

# Final Report

## Spawning Ground Surveys, 2008-2009 Season Mattole River Watershed



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# Table of Contents

<b>Abstract</b>	<b>2</b>
<b>Introduction and Methods</b>	<b>2</b>
<b>Results</b>	<b>5</b>
<b>Discussion</b>	<b>19</b>

## List of Figures

<b>Figure 1:</b> Daily mean discharge at Ettersburg during 2008-09	<b>6</b>
<b>Figure 2:</b> Comparison of flows: 2005-06 through 2008-09	<b>7</b>
<b>Figure 3:</b> Map of surveyed reaches in upper Mattole River	<b>8</b>
<b>Figure 4:</b> Map of surveyed reaches in middle Mattole River	<b>9</b>
<b>Figure 5:</b> Map of surveyed reaches in lower Mattole River	<b>10</b>
<b>Figure 6:</b> Survey effort and coverage, 1994-2009	<b>11</b>
<b>Figure 7:</b> Observations of Live Adult Salmonids, 1994-2009	<b>13</b>
<b>Figure 8:</b> Observations of Redds, 1994-2009	<b>14</b>
<b>Figure 9:</b> Observations of Carcasses, 1994-2009	<b>15</b>
<b>Figure 10:</b> Escapement Index for all reaches combined, 1994-2009	<b>16</b>
<b>Figure 11:</b> Escapement Index for all tributaries (except Bear Cr.) combined, 1994-2009	<b>16</b>
<b>Figure 12:</b> Escapement Index for uppermost mainstem Mattole River, 1994-2009	<b>17</b>
<b>Figure 13:</b> Escapement Index for mainstem Mattole River between Bear Cr. and Big Finley Cr., 1994-2009	<b>18</b>
<b>Figure 14:</b> Escapement Index for Bear Cr., 1994-2009	<b>18</b>

## List of Tables

<b>Table 1:</b> Mainstem Mattole, Live Fish Observed	<b>21</b>
<b>Table 2:</b> Mainstem Mattole, Carcasses Observed	<b>22</b>
<b>Table 3:</b> Mainstem Mattole, Definite Fresh Redds Observed	<b>23</b>
<b>Table 4:</b> Upper Mattole Tributaries, Live Fish Observed	<b>24</b>
<b>Table 5:</b> Upper Mattole Tributaries, Carcasses Observed	<b>25</b>
<b>Table 6:</b> Upper Mattole Tributaries, Definite Fresh Redds Observed	<b>26</b>
<b>Table 7:</b> Lower Mattole Tributaries, Live Fish Observed	<b>27</b>
<b>Table 8:</b> Lower Mattole Tributaries, Carcasses Observed	<b>28</b>
<b>Table 9:</b> Lower Mattole Tributaries, Definite Fresh Redds Observed	<b>29</b>
<b>Table 10:</b> Data summary table, 1994-2009	<b>30</b>
<b>Table 11:</b> Escapement Indices for chinook and coho by reach and combined, 1994-2009	<b>38</b>

# Final Report

## Spawning Ground Surveys, 2008-2009 Season, Mattole River Watershed

### Abstract

The Mattole Salmon Group (MSG) has conducted annual spawning ground surveys in selected mainstem and tributary reaches in the Mattole River watershed for 28 consecutive seasons, from 1981-82 through 2008-2009. Data are used to track long-term trends in escapement and spawner distribution for fall-run chinook salmon (*Oncorhynchus tshawytscha*) and coho salmon (*Oncorhynchus kisutch*). Some data is incidentally collected on steelhead/rainbow trout (*Oncorhynchus mykiss*). The 2008-2009 spawning ground surveys covered 92.77 miles of mainstem and tributary habitat with an accumulated total of 139.83 miles surveyed due to repeat surveys in some reaches. This included coverage of approximately 98.2% of the total available habitat in the mainstem (63.81 surveyed miles of the approximately 65 total miles). The percentage of tributary habitat was much lower and is also unknown due to much more stringent property access restrictions in the tributaries as compared to the mainstem. 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 2008-09 spawner season was characterized by an early mouth opening followed by widely spaced, distinct rain and flow events of below average storm intensity. This resulted in relatively short and low stream flows, particularly early in the season and limited opportunities for fish to migrate upstream between peak flows. In particular, there was an extended low flow period from the mouth opening in early-October until mid-December. As a result, fish were trapped below naturally occurring low flow barriers (the Honeydew Slide and Noonung Cr. gorge) for extended periods. This resulted in a good opportunity for complete surveys as fish held and waited in the few lower river reaches they occupied. Significant spawning occurred in the lower mainstem during this period. In late December small rain events allowed fish to reach the upper mainstem and tributaries. Another extended dry period occurred during the late season that allowed surveys throughout the tributaries and the mainstem as far downstream as Honeydew Creek. Surveys began on October 22, 2008 and continued intermittently as weather allowed through the last survey on January 20, 2009. Repeated surveys of well established index reaches have been supplemented by surveys of some past index reaches and surveys in some promising new reaches.

Relative to the past few years, the Mattole had a diminished chinook salmon run during the 2008-09 season. Relative to the past 14 years, however, the chinook run was fairly average, thus suggesting that hopes raised by the past few years for an increasing trend may have been premature. Also, coho salmon escapement appears to have decreased relative to the past few low years and has been close to the lowest point of the past 14 years. This raises questions about whether the Mattole coho population will persist in the face of the slow pace of recovery and restoration, increasing human development and climate change.

### Introduction and Methods

The 2008-09 season marked the 28th 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. Surveys are conducted 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. For further background information on the program and its past data as well as data analysis techniques, please refer to the State of the Salmon report section on spawner surveys. The report can be found on the MSG website: [www.mattolesalmon.org](http://www.mattolesalmon.org)

### Protocols

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, a detailed, 14-page training manual and new data forms that facilitated the recording of information in the field were developed. Minor updates to the manual and field forms were done in November 1998, 2003 and 2008.

During the 2008-09 season, MSG participated in field testing of a developing new California Department of Fish and Game (DFG) protocol for spawning surveys, in addition to using the established MSG protocol. Both protocols were used because the DFG protocol was described by DFG as unfinished and because DFG requested that both be used together in order to compare results from each protocol. A number of problems with the DFG protocol were evident. Despite attendance at a DFG training and reference to printed protocols provided by DFG, surveyors remained unclear on certain aspects of the protocol because there are at least two different DFG protocols in existence. The amount of time required to document redds using the DFG methods was excessive, particularly the GPS procedure for entering waypoint identification numbers and averaging 200 location points for each redd. Attempting to use the DFG protocols in addition to the MSG protocol also added to the time required and confusion in methods. Another example was the surveyor's relative unfamiliarity with the metric system, while the MSG protocol utilizes standard English units. Future MSG surveys will use metric units. As a result of these issues, in the interests of safety and financial constraints, surveyors were instructed to use both protocols as much as possible, but to default to the MSG protocol when necessary in order to complete a survey reach within daylight hours. This provided continuity in the existing Mattole survey record and resulted in surveys being completed safely and on budget, but with a consequent inconsistency and incompleteness to the DFG protocol records. Post season attempts to contact DFG biologists for assistance or consultation in sorting out and analyzing the DFG protocol data have been completely unsuccessful. Despite numerous phone calls and emails, there has been no response from DFG. As a result, all data presented in this report follows the existing MSG protocol and format. No data is reported here using the DFG protocol.

### Training

Beginning with the 2004-05 season, MSG established a one day training session as a prelude to each season's surveys. This training covers the MSG training manual for these surveys, as well as fish identification techniques and carcass handling using a salmon carcass (when available) and photos and videos of live fish, redds and carcasses from past survey seasons. As in past years, on the job field training and quality control consisted of experienced surveyors accompanying new participants for at least the first few outings of the season or until they demonstrated proficiency. As soon as possible after each survey, the Project Coordinator reviewed data sheets and debriefed surveyors in order to clarify and correct the survey forms as necessary. After data entry, the Project Coordinator thoroughly checked each entry for errors.

### Data

All survey forms, maps, photographs, scale samples and ancillary information are kept on file by the MSG. These materials are available for review by contacting the Project Coordinator. In the

past, the information gathered in the field each season was entered into a Microsoft Word table and distributed as raw data compilations to agencies, funding entities, and other stakeholders and individuals. This season marks the fourth since the transition of the annual data compilation to an Excel spreadsheet format that allows easier rearrangement of the data, summary analysis and graphical presentation. The State of the Salmon report further consolidated and analyzed the past ten years of Microsoft Word survey data. Many of the past ten year's spawner survey data are digitized as layers in a Geographic Information System (GIS) maintained by the Mattole Restoration Council (MRC). Future plans are to continue the annual digitization of data into the GIS database and develop a query-able relational database, linked to the GIS database.

Observations of "unknown" and "not determined" were lumped together beginning with the 2004-05 season due to a lack of clear rationale for having them separate and this was continued during the 2008-09 season. These categories have in the past attempted to separate steelhead from chinook and coho when the species identification was unclear. However, in those cases where identification is unclear, the usual confusion is between coho and steelhead, since these two species are the closest in size, coloration and habitat usage relative to chinook. More importantly, the two categories created confusion for surveyors, complicated analysis of the data and introduced an unnecessary opportunity for observer bias. Lumping all unidentified observations into one "unknown species" category eliminates these problems.

### Reaches

During the 2008-09 season, the following streams were surveyed at least once. They are listed in order from the headwaters downstream since that is the usual order they are surveyed as they clear up following a storm event. Maps of survey coverage are presented in Figures 3-5.

Danny's Creek (river mile 58.4+2.2), Yew Creek (river mile 58.4+0.15), Upper Mattole mainstem from Hulse Creek (river mile 60.5) to Metz Bridge (river mile 57.4), Thompson Creek (river mile 58.4), Baker Creek (river mile 57.6), Upper Mill Creek (river mile 56.2), Vanauken Creek (river mile 54), McKee Creek (river mile 52.8), Bridge Creek (river mile 52.1), the mainstem Mattole through Whitethorn (river mile 57.4 to 51.2), the South Fork of Bear Creek (river mile 42.8+6), Eubanks Creek (river mile 47.7), the mainstem Mattole from Big Finley Creek (river mile 47.4) to Bear Creek (river mile 42.8), Lower Bear Creek (river mile 42.8), Mattole Canyon Creek (river mile 41.1), the mainstem from Bear Creek (river mile 42.8), to Honeydew Creek (river mile 26.5), Four Mile Creek (river mile 34.6), Rattlesnake Creek (river mile 25.5+2), the mainstem from Honeydew Creek (river mile 26.5) to Petrolia (river mile 5.2), McGinnis Creek (river mile 8), Clear Creek (river mile 6.1), East Mill Creek (river mile 5.4), and Lower Mill Creek (river mile 2.8).

### Personnel

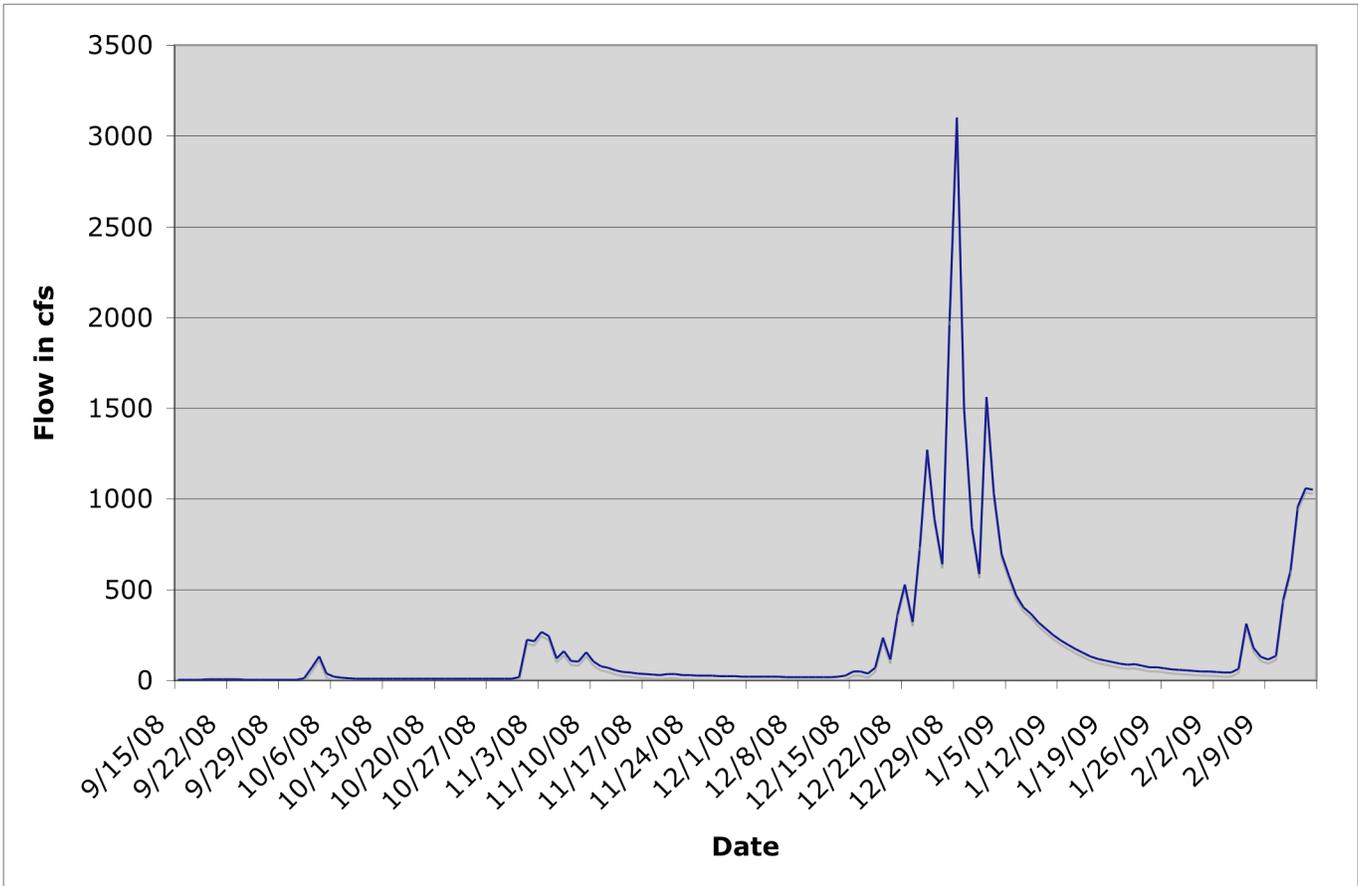
Seventeen people were involved in the survey effort during the 2008-09 season. All the surveyors received training in the current protocol, including seven new surveyors. MSG's Project Coordinator for Spawner surveys (Campbell Thompson) was involved in 74.91 miles of survey, or about 54% of the total accumulated mileage. This is important for quality assurance and in the field training. Many thanks are given to all the people who participated in surveys. In no particular order, they were: Sean James, Jill Grbavac, John Deibner-Hanson, Brock Nedland, John Winkowski, Will Kelly, Sierra Simpson, Nathan Queener, Flora Brain, Kate Cenci and Scott Sinnott. Particular thanks are due to local volunteer surveyors Eric Shafer, Steve Walters and Maureen Roche. Thanks also go out to the Americorps Watershed Stewards Program for the contributions of Chris Root and Sarah Burstein.

## Results

Tabular summaries of the 2008-09 survey results are appended at the end of this report. Tables were prepared separately for mainstem reaches (Tables 1-3) and tributary surveys (upper river tributaries: Tables 4-6 and lower river tributaries: Tables 7-9). Within each of these groups, there is a separate table for observations of live fish (Tables 1, 4 and 7), carcasses (Tables 2, 5 and 8), and redds (Tables 3, 6 and 9). A summary of all of the past fifteen years of Mattole spawning ground surveys is presented in Table 10. Table 11 contains the Escapement Index data for all the years of the summary table. Major findings from the 2008-2009 season are discussed below and illustrated with selected figures. Interpretations and conclusions are in the following Discussion section. Figure 1 is a chart of river flow during the season and Figure 2 is a chart of river flows during the spawning season comparing 2008-09 with flows for the past three seasons. Figures 3-5 are maps of the area and reaches surveyed in 2008-09. Figure 6 depicts survey effort and coverage for each season since 1994-95. Figures 7-9 show the total number of live fish, redds, and carcasses observed by species for all of the seasons since 1994-95. Figures 10-14 depict the Escapement Index for chinook and coho for four separate subbasins for all seasons since 1994-95.

Survey timing during the 2008-09 season was roughly comparable to inventory efforts in past years. From October 22, 2008 through January 20, 2009, a total of 51 surveys were conducted. Surveys of a given reach were scheduled to maximize the observation of live fish, redds and carcasses. For a complete explanation of the factors involved and how this is accomplished please refer to the State of the Salmon report Spawner section on the MSG website.

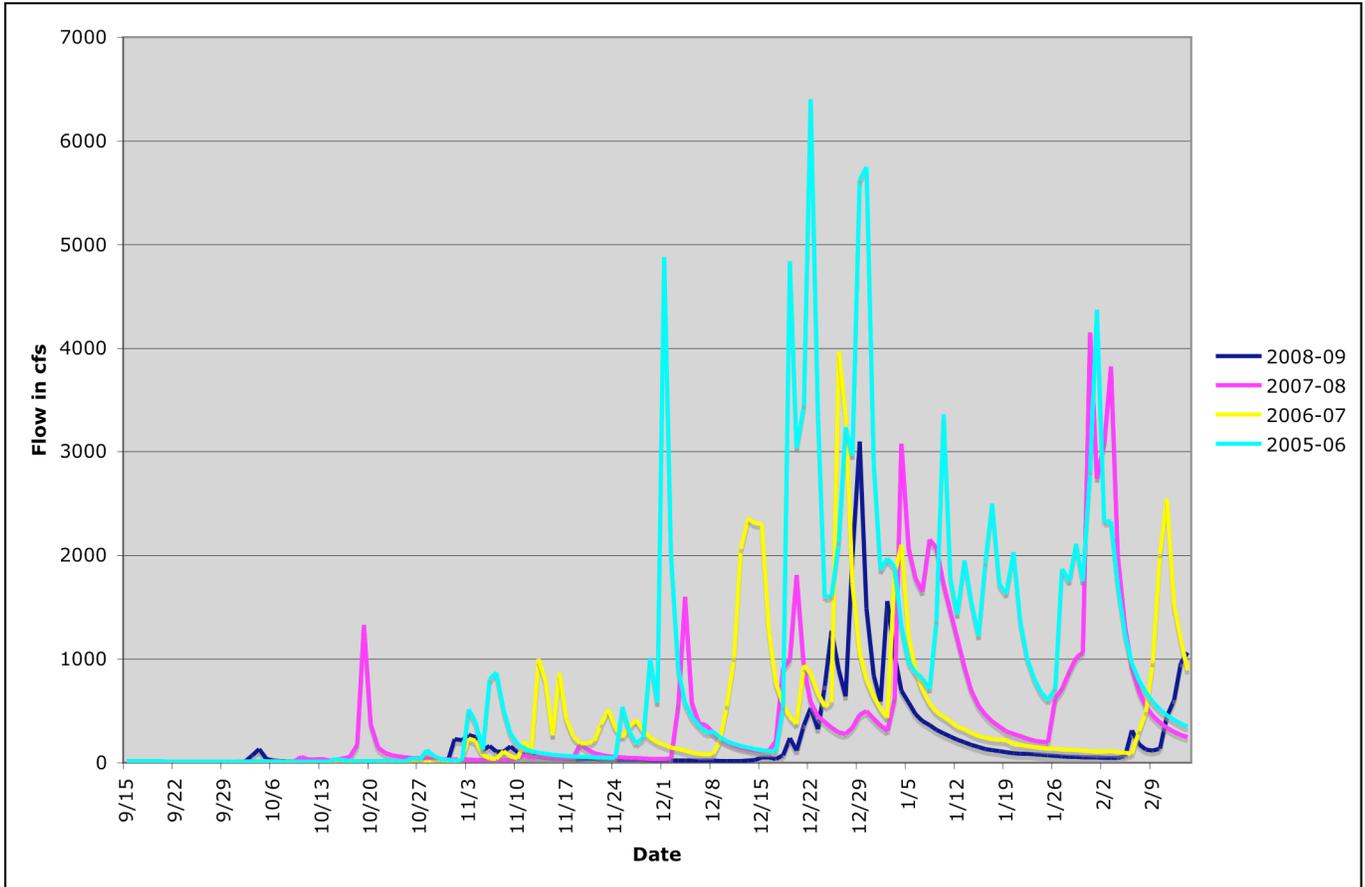
Run and rainfall/flow timing were lower and later than average during this season. Figure 1 shows the flow (discharge in cubic feet per second) in the mainstem at Ettersburg during the season. A figure comparing flows this season with the past three can be found in Figure 2. The mouth of the river first opened on October 5 and salmon began migrating into the river. There was no more rain until early November however, and the mouth reclosed on Oct. 13. The fish that had entered the river were trapped by low flows in mainstem pools downstream of Honeydew Creek at river mile 26.5. Surveys commenced on October 22, 2008 with great visibility in the lower river. It was immediately apparent that there were very few coho. Following a second mouth opening on November 2 more fish entered the river but the rains stopped again and fish remained trapped by low flows in the lower mainstem. Flows got so low that the mouth reclosed a second time on November 29. By early December many of the chinook began to spawn in the lower mainstem. Enough rain to create sufficient flows for upstream migration finally arrived in the third week of December and adult fish finally reached the upper mainstem in the Whitethorn area. Rainfall and flows remained below average however, and very few fish were observed in any tributaries, even those that have strong spawning activity every year. This meant few opportunities for spawners to reach their choice of habitat unmolested by poachers and predators, and relatively plentiful opportunities for surveyors to observe them. As a result, the amount of stream miles surveyed at least once this season was the highest in over 15 years. As usual, the rain stopped soon after New Years, and in January we received no more rain. Surveys at this time saw the lack of live fish and preponderance of old carcasses typical of the end of the chinook and coho runs and the arrival in the headwaters of fresh steelhead. The last survey took place on January 20, 2009. Unfortunately, despite the steelhead's status as a Federally listed threatened species here in the Mattole, funding has not been available for continuing the spawner survey program during the majority of the steelhead run. As a result, just as in past years, this is where the survey season ends, when the majority of the steelhead arrive. However, the extended low flows and good visibility did allow unusually late and low mainstem surveys that observed many live steelhead in the mainstem waiting for migration flows.



**FIGURE 1: Mainstem river flow at Ettersburg during the 2008-09 MSG Spawning Survey Season.**

This data is daily mean discharge from an automatic gauge operated by the U.S. Geological Service located at the bridge in Ettersburg where the county road (Telegraph Ridge Rd./Wilder Ridge Rd.) crosses the Mattole River. Further information on the gauge as well as water temperature and stage height can be found on the internet at:

[http://waterdata.usgs.gov/nwis/uv?dd\\_cd=01%2C02%2C03&format=gif&period=30&site\\_no=11468900](http://waterdata.usgs.gov/nwis/uv?dd_cd=01%2C02%2C03&format=gif&period=30&site_no=11468900). Similar information is available for a USGS gauge in Petrolia.



**FIGURE 2:** Comparison of mainstem flows at Ettersburg during the spawning season 2005-06 through 2008-09.



**FIGURE 3: Map of surveyed reaches in upper Mattole River.** Surveyed reaches are shown in red. Note that base map may be distorted due to formatting of document.

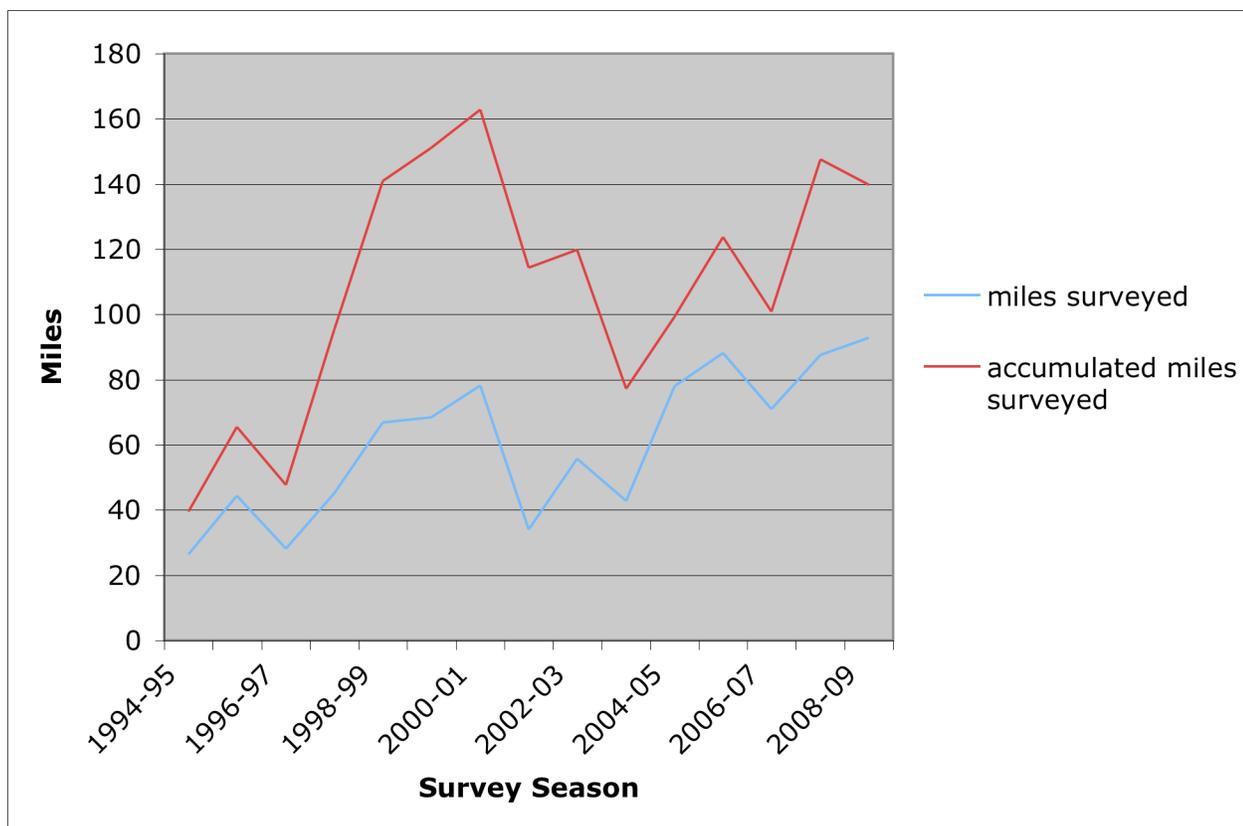


**FIGURE 4: Map of surveyed reaches in middle Mattole River.** Surveyed reaches are shown in red. Note that base map may be distorted due to formatting of document.



**FIGURE 5: Map of surveyed reaches in lower Mattole River.** Surveyed reaches are shown in red. Note that base map may be distorted due to formatting of document. Note also that Figure 5 is a different scale than Figs. 3 and 4.

Figure 6 shows miles surveyed and accumulated miles from 1994 to 2009. During the 2008-09 season 92.77 miles of mainstem and tributary habitat were inventoried. Some reaches were covered two or more times, resulting in 139.8 accumulated miles of survey. In the mainstem Mattole, 63.81 miles were surveyed (100.29 accumulated miles), comprising about 98.2% of the entire mainstem length. In the tributaries, 29.13 miles were covered (39.51 accumulated miles) in 15 sub-basins containing historically productive salmon habitat. About 23% of the tributary coverage was focused on Bear Creek, the Mattole's third-largest tributary.



**FIGURE 6: Survey effort and coverage for 1994-2009.** The red line shows the accumulated miles surveyed each season (survey effort) and the blue line shows the miles of stream that were covered each season (survey coverage).

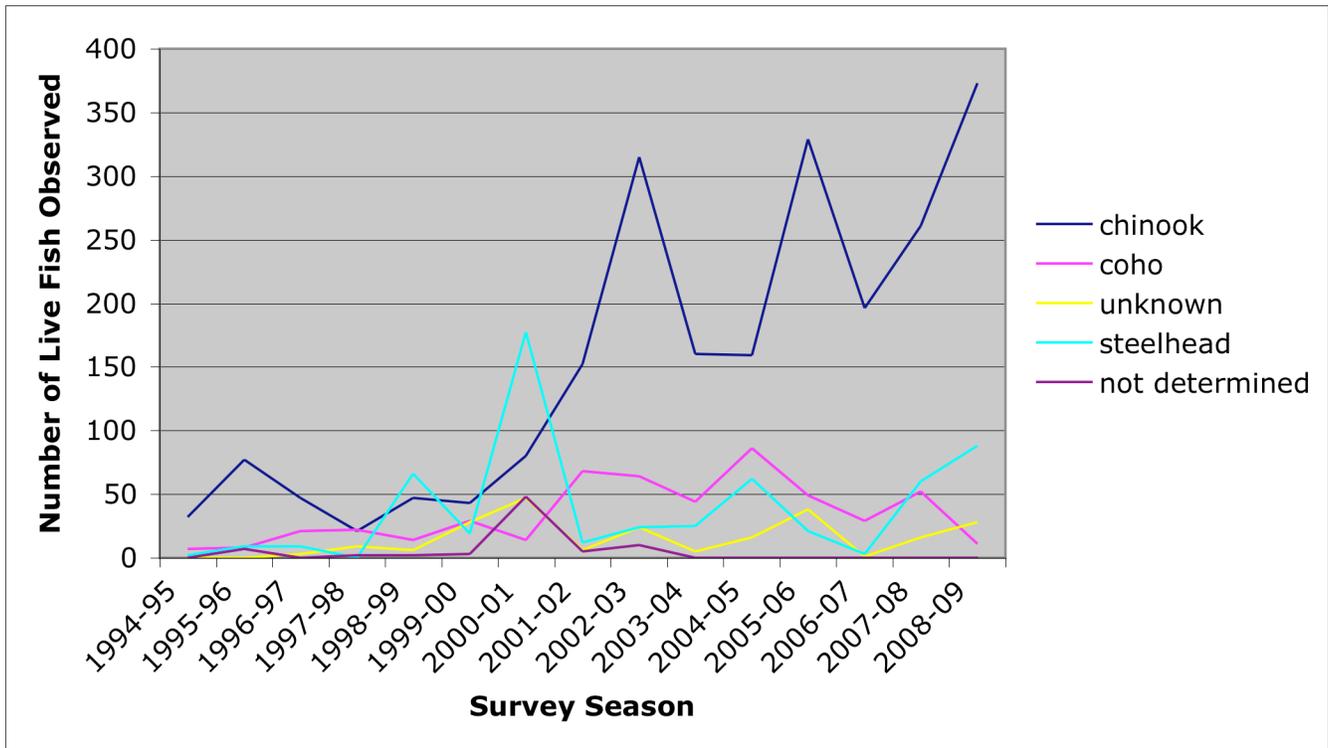
The 2008-09 accumulated mileage is above the average mileage over the past 14 years. In addition, the amount of stream surveyed is higher than any of the past 14 years. This was largely due to three factors: the storm pattern during this year's season, availability of experienced personnel and availability of funding. Infrequent storms and low flows during the entire season created good visibility throughout the watershed, including the lower mainstem, which in some seasons is unsurveyable due to turbidity / low visibility throughout the season. This allowed extensive coverage of the mainstem. The extended break in the rain after the beginning of the new year allowed an unusual set of repeat surveys in the mainstem as low as Honeydew Cr. The extended low flows during the early and mid-season allowed surveys of the lower mainstem and prevented surveys of the shorter headwaters reaches because fish couldn't access those reaches. This resulted in less repeat surveys of short reaches, lowering the accumulated miles relative to

total coverage. The availability of funding and experienced personnel this season enabled many surveys during the periods immediately following storms thus allowing surveys to reach the lower priority reaches before rains returned.

The extensive and repeated mainstem surveys also contributed to mileage because all but one mainstem survey below the Mendocino County Bridge were done by canoe, which allows more miles to be covered in fewer surveys. The remaining mainstem headwaters reach upstream from the Mendocino County Bridge was waded. All tributary surveys were wading surveys although it was determined that the lower part of mainstem Bear Cr. would be better surveyed in the future by boat.

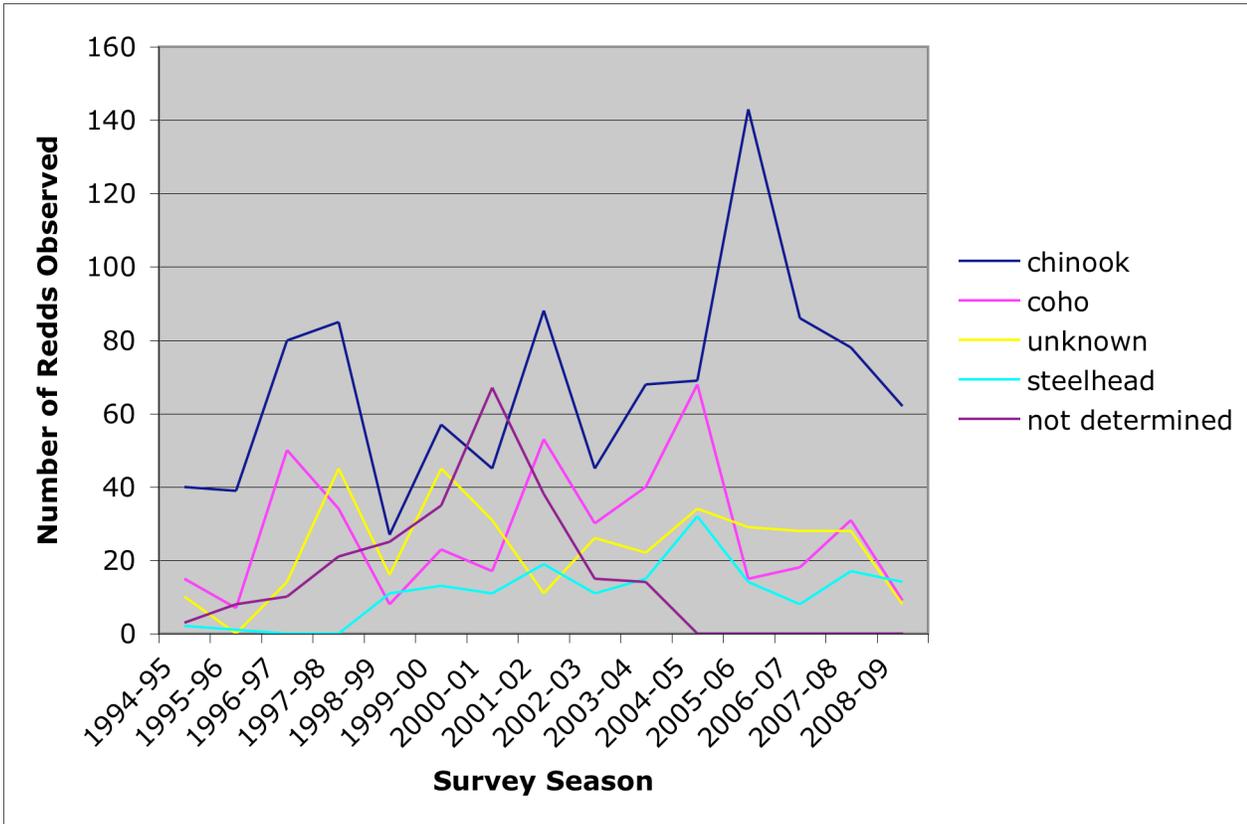
Observations of live fish and carcasses in the unknown species category were low relative to positive identifications, reflecting good identification skills amongst the season's relatively experienced surveyors. However, the number of unknown species live fish observed did rise, largely due to the large overall number of live fish observed. These were frequently seen in large schools resulting in less certainty about the exact species of each fish. The number of unknown redds was considerable due the difficulty in identifying an unoccupied redd to species, particularly where coho and steelhead are concerned since they have relatively more overlap in their redd characteristics, timing and habitat selection than chinook.

Live fish observations of chinook were higher (373) during the 2008-09 season than any season since 1994-95 (Figure 7). As already mentioned, the season's low flows allowed extensive and repeated surveys of lower mainstem reaches during the period that fish were trapped there by low flow. This allowed thorough observation of species composition and individual size, but also resulted in extensive repeat observations of individual fish. The same reaches were surveyed two and three times without intervening rainfalls and flows that would have allowed fish to migrate upstream from reach to reach. This was done in order to detect spawning activity in the lower mainstem by fish trapped there for extended periods, but artificially inflated the live fish observations, particularly for chinook because they were the prevalent species present during this period. If we assume that the entire chinook run had entered the river by December 2 and correct double counting by removing the repeat surveys, there was a total of 178 chinook that returned to the Mattole this season. Of these 42 were females, 38 male, 36 jacks, and 62 of unknown sex. These figures match up more closely with the 62 chinook redds (Figure 8) observed for the season than the numbers of live chinook recorded in Figure 7.



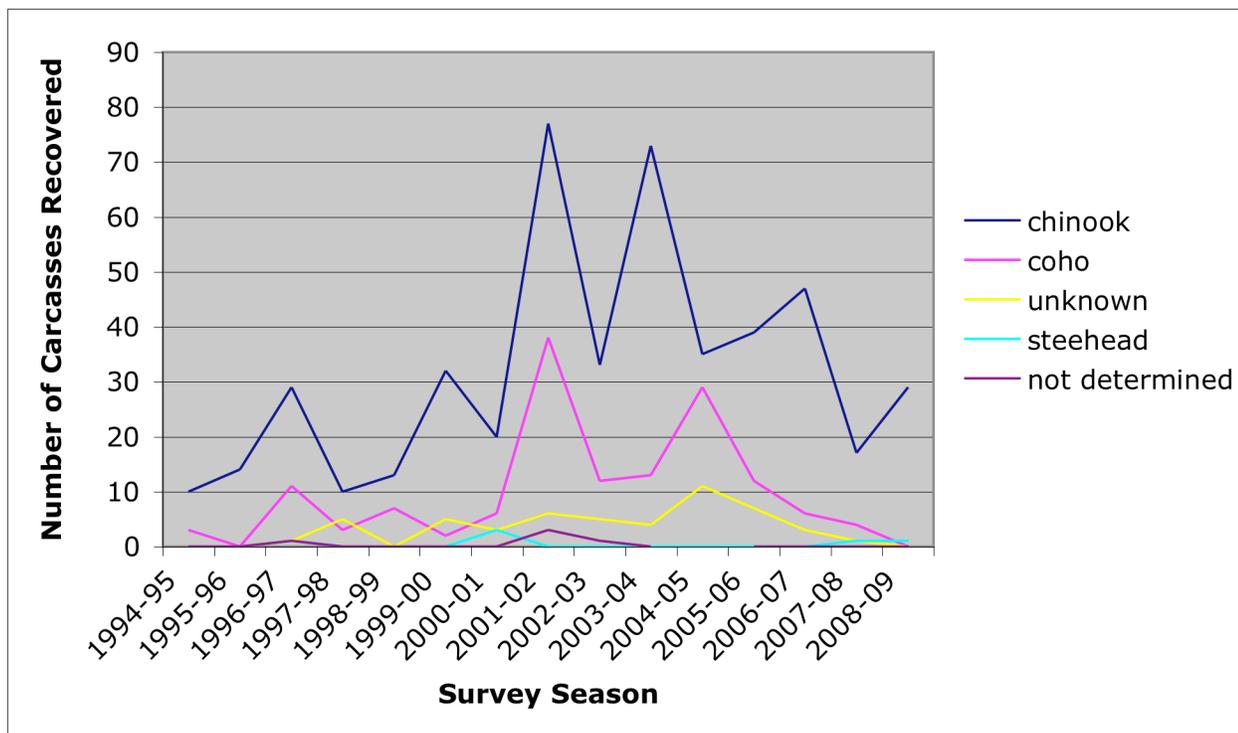
**FIGURE 7: Observations of Live Adult Salmonids.** Shown by species for all reaches combined for all seasons since 1994-95.

The number of redds observed this season was lower than the 2007-08 season for all species (Figure 8). Unfortunately, for all species but steelhead, there were fewer redds observed during the 2008-09 season than the past five years. Coho in particular had fewer redds observed (9) than any year in the past ten years. Low flows during the 2008-09 season allowed easy redd detection. The algae covering of the substrate, which forms during summer and causes the substrate to have a darker color than gravels that are freshly scoured by spawning activity or high flows, remained in place throughout the spawning season due to the complete lack of really high flows that would mobilize bedload and remove the algae. These high flows normally occur in the Mattole by the middle of the spawning season, making redds far less obvious during the latter part of the season than during the early season when the color difference makes redds easily visible. These conditions make it likely that fewer redds went undetected by surveyors than in other years. As a result, the observed drop in the numbers of redds during the 2008-09 season is likely the result of an actual decrease in the escapement rather than an artifact of survey conditions.



**FIGURE 8: Observations of Redds.** Shown by species for all reaches combined for all seasons since 1994-95.

Chinook carcass recoveries were higher (29) than the 2007-08 season (Figure 9). The repeat surveys without intervening flow events allowed improved carcass recovery by limiting the role of high flows in removing carcasses from reaches before they could be recovered. The flows kept most fish from reaching the tributaries, thus concentrating spawning in the mainstem and thereby allowing better predator saturation in the areas where spawning occurred. The observed decline in and low numbers of coho carcass recoveries despite these factors further reinforces the significance of the drop in coho escapement this season.

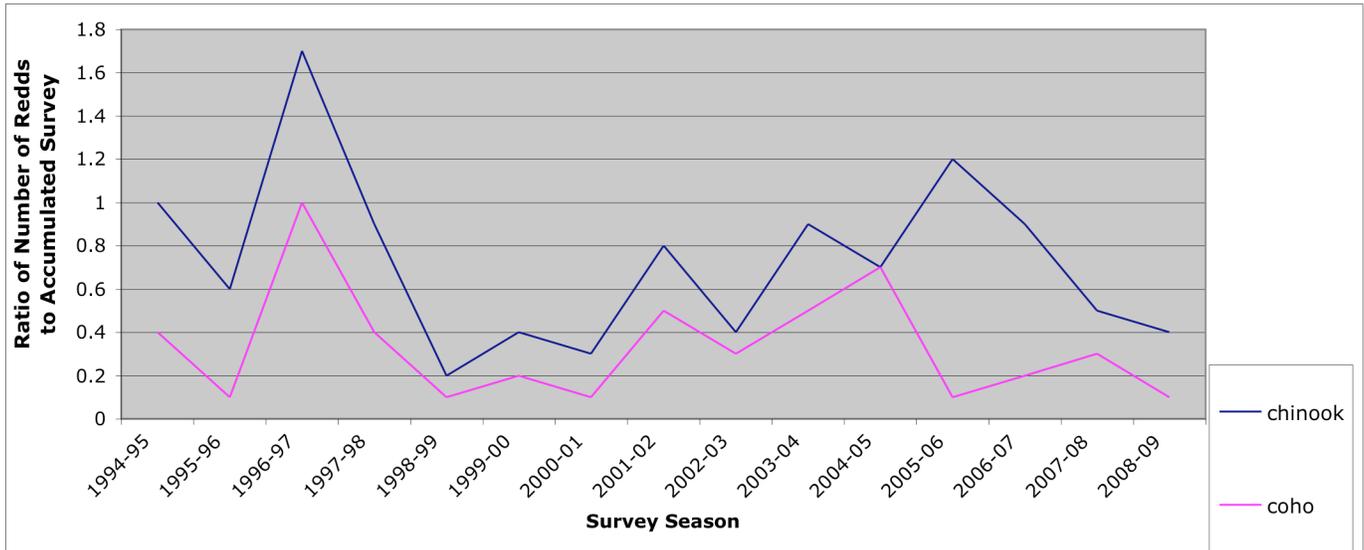


**FIGURE 9: Observations of Carcasses.** Shown by species for all reaches combined for all seasons since 1994-95.

The comparison between years using numbers of observations as in Figures 7, 8 and 9 is complicated not only by the difference between years in rainfall and flow timing but also by the fact that survey coverage and effort varies by season. Coverage and accumulated miles during 2008-09 were relatively high for the period from 1994 to present (Figure 6). The fact that survey extent and effort (as indicated by total coverage and accumulated mileage) were high would suggest the chinook run was indeed weak and the coho almost completely missing relative to past years. In order to compare survey seasons with varying amounts of survey coverage (total miles) and survey effort (accumulated miles) MSG utilizes an “Escapement Index” (EI) that is the number of redds for a given species divided by the accumulated miles surveyed for a particular watershed unit in order to correct for variation in survey effort and a similar ratio using total miles to correct for variation in survey coverage. Please refer to the State of the Salmon report for further discussion and explanation.

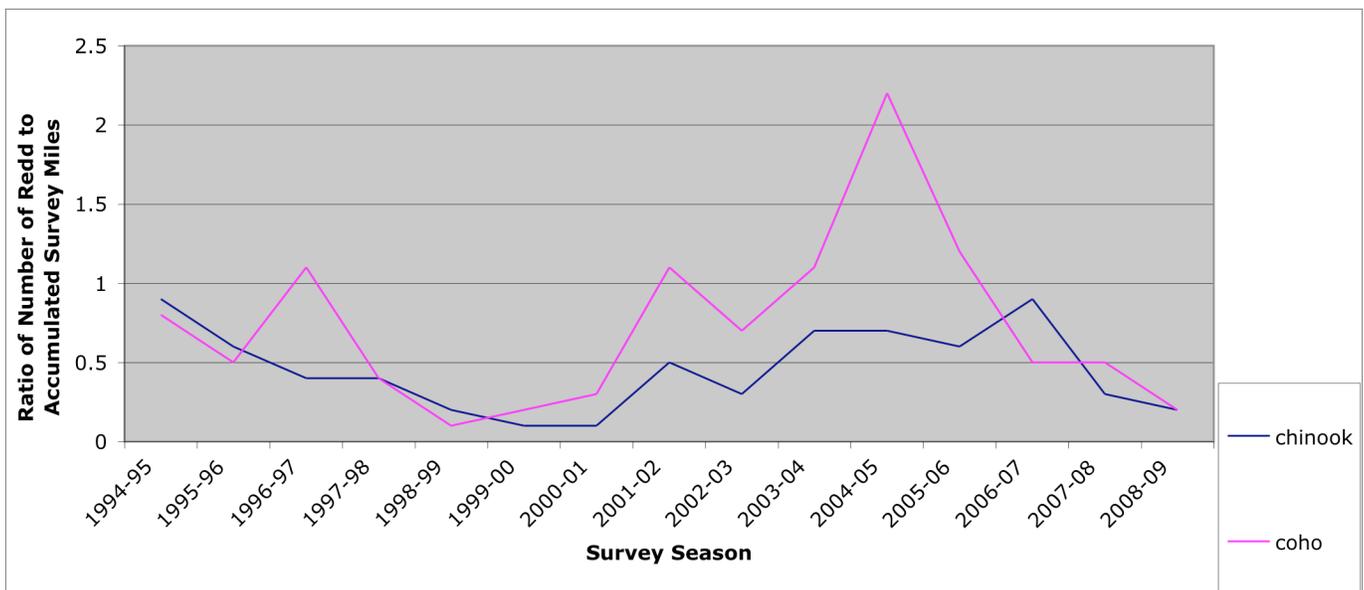
In the case of this season, using the EI to correct for the amount of survey effort confirms the impressions drawn from the numbers of observations in Figures 7, 8 and 9. Figure 10, showing the EI for all reaches combined over the past 15 years clearly shows that the Mattole chinook run

declined relative to the past five seasons and the coho run was as low as any other year in these records. EI for coho in all reaches combined was 0.1. It has been this low in four previous years but has not been lower than 0.1 in the entire period since 1994-95.

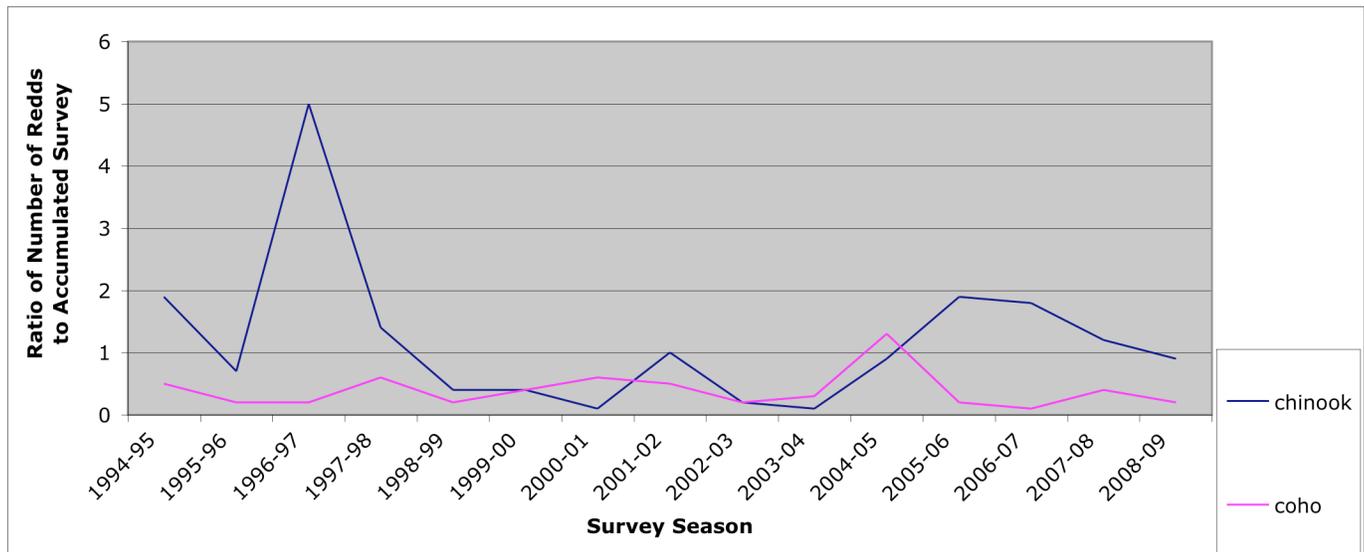


**FIGURE 10: Escapement Index for all reaches combined.** Shown by species for all reaches combined for all seasons since 1994-95. The EI is a comparison of number of redds observed corrected for amount of survey effort.

Figures 11 and 12 show decreases in the EI for tributaries and the upper mainstem. This is in part due to low flows preventing fish from migrating into these areas and in part due to decreased escapement this season.

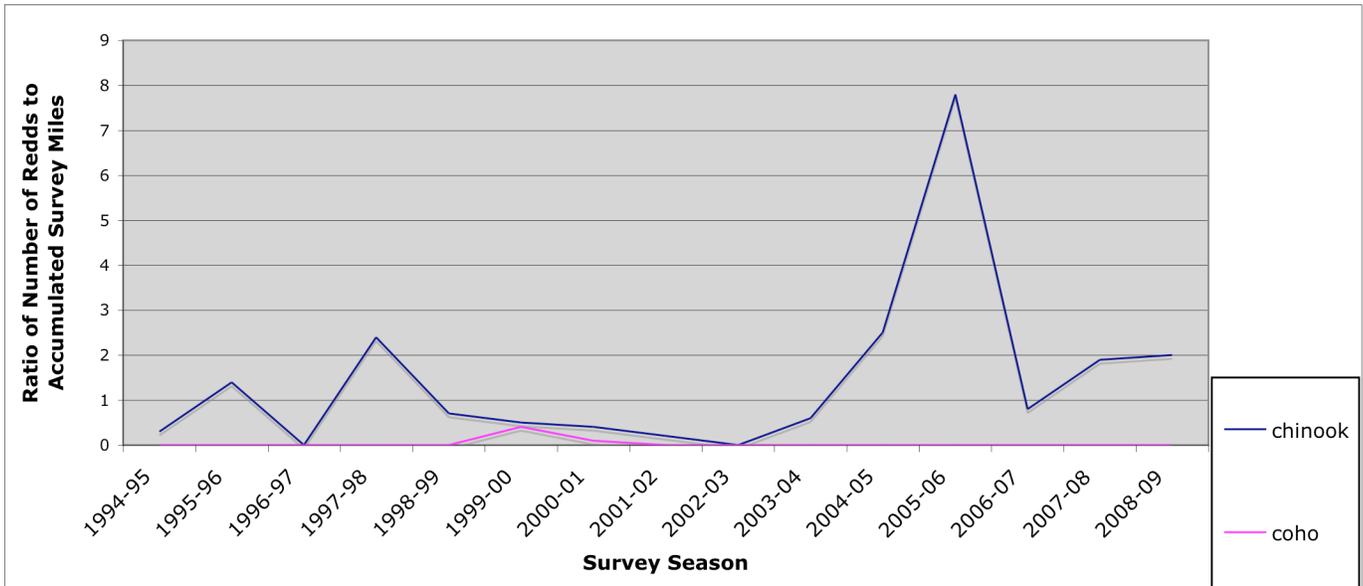


**FIGURE 11: Escapement Index for all tributaries (except Bear Creek) combined.** Shown by species for all tributary reaches except Bear Cr. combined for all seasons since 1994-95. The EI is a comparison of number of redds observed corrected for amount of survey effort.



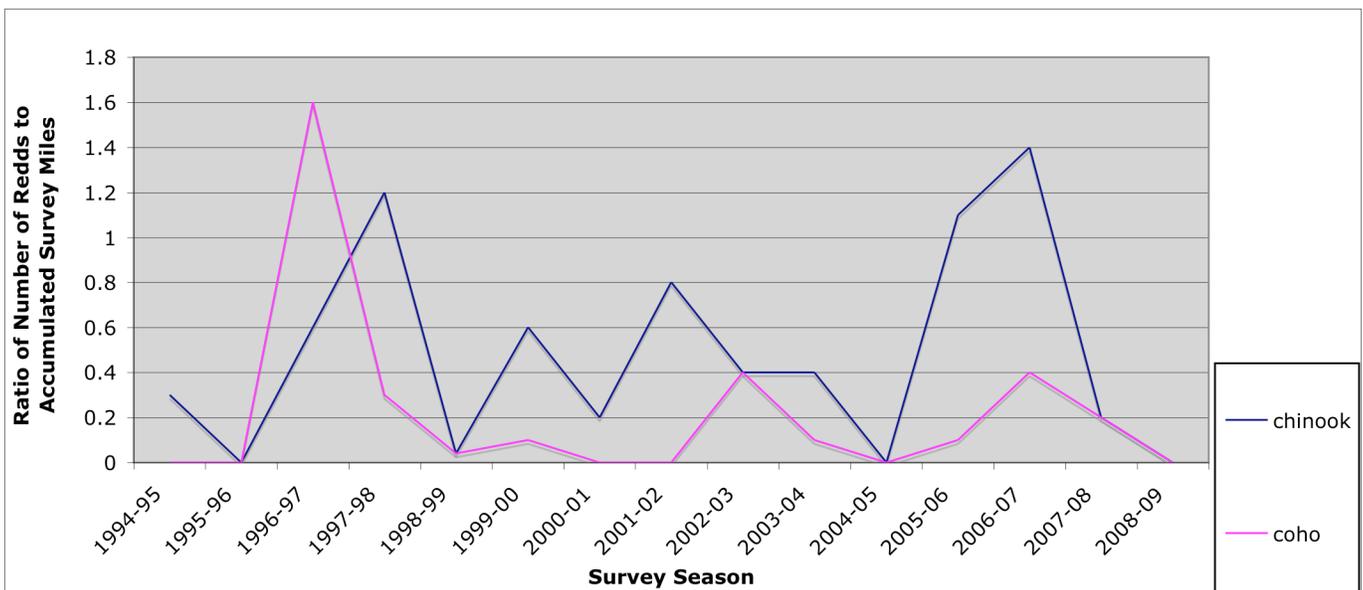
**FIGURE 12: Escapement Index for uppermost mainstem Mattole River.** Shown by species for all uppermost mainstem reaches (upstream of Metz bridge located at river mile 57.4) combined for all seasons since 1994-95.

Note that while Figure 13 appears to show an increase in chinook during the 2007-08 and 2008-09 seasons this is the result of the flow patterns for those years. Chinook were forced to hold in the lower river for longer than usual by low flows. When they did get enough flow to surmount the low flow barrier at the Honeydew Slide (river mile 27.4) they did not get a long enough and high enough flow to also reach and pass the low flow barrier at the Nooning Creek gorge (river mile 50.4). When flows began to decline the majority spawned in the reach just below Nooning Creek (Big Finley Creek (river mile 47.4) to Bear Creek (river mile 42.8)) similarly to what occurred even more prominently after a similar flow situation in 2005-06. Also, referring to Figure 13, note that in some seasons (1996-97 and 2002-03) the reach was unsurveyable due to high flow and lack of visibility and that this is primarily a chinook spawning reach with coho rarely observed.



**FIGURE 13: Escapement Index for mainstem Mattole River between Bear Creek and Big Finley Creek** Shown by species for all seasons since 1994-95.

Figure 14 showing EI for Bear Creek indicates that there were no redds observed in this large subbasin during the 2008-09 season despite extensive and repeated surveys. Bear Creek has a history of producing many redd observations in some years and not others.



**FIGURE 14: Escapement Index for Bear Creek** Shown by species for all seasons since 1994-95. Reaches were surveyed in all seasons. The EI is a comparison of number of redds observed corrected for amount of survey effort.

As expected, there were no right maxillary or adipose fin clips recovered. The right maxillary clip was the mark used to indicate adult returns from MSG’s natal-stock propagation (hatchbox) program. A clipped adipose fin indicates the presence of a coded wire tag applied to the fish as a juvenile. This mark has only been used in the Mattole by the MSG’s downriver rescue rearing

program. Both programs were discontinued by CADFG after the release of the last juveniles in 2004. The majority of returns from the 2004 release were expected during the 2005-06 season as three-year-old fish, however, a minority could have returned during the 2006-07 season since four year old returns have been documented in many watersheds, including the Mattole.

## Discussion

### COHO

Coho spawning activity was concentrated in the headwaters and upper tributaries as usual despite limitations to migration posed by low flows. The observed coho redds were located in the following mainstem reaches and tributaries: upper mainstem Mattole above the Mendocino County Bridge (river mile 58.6), McKee Creek (river mile 52.8) and Upper Mill Creek (river mile 56.2). The Thompson Creek subbasin (river mile 58.4) was particularly notable for the absence of coho observations since this subbasin is usually responsible for more coho redd observations than all other subbasins combined.

Despite the possibility of missed observations, which is true for both species and in almost every year, the data collected show that the adult coho run was down significantly from recent years by all measures. Due to survey conditions resulting from low flows, the possibility of missed observations was lower than in most years. Compared to the record since 1994, coho observations were as low as in any year. When combined with better conditions for observation and high survey effort, this indicates that the coho escapement during 2008-09 was at an unprecedented low.

This result is in direct contradiction to expectations based on the data collected in prior years. The 2008-09 adult coho runs were primarily the progeny of the 2004-05 spawning season, which by most measures was the best of the past 13 years (see Figures above). Analysis of scales from returned coho adults in the Mattole has consistently shown that the large majority of adult returns are three years of age, but some fish return at four years of age. Hence, adult returns in 2008-09 were primarily derived from the juveniles that reared in the summer of 2005. MSG has in the past attributed the overall variation in coho observations during the spawning season to the degree of drought during the summer three years previous. The majority of good quality coho rearing habitat in the Mattole is located in the headwaters and upper tributaries, also referred to as the Southern subbasin. (Please refer to the Recovery Strategy for California Coho Salmon, page 6.28 and the North Coast Watershed Assessment Program Mattole report, page 17, both are available from the CA Dept. of Fish and Game) During the summer of most years, many reaches in that area dry up or experience very low flows, resulting in the death of most of the season's juvenile coho. 2005 was a summer of lots of rain and high flows, cool water temperatures etc. Since 2006 and 2007 were years of relatively poor ocean conditions for juvenile salmonids this wasn't expected to result in a perfect storm of coho returns but nevertheless there were reasonable hopes for a really good coho run in 2008-09. The observed decline in coho escapement during the 2008-09 season suggests ocean conditions played a larger role in limiting Mattole coho populations than instream habitat for this cohort.

### CHINOOK

For chinook, there was a noticeable increase in observations of live fish and carcasses from last season, particularly for live fish, which was at the highest level for the entire period since 1994. This was most likely due to the extended low flows which allowed good visibility and frequent repeat surveys in reaches. This resulted in multiple observations of individual live fish and

improved rates of carcass observations. However, the number of observed redds decreased despite the highest number of miles surveyed in the entire period since 1994 and very good conditions for observing redds. Redds have a longer period of time in which they are observable and do not change location once constructed, eliminating multiple counting of the same redd. Additionally, given the fact that carcass observations were low compared to recent years despite good conditions for their recovery, it is likely that the number of redds observed is a better indicator of escapement than the observations of live fish and carcasses. From this it is concluded that chinook escapement was lower in 2008-09 than in recent years. However, comparison to the entire period since 1994 indicates that this escapement was not exceptionally low.

Analysis of scales from returned chinook adults in the Mattole has consistently shown that the large majority of adult returns are three years of age, but some fish return at four years of age. Hence, adult returns in 2008-09 were primarily derived from the juveniles that hatched and reared in the spring and summer of 2005. Referring to the above Figures indicates that the 2004-05 chinook escapement was not particularly high. As discussed above for coho, the summer flows of 2005 resulted in conditions which allowed many chinook juveniles to rear over the summer in the river that year. This was observed by MSG dive surveys that season. Juveniles which rear oversummer in fresh water achieve larger size before entering the ocean which can be expected to have contributed greatly to their survival at sea and resulting return to spawn in 2008-09. While ocean conditions during the summers of 2006 and 2007 were also poor for juvenile chinook as they were for juvenile coho, this seems to have played a less decisive role in shaping the Mattole chinook escapement in 2008-09 than it did for coho.

**TABLE 1: Mainstem Mattole 08-09 Spawner Surveys: Live Fish Observed**

Survey Reach	Survey Date (m/d/y)	Reach Length (miles)	Survey Personnel	Live Fish Seen (number observed) (RM indicates a right maxillary clip and AD indicates an adipose fin clip)															
				Chinook Males (>22"FL)	Chinook Jacks (<22"FL)	Chinook Females	Chinook Sex Unknown	Marked Chinook	Coho Males (>20" FL)	Coho Jacks (<20"FL)	Coho Females	Coho Sex Unknown	Steelhead Males	Steelhead Females	Steelhead Sex Unknown	Unknown Males	Unknown Females	Unknown Species & Sex	
<b>Upper Mainstem (MS) (from US to DS)</b>																			
MS Mattole: Mendo County Br. to Hulise Cr.	12/31/08	2.37	CT, JG	12	2	1				1		1					1		
MS Mattole: Mendo County Br. to Hulise Cr.	1/12/09	2.37	SJ, WK																
MS Mattole: Mendo County Br. to Metz Br.	1/4/09	2.12	CT, ES	4	1	4													
MS Mattole: Mendo County Br. to Metz Br.	1/15/09	2.12	JG, JDH															1	
MS Mattole: Metz Br. to McKee Cr.	1/9/09	5.26	CT, SW																
MS Mattole: McKee Cr. to Huckleberry Ln.	1/9/09	1.63	CT, SW																
MS Mattole: Big Finley Cr. to Bear Cr.	1/11/09	5.10	CT, JDH	12	3	10	1										2		
<b>Middle Mainstem (from US to DS)</b>																			
MS Mattole: Bear Cr. to redwoods US of 4mile Cr.	1/13/09	8.16	CT, WK	1		1											4		16
MS Mattole: redwoods US of 4mile Cr. to Honeydew Cr.	1/14/09	10.58	CT, WK														10		
<b>Lower Mainstem (from US to DS)</b>																			
MS Mattole: Honeydew Cr. to Hadley Br.	11/14/08	6.17	CT, SJ	1															1
MS Mattole: Honeydew Cr. to Hadley Br.	12/2/08	6.17	SJ, WK	26	27	29	3												
MS Mattole: Honeydew Cr. to Hadley Br.	12/12/08	6.17	SJ, NQ	18	17	9	40	0											
MS Mattole: Hadley Br. to AW Way	11/19/08	7.29	SJ, JG	5	1	6													8
MS Mattole: Hadley Br. to AW Way	12/2/08	7.29	CT, JG	4	5	7	17												
MS Mattole: Hadley Br. to AW Way	12/12/08	7.29	CT, FB	10	10	7	1										4		2
MS Mattole: AW Way to Conklin Cr.	12/3/08	7.37	CT, WK	6	4	3	32										1		
MS Mattole: Conklin Cr. to Wing dam hole	12/3/08	4.97	SJ, JG	2		3												1	
MS Mattole: Conklin Cr. to Wing dam hole	12/11/08	4.97	SJ, WK	2		2												1	2
MS Mattole: Just upstream of East Mill Cr.	11/19/08	0.10	KC, JG																
MS Mattole: Wing dam hole	11/24/08	0.10	SJ	4	1	4				1		1						4	
MS Mattole: Wing dam hole to Estuary, first riffle	12/11/08	2.59	CT					10										6	50
MS Mattole: Estuary, first riffle	10/22/08	0.10	MR, JG	1	2	1													

**TABLE 2: Mainstem Mattole 08-09 Spawner Surveys: Carasses Observed**

Survey Reach	Survey Date (m/d/y)	Reach Length (miles)	Survey Personnel	Carcasses (number observed and path numbers)															
				Chinook Males (>22"FL)	Chinook Jacks (<22"FL)	Chinook Females	Chinook Sex Unknown	Marked Chinook	Coho Males (>20" FL)	Coho Jacks (<20"FL)	Coho Females	Coho Sex Unknown	Steelhead Males	Steelhead Females	Steelhead Sex Unknown	Unknown Males	Unknown Females	Unknown Species & Sex	
<b>Upper Mainstem (from US to DS)</b>																			
MS Mattole: Mendo County Br. to Hulse Cr.	12/31/08	2.37	CT, JG																
MS Mattole: Mendo County Br. to Hulse Cr.	1/12/09	2.37	SJ,WK	1,3	2,3-3	7,all 3													
MS Mattole: Mendo County Br. to Metz Br.	1/4/09	2.12	CT,ES																
MS Mattole: Mendo County Br. to Metz Br.	1/15/09	2.12	JG,JDH	1,3		1,3	1,3												
MS Mattole: Metz Br. to McKee Cr.	1/9/09	5.26	CT,SW																
MS Mattole: McKee Cr. to Huckleberry Ln.	1/9/09	1.63	CT,SW																
MS Mattole: Big Finley Cr. to Bear Cr.	1/11/09	5.10	CT,JDH	6,3-3-1-1-3-3															
<b>Middle Mainstem (from US to DS)</b>																			
MS Mattole: Bear Cr. to redwoods US of 4mile Cr.	1/13/09	8.16	CT,WK	1,1															
MS Mattole: redwoods US of 4mile Cr. to Honeydew Cr.	1/14/09	10.58	CT,WK																
<b>Lower Mainstem (from US to DS)</b>																			
MS Mattole: Honeydew Cr. to Hadley Br.	11/14/08	6.17	CT, SJ																
MS Mattole: Honeydew Cr. to Hadley Br.	12/2/08	6.17	SJ,WK				1,3												
MS Mattole: Honeydew Cr. to Hadley Br.	12/12/08	6.17	SJ,NQ				4,1-3-3-3												
MS Mattole: Hadley Br. to AW Way	11/19/08	7.29	SJ, JG																
MS Mattole: Hadley Br. to AW Way	12/2/08	7.29	CT, JG				1,5												
MS Mattole: Hadley Br. to AW Way	12/12/08	7.29	CT,FB				1,3												
MS Mattole: AW Way to Conklin Cr.	12/3/08	7.37	CT,WK																
MS Mattole: Conklin Cr. to Wing dam hole	12/3/08	4.97	SJ, JG																
MS Mattole: Conklin Cr. to Wing dam hole	12/11/08	4.97	SJ,WK																
MS Mattole: just upstream of East Mill Cr.	11/19/08	0.10	KC, JG				1,1												
MS Mattole: Wing dam hole	11/24/08	0.10	SJ																
MS Mattole: Wing dam hole to Estuary,first riffle	12/11/08	2.59	CT																
MS Mattole: Estuary, first riffle	10/22/08	0.10	MR, JG																

**TABLE 3: Mainstem Mattole 08-09 Spawner Surveys: Definite Fresh Redds Observed**

Survey Reach	Survey Date (m/d/y)	Reach Length (miles)	Survey Personnel	Fresh Redds (number of redds and number occupied)							
				Chinook Total	Chinook Occupied	Coho Total	Coho Occupied	Steelhead Total	Steelhead Occupied	Unknown Total	Unknown Occupied
<b>Upper Mainstem (from US to DS)</b>											
MS Mattole: Mendo County Br. to Hulise Cr.	12/31/08	2.37	CT, JG	3	1	2	0				
MS Mattole: Mendo County Br. to Hulise Cr.	1/12/09	2.37	SJ,WK	1	0					1	0
MS Mattole: Mendo County Br. to Metz Br.	1/4/09	2.12	CT,ES	2	1						
MS Mattole: Mendo County Br. to Metz Br.	1/15/09	2.12	JG,JDH	2	0			2	0		
MS Mattole: Metz Br. to McKee Cr.	1/9/09	5.26	CT,SW	1	0						
MS Mattole: McKee Cr. to Huckleberry Ln.	1/9/09	1.63	CT,SW								
MS Mattole: Big Finley Cr. to Bear Cr.	1/11/09	5.10	CT,JDH	10	2						
<b>Middle Mainstem (from US to DS)</b>											
MS Mattole: Bear Cr. to redwoods US of 4mile Cr.	1/13/09	8.16	CT,WK	1	0						
MS Mattole: redwoods US of 4mile Cr. to Honeydew Cr.	1/14/09	10.58	CT,WK								
<b>Lower Mainstem (from US to DS)</b>											
MS Mattole: Honeydew Cr. to Hadley Br.	11/14/08	6.17	CT, SJ								
MS Mattole: Honeydew Cr. to Hadley Br.	12/2/08	6.17	SJ,WK	5	2					1	0
MS Mattole: Honeydew Cr. to Hadley Br.	12/12/08	6.17	SJ,NQ	7	1						
MS Mattole: Hadley Br. to AW Way	11/19/08	7.29	SJ, JG								
MS Mattole: Hadley Br. to AW Way	12/2/08	7.29	CT, JG	17	5						
MS Mattole: Hadley Br. to AW Way	12/12/08	7.29	CT,FB	5	0						
MS Mattole: AW Way to Conklin Cr.	12/3/08	7.37	CT,WK	1	0						
MS Mattole: Conklin Cr. to Wing dam hole	12/3/08	4.97	SJ, JG	1	1						
MS Mattole: Conklin Cr. to Wing dam hole	12/11/08	4.97	SJ,WK								
MS Mattole: just upstream of East Mill Cr.	11/19/08	0.10	KC, JG								
MS Mattole: Wing dam hole	11/24/08	0.10	SJ								
MS Mattole: Wing dam hole to Estuary,first riffle	12/11/08	2.59	CT								
MS Mattole: Estuary, first riffle	10/22/08	0.10	MR, JG								

**TABLE 4: Upper Mattole River Tributaries: 08-09 Spawner Surveys: Live Fish Observed**

Survey Reach	Survey Date (m/d/y)	Reach Length (m)	Survey Personnel	Live Fish Seen (number observed) (RM indicates a right maxillary clip and AD indicates an adipose fin clip)															
				Chinook Males (>22"FL)	Chinook Jacks (<22"FL)	Chinook Females	Chinook Sex Unknown	Marked Chinook	Coho Males (>20" FL)	Coho Jacks (<20"FL)	Coho Females	Coho Sex Unknown	Steelhead Males	Steelhead Females	Steelhead Sex Unknown	Unknown Males	Unknown Females	Unknown Species & Sex	
<b>US Tribs (Bear Cr. and up from US to BS)</b>																			
Danny's Cr.: conf. w/ Thompson Cr. to usual major forks	1/2/09	0.61	CT											2	2				
Yew Cr.: conf. w/ Thompson Cr. to usual major bend	12/30/08	0.90	CT																
Yew Cr.: conf. w/ Thompson Cr. to usual major bend	1/12/09	0.90	CT																
Thompson Cr.: conf. w/ Mattole to conf. w/ Danny's Cr.	12/31/08	2.20	SJ,WK										1	1					
Thompson Cr.: conf. w/ Mattole to conf. w/ Danny's Cr.	1/15/09	2.20	CT,WK																
Baker Cr.: conf. w/ Mattole to usual major forks	1/3/09	0.94	JG,FB														1		
Baker Cr.: conf. w/ Mattole to usual major forks	1/13/09	0.94	SJ,JW																
Upper Mill Cr.: conf. w/ Mattole to usual major forks	12/30/08	1.26	SJ																
Upper Mill Cr.: conf. w/ Mattole to usual major forks	1/13/09	1.26	JG,JDH																
Vanauken Cr.: conf. w/ Mattole to usual rd. crossing	1/3/09	1.14	CT,SSn																
McKee Cr.: conf. w/ Mattole to third major fork	1/3/09	0.91	JG,FB																
McKee Cr.: conf. w/ Mattole to (see map)	1/13/09	0.67	SJ,JW																
Bridge Cr.: conf. w/ Mattole to bridges on E. and W. Forks	1/3/09	2.30	NQ,BN				1												
Bridge Cr.: conf. w/ Mattole to bridges on E. and W. Forks	1/15/09	2.30	SJ,JW																
Eubanks Cr.: Torbert's Br. to usual road crossing	1/11/09	1.29	JW,BN																
S. Fork Bear Cr.: Hidden Valley Cr. To forks by Edward's	1/3/09	1.78	SJ,WK																
So. Fk. Bear Cr.: Lingel/Brown Br. To Shelter Cove Rd.	1/4/09	1.60	JG,BN																
So. Fk. Bear Cr.: Tolkan CG to Queens Mine Rd.	1/12/09	1.50	JG,JDH																
So. Fk. Bear Cr.: Horse Mt. CG to Tolkan CG	1/12/09	2.01	JW,BN																
Bear Cr.: conf. w/ Mattole to Jewett Cr.	1/16/09	2.07	JG,JDH																

**TABLE 5: Upper Mattole River Tributaries: 08-09 Spawner Surveys: Carcasses Observed**

Survey Reach	Survey Date (m/d/y)	Reach Length (rkm)	Survey Personnel	Carcasses (number observed and path numbers)										Steelhead Males	Steelhead Females	Steelhead Sex Unknown	Unknown Males	Unknown Females	Unknown Species & Sex
				Chinook Males (>22"FL)	Chinook Jacks (<22"FL)	Chinook Females	Chinook Sex Unknown	Marked Chinook	Coho Males (>20" FL)	Coho Jacks (<20"FL)	Coho Females	Coho Sex Unknown							
<b>US Tribs (Bear Cr. and up from US to BS)</b>																			
Danny's Cr.: conf. w/ Thompson Cr. to usual major forks	1/2/09	0.61	CT																
Yew Cr.: conf. w/ Thompson Cr. to usual major bend	12/30/08	0.90	CT																
Yew Cr.: conf. w/ Thompson Cr. to usual major bend	1/12/09	0.90	CT																
Thompson Cr.: conf. w/ Mattole to conf. w/ Danny's Cr.	12/31/08	2.20	SJ,WK																
Thompson Cr.: conf. w/ Mattole to conf. w/ Danny's Cr.	1/15/09	2.20	CT,WK					1,3											
Baker Cr.: conf. w/ Mattole to usual major forks	1/3/09	0.94	JG,FB																
Baker Cr.: conf. w/ Mattole to usual major forks	1/13/09	0.94	SJ,JW																
Upper Mill Cr.: conf. w/ Mattole to usual major forks	12/30/08	1.26	SJ																
Upper Mill Cr.: conf. w/ Mattole to usual major forks	1/13/09	1.26	JG,JDH																
Vanauken Cr.: conf. w/ Mattole to usual rd. crossing	1/3/09	1.14	CT,SSn																
McKee Cr.: conf. w/ Mattole to third major fork	1/3/09	0.91	JG,FB																
McKee Cr.: conf. w/ Mattole to (see map)	1/13/09	0.67	SJ,JW																
Bridge Cr.: conf. w/ Mattole to bridges on E. and W. Forks	1/3/09	2.30	NQ,BN																
Bridge Cr.: conf. w/ Mattole to bridges on E. and W. Forks	1/15/09	2.30	SJ,JW											1,3					
Eubanks Cr.: Torbert's Br. to usual road crossing	1/11/09	1.29	JW,BN																
S. Fork Bear Cr.: Hidden Valley Cr. To forks by Edward's	1/3/09	1.78	SJ,WK																
So. Fk. Bear Cr.: Lingel/Brown Br. To Shelter Cove Rd.	1/4/09	1.60	JG,BN																
So. Fk. Bear Cr.: Tolkan CG to Queens Mine Rd.	1/12/09	1.50	JG,JDH																
So. Fk. Bear Cr.: Horse Mt. CG to Tolkan CG	1/12/09	2.01	JW,BN																
Bear Cr.: conf. w/ Mattole to Jewett Cr.	1/16/09	2.07	JG,JDH																

**TABLE 6: Upper Mattole River Tributaries: 08-09 Spawner Surveys: Definite Fresh Redds Observed**

Survey Reach	Survey Date (m/d/y)	Reach Length (rkm)	Survey Personnel	Fresh Redds (number of redds and number occupied)							
				Chinook Total	Chinook Occupied	Coho Total	Coho Occupied	Steelhead Total	Steelhead Occupied	Unknown Total	Unknown Occupied
<b>US Tribs (Bear Cr. and up from US to BS)</b>											
Danny's Cr.: conf. w/ Thompson Cr. to usual major forks	1/2/09	0.61	CT					2	2		
Yew Cr.: conf. w/ Thompson Cr. to usual major bend	12/30/08	0.90	CT								
Yew Cr.: conf. w/ Thompson Cr. to usual major bend	1/12/09	0.90	CT								
Thompson Cr.: conf. w/ Mattole to conf. w/ Danny's Cr.	12/31/08	2.20	SJ,WK					1	1		
Thompson Cr.: conf. w/ Mattole to conf. w/ Danny's Cr.	1/15/09	2.20	CT,WK								
Baker Cr.: conf. w/ Mattole to usual major forks	1/3/09	0.94	JG,FB								
Baker Cr.: conf. w/ Mattole to usual major forks	1/13/09	0.94	SJ,JW								
Upper Mill Cr.: conf. w/ Mattole to usual major forks	12/30/08	1.26	SJ								
Upper Mill Cr.: conf. w/ Mattole to usual major forks	1/13/09	1.26	JG,JDH			4	0				
Vanauken Cr.: conf. w/ Mattole to usual rd. crossing	1/3/09	1.14	CT,SSn							1	0
McKee Cr.: conf. w/ Mattole to third major fork	1/3/09	0.91	JG,FB	2	0	3	0				
McKee Cr.: conf. w/ Mattole to (see map)	1/13/09	0.67	SJ,JW	1	0						
Bridge Cr.: conf. w/ Mattole to bridges on E. and W. Forks	1/3/09	2.30	NQ,BN								
Bridge Cr.: conf. w/ Mattole to bridges on E. and W. Forks	1/15/09	2.30	SJ,JW	1	0			4	0	1	0
Eubanks Cr.: Torbert's Br. to usual road crossing	1/11/09	1.29	JW,BN								
S. Fork Bear Cr.: Hidden Valley Cr. To forks by Edward's	1/3/09	1.78	SJ,WK								
So. Fk. Bear Cr.: Lingel/Brown Br. To Shelter Cove Rd.	1/4/09	1.60	JG,BN								
So. Fk. Bear Cr.: Tolkan CG to Queens Mine Rd.	1/12/09	1.50	JG,JDH							1	0
So. Fk. Bear Cr.: Horse Mt. CG to Tolkan CG	1/12/09	2.01	JW,BN								
Bear Cr.: conf. w/ Mattole to Jewett Cr.	1/16/09	2.07	JG,JDH								

**TABLE 7: Lower Mattole River Tributaries: 08-09 Spawner Surveys: Live Fish Observed**

Survey Reach	Survey Date (m/d/y)	Reach Length	Survey Personnel	Live Fish Seen (number observed) (RM indicates a right maxillary clip and AD indicates an adipose fin clip)															
				Chinook Males (>22"FL)	Chinook Jacks (<22"FL)	Chinook Females	Chinook Sex Unknown	Marked Chinook	Coho Males (>20" FL)	Coho Jacks (<20"FL)	Coho Females	Coho Sex Unknown	Steelhead Males	Steelhead Females	Steelhead Sex Unknown	Unknown Males	Unknown Females	Unknown Species & Sex	
<b>DS Tribe (from US to DS)</b>																			
Mattole Canyon Cr.: conf. w/Mattole to Pete's Br.	1/11/09	1.95	JG,CC																
Fourmile Cr.: conf. w/Mattole to first major fork	1/14/09	0.61	CT,WK																
Rattlesnake Cr.:conf w/DII Cr. to see map	1/16/09	0.61	CT,JW																
Clear Cr.: conf. w/ Mattole to waterfall	1/16/09	1.29	SJ																
McGinnis Cr.: conf w/Mattole to map location	12/17/08	2.01	CT,SSL																
McGinnis Cr.: conf w/Mattole to large trib on north	1/20/09	1.42	SJ,CR,SB																
East Mill Cr.: conf. w/Mattole to upper bridge	1/7/09	1.46	SJ,WK																
Lower Mill Cr.: conf. w/Mattole to upper weir	12/17/08	0.69	SJ,WK																
Lower Mill Cr.: conf. w/Mattole to upper weir	1/6/09	0.69	SJ,KC																

**TABLE 8: Lower Mattole River Tributaries: 08-09 Spawner Surveys: Carcasses Observed**

Survey Reach	Survey Date (m/d/y)	Reach Length	Survey Personnel	Carcasses (number observed and path numbers)															
				Chinook Males (>22"FL)	Chinook Jacks (<22"FL)	Chinook Females	Chinook Sex Unknown	Marked Chinook	Coho Males (>20" FL)	Coho Jacks (<20"FL)	Coho Females	Coho Sex Unknown	Steelhead Males	Steelhead Females	Steelhead Sex Unknown	Unknown Males	Unknown Females	Unknown Species & Sex	
<b>DS Tribes (from US to DS)</b>																			
Mattole Canyon Cr.: conf. w/Mattole to Pete's Br.	1/11/09	1.95	JG,CC																
Fourmile Cr.: conf. w/Mattole to first major fork	1/14/09	0.61	CT,WK																
Rattlesnake Cr.:conf w/Oil Cr. to see map	1/16/09	0.61	CT,JW																
Clear Cr.: conf. w/ Mattole to waterfall	1/16/09	1.29	SJ																
McGinnis Cr.: conf w/Mattole to map location	12/17/08	2.01	CT,SSJ																
McGinnis Cr.: conf w/Mattole to large trib on north	1/20/09	1.42	SJ,CR,SB																
East Mill Cr.: conf. w/Mattole to upper bridge	1/7/09	1.46	SJ,WK																
Lower Mill Cr.: conf. w/Mattole to upper weir	12/17/08	0.69	SJ,WK																
Lower Mill Cr.: conf. w/Mattole to upper weir	1/6/09	0.69	SJ,KC																

**TABLE 9: Lower Mattole River Tributaries: 08-09 Spawner Surveys: Definite Fresh Redds Observed**

Survey Reach	Survey Date (m/d/y)	Reach Length	Survey Personnel	Fresh Redds (number of redds and number occupied)								
				Chinook Total	Chinook Occupied	Coho Total	Coho Occupied	Steelhead Total	Steelhead Occupied	Unknown Total	Unknown Occupied	
<b>DS Tribe (from US to DS)</b>												
Mattole Canyon Cr.: conf. w/Mattole to Pete's Br.	1/11/09	1.95	JG,CC									
Fourmile Cr.: conf. w/Mattole to first major fork	1/14/09	0.61	CT,WK	2	0			2	0	1	0	
Rattlesnake Cr.: conf w/Oil Cr. to see map	1/16/09	0.61	CT,JW									
Clear Cr.: conf. w/ Mattole to waterfall	1/16/09	1.29	SJ					1	0			
McGinnis Cr.: conf w/Mattole to map location	12/17/08	2.01	CT,SSL									
McGinnis Cr.: conf w/Mattole to large trib on north	1/20/09	1.42	SJ,CR,SB							1	0	
East Mill Cr.: conf. w/Mattole to upper bridge	1/7/09	1.46	SJ,WK					2	0	1	0	
Lower Mill Cr.: conf. w/Mattole to upper weir	12/17/08	0.69	SJ,WK									
Lower Mill Cr.: conf. w/Mattole to upper weir	1/6/09	0.69	SJ,KC									

**TABLE 10: Data summary for 1994-95 through 2008-2009 seasons: Spawner Surveys, Mattole River watershed**

Spawning ground surveys in the Mattole, ongoing since the 1981-82 season, have focused primarily on assessments of fall-run chinook salmon. Survey effort, coverage and timing have varied somewhat from season to season, depending upon such factors as funding, availability of trained personnel, weather conditions and water visibility. Number of redds per mile was calculated as total redds divided by reach length. Surveys conducted by the Mattole Salmon Group (phone 707-629-3433; fax 707-629-3435; e-mail: msg@mattolesalmon.org). Data summary for 1994-2003 prepared by Gary D. Peterson, MSG fisheries biologist (last updated February 2003), and data summary for 2003-2009 prepared by Campbell Thompson, MSG Project Coordinator and fisheries biologist (last updated 2009). Starting with 2004-05, UN and ND are lumped together as UN.

**Key to Abbreviations:** KS = king (chinook) salmon; SS = silver (coho) salmon; UN = unknown if chinook or coho; SH = steelhead; ND = species not determined

Survey Season & inclusive dates	Survey Reaches (results displayed for 6 mainstem segments, for Bear Creek, & as pooled data for all other Mattole tributaries)	Reach Length (miles)	Accumulated Survey Miles	Live Fish Seen					Carcasses & Skeletons					Number of Definite Redds					Number of Redds Per Mile		
				KS	SS	UN	SH	ND	KS	SS	UN	SH	ND	KS	SS	UN	SH	ND		Total Redds	
1994-95  11/14/94  to  1/23/95	Mattole headwaters index reach (Stanley Creek to Hulse Creek)	4.7	9.4	9	4	-	-	-	1	2	-	-	-	18	5	6	-	3	32	6.8	
	upper mainstem, Whitethorn area to Thorn Jct. (Stanley Cr. to McKee Cr.)	<i>not surveyed</i>																			
	upper mainstem, Thorn Junction index reach (McKee Cr. to "Raintree" area)	1.6	1.6	4	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	3	1.9
	middle mainstem index reach above Ettersburg (Eubanks Cr. to Bear Cr.)	1.6	3.2	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	0.6
	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	0.5	1	-	-	-	-	-	7	-	-	-	-	-	1	-	-	-	-	1	2
	lower mainstem Mattole River (downstream from Honeydew Creek)	0.6	0.6	15	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	3	5
	tributaries (except Bear Creek)	9.8	11.8	2	3	-	2	-	2	1	-	-	-	-	11	10	3	2	-	26	2.7
	Bear Creek (enters Mattole River at Ettersburg)	7.6	11.4	-	-	-	-	-	-	-	-	-	-	-	3	-	1	-	-	4	0.5
<b>ALL REACHES COMBINED 1994-95 SEASON</b>	<b>26.4</b>	<b>39.4</b>	<b>32</b>	<b>7</b>	<b>-</b>	<b>2</b>	<b>-</b>	<b>10</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>40</b>	<b>15</b>	<b>10</b>	<b>2</b>	<b>3</b>	<b>70</b>	<b>2.7</b>	
1995-96  12/1/95  to  1/15/96	Mattole headwaters index reach (Stanley Creek to Hulse Creek)	4.7	9.4	6	3	-	-	-	-	-	-	-	-	7	2	-	-	4	13	2.8	
	upper mainstem, Whitethorn area to Thorn Jct. (Stanley Cr. to McKee Cr.)	4.1	4.1	3	-	-	2	-	-	-	-	-	-	1	-	-	1	-	2	0.5	
	upper mainstem, Thorn Junction index reach (McKee Cr. to "Raintree" area)	2.1	4.2	11	-	-	-	-	1	-	-	-	-	3	-	-	-	-	3	1.4	
	middle mainstem index reach above Ettersburg (Eubanks Cr. to Bear Cr.)	4.9	11.3	23	-	-	-	-	7	-	-	-	-	16	-	-	-	-	16	3.3	
	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	8.2	10.2	3	1	-	-	-	1	-	-	-	-	4	-	-	-	1	5	0.6	
	lower mainstem Mattole River (downstream from Honeydew Creek)	4	4	28	-	-	-	6	2	-	-	-	-	1	-	-	-	-	1	0.3	
	tributaries (except Bear Creek)	7.5	10.8	3	4	-	4	1	3	-	-	-	-	7	5	-	-	2	14	1.9	
	Bear Creek (enters Mattole River at Ettersburg)	8.9	11.4	-	-	-	3	-	-	-	-	-	-	-	-	-	-	1	1	0.1	
<b>ALL REACHES COMBINED 1995-96 SEASON</b>	<b>44.4</b>	<b>65.4</b>	<b>77</b>	<b>8</b>	<b>-</b>	<b>9</b>	<b>7</b>	<b>14</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>39</b>	<b>7</b>	<b>-</b>	<b>1</b>	<b>8</b>	<b>55</b>	<b>1.2</b>		

Survey Season & inclusive dates	Survey Reaches (results displayed for 6 mainstem segments, for Bear Creek, & as pooled data for all other Mattole tributaries)	Reach Length (miles)	Accumulated Survey Miles	Live Fish Seen					Carcasses & Skeletons					Number of Definite Redds					Number of Redds Per Mile
				KS	SS	UN	SH	ND	KS	SS	UN	SH	ND	KS	SS	UN	SH	ND	

1996-97  12/13/96  to  1/10/97	Mattole headwaters index reach (Stanley Creek to Hulse Creek)	4.7	10.2	33	8	2	-	-	27	1	1	-	1	51	2	1	-	9	63	13.4
	upper mainstem, Whitethorn area to Thorn Jct. (Stanley Cr. to McKee Cr.)	<i>not surveyed</i>																		<i>not surveyed</i>
	upper mainstem, Thorn Junction index reach (McKee Cr. to "Raintree" area)	1.6	3.2	3	-	-	-	-	2	-	-	-	-	11	-	-	-	-	11	6.9
	middle mainstem index reach above Ettersburg (Big Finley Cr. to Bear Cr.)	<i>not surveyed</i>																		<i>not surveyed</i>
	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	<i>not surveyed</i>																		<i>not surveyed</i>
	lower mainstem Mattole River (downstream from Honeydew Creek)	<i>not surveyed</i>																		<i>not surveyed</i>
	tributaries (except Bear Creek)	9.25	14.9	5	3	1	1	-	-	3	-	1	-	6	17	1	-	-	24	2.6
	Bear Creek (enters Mattole River at Ettersburg)	12.6	19.4	1	9	-	-	-	-	7	-	-	-	12	31	12	-	1	56	4.4
<b>ALL REACHES COMBINED 1996-97 SEASON</b>	<b>28.15</b>	<b>47.7</b>	<b>47</b>	<b>21</b>	<b>3</b>	<b>9</b>	<b>-</b>	<b>29</b>	<b>11</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>80</b>	<b>50</b>	<b>14</b>	<b>-</b>	<b>10</b>	<b>154</b>	<b>5.5</b>	

1997-98  11/28/97  to  1/10/98	Mattole headwaters index reach (Stanley Creek to Hulse Creek)	4.7	18.8	8	9	4	-	-	1	3	-	-	-	27	12	14	-	9	62	13.2
	upper mainstem, Whitethorn area to Thorn Jct. (Stanley Cr. to McKee Cr.)	<i>not surveyed</i>																		<i>not surveyed</i>
	upper mainstem, Thorn Junction index reach (McKee Cr. to "Raintree" area)	1.6	6.4	2	-	1	-	-	2	-	-	-	-	6	-	-	-	-	6	3.8
	middle mainstem index reach above Ettersburg (Big Finley Cr. to Bear Cr.)	4.6	4.6	1	-	-	-	-	1	-	-	-	-	11	-	-	-	-	11	2.4
	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	8.1	8.1	-	-	2	-	-	2	-	-	-	-	-	-	-	-	-	0	0
	lower mainstem Mattole River (downstream from Honeydew Creek)	<i>not surveyed</i>																		<i>not surveyed</i>
	tributaries (except Bear Creek)	16.35	35.35	-	12	-	-	2	-	-	1	-	-	14	15	5	-	10	44	2.7
	Bear Creek (enters Mattole River at Ettersburg)	9.85	22.15	10	1	-	-	-	4	-	4	-	-	27	7	26	-	2	62	6.3
<b>ALL REACHES COMBINED 1997-98 SEASON</b>	<b>45.2</b>	<b>95.4</b>	<b>21</b>	<b>22</b>	<b>9</b>	<b>-</b>	<b>2</b>	<b>10</b>	<b>3</b>	<b>5</b>	<b>-</b>	<b>-</b>	<b>85</b>	<b>34</b>	<b>45</b>	<b>-</b>	<b>21</b>	<b>185</b>	<b>4.1</b>	

Survey Season & inclusive dates	Survey Reaches (results displayed for 6 mainstem segments, for Bear Creek, & as pooled data for all other Mattole tributaries)	Reach Length (miles)	Accumulated Survey Miles	Live Fish Seen					Carcasses & Skeletons					Number of Definite Redds						Number of Redds Per Mile
				KS	SS	UN	SH	ND	KS	SS	UN	SH	ND	KS	SS	UN	SH	ND	Total Redds	

1998-99  12/4/98 to 1/29/99  (+ spot check on 2/11/99)	Mattole headwaters index reach (Stanley Creek to Hulse Creek)	4.7	18.8	7	2	2	3	-	2	2	-	-	-	8	4	7	3	6	28	6
	upper mainstem, Whitethorn area to Thorn Jct. (Stanley Cr. to McKee Cr.)	4.3	8.6	1	-	-	3	-	2	2	-	-	-	1	-	6	1	1	9	2.1
	upper mainstem, Thorn Junction index reach (McKee Cr. to "Raintree" area)	1.6	5.5	8	1	2	8	-	1	-	-	-	-	1	-	-	-	1	2	1.3
	middle mainstem index reach above Ettersburg (Big Finley Cr. to Bear Cr.)	4.6	9.2	14	-	1	-	-	3	1	-	-	-	6	-	-	-	1	7	1.5
	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	9.75	21.2	12	-	-	29	-	4	1	-	-	-	2	-	-	-	-	2	0.2
	lower mainstem Mattole River (downstream from Honeydew Creek)	11.5	11.8	1	-	-	8	-	-	-	-	-	-	-	-	-	-	-	0	0
	tributaries (except Bear Creek)	20	40.85	4	6	1	11	-	-	1	-	-	-	8	3	1	5	10	27	1.4
	Bear Creek (enters Mattole River at Ettersburg)	10.4	25.05	-	5	-	4	2	-	-	-	-	-	1	1	2	2	6	12	1.2
<b>ALL REACHES COMBINED 1998-99 SEASON</b>	<b>66.85</b>	<b>141</b>	<b>47</b>	<b>14</b>	<b>6</b>	<b>66</b>	<b>2</b>	<b>13</b>	<b>7</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>27</b>	<b>8</b>	<b>16</b>	<b>11</b>	<b>25</b>	<b>87</b>	<b>1.3</b>	

1999-  2000  11/24/99 to 1/27/00	Mattole headwaters index reach (Stanley Creek to Hulse Creek)	4.7	16.6	3	7	1	8	1	-	-	-	-	-	6	7	9	3	12	37	7.9
	upper mainstem, Whitethorn area to Thorn Jct. (Stanley Cr. to McKee Cr.)	4.3	8.6	3	2	3	-	-	2	-	-	-	-	6	2	6	-	1	15	3.5
	upper mainstem, Thorn Junction index reach (McKee Cr. to "Raintree" area)	1.6	4.8	10	3	-	-	-	-	-	1	-	-	10	-	2	-	-	12	7.5
	middle mainstem index reach above Ettersburg (Big Finley Cr. to Bear Cr.)	4.6	18.4	12	10	17	4	1	7	-	3	-	-	9	7	8	-	-	24	5.2
	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	9.75	21.2	7	-	1	3	-	10	-	1	-	-	7	-	3	-	-	10	1
	lower mainstem Mattole River (downstream from Honeydew Creek)	12	24	1	-	-	1	-	2	-	-	-	-	-	-	-	-	-	0	0
	tributaries (except Bear Creek)	18.3	33.15	-	1	-	3	1	2	2	-	-	-	4	5	4	5	15	33	1.8
	Bear Creek (enters Mattole River at Ettersburg)	13.1	24.25	7	6	6	-	-	9	-	-	-	-	15	2	13	5	7	42	3.2
<b>ALL REACHES COMBINED 1999-2000 SEASON</b>	<b>68.35</b>	<b>151</b>	<b>43</b>	<b>29</b>	<b>28</b>	<b>19</b>	<b>3</b>	<b>32</b>	<b>2</b>	<b>5</b>	<b>-</b>	<b>-</b>	<b>57</b>	<b>23</b>	<b>45</b>	<b>13</b>	<b>35</b>	<b>173</b>	<b>2.5</b>	

Survey Season & inclusive dates	Survey Reaches (results displayed for 6 mainstem segments, for Bear Creek, & as pooled data for all other Mattole tributaries)	Reach Length (miles)	Accumulated Survey Miles	Live Fish Seen					Carcasses & Skeletons					Number of Definite Redds						Number of Redds Per Mile
				KS	SS	UN	SH	ND	KS	SS	UN	SH	ND	KS	SS	UN	SH	ND	Total Redds	

2000-2001	Mattole headwaters index reach (Stanley Creek to Hulse Creek)	4.7	14.1	-	5	2	7	-	-	2	-	2	-	1	9	14	8	34	56	11.9	
	upper mainstem, Whitethorn area to Thorn Jct. (Stanley Cr. to McKee Cr.)	4.3	8.6	-	-	-	3	-	-	-	-	-	-	-	-	5	-	3	8	1.9	
	upper mainstem, Thorn Junction index reach (McKee Cr. to "Raintree" area)	1.6	3.2	-	3	-	-	1	-	-	-	-	-	-	-	-	-	1	1	0.6	
	middle mainstem index reach above Ettersburg (Big Finley Cr. to Bear Cr.)	4.6	13.8	-	-	1	1	3	4	1	1	-	-	5	1	2	-	9	17	3.7	
	12/2/00 to 2/2/01	middle mainstem below Ettersburg (Bear Creek to Bundle Prairie Creek)	17.5	46.75	66	2	27	81	27	11	-	2	-	-	27	1	7	-	7	42	2.4
	lower mainstem Mattole River (downstream from Bundle Prairie Cr.)	23.9	42.6	10	-	17	83	17	2	-	-	-	-	7	-	-	-	1	8	0.3	
	tributaries (except Bear Creek)	12.25	19.7	-	4	-	-	-	-	3	-	1	-	2	6	3	3	9	23	1.9	
	Bear Creek (enters Mattole River at Ettersburg)	9.35	14.1	4	-	-	2	-	3	-	-	-	-	3	-	-	-	3	6	0.6	
<b>ALL REACHES COMBINED 2000-2001 SEASON</b>	<b>78.2</b>	<b>162.85</b>	<b>80</b>	<b>14</b>	<b>47</b>	<b>177</b>	<b>48</b>	<b>20</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>45</b>	<b>17</b>	<b>31</b>	<b>11</b>	<b>67</b>	<b>171</b>	<b>2.2</b>		

2001-2002	Mattole headwaters index reach (Stanley Creek to Hulse Creek)	4.7	33.7	87	32	2	2	-	34	28	3	-	1	34	16	2	10	17	79	16.8	
	upper mainstem, Whitethorn area to Thorn Jct. (Stanley Cr. to McKee Cr.)	4.3	11	14	5	4	4	1	18	4	-	-	-	9	-	-	-	-	9	2.1	
	upper mainstem, Thorn Junction index reach (McKee Cr. to "Raintree" area)	1.6	3.2	5	-	-	-	-	2	1	-	-	-	4	-	-	-	-	4	2.5	
	middle mainstem index reach above Ettersburg (Big Finley Cr. to Bear Cr.)	4.6	4.6	-	-	-	-	2	1	-	-	-	-	1	-	-	-	-	1	0.2	
	11/30/01 to 1/24/02	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	<i>not surveyed</i>																		<i>not surveyed</i>
	lower mainstem Mattole River (downstream from Honeydew Creek)	<i>not surveyed</i>																			<i>not surveyed</i>
	tributaries (except Bear Creek)	9.95	33.05	10	31	-	3	2	5	5	2	-	2	18	37	9	8	19	91	9.1	
	Bear Creek (enters Mattole River at Ettersburg)	8.9	28.8	36	-	-	3	-	17	-	1	-	-	22	-	-	1	2	25	2.8	
<b>ALL REACHES COMBINED 2001-2002 SEASON</b>	<b>34.05</b>	<b>114.35</b>	<b>152</b>	<b>68</b>	<b>6</b>	<b>12</b>	<b>5</b>	<b>77</b>	<b>38</b>	<b>6</b>	<b>-</b>	<b>3</b>	<b>88</b>	<b>53</b>	<b>11</b>	<b>19</b>	<b>38</b>	<b>209</b>	<b>6.1</b>		

Survey Season & inclusive dates	Survey Reaches (results displayed for 6 mainstem segments, for Bear Creek, & as pooled data for all other Mattole tributaries)	Reach Length (miles)	Accumulated Survey Miles	Live Fish Seen					Carcasses & Skeletons					Number of Definite Redds						Number of Redds Per Mile
				KS	SS	UN	SH	ND	KS	SS	UN	SH	ND	KS	SS	UN	SH	ND	Total Redds	

2002-	Mattole headwaters index reach (Stanley Creek to Hulse Creek)	4.7	16.6	4	14	3	1	-	4	-	-	-	1	4	4	3	1	1	13	2.8
	upper mainstem, Whitethorn area to Thorn Jct. (Stanley Cr. to McKee Cr.)	4.3	8.75	-	3	1	1	-	11	4	1	-	-	1	1	1	-	1	4	0.9
	upper mainstem, Thorn Junction index reach (McKee Cr. to "Raintree" area)	1.6	3.2	-	-	-	-	-	4	2	-	-	-	1	-	-	-	-	1	0.6
2003	middle mainstem index reach above Ettersburg (Big Finley Cr. to Bear Cr.)	<i>Not Surveyed</i>																		<i>not surveyed</i>
11/21/02 to 1/20/03	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	2.9	2.9	4	1	1	-	2	2	-	1	-	-	1	-	-	-	-	1	0.3
	lower mainstem Mattole River (downstream from Honeydew Creek)	25	46.01	281	18	17	13	8	8	-	-	-	-	24	-	-	-	4	28	1.1
	tributaries (except Bear Creek)	9.15	23.05	16	20	1	8	-	2	4	1	-	-	7	17	13	10	8	55	6
	Bear Creek (enters Mattole River at Ettersburg)	8.1	19.25	10	8	1	1	-	2	2	2	-	-	7	8	9	-	1	25	3.1
	<b>ALL REACHES COMBINED 2002-2003 SEASON</b>	<b>55.75</b>	<b>119.85</b>	<b>315</b>	<b>64</b>	<b>24</b>	<b>24</b>	<b>10</b>	<b>33</b>	<b>12</b>	<b>5</b>	<b>-</b>	<b>1</b>	<b>45</b>	<b>30</b>	<b>26</b>	<b>11</b>	<b>15</b>	<b>127</b>	<b>2.3</b>

2003-	Mattole headwaters index reach (Metz's bridge to Hulse Creek)	5	15.6	58	17	4	-	-	38	6	1	-	-	31	4	10	-	-	45	9
	upper mainstem, Whitethorn area to Thorn Jct. (Upper Mill Cr. to McKee Cr.)	4.2	8.4	17	-	-	6	-	16	-	1	-	-	6	-	1	2	2	11	2.6
	upper mainstem, Thorn Junction index reach (McKee Cr. to "Raintree" area)	1.6	3.2	11	-	-	-	-	8	-	-	-	-	2	-	-	-	-	2	1.3
2004	middle mainstem index reach above Ettersburg (Big Finley Cr. to Bear Cr.)	4.6	4.7	-	-	-	1	-	-	-	-	-	-	3	-	-	-	-	3	0.7
12/7/2003 to 1/23/2004	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	<i>not surveyed</i>																		<i>not surveyed</i>
	lower mainstem Mattole River (downstream from Honeydew Creek)	<i>not surveyed</i>																		<i>not surveyed</i>
	tributaries (except Bear Creek)	19.45	29.85	45	25	1	18	-	11	7	2	-	-	20	34	11	13	12	90	4.6
	Bear Creek (enters Mattole River at Ettersburg)	7.9	15.4	29	2	0	0	-	-	-	-	-	-	6	2	-	-	-	8	1
	<b>ALL REACHES COMBINED 2003-2004 SEASON</b>	<b>42.75</b>	<b>77.15</b>	<b>160</b>	<b>44</b>	<b>5</b>	<b>25</b>	<b>-</b>	<b>73</b>	<b>13</b>	<b>4</b>	<b>-</b>	<b>-</b>	<b>68</b>	<b>40</b>	<b>22</b>	<b>15</b>	<b>14</b>	<b>159</b>	<b>3.7</b>

Survey Season & inclusive dates	Survey Reaches (results displayed for 6 mainstem segments, for pooled upper river tributaries (Bear Creek and up), & as pooled data for lower river tributaries (downstream of Bear Cr.)	Reach Length (miles)	Accumulated Survey Miles	Live Fish Seen				Carcasses & Skeletons				Number of Definite Redds					Number of Redds Per Mile
				KS	SS	UN+ND	SH	KS	SS	UN+ND	SH	KS	SS	UN+ND	SH	Total Redds	

2004-	Mattole headwaters index reach (Metz's bridge to Hulse Creek)	4.49	13.47	11	13	1	2		10	20	3	-		12	18	9	4		43	9.6
	upper mainstem, Whitethorn area to Thorn Jct. (Upper Mill Cr. to McKee Cr.)	4.12	8.24	-	7	-	46		5	1	1	-		2	2	4	7		15	3.6
	upper mainstem, Thorn Junction index reach (McKee Cr. to Huckleberry Ln.)	1.63	3.26	3	-	-	-		-	-	-	-		1	1	-	1		3	1.8
2005	middle mainstem index reach above Ettersburg (Big Finley Cr. to Bear Cr.)	5.1	5.1	39	11	3	2		5	-	-	-		13	-	-	-		13	2.5
	11/20/04 to 1/24/05 middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	18.74	18.74	37	10	9	2		-	-	-	-		11	-	-	-		11	0.6
	lower mainstem Mattole River (downstream from Honeydew Creek)	23.32	23.32	64	11	-	4		2	-	2	-		15	-	-	-		15	0.6
	upper river tributaries (Bear Creek and upstream)	14.74	20.57	2	34	3	4		8	8	2	-		13	47	21	20		101	6.8
	lower river tributaries (downstream of Bear Creek)	5.87	6.6	3	-	-	2		5	-	3	-		2	-	-	-		2	0.3
	<b>ALL REACHES COMBINED 2004-2005 SEASON</b>	<b>78.01</b>	<b>99.3</b>	<b>159</b>	<b>86</b>	<b>16</b>	<b>62</b>		<b>35</b>	<b>29</b>	<b>11</b>	<b>-</b>		<b>69</b>	<b>68</b>	<b>34</b>	<b>32</b>		<b>203</b>	<b>2.6</b>

2005-	Mattole headwaters index reach (Metz's bridge to Hulse Creek)	4.49	15.84	59	8	3	11		11	3	4	0		30	3	8	5		46	10.2
	upper mainstem, Whitethorn area to Thorn Jct. (Upper Mill Cr. to McKee Cr.)	5.29	7.63	40	15	5	2		6	0	0	0		16	0	0	0		16	3.0
	upper mainstem, Thorn Junction index reach (McKee Cr. to Huckleberry Ln.)	1.63	1.63	24	0	1	0		1	0	0	0		12	0	1	0		13	8.0
2006	middle mainstem index reach above Ettersburg (Big Finley Cr. to Bear Cr.)	5.1	5.1	82	1	2	0		3	0	0	0		40	0	2	0		42	8.2
	11/19/05 to 1/25/06 middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	18.74	18.74	25	5	1	0		6	1	0	0		10	0	1	0		11	0.6
	lower mainstem Mattole River (downstream from Honeydew Creek)	26.05	26.05	39	4	19	3		0	0	0	0		1	0	0	0		1	0.0
	upper river tributaries (Bear Creek and upstream)	19.54	41.41	53	16	7	5		11	8	2	0		30	12	17	9		68	3.5
	lower river tributaries (downstream of Bear Creek)	7.24	7.24	7	0	0	0		1	0	1	0		4	0	0	0		4	0.6
	<b>ALL REACHES COMBINED 2005-2006 SEASON</b>	<b>88.08</b>	<b>123.64</b>	<b>329</b>	<b>49</b>	<b>38</b>	<b>21</b>		<b>39</b>	<b>12</b>	<b>7</b>	<b>-</b>		<b>143</b>	<b>15</b>	<b>29</b>	<b>14</b>		<b>201</b>	<b>2.3</b>

Survey Season & inclusive dates	Survey Reaches (results displayed for 6 mainstem segments, for pooled upper river tributaries (Bear Creek and up), & as pooled data for lower river tributaries (downstream of Bear Cr.)	Reach Length (miles)	Accumulated Survey Miles	Live Fish Seen				Carcasses & Skeletons				Number of Definite Redds					Number of Redds Per Mile
				KS	SS	UN+ ND	SH	KS	SS	UN+ ND	SH	KS	SS	UN+ ND	SH	Total Redds	

2006-  2007  11/10/06 to 1/16/07	Mattole headwaters index reach (Hulse Creek to Metz's bridge)	4.49	15.84	35	9	0	2		27	1	0	0		29	1	7	1		38	8.5
	upper mainstem, Whitethorn area to Thorn Jct. (Metz's bridge to McKee Creek)	5.29	6.46	6	2	0	0		1	0	0	0		0	0	2	0		2	0.4
	upper mainstem, Thorn Junction index reach (McKee Creek to Huckleberry Lane)	1.63	1.63	0	0	0	0		0	0	0	0		2	0	0	0		2	1.2
	middle mainstem index reach above Ettersburg (Big Finley Creek to Bear Creek)	5.10	5.10	17	2	0	0		1	0	0	0		4	0	0	1		5	1.0
	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	18.74	18.74	54	2	0	0		2	0	0	0		12	0	1	0		13	0.7
	lower mainstem Mattole River (downstream from Honeydew Creek)	15.84	15.84	19	2	1	0		0	0	0	0		0	0	1	0		1	0.1
	upper river tributaries (Bear Creek and upstream)	16.40	33.75	65	12	0	1		16	5	3	0		38	17	17	6		78	4.8
	lower river tributaries (downstream of Bear Creek)	3.40	3.40	0	0	0	0		0	0	0	0		1	0	0	0		1	0.3
	<b>ALL REACHES COMBINED 2006-2007 SEASON</b>	<b>70.89</b>	<b>100.76</b>	<b>196</b>	<b>29</b>	<b>1</b>	<b>3</b>		<b>47</b>	<b>6</b>	<b>3</b>	<b>0</b>		<b>86</b>	<b>18</b>	<b>28</b>	<b>8</b>		<b>140</b>	<b>2.0</b>

2007-  2008  11/5/07 to 1/23/08	Mattole headwaters index reach (Hulse Creek to Metz's bridge)	4.49	15.59	15	4	0	1		4	2	0	0		18	7	7	0		32	7.1
	upper mainstem, Whitethorn area to Thorn Jct. (Metz's bridge to McKee Creek)	5.26	10.55	1	2	0	7		3	0	0	0		6	2	3	1		12	2.3
	upper mainstem, Thorn Junction index reach (McKee Creek to Huckleberry Lane)	1.63	3.26	11	3	1	12		3	0	0	0		9	0	0	2		11	6.7
	middle mainstem index reach above Ettersburg (Big Finley Creek to Bear Creek)	5.10	10.20	36	1	0	28		1	0	0	1		19	0	2	2		23	4.5
	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	18.74	18.74	21	9	0	1		0	0	0	0		4	0	0	1		5	0.3
	lower mainstem Mattole River (downstream from Honeydew Creek)	25.67	39.33	164	18	10	4		3	0	0	0		9	0	3	0		12	0.5
	upper river tributaries (Bear Creek and upstream)	18.76	36.86	13	15	5	3		3	2	1	0		11	22	13	9		55	2.9
	lower river tributaries (downstream of Bear Creek)	7.86	13.12	0	0	0	4		0	0	0	0		2	0	0	2		4	0.5
	<b>ALL REACHES COMBINED 2007-2008 SEASON</b>	<b>87.51</b>	<b>147.65</b>	<b>261</b>	<b>52</b>	<b>16</b>	<b>60</b>		<b>17</b>	<b>4</b>	<b>1</b>	<b>1</b>		<b>78</b>	<b>31</b>	<b>28</b>	<b>17</b>		<b>154</b>	<b>1.8</b>

Survey Season & inclusive dates	Survey Reaches (results displayed for 6 mainstem segments, for pooled upper river tributaries (Bear Creek and up), & as pooled data for lower river tributaries (downstream of Bear Cr.)	Reach Length (miles)	Accumulated Survey Miles	Live Fish Seen				Carcasses & Skeletons				Number of Definite Redds					Number of Redds Per Mile
				KS	SS	UN+ ND	SH	KS	SS	UN+ ND	SH	KS	SS	UN+ ND	SH	Total Redds	

2008- 2009  10/22/08 to 1/20/09	Mattole headwaters index reach (Hulse Creek to Metz's bridge)	4.49	8.98	24	2	1	1		13	0	0	0		8	2	1	2		13	2.9
	upper mainstem, Whitethorn area to Thorn Jct. (Metz's bridge to McKee Creek)	5.29	5.29	0	0	0	0		0	0	0	0		1	0	0	0		1	0.2
	upper mainstem, Thorn Junction index reach (McKee Creek)	1.63	1.63	0	0	0	0		0	0	0	0		0	0	0	0		0	0.0
	middle mainstem index reach above Ettersburg (Big Finley Creek to Bear Creek)	5.10	5.10	26	0	0	2		6	0	0	0		10	0	0	0		10	2.0
	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	18.74	18.74	2	0	16	14		1	0	0	0		1	0	0	0		1	0.1
	lower mainstem Mattole River (downstream from Honeydew Creek)	28.39	60.58	320	9	11	64		8	0	0	0		36	0	1	0		37	1.3
	upper river tributaries (Bear Creek and upstream)	20.51	28.78	1	0	0	7		1	0	0	1		4	7	3	7		21	1.0
	lower river tributaries (downstream of Bear Creek)	8.62	10.73	0	0	0	0		0	0	0	0		2	0	3	5		10	1.2
<b>ALL REACHES COMBINED 2008-2009 SEASON</b>	<b>92.77</b>	<b>139.83</b>	<b>373</b>	<b>11</b>	<b>28</b>	<b>88</b>		<b>29</b>	<b>0</b>	<b>0</b>	<b>1</b>		<b>62</b>	<b>9</b>	<b>8</b>	<b>14</b>		<b>93</b>	<b>1.0</b>	

**TABLE 11: Escapement Indexes for chinook and coho by reach and combined. See State of the Salmon 2005 for further information.**

Season	Escapement Indexes (EI) by basin																				Note: EI is number of redds per mile surveyed (accumulated survey miles)		Upper river tributaries Bear Cr. and US	Upper river tributaries Bear Cr. and US	Lower river tributaries, DS of Bear cr.	Lower river tributaries, DS of Bear cr.	All reaches Combined	All reaches Combined	Number of redds, all reaches combined	Number of redds, all reaches combined
	Mainstem Metz bridge to Hulse Cr.	Mainstem Metz bridge to Hulse Cr.	Mainstem Big Finley Cr. to Metz Bridge	Mainstem Big Finley Cr. to Metz Bridge	Mainstem Bear Cr. to Big Finley Cr.	Mainstem Bear Cr. to Big Finley Cr.	Mainstem Honeydew Cr. to Bear Cr.	Mainstem Honeydew Cr. to Bear Cr.	Mainstem mouth to Honeydew Cr.	Mainstem mouth to Honeydew Cr.	All tributaries except Bear Cr.	All tributaries except Bear Cr.	Bear Cr.	Bear Cr.																
	Chinook	Coho	Chinook	Coho	Chinook	Coho	Chinook	Coho	Chinook	Coho	Chinook	Coho	Chinook	Coho	Chinook	Coho	Chinook	Coho	Chinook	Coho										
1994-95	1.9	0.5	1.9	0	0.3	0	1	0	5	0	0.9	0.8	0.3	0					1	0.4	40	15								
1995-96	0.7	0.2	0.5	0	1.4	0	0.4	0	0.3	0	0.6	0.5	0	0					0.6	0.1	39	7								
1996-97	5	0.2	3.4	0	0	0	0	0	0	0	0.4	1.1	0.6	1.6					1.7	1	80	50								
1997-98	1.4	0.6	0.9	0	2.4	0	0	0	0	0	0.4	0.4	1.2	0.3					0.9	0.4	85	34								
1998-99	0.4	0.2	0.1	0	0.7	0	0.1	0	0	0	0.2	0.1	0.04	0.04					0.2	0.1	27	8								
1999-00	0.4	0.4	1.2	0.1	0.5	0.4	0.3	0	0	0	0.1	0.2	0.6	0.1					0.4	0.2	57	23								
2000-01	0.1	0.6	0	0	0.4	0.1	0.6	0.02	0.2	0	0.1	0.3	0.2	0					0.3	0.1	45	17								
2001-02	1	0.5	0.9	0	0.2	0	0	0	0	0	0.5	1.1	0.8	0					0.8	0.5	88	53								
2002-03	0.2	0.2	0.2	0.1	0	0	0.3	0	0.5	0	0.3	0.7	0.4	0.4					0.4	0.3	45	30								
2003-04	0.1	0.3	0.7	0	0.6	0	0	0	0	0	0.7	1.1	0.4	0.1					0.9	0.5	68	40								
2004-05	0.9	1.3	0.3	0.3	2.5	0	0.6	0	0.6	0	0.7	2.2	0	0	0.6	2.3	0.3	0.0	0.7	0.7	69	68								
2005-06	1.9	0.2	3.0	0.0	7.8	0.0	0.5	0.0	0.0	0.0	0.6	1.2	1.1	0.1	0.7	0.3	0.6	0.0	1.2	0.1	143	15								
2006-07	1.8	0.1	0.2	0.0	0.8	0.0	0.6	0.0	0.0	0.0	0.9	0.5	1.4	0.4	1.1	0.5	0.3	0.0	0.9	0.2	86	18								
2007-08	1.2	0.4	1.1	0.1	1.9	0.0	0.2	0.0	0.2	0.0	0.3	0.5	0.2	0.2	0.3	0.6	0.2	0.0	0.5	0.3	78	37								