:* Mattole Salmon Group  
P.O. Box 188  
Petrolia, CA 95558-0188

*MSG Project Coordinators:* Campbell Thompson  
Gary D. Peterson

Report prepared by Campbell Thompson  
April 2004



# Final Report

## Spawning Ground Surveys, 2003-2004 Season, Mattole River Watershed

### Abstract

The Mattole Salmon Group has conducted annual spawning ground surveys in selected mainstem and tributary reaches in the Mattole River watershed for 23 consecutive seasons, from 1981-82 through 2003-2004. Data are used to track long-term trends in escapement and spawner distribution for fall-run Chinook salmon and Coho. The 2003-2004 spawning ground surveys covered 42.75 miles of mainstem and tributary habitat (including approximately 25% of the total available habitat in the mainstem, and approximately 41.5% of the total available habitat in Bear Cr.) with an accumulated total of 77.15 miles surveyed due to repeat surveys in some reaches. Redd counts are used as an indicator of escapement in index reaches because of the inconsistency of live spawner sightings and the low number of carcass recoveries. The 2003-04 spawner season was characterized by frequent but small rainstorm events. This resulted in relatively even stream flows and good survey visibility in the smaller upstream survey reaches, with few good survey opportunities in the larger tributaries and lower mainstem Mattole. Surveys began on December 7, 2003 and continued intermittently as weather allowed through the last survey on Jan. 23, 2004. Repeated surveys of well established index reaches have been supplemented by surveys of some past index reaches where survey effort had lapsed in recent years and surveys in some promising new reaches. Prior to beginning the 2003/4 spawning survey season, Mattole Salmon Group biologist Gary Peterson updated and added to the training manual for these surveys. At least twelve people were trained in the new protocol over the course of the season. After January 1, 2004 Campbell Thompson took over from Gary Peterson as the Coordinator for this project.

### Introduction and Methods

The 2003-2004 season marked the 23 consecutive year of spawning ground surveys in the Mattole River watershed. These surveys provide data on the distribution and relative abundance of live salmon spawners, carcasses, and redds (spawning nests) in key tributaries and selected mainstem reaches. Surveys are conducted by a resident network of trained volunteers and paid personnel by wading, canoeing or snorkeling specified stream segments one or more times during the salmon spawning season- generally late November through late January. Data are used as an indicator of changes or trends in salmon escapement, and for evaluation of progress towards restoration goals.

The basic protocols for conducting spawning ground surveys in the Mattole have remained consistent from the 1985-86 season to the present. In the fall of 1997, Project Coordinator Gary Peterson prepared a detailed, 14-page training manual and developed a series of new data forms that facilitated the recording of information in the field. The manual and field forms were updated in November 1998 (version 2.2) and issued to prospective surveyors with two attachments, a one-page Safety Sheet and an 8-page guide to identification of adult salmonids.

Prior to beginning the 2003-04 spawning survey season, Mattole Salmon Group biologist Gary Peterson again updated and added to the 1998 training manual for these surveys. At least twelve people were trained in this new protocol over the course of the season. These included: Colum Coyne, Sean James, Ron Ward, Tabi Bolton, Mijanou Brown, Michele Palazzo, Tim Day, Rob Yosha, Dylan Brown, Deva Wheeler, Campbell Thompson, Unity Peterson, Ray Lingel and Steve Fortney. As in past years, field training consisted of experienced surveyors accompanying new participants for the first few outings of the season.

All survey forms, maps, photographs, scale samples and ancillary information are kept on file by the Mattole Salmon Group (MSG). These materials are available for review and/or duplication by contacting the Project Coordinator. The information gathered in the field each season is entered into a database and distributed as raw data compilations to agencies, funding entities, and interested groups and individuals. Future plans are to digitize all spawner survey data as layers in a Geographic Information System (GIS).

Established index reaches include the upper Mattole mainstem, Thompson Cr., Yew Cr., Danny's Cr., Baker Cr., Bridge Cr., McKee Cr., the mainstem Mattole through Whitethorn, the mainstem Mattole from Big Finley Cr. to Bear Cr., upper and lower Mill Crs., and the South Fork of Bear Cr. Past index reaches that were renewed in 2003-04 include Eubanks Cr. and Honeydew Cr. New reaches for the 2003-04 season included Vanauken Cr., Indian Cr., Clear Cr., Big Finley Cr. and Mattole Canyon Cr.

## **Results and Discussion**

Survey timing during the 2003-04 season was comparable to inventory efforts in past years. From December 7, 2003 through January 23, 2004, 42.75 miles of mainstem and tributary habitat were inventoried. Many reaches were covered two or more times, resulting in 77.15 accumulated miles of survey. Both of these mileage figures were considerably lower than the last six years. This was largely due to the storm pattern during this year's season. Frequent storms both prevented surveys while they were occurring (due to reduced visibility) and prevented the lower mainstem reaches from clearing throughout the season. These reaches are all canoe surveys, which allow many miles to be covered in a few surveys. Most of the surveyed reaches this season were in the headwaters and smaller tributaries, which clear up the fastest after a storm, but also require wading, hiking in and backtracking in many cases. Another factor was the absence of Gary Peterson. This season was the first MSG spawner survey season in which Gary did not conduct any of the surveys. Gary is our most experienced surveyor and usually conducted a large percentage of the total mileage. His presence was sorely missed and it is hoped he may return to the program in future years.

In the mainstem Mattole, 15.4 miles were surveyed (31.9 accumulated miles), comprising about 25% of the entire mainstem length. All mainstem surveys below the Mendocino County bridge were done by canoe. The remaining reach (1a) was waded. In the tributaries, 27.35 miles were covered (45.25 accumulated miles) in 14 sub-basins containing historically productive salmon habitat. All but 0.4 miles were waded. About 29% of the tributary coverage was focused on Bear Creek, the Mattole's third-largest tributary.

Fourteen people were involved in the survey effort during the 2003-04 season. Six new surveyors received field training this season. All the surveyors received training in the new protocol. MSG's second most experienced observer (Campbell Thompson) was involved in 38.15 miles of survey, or about 49% of the total accumulated mileage, including all of the surveys conducted by boat.

Figure 1 shows the timing of rainfall events. Spawning ground surveys began in earnest on December 7, after a strong rain 2 days before finally brought high enough flows for salmon to reach the Whitethorn area. This was followed by a series of frequent small storms, with breaks of several days between them. Surveys were conducted during these breaks in those streams with sufficient visibility. After January 1, the rainfall decreased in quantity, and the longest break of the season occurred between January 15 and January 23. MSG took advantage of this break in the rain to conduct as many surveys as possible. Very few live salmon were observed however and these were spawned-out fish. These surveys also located very few fresh redds, with the exception of Steelhead, which had begun arriving. The final survey of the season took place on January 23, 2004. Following this, more rain, and lack of any salmon observations, as well as the historical pattern of the salmon runs being over at this time, led to the conclusion of survey effort.

Tabular summaries of survey results were prepared separately for mainstem reaches (Table 1) and tributary surveys (Table 2, and Table 3 for Bear Creek only). A comparison of nine of the past ten years of Mattole spawning ground surveys is presented in Table 4. The 2002-03 season data is missing due to the fact that the report for that season has yet to be released. As a result, no comparison is made here to that season. Major findings, interpretations and conclusions from the 2003-2004 season are discussed below.

The upper mainstem Mattole had a strong season relative to the past 10 years. For example, compared to 1997-2002, there were less miles surveyed, but similar and higher numbers of observations. The impression is that the numbers of spawning Chinook salmon were relatively high, with more than average numbers of small to mid size males. Chinook spawning activity was higher than usual in the lower half of the upper Mattole mainstem index reach and Thompson Cr., while it seemed lower than usual in the upper half of the upper Mattole mainstem index reach and tributaries other than Thompson Cr. The Coho run appeared to start strong and somewhat earlier than usual, then petered out earlier than usual. Coho spawning activity was particularly high in Thompson and Danny's Crs., and noticeably lower than usual in the upper half of the upper Mattole mainstem index reach and Yew Cr. This may have been the result of increased amounts of fine sediments in the uppermost Mattole and particularly noticeably in Yew Cr. due to recent road decommissioning work in the area. While such work also occurred in the Thompson Cr. drainage at the same time, due to site-specific conditions at the Thompson Cr. sites, the resulting fine sediments were trapped in a marshy area and not delivered to the fish-bearing stream. Perhaps migrating adults bound for the upper mainstem and Yew Cr. diverted into Thompson and Danny's Crs. as a result. Amongst other tributaries (not including Bear Cr.), Baker and Bridge Crs. were a distant second to the Thompson Cr. system. All Baker Cr. observations were of Coho and all Bridge Cr. observations were of Chinook. This fits the usual pattern but was unusually stark this year. Very few salmon observations were made in the newly added and revived tributaries this year. This is probably due to the fact that these were largely

surveyed only once, during the longest break in the rain, at the end of the season. However, it is also true that the reason these tributaries have not been surveyed in recent years is due to the prioritization of surveys in the tributaries where most of the salmon spawning activity takes place. Continuing to survey these streams in future years will help clarify which of these factors is most relevant. In Bear Creek, approximately 41.5% of the available salmon habitat was surveyed at least once. Coho numbers were low. There were only two redds observed, both in the uppermost reach. There were six Chinook redds observed, all in one reach of the South Fork.

The large majority (76%) of carcasses recovered this season were in the mainstem Mattole. The remainder were recovered in tributaries other than Bear Cr., where none were observed. 80% of all carcasses recovered were Chinook, 16% Coho and the remainder were too badly decomposed to determine species or sex. Of 60 carcasses fresh enough to mark with a color-coded jaw tag, 8 were retrieved on a subsequent survey. All 8 recoveries of tagged carcasses occurred in the mainstem Mattole, with six of these eight occurring upstream of Metz's bridge. Whether this is due to higher densities of spawning activity or reduced predator populations is unknown. However, this area is probably the most densely occupied by humans of any of the survey reaches. The rapid disappearance of carcasses, primarily due to intense scavenging by predators, is a recurring phenomenon and indicates that the time interval between surveys needs to be very short in order for carcass mark-and-recapture to be an effective method of escapement estimation. Alternatively, salmon spawning densities and total number of individuals may simply be too low in this area for this method to be effective.

Seven of the 73 total (9%) Chinook carcasses had a clipped right maxillary, indicating adult returns from MSG's natal-stock propagation program. All of these were recovered in the upper mainstem Mattole. This would appear to indicate that the hatchbox program continues to succeed in its goal of not unduly dominating the overall salmon run.

Over the course of the season, numerous photos and video clips of live fish, spawning activity, redds and carcasses of Chinook and Coho were taken with the intention of editing them into a future training video. This will allow training to begin before the season, thus increasing MSG's ability to maximize our survey effort during the short season. It will also allow numerous surveyors to see and compare observations at one time without disturbing living specimens and, most importantly, it will help overcome the perennial problem of trying to train new surveyors, who have not seen any salmonids before, on surveys with few or no actual observations.

As usual, the Mattole Salmon Group's spawning survey effort came to an end just as the Steelhead run was getting started. Some Steelhead were observed and photos and video footage taken. It is hoped that funding will be available in the future for extending survey coverage to include a larger portion of the Steelhead run, in order to begin correcting the current lack of information.



**FIGURE 1: Rainfall during the 2003-04 MSG Spawning Survey Season.**

This data is from an automatic gauge located in the Thompson Cr. watershed. Note that the data interval is half an hour, so that the numbers along the vertical axis labeled rainfall indicate the amount of rain (in inches) during each half-hour period.

