Final Report

REF 90414

Spawning Ground Surveys, 1999-2000 Season

Mattole River Watershed

BLM Cooperative Agreement 1422-B300-A7-1010, Task Order 003

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

phone 707-629-3433 • fax 707-629-3435 • salmon@humboldt.net

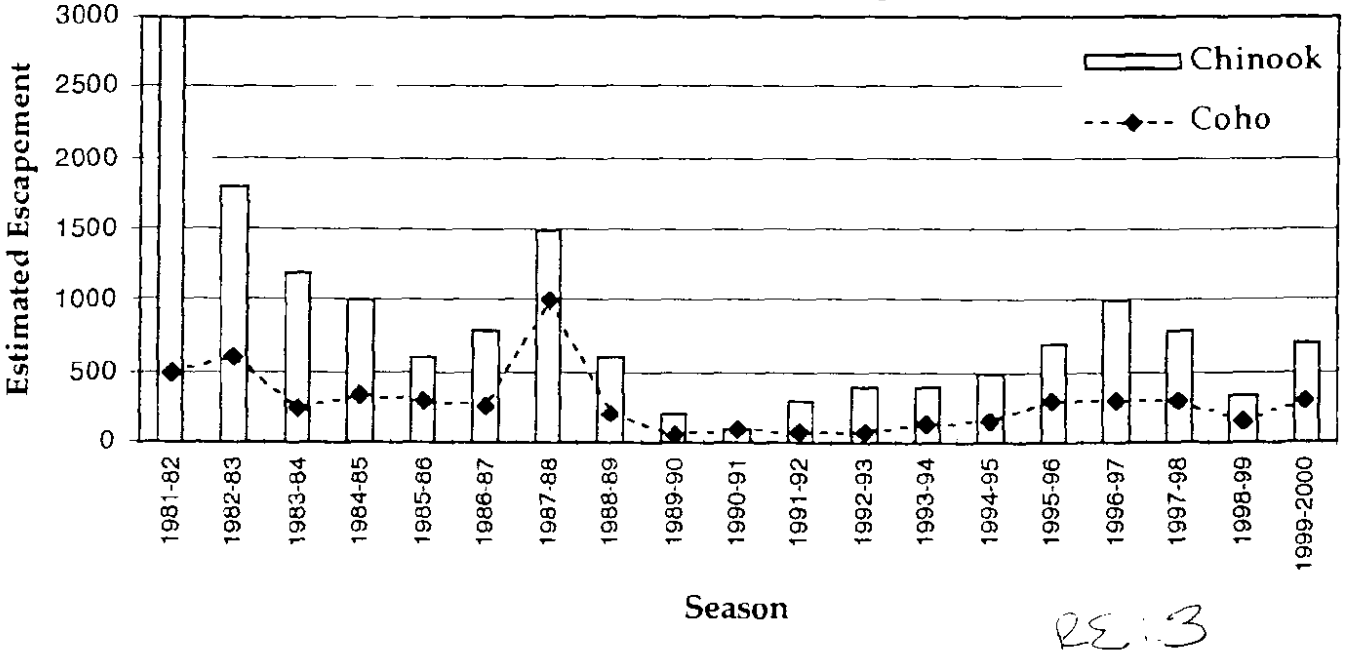
MSG Project Coordinator: Gary D. Peterson
MSG Project Manager: Maureen Roche

Administering Entity: Bureau of Land Management (BLM)
Arcata Field Office
1695 Heindon Road
Arcata, CA 95521

Assistance Officer: Linda Stewart (BLM Ukiah)
Assistance Representative: Dave Fuller (BLM Arcata)

Report prepared by Gary D. Peterson
August 2000

Figure 1 - **Estimated number of adult salmon returning to spawn in the Mattole River watershed, 1981-82 through 1999-2000 seasons.**



RE: 3

Final Report

Spawning Ground Surveys, 1999-2000 Season, Mattole River Watershed

BLM Cooperative Agreement 1422-B300-A7-1010, Task Order 003

Abstract

The Mattole Salmon Group has conducted annual spawning ground surveys in selected mainstem and tributary reaches in the Mattole River watershed for 19 consecutive seasons, from 1981-82 through 1999-2000. Data are used to track long-term trends in escapement and spawner distribution for fall-run chinook salmon and, secondarily, for coho. The 1999-2000 spawning ground surveys were the most extensive ever undertaken in the Mattole — 151.0 accumulated miles of survey, covering 68.35 miles of mainstem and tributary habitat — slightly surpassing the mileage totals from 1998-99. Redd counts are used as an indicator of escapement in index reaches because of the inconsistency of live spawner sightings and the paucity of carcass recoveries. Mattole chinook and coho escapements during the 1999-2000 season exhibited a definite upswing, to about double the low returns from the previous year and comparable to the estimated escapement during 1997-98 (see Figure 1 on cover page). However, a substantial number of salmon spawned lower in the system than is ideal, due to a month-long dry spell extending from 12/11/99 to 1/10/00. After a series of strong storms in mid-January, we documented a small but encouraging pulse of late-run coho to the mainstem Mattole headwaters and Thompson Creek. Other noteworthy observations from the 1999-2000 season included the documentation of a 4-year-old marked coho in Thompson Creek, concentrated spawning activity of chinook in the lower 2.1 miles of Bear Creek, and our earliest sightings of adult lamprey in the Mattole, at the end of December 1999.

Introduction and Methods

The 1999-2000 season marked the 19th 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 mid-January. Data are used as an indicator of changes or trends in salmon escapement, and for evaluation of progress toward 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 which 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. 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). Integration of data in ArcView GIS format was recently initiated using data from the 1999-2000 survey season, with the cooperation of the Mattole Restoration Council's GIS staff (Jeremy Wheeler and Vikki Avara) and intern Josh Israel.

Results and Discussion

Survey coverage, intensity and timing during the 1999-2000 season were comparable to inventory efforts in 1998-99. From 24 November 1999 to 27 January 2000, ~~68.35~~ miles of mainstem and tributary habitat were inventoried. Most reaches were covered two or more times, resulting in 151.0 accumulated miles of survey. Both of these mileage figures were slightly higher than last year's totals.

In the mainstem Mattole, 36.95 miles were surveyed (93.6 accumulated miles), comprising about 60% of the entire mainstem length. All mainstem surveys below Big Finley Creek were done by canoeing or snorkeling. In the tributaries, 31.4 miles were walked (57.4 accumulated miles) in 9 sub-basins containing historically productive salmon habitat. About 40% of the tributary coverage was focused on Bear Creek, the Mattole's third-largest tributary.

Twenty-one people were involved in the survey effort during the 1999-2000 season, three fewer than last year and four less than the record number of participants in 1997-98. Seven new surveyors received field training this season, the same number as last year. MSG's two most experienced observers (Gary Peterson and Campbell Thompson) were involved in 131.5 miles of survey, or about 87% of the total accumulated mileage.

As indicated in Table 1, the final project budget was $10,783.14, and about 86% of this ($9,299.98) was funded by the Bureau of Land Management under Cooperative Agreement 1422-B300-A7-1010, Task Order 003. BLM monies were supplemented by $1,483.16 of discretionary funds contributed by MSG. A total of 826 person-hours was expended over the course of the season (field work plus office time), and about one-third of this was volunteer labor. Comparable figures for last year were 927.5 total person-hours and 40% volunteer time. The cost per mile of stream surveyed was about $71, nearly identical to the $72 per mile for the 1998-99 season. The primary reason that surveys the last two seasons were so economical had to do with the relatively large number of miles surveyed by canoe — 61.9 and 40.2 miles in 1999-2000 and 1998-99, respectively — made possible by extended periods of low, clear water conditions from mid-December into January.

Figure 2 shows the timing of surveys in relation to rainfall patterns. The sandbar at the mouth of the Mattole breached on 28 October, followed by ten days of dry weather and then two weeks of moderate storm activity. Salmon were first detected in the Ettersburg area (river-mile 42.9) on 16 November when a coho female was captured during broodstock trapping operations conducted by MSG as part of its Stock Rescue Program (natal-stock "hatchbox program"). Adult chinook were first captured at the Ettersburg trap on 20 November. Spawning ground surveys began in earnest on 27 November, 3 days after a spot check in the upper mainstem Mattole at the Junction Hole (river-mile 52.8) revealed the presence of 3 adult coho. Most surveys were conducted during a month-long period of unseasonably dry weather beginning 11 December. A second round of concentrated survey activity occurred after rains resumed in mid-January. The highest flows during the survey season occurred from 11-14 January following a series of strong storms, which included a 24-hour rainfall of 7 inches in the Mattole headwaters area. The final survey of the season took place on 27 January 2000.

Tabular summaries of survey results were prepared separately for mainstem reaches (Table 2) and tributary surveys (Table 3, and Table 4 for Bear Creek only). The location of all survey reaches is displayed in a series of three maps, which appear on pages 10-12. A comparison of the past six years of Mattole spawning ground surveys is presented in Table 5. Major findings, interpretations and conclusions from the 1999-2000 season are discussed below.

For the second straight year, a prolonged dry spell during the peak of chinook and coho runs resulted in substantial spawning activity lower in the system than is ideal. Although moderate numbers of salmon were able to access prime spawning habitat in the mainstem Mattole headwaters upstream from Whitethorn, the vast majority of all live salmon sightings, redd counts and carcass recoveries occurred much further down in the mainstem, between Thorn Junction and the Ettersburg area. In fact, the number of redds per mile in the 3 mainstem reaches downstream from Thorn Junction were among the highest recorded in these reaches since the banner year of 1987-88.

One particularly striking observation in the middle mainstem was of 6 coho redds (2 occupied by females) in a single riffle about a mile upstream from Ettersburg at the end of November. This is an area where summertime water temperatures exceed levels lethal to juvenile coho, and any young produced needed to migrate at least 8 miles upstream in order to have any chance of surviving over the summer. Another interesting discovery was of several adult lamprey at the end of December, about 2 months earlier than we'd ever seen them in the Mattole. Adult lamprey were found in two locations: the lower mainstem Mattole from the town of Honeydew to about 7 miles downstream (one live fresh adult and several carcass fragments), and in the upper reaches of Squaw Creek (one piece of a carcass).

In Bear Creek, the Mattole tributary most intensively inventoried for spawner information, surveys yielded mixed results. Low-flow conditions in December and early January evidently prevented nearly all salmon from accessing high-quality spawning habitat in the headwaters area of South Fork Bear Creek, where only a single spawning pair of coho was noted. Above the Queen Mine Road in the South Fork, surveyors saw no chinook and only one coho redd. On a positive note, we documented substantial spawning activity of mostly large-sized chinook in the mainstem of Bear Creek, concentrated in the 2.1-mile reach from Jewett Creek to the mouth. This is an area seldom surveyed due to past problems in obtaining landowner access permission. Based on our findings in lower Bear Creek this season, MSG will renew its efforts to cultivate landowner support for survey access here in future years.

Aside from Bear Creek, Thompson Creek was the only other surveyed tributary where both chinook and coho spawned, although at very low levels leaving vast stretches of apparently suitable gravels devoid of spawner utilization. Tributary spawning of chinook was documented in only two other streams, Squaw Creek and Honeydew

Creek. Bridge Creek, formerly a hotspot of chinook spawning activity, exhibited no definite signs of salmon presence for the first time in memory. Of the 7 coho redds seen in Mattole tributaries, 2 were found in South Fork Bear Creek and 5 in Thompson Creek. Over half of the definite redds recorded in the Thompson Creek system (15 of 28) were seen during surveys in late January, and most of these late redds were likely made by steelhead.

The incidence of redd superimposition this season was slightly lower (about 6% overall = 10 of 173 redds) than in 1998-99 (8% = 7 of 87 redds). Last season, we documented an unusually high occurrence of superimposed redds — nearly 27% (4 of 15 redds) — in the 2.2-mile stretch of the mainstem Mattole headwaters downstream from the Mendocino County one-lane bridge. In the same reach this year, redd superimposition was about 19% (3 of 16 redds). The only other area exhibiting elevated levels of redd superimposition this season was the mainstem of Thompson Creek (2 of 14 redds = about 14%), where none of the 8 redds counted in 1998-99 were superimposed. Both instances of redd superimposition in Thompson Creek were noted in late January, and available evidence indicated these late redds were constructed by steelhead.

The average size of salmon seen on surveys and at the Ettersburg fish trap was noticeably larger than fish that returned during the El Niño-impacted seasons of 1997-98 and 1998-99. Fish size this season was close to the long-term average, based on length data compiled and presented in last year's final report. Average lengths of salmon during the 1999-2000 season were as follows, with sample size given in parentheses: chinook females 32.6" (n = 31); chinook males 33.8" (n = 32); chinook grilse 18.8" (n = 4); coho females 24.9" (n = 19); coho males 28.6" (n = 8); coho grilse 17.0" (n = 2). The 1999-2000 data set consisted of measured fork lengths of carcasses, and estimated total lengths of live salmon where surveyors made a positive identification as to species and sex.

As in most seasons, the 1999-2000 chinook run was dominated by medium-sized fish thought to be 3-year-olds, with very few adults large enough to be considered age 4 or older (generally > 39" fork length). Surveyors recorded only 4 chinook that exceeded 39" long — 2 females at 44" and 48" estimated length, and 2 males estimated at 40" and 46" long. The observed proportion of grilse in the chinook run was low at 6%, similar to last year's 9% and far below the 23% estimate for the 1997-98 season.

Twice as many salmon carcasses and skeletons were counted this season compared to last year (39 versus 20, respectively). Carcass counts consisted of 32 chinook and 2 coho, plus 5 salmon that had deteriorated to the point where positive identification of species was impossible. Twenty-six carcasses/skeletons were found in the mainstem Mattole and the remaining 13 were encountered in tributary surveys. The only tributaries where carcasses or skeletons were found were Bear Creek (9 chinook), Squaw Creek (2 chinook) and Thompson Creek (2 coho). Of 21 carcasses fresh enough to mark with a color-coded jaw tag, 3 were retrieved on a subsequent survey. All 3 recoveries of tagged carcasses occurred in the mainstem Mattole a short distance downstream from Ettersburg within 5 days of the original tagging date. 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.

Two carcasses had a clipped right maxillary, indicating adult returns from MSG's natal-stock propagation program. One of the marked carcasses was a large chinook male (37" fork length, likely a 3-year-old fish) found at the end of December in the mainstem Mattole about 0.2 miles downstream from Bear Creek. The other marked carcass was a coho female (24" fork length) found on 1/27/00 in Thompson Creek near its mouth. The discovery of an adult coho with a right maxillary clip was intriguing because the last time MSG had reared and released coho was in June 1996 (pre-smolt release from the 1995 brood year). A scale sample from the marked coho carcass was sent to Bill Jong, DFG Arcata fisheries biologist, who interpreted the age as 4 years old (2 freshwater annuli and 2 ocean annuli). Another interesting fact is that the release group of 4,680 coho pre-smolts was reared, marked and released in two locations: 4,350 fish were planted in the upper reaches of South Fork Bear Creek (on-site release of 2,350 from MSG's Oliver Gap facility, plus off-station release of 2,000 pre-smolts reared at our Mill Creek facility located southwest of Petrolia), and the remaining 330 were planted in upper Eubanks Creek (off-station release from the Mill Creek facility). The releases were authorized by Larry Preston, DFG Eureka fisheries biologist, after electrofishing and direct observation revealed the presence of suitable under-utilized habitat. Since both of the release sites are somewhat distant from Thompson Creek, the marked 4-year-old coho obviously strayed some distance from its "home" stream.

Based on best professional judgment in reviewing all available information, we estimate that 700 chinook and 300 coho returned to spawn in the Mattole during the 1999-2000 season. These escapement figures are double the estimated return in 1998-99, and comparable to our estimates of 2 and 4 years ago (see Figure 1, on cover page). In reviewing the escapement estimates plotted in Figure 1, we emphasize that the information is best interpreted as an index of changes or trends in year-to-year run strengths.

TABLE 2: Spawning Ground Surveys, mainstem Mattole River, 1999-2000 Season

Surveys conducted by the Mattole Salmon Group (phone 707-629-3433; fax 707-629-3435; e-mail: salmon@humboldt.net). Primary funding provided by the Bureau of Land Management, Arcata Field Office (Cooperative Agreement 1422-B300-A7-1010, Task Order 003). compiled March 2000 by Gary D. Peterson, MSG fisheries biologist. ***Key to abbreviations at bottom of next page.***

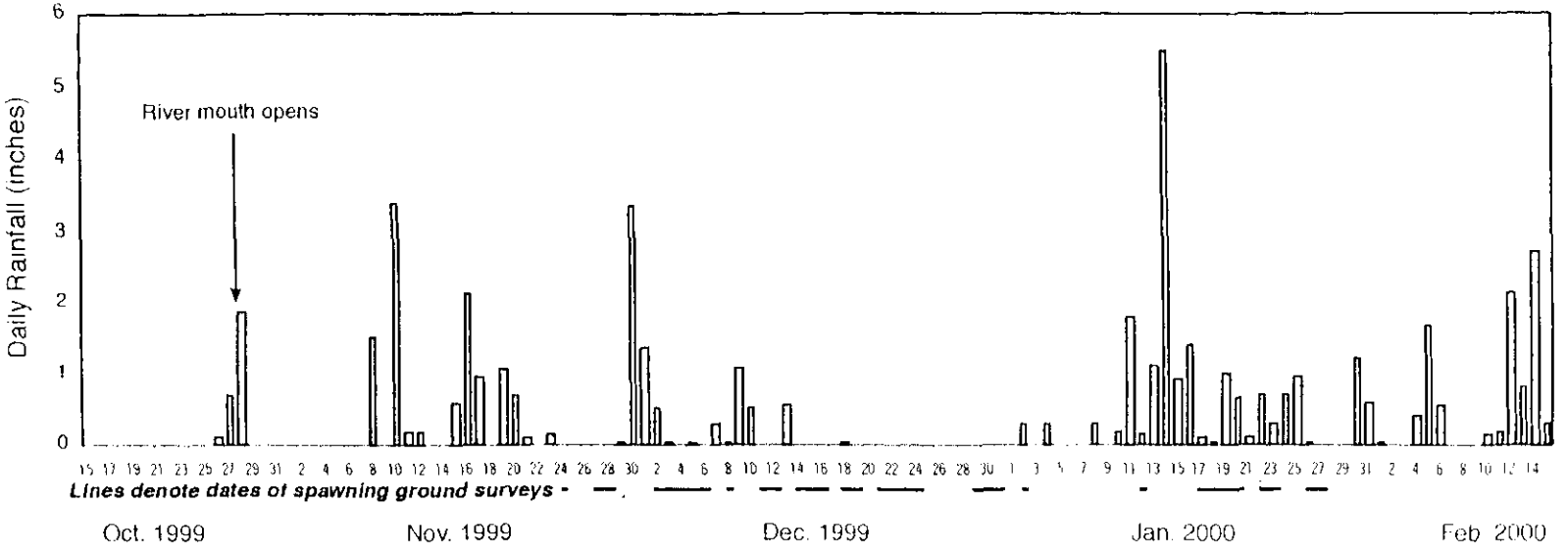
Map Code No.	MAINSTEM SURVEY REACHES Location & Description	Survey Date (m/d/y)	Reach Length (miles)	Inventory Procedure (type/direction)	Survey Personnel	Live Fish Seen	Carcasses & Skeletons Examined	Fresh Redds & designation by species: total # redds	Fresh Redds & designation by species: # occupied
1a & 1b	Mattole headwaters, primary index reach from Stanley Creek (RM 57.1) to Hulse Creek (RM 61.8) *[Note: Due to the length of this reach, it is divided into two sections. The upper section, from the county bridge to Hulse Creek, is 2.5 miles long and is surveyed walking upstream. The lower section, from the county bridge to Stanley Creek, is 2.2 miles long and is surveyed walking downstream.]*	12/3/99 (upper)	2.5	W/u above county bridge	upper section: MR, JL	1 KSX	–	2 KS 1 UN	0 0
		12/3/99 (lower)	2.2	W/d below county bridge	lower section: GP, JD	1 KSF 1 KSM	–	3 KS 1 SS 1 UN	1 0 0
		12/11/99 (upper)	2.5	W/u above county bridge	upper section: MD, JL	–	–	1 UN 4 possible	0 –
		12/11/99 (lower)	2.2	W/d below county bridge	lower section: CT	2 SSF 1 SSM 1 UNF 1 SHX	–	3 SS 3 UN 1 possible	2 0 –
		1/17/00 (upper)	2.5	W/u above county bridge	upper section: GP	–	–	1 UN 1 ND	0 0
		1/23/00 (upper)	2.5	W/u above county bridge	upper section: CT	2 SSF 3 SHF 3 SHM 1 SHX 1 NDX	–	3 SS 3 SH 8 ND	1 3 1
		1/23/00 (lower)	2.2	W/d below county bridge	lower section: GP	–	–	1 KS 1 UN 3 ND	0 0 0
1c	spot check immediately downstream from county bridge (boundary between upper and lower sections of headwaters index reach, at RM 59.6)	12/2/99	–	spot check	GP	1 SSF 1 SSM	–	–	–
		12/21/99	–	spot check	GP	–	–	1 UN	0
2	upper mainstem Mattole, from Stanley Creek RM 57.1) to Mickey Dulas' house (RM 54.7' located about 0.9 miles downstream from Anderson Creek & 0.7 miles upstream from Van Arken Creek)	12/5/99	2.4	W/d	GP, JD	–	–	3 KS 1 UN	0 0
		12/16/99	2.4	W/d	CT, DB	1 SSF 1 SSM 1 UNF 2 UNX	1s KSF 1s KSX	2 KS 2 SS 1 UN 1 possible	0 1 0 –
2a	spot check about 0.15 miles downstream from Stanley Creek (~75 yards below Metz bridge)	12/23/99	–	spot check	CT	–	–	1 UN	0
3	upper mainstem Mattole, from Mickey Dulas house (RM 54.7) to McKee Cr. (RM 52.8)	12/5/99	1.9	W/d	CT, MD	2 KSM	–	3 UN 1 possible	0 –
		12/16/99	1.9	W/d	GP, DW	1 KSF	–	1 KS 1 ND 1 possible	1 0 –
4	upper mainstem Mattole, from Junction Hole at McKee Creek (RM 52.8) to "Raintree" area on Huckleberry Lane (RM 51.2)	12/5/99	1.6	W/d	CT, MD	–	–	2 KS 2 UN 1 possible	0 0 –
		12/14/99	1.6	W/d	GP, JL	1 KSF 2 KSM 1 KSX	–	5 KS 1 possible	2 –
		12/30/99	1.6	Snorkel survey	MR, DK	2 KSF 3 KSM 1 KSG	1s UNX	3 KS	1
4a	spot check at Junction Hole (large mainstem pool at confluence of McKee Cr., RM 52.8)	11/24/99	–	spot check	CT	2 SSF 1 SSM	–	–	–
5	middle mainstem Mattole, from Big Finley Creek (RM 47.4) down to Bear Creek near Ettersburg (RM 42.8)	11/28/99	4.6	Canoe survey	CT, MD	4 SSF 1 SSM 1 SHX	–	6 SS 1 UN 1 possible	2 0 –
		12/8/99	4.6	Canoe survey	CT, DW	2 KSF 2 KSM 2 SSF 1 SSM 3 UNG 7 UNX	1c KSF 1s KSM 1s UNF	3 KS 2 UN 2 possible	2 0 –
		12/19/99	4.6	Canoe survey	CT, JD	4 KSF 1 KSM 2 UNX 1 SHX 1 NDX	1s KSM 1s UNM	5 KS 1 SS 1 UN	3 0 0
		1/2/00	4.6	Canoe survey	CT, DW	2 KSM 1 KSX 1 SSF 1 SSG 1 UNM 1 UNG 3 UNX 2 SHX	1c KSF 3s KSM 1s UNX	1 KS 4 UN	0 0

ble continued on following page

TABLE 1. **Final budget for spawning ground surveys, 1999-2000 season, Mattole River watershed**

PERSONNEL COSTS Level of Staff	Number of Hours	Hourly Rate	BLM Task Order #003	Mattole Salmon Group discretionary funds	Total	
Project coordinator	192.00	$14	$ 2,688.00	—	$2,688.00	Total of 21 people
Surveyor	283.00	12	2,688.00	$ 708.00	3,396.00	participated in surveys
Surveyor trainee	61.25	10	612.50	—	612.50	
Surveyor trainee	21.50	9	148.50	45.00	193.50	
Staff benefits @ 30%			1,841.10	225.90	2,067.00	In-kind contributions =
Subtotal: Personnel costs (557.75 hrs @ $9 to $14/hr)			*$ 7,978.10*	*$ 978.90*	*$ 8,957.00*	268.25 volunteer hours
MATERIALS, SUPPLIES, & OPERATING EXPENSES						
Gear & equipment (chest waders, safety gear, flagging, "Rite-in-the-Rain" paper, polaroid glasses, etc.)			240.22	179.71	419.93	
Postage ($10.23), phone ($11.40), copies ($20.30)			41.93	—	41.93	
Transportation costs: 1,600 miles @ $0.24 per mile			194.28	189.72	384.00	
Project subtotal			*$ 8,454.53*	*$ 1,348.33*	*$ 9,802.86*	
10% administrative overhead			845.45	134.83	980.28	
TOTAL PROJECT BUDGET			$ 9,299.98	$ 1,483.16	$10,783.14	

FIGURE 2. **Rainfall patterns, time of mouth opening, and dates of spawning ground surveys, Mattole River watershed, 15 October 1999 through 15 February 2000.** Daily rainfall statistics from the Petrolia area, courtesy of Rex Rathbun.



Mattole Salmon Group
Box 188, Petrolia, CA 95558

Table 2 (continued from previous page)

Map Code No.	MAINSTEM SURVEY REACHES Location & Description	Survey Date (m/d/y)	Reach Length (miles)	Inventory Procedure (type/direction)	Survey Personnel	Live Fish Seen	Carcasses & Skeletons Examined	Fresh Redds & designation by species: total # redds	Fresh Redds & designation by species: # occupied
5a	middle mainstem Mattole, from Bear Cr (RM 42.8) to Mattole Canyon Cr. (RM 41.1)	12/23/99	1.7	Snorkel survey	MR, DK	3 KSF 1 KSM	1c KSF 2s KSX	–	–
6a+ 6b	middle mainstem Mattole, from Bear Creek (RM 42.8) down to footbridge about 0.25 miles upstream from Gilham Creek (confluence at RM 32.8)	12/12/99	9.75	Canoe survey	GP, CT	1 SHX	1c KSM (+ 1 carcass recovery KSF from 12/8 mainstem survey above Ettersburg)	1 KS 2 UN	0 0
		12/29/99	9.75	Canoe survey	CT, MD	2 KSF 1 KSM 1 UNM 2 SHX	1c KSF 1s KSF 2c KSM [one KSM with **Rt Max** clip] 1s KSM 1c KSG 1s UNM (+ 2 carcass recoveries KSM from 12/23 Bear Cr. spot check, & KSF from 12/23 snorkel survey)	6 KS 1 UN	0 0
7	lower mainstem Mattole, from Honeydew Creek (RM 26.5) to Upper Mattole School bridge (RM 21.1)	12/22/99	5.4	Canoe survey	GP, DK	1 SHX 1 live adult lamprey near confluence of Woods Cr.	1c KSF 1c KSM	–	–
		12/31/99	5.4	Canoe survey	GP, DW	1 KSM	Fragments of lamprey carcasses	–	–
8	lower mainstem Mattole, from Upper Mattole School bridge (RM 21.1) to 0.4 miles downstream from Squaw Creek (RM 14.9) at A.W. Way County Park	12/22/99	6.6	Canoe survey	CT, JD	–	–	–	–
		12/31/99	6.6	Canoe survey	CT, AS	–	Fragment of lamprey carcass	–	–

SUMMARY & TOTALS: MAINSTEM SURVEYS

36.95 reach miles (24.35 miles surveyed twice, 5.5 miles three times, & 7.1 miles four times)
93.6 accumulated miles of survey (61.9 by canoe, 28.4 by wading, 3.3 by snorkeling).

98 live fish seen (36 KS, 22 SS, 22 UN, 16 SH, 2 ND) = 80% of all live fish seen this season.
Male:Female sex ratio of live fish in the mainstem: KS = 1.1:1; SS = 1:2.1; UN = 3:1; SH = 1:1.
About 45% of the live fish seen in the mainstem were in the 4.6-mile index reach above Ettersburg, 20% in the 4.7-mile headwaters index reach upstream from Stanley Creek, and 21% in the 5.9 miles between Stanley Creek and "Raintree" below Thorn Junction.

26 carcasses/skeletons found (21 KS, 0 SS, 5 UN) = 67% of all carcs/skels seen this season.
Male:Female sex ratio of carcasses in the mainstem: KS = 1.6:1; UN = 2:1
About 81% of the carcasses/skeletons retrieved in the mainstem were in the 2 reaches immediately upstream and downstream from Ettersburg (10 & 11 found, respectively).

98 definite redds (20 occupied) + 13 possible redds
About 64% of all definite redds counted this season were in the mainstem. Documentation of coho spawning in the middle mainstem, about a mile upstream from Ettersburg on 11/28/99, was very unusual. The number of redds per mile in the 3 mainstem reaches downstream from Thorn Junction were among the highest seen in these reaches since the 1987-88 season.

10 different surveyors participated in mainstem surveys

Live Fish Seen	Carcasses & Skeletons Examined	Fresh Redds
16 KSF	**5c KSF**	**38 KS redds**
16 KSM	**2s KSF**	
1 KSG	**4c KSM**	
3 KSX	**6s KSM**	**16 SS redds**
15 SSF	**1c KSG**	
6 SSM	**3s KSX**	
1 SSG		**28 UN redds**
2 UNF	**0 SSF**	
2 UNM	**0 SSM**	**3 SH redds**
4 UNG		
14 UNX		**13 ND redds**
3 SHF	**1s UNF**	
3 SHM	**2s UNM**	
10 SHX	**2s UNX**	**13 possible redds**
2 NDX		
1 live adult lamprey	**Fragments of lamprey carcasses**	

Key to Abbreviations: **RM** = River-Mile reference location along the channel of the mainstem Mattole River, expressed as distance upstream from the mouth. River-Mile designations are based on mapping by the California Department of Water Resources (1973). [DWR. 1973. Character and use of rivers: Mattole River (a pilot study). Memorandum Report, CA Dept. of Water Resources, Div. of Resources Development, Sacramento, CA, April 1973. 145 pp + 3 appendices.]

W/u = wading upstream
W/d = wading downstream
Rt Max = right maxillary clip (adult return from 1995 or 1996 brood-year release of chinook)

KS = king (chinook) salmon
SS = silver (coho) salmon
UN = unknown if chinook or coho
SH = steelhead
ND = species not determined

F = female
M = male
X = sex of fish undetermined
G = grilse (KS chub or SS jack). Grilse are small male salmon returning to spawn at age 2. Chinook grilse are males < 22" long; coho grilse are males < 20" long.

c = carcass (recently dead fish, suitable for jaw tagging because head and body are relatively intact)
s = skeleton (pieces or parts of fish, not suitable for jaw tagging because head and body are not intact)

Surveyors (asterisk indicates new participant with no prior training in MSG survey protocols)

DB = Drew Barber
JD = Jeff Downie*
MD = Mickey Dulas
DK = Daniel Kosmal
JL = Jeff Lamborn*
GP = Gary D. Peterson
MR = Maureen Roche
AS = Andrew Sawyer*
CT = Campbell Thompson
DW = Deva Wheeler

TABLE 3:
Spawning Ground Surveys, Mattole River tributaries (except Bear Creek), 1999-2000 Season

Surveys conducted by the Mattole Salmon Group (phone 707-629-3433; fax 707-629-3435, e-mail: salmon@humboldt.net). Primary funding provided by the Bureau of Land Management, Arcata Field Office (Cooperative Agreement 1422-B300-A7-1010, Task Order 003). Data compiled March 2000 by Gary D. Peterson, MSG fisheries biologist. ***Key to abbreviations at bottom of next page.***

Map Code No.	TRIBUTARY SURVEY REACHES (except Bear Creek) Location & Description	Survey Date (m/d/y)	Reach Length (miles)	Inventory Procedure (type/direction)	Survey Personnel	Live Fish Seen	Carcasses & Skeletons Examined	Fresh Redds & designation by species: total # redds	Fresh Redds & designation by species: # occupied
9a	Thompson Creek mainstem from mouth to confluence of Danny's Creek (North Fork Thompson Creek)	12/5/98	2.2	W/u	CT, TM	–	–	1 possible	–
		12/14/99	2.2	W/u	CT	–	–	1 KS 1 SS 2 UN 1 possible	0 0 0 –
		1/18/00	2.2	W/d	GP, JL	–	–	1 UN 4 ND	0 0
		1/27/00	2.2	W/u	CT	1 SHM	1c SSF (with Rt Max chip)	4 SH 1 ND 1 possible	0 0 –
9b	Danny's Creek (North Fork Thompson Creek), from mouth to forks 0.6 miles upstream	12/5/99	0.6	W/u	CT, TM	–	–	–	–
		1/20/00	0.6	W/u	CT	1 SSF	–	1 SS 3 ND 2 possible	0 0 –
		1/27/00	0.6	W/u	CT	–	1c SSF	2 SS 4 ND	0 0
9c	Yew Creek, from mouth to 0.4 miles upstream from major south-side tributary (near east edge of Section 28)	1/12/00	0.95	W/u	CT	–	–	–	–
		1/19/00	0.95	W/u	CT	–	–	–	–
		1/27/00	0.95	W/u	GP	–	–	1 SS 3 ND	0 0
10	Baker Creek, from mouth up to first major forks	1/22/00	1.0	W/u	CT	–	–	2 possible	–
11	Upper Mill Creek (west of Whitethorn), from mouth to major forks	12/4/99	1.5	W/u	CT, MD	–	–	–	–
12a	Bridge Creek mainstem, from mouth up to beginning of gorge area	12/4/99	0.5	W/u	GP, SM, JL	–	–	1 possible	–
		12/15/99	0.5	W/u	GP, RS	–	–	–	–
		1/22/00	0.5	W/u	CT	–	–	–	–
12b	spot check in Bridge Creek mainstem, just downstream from confluence of Robertson Cr. and West Fork Bridge Cr.	12/4/99	–	spot check	GP, SM	–	–	1 possible	–
		1/22/00	–	spot check	CT	1 NDM	–	–	–
12c	Robertson Creek (South Fork Bridge Creek), lower section up to West Fork Robertson Creek	12/4/99	0.25	W/u	GP, SM	–	–	1 possible	–
		1/22/00	0.25	W/u	CT	–	–	–	–
12d	West Fork Bridge Creek, lower section up to old stringer bridge	12/4/99	0.15	W/u	GP, SM	–	–	–	–
		1/22/00	0.15	W/u	CT	–	–	–	–
13	Eubanks Creek, from Torbert's bridge up to about 0.15 miles above road crossing	1/26/00	1.4	W/u	MD, DW	–	–	–	–
14a	Honeydew Creek mainstem, from BLM campground to mouth	11/27/99	0.6	W/d	GP, DW	–	–	1 KS	0
		12/15/99	0.6	W/d	DW, JW	–	–	–	–
14b	Honeydew Cr. mainstem, from Catalina/BLM boundary (0.8 miles above county bridge, & 0.8 miles below Lower E. Fk. Honeydew Creek) up to W. Fk. Honeydew Creek	11/27/99	2.3	W/u	GP, DW	–	–	–	–
		12/12/99	2.3	W/u	DW, JW	2 SHX	–	1 SH	1
14c	West Fork Honeydew Creek, from mouth to north-side tributary located 200 yards above former debris jam barrier	11/27/99	0.25	W/u	GP, DW	–	–	–	–
		12/12/99	0.25	W/u	DW, JW	–	–	–	–
14d	Bear Trap Cr., from mouth up to impassable barrier (2-step falls/cascade, 12' & 6' high)	12/15/99	0.7	W/u	DW, JW	–	–	–	–

Table continued on following page

Table 3 (continued from previous page)

Map Code No.	TRIBUTARY SURVEY REACHES (except Bear Creek) Location & Description	Survey Date (m/d/y)	Reach Length (miles)	Inventory Procedure (type/direction)	Survey Personnel	Live Fish Seen	Carcasses & Skeletons Examined	Fresh Redds & designation by species: total # redds	Fresh Redds & designation by species: # occupied
5a	Squaw Creek, from mouth to 1 mile upstream at MSG hatchbox & rearing site	12/24/99	1.0	W/d	GP	–	–	–	–
15b	Squaw Cr., from Mozzetti access road (near north edge of Section 7, T3S, R1W) down to narrowest part of bedrock gorge (boundary between Sections 1 & 6)	12/30/99	1.7	W/d	GP	–	–	1 UN	0
15c	Squaw Creek, from Mozzetti access road (near north edge of Section 7, T3S, R1W) to the border of BLM's King Range National Conservation Area (SW quarter of Section 9, about 0.15 miles east of the boundary between Sections 8 & 9)	12/30/99	2.6	W/u	CT	–	2c KSF Fragment of lamprey carcass near upper limit of survey	2 KS	0
16	Mill Creek (southwest of Petrolia), from mouth to uppermost log weirs	12/4/99	0.6	W/u	JV, DW	–	–	–	–
		12/29/99	0.6	W/u	GP, DW	–	–	–	–
SUMMARY & TOTALS: MATTOLE TRIBUTARY SURVEYS (except Bear Creek) 18.3 reach miles (9.9 miles surveyed once, 4.15 miles twice, 2.05 miles 3 times, & 2.2 mi. 4 times) 33.15 accumulated miles of survey (all by wading) in 9 key Mattole tributaries 5 live fish seen (1 SSF, 3 SH, 1 NDM). Live SSF seen in Danny's Creek (N. Fk. Thompson Creek). 4 carcasses found (2 KSF, & 2 SSF – including one SSF with clipped right maxillary, confirmed as a 4-year-old fish [2 freshwater annuli + 2 ocean annuli] through scale reading by Bill Jong, DFG Arcata. Marked SSF carcass was found in Thompson Creek downstream from Yew Cr.). Chinook carcasses were found only in upper Squaw Creek (and mainstem Bear Creek – see Table 4). 33 definite redds (1 occupied) + 10 possible redds. 28 of the 33 definite redds (85%) were in the Thompson Creek system, including all 5 coho redds. Over half of the definite redds recorded in the Thompson Creek system (15 of 28) were seen during surveys in late January, & most of these were probably steelhead redds. Tributary spawning of chinook was documented only in larger streams – Squaw, Honeydew, Thompson, & Bear creeks (see Table 4 for Bear Creek results).				**10 different surveyors participated in tributary surveys**	**0 KSF** **0 KSM** **1 SSF** **0 SSM** **1 SHM** **2 SHX** **1 NDM**	**2c KSF** **2c SSF (one with clipped rt. maxillary)** **Lamprey carcass (found in upper Squaw Cr.)**	**4 KS redds** **5 SS redds** **4 UN redds** **5 SH redds** **15 ND redds** **10 possible redds**	**0** **0** **0** **1** **0** **–**

Key to Abbreviations:

W/u = wading upstream
W/d = wading downstream
Rt Max = right maxillary clip (return of 4-year-old adult coho from June 1996 release of 4,680 coho pre-smolts [1995 brood year] planted in upper reaches of S. Fk. Bear Creek & Eubanks Creek – see text for more information)

KS = king (chinook) salmon
SS = silver (coho) salmon
UN = unknown if chinook or coho
SH = steelhead
ND = species not determined

F = female
M = male
X = sex of fish undetermined
G = grilse (KS chub or SS jack). Grilse are small male salmon returning to spawn at age 2. Chinook grilse are males < 22" long; coho grilse are males < 20" long.

c = carcass (recently dead fish, suitable for jaw tagging because head and body are relatively intact)
s = skeleton (pieces or parts of fish, not suitable for jaw tagging because head and body are not intact)

Surveyors (asterisk indicates new participant with no prior training in MSG survey protocols)

MD = Mickey Dulas
JL = Jeff Lamborn*
SM = Stewart McMorrow
TM = Tim Metz*
GP = Gary D. Peterson
RS = Randy Speck*
CT = Campbell Thompson
JV = John Vargo
DW = Deva Wheeler
JW = Jeremy Wheeler

TABLE 4: Spawning Ground Surveys, Bear Creek, 1999-2000 Season

Bear Creek is the third-largest tributary of the Mattole River (enters at river-mile 42.8, near Ettersburg)

Surveys conducted by the Mattole Salmon Group (phone 707-629-3433; fax 707-629-3435; e-mail: salmon@humboldt.net). Primary funding provided by the Bureau of Land Management, Arcata Field Office (Cooperative Agreement 1422-B300-A7-1010, Task Order 003). Data compiled March 2000 by Gary D. Peterson, MSG fisheries biologist. ***Key to abbreviations at bottom of page.***

Map Code No.	BEAR CR. SURVEY REACHES Location & Description	Survey Date (m/d/y)	Reach Length (miles)	Inventory Procedure (type/direction)	Survey Personnel	Live Fish Seen	Carcasses & Skeletons Examined	Fresh Redds & designation by species total # redds	 # occupied
17a	South Fork Bear Creek headwaters, from Day's (0.4 miles downstream from BLM's Nadelos Campground) up to Edwards' house	1/17/00	1.2	W/u	CT	–	–	1 ND	0
		1/26/00	1.2	W/u	CT	1 SHX	–	1 SH	0
17b	South Fork Bear Creek, from confluence of Hidden Valley Creek (about 0.15 miles downstream from "tire pool" at Chemise Mountain Road culvert) up to Day's house	1/17/00	0.9	W/u	CT, TD	1 SSF 1 SSM	–	1 SS	1
		1/26/00	0.9	W/u	CT	–	–	2 SH 1 ND	0 0
17c	South Fork Bear Creek, from Marenghi/Lingel bridge up to Shelter Cove Road ("Bear Creek pool")	12/14/99	1.7	W/u	GM, RL	–	–	–	–
		1/18/00	1.7	W/d	GM, BM	–	–	2 ND	0
		1/26/00	1.7	W/u	GP	1 SHF 2 SHM	–	2 SH 3 ND 2 possible	1 0 –
17d	South Fork Bear Creek, from trail access at BLM's Tolkan Campground up to Queen Mine Road crossing	12/6/99	1.75	W/u	CT	–	–	–	–
		12/19/99	1.75	W/u	GP, SZ	1 SSF	–	2 KS 1 SS 5 UN	0 1 0
17e	South Fork Bear Creek, from trail access at BLM's Tolkan Campground down to old bridge site at Low Gap Creek (major west-side tributary located 0.4 miles south of BLM's Horse Mountain Campground)	12/6/99	1.8	W/d	GP	–	–	2 KS 2 UN	0 0
17e+ 17f	South Fork Bear Creek, from trail access at BLM's Tolkan Campground to 0.15 miles downstream from old bridge site at Low Gap Creek	12/19/99	1.95	W/d	GM, LM	1 KSF	–	1 KS 6 UN 2 possible	1 0 –
18	North Fork Bear Creek, from mouth to bridge at Horse Mountain Road (Kings Peak Road)	12/18/99	1.9	W/u	CT	–	–	–	–
19a	Bear Creek mainstem, from confluence of North Fork & South Fork to north-side tributary 1.8 miles downstream	12/18/99	1.6	W/d	GP	–	1s KSX	1 KS	0
19b	Bear Creek mainstem, from Jewett Creek down to mouth (near Ettersburg)	12/8/99	2.1	W/d	GP, JW	1 KSF	–	4 KS	1
		1/2/00	2.1	W/d	GP, JW	2 KSF 1 KSG 2 SHX	1c KSF 1s KSF 5c KSM	5 KS	1
19c	spot check of large pool in lower mainstem of Bear Creek at confluence of French Creek (at one-lane county bridge that crosses Bear Creek about 0.3 miles above its mouth)	11/28/99	–	spot check	GP	2 KSM 1 SSF 1 SSM 1 SSG	–	–	–
19d	spot check in lowermost 50 yards of mainstem Bear Creek	12/23/99	–	spot check	MR, DK	–	1c KSM	–	–

SUMMARY & TOTALS: BEAR CR. SURVEYS

13.1 reach miles (3.65 miles surveyed once, 7.75 miles surveyed twice, & 1.7 miles three times). 24.25 accumulated miles of survey (all by wading).

19 live fish seen (7 KS, 6 SS, 6 SH). Six of the 7 live chinook seen were in the lower 2.1 miles of the Bear Creek mainstem.

9 carcasses/skeletons found (all KS). All chinook carcs/skels were found in the Bear Cr. mainstem.

42 definite redds (6 occupied) + 4 possible redds. Ten of the 15 chinook redds recorded were in the mainstem of Bear Creek. No chinook redds were seen above the Queen Mine Road.

11 different surveyors participated in Bear Creek surveys

Live Fish Seen	Carcasses & Skeletons Examined	Fresh Redds & designation by species	
4 KSF	1c KSF	15 KS redds	3
2 KSM	1s KSF		
1 KSG	6c KSM	2 SS redds	2
	1s KSX	13 UN redds	0
3 SSF			
2 SSM		5 SH redds	1
1 SSG		7 ND redds	0
1 SHF			
2 SHM		4 possible redds	–
3 SHX			

Key to Abbreviations:

W/u = wading upstream
W/d = wading downstream

KS = king (chinook) salmon
SS = silver (coho) salmon
UN = unknown if chinook or coho
SH = steelhead
ND = species not determined

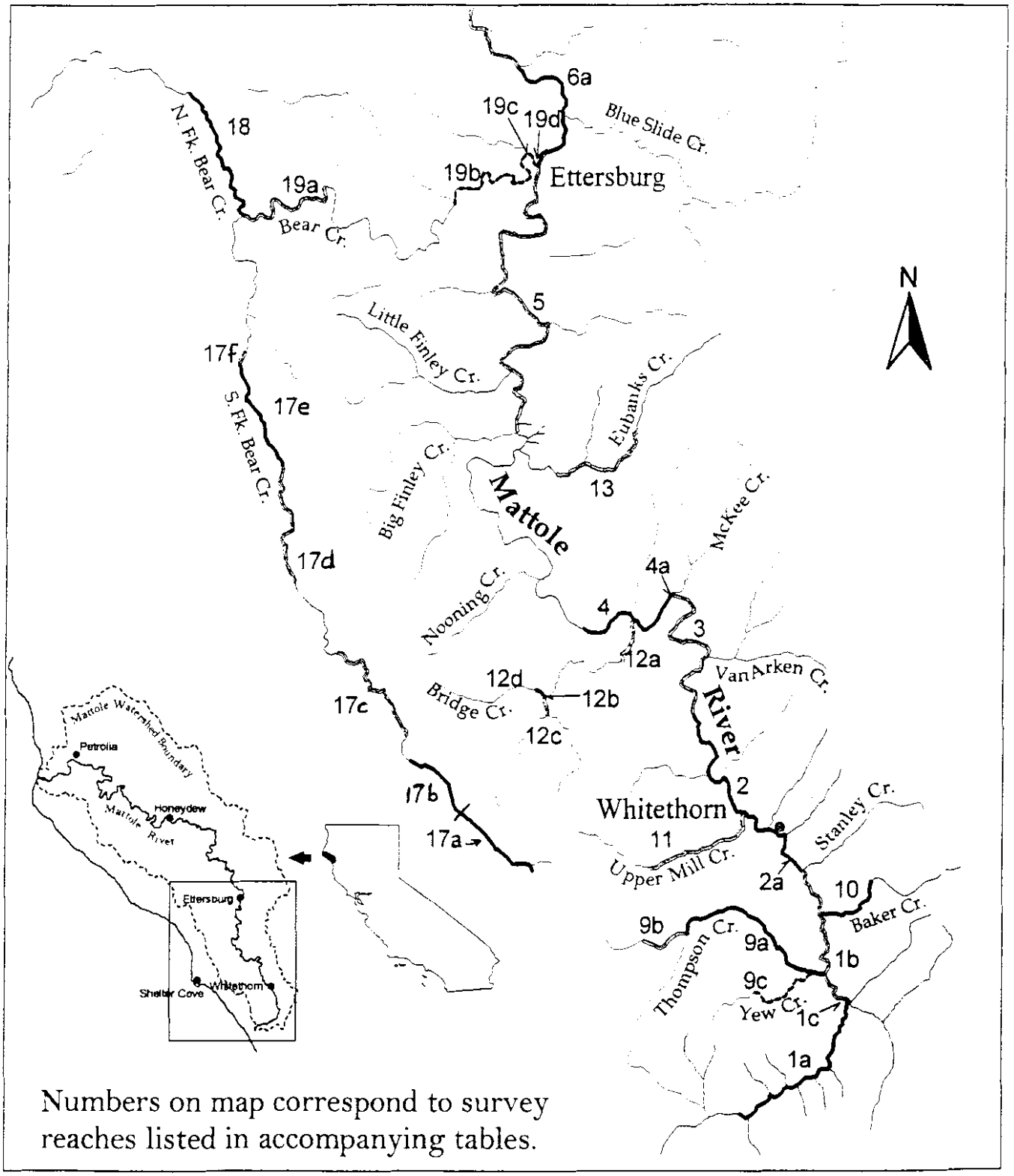
F = female
M = male
X = sex of fish undetermined
G = grilse (KS chub or SS jack). Grilse are small male salmon returning to spawn at age 2. Chinook grilse are males < 22" long; coho grilse are males < 20" long.

c = carcass (recently dead fish, suitable for jaw tagging because head and body are relatively intact)
s = skeleton (pieces or parts of fish, not suitable for jaw tagging because head and body are not intact)

Surveyors (asterisk indicates new participant with no prior training in MSG survey protocols)

TD = Tim Day
DK = Daniel Kosmal
RL = Ray Lingel
BM = Betsy Mullins*
GM = Greg Mullins
LM = Lindsey Mullins*
GP = Gary D. Peterson
MR = Maureen Roche
CT = Campbell Thompson
JW = Jeremy Wheeler
SZ = Seth Zuckerman

Spawning Ground Survey Reaches
Mattole River Watershed
1999 - 2000 Season
Map 1 of 3: Mattole headwaters to Ettersburg

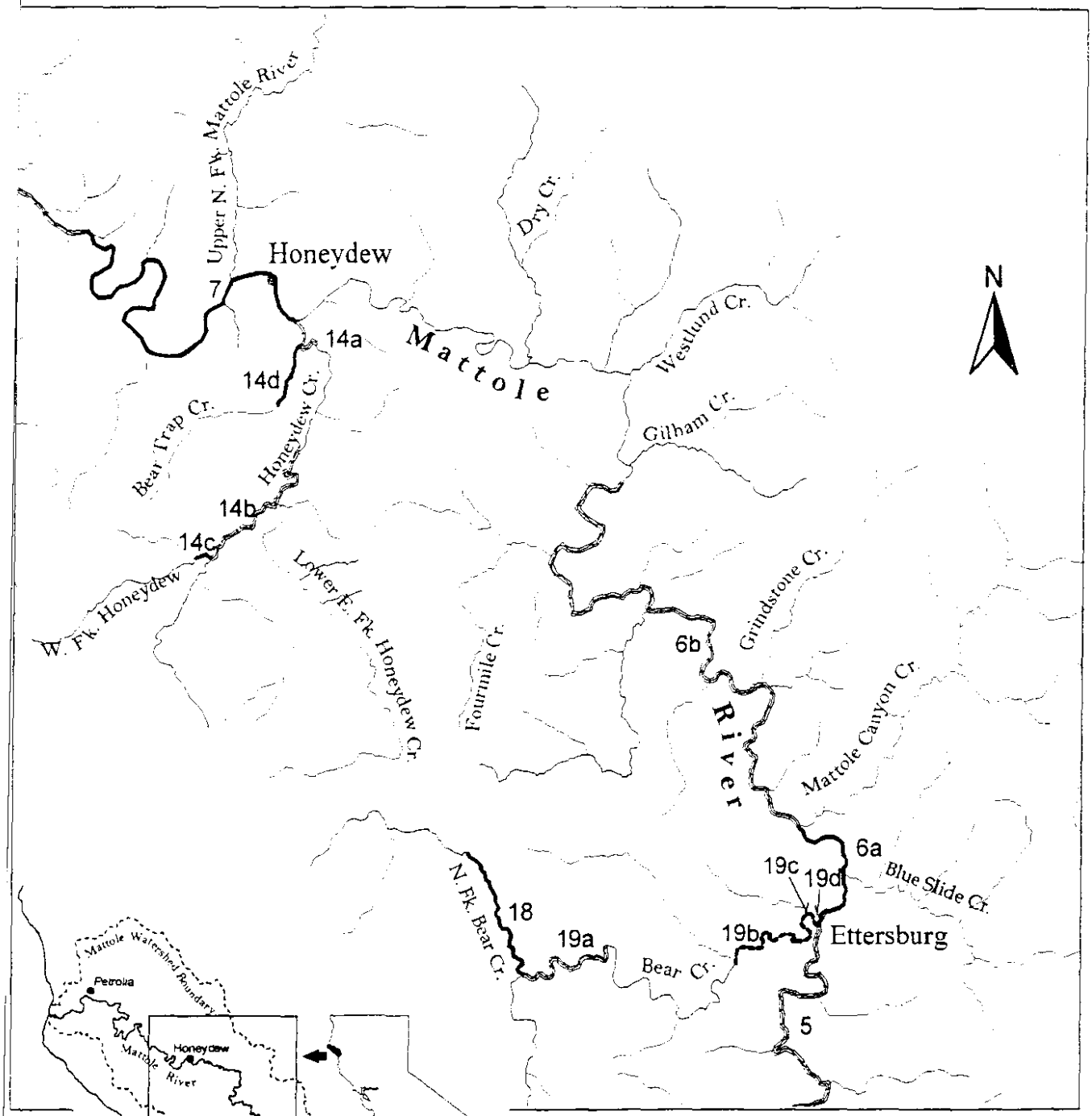


Numbers on map correspond to survey reaches listed in accompanying tables.

1 0 1 2 3 4 5 Miles

Mattole Restoration Council GIS
for the Mattole Salmon Group
7/28/2000
msg/spawnsurvey.apr : 99/00 - 1

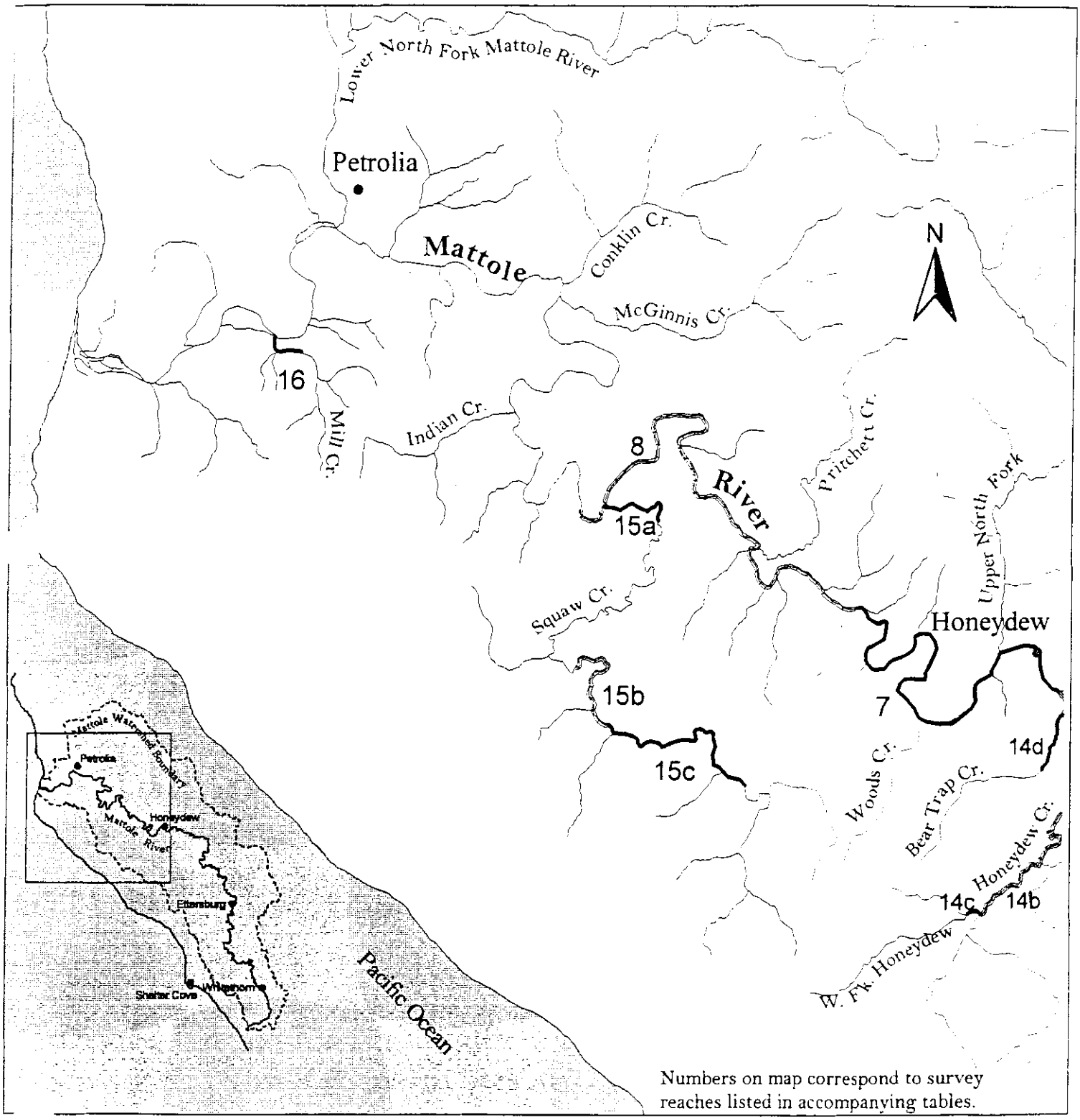
Spawning Ground Survey Reaches
Mattole River Watershed
1999 - 2000 Season
Map 2 of 3: Ettersburg to Honeydew



Numbers on map correspond to survey reaches listed in accompanying tables.

Mattole Restoration Council GIS
for the Mattole Salmon Group
7/28/2000
msg/spawnsurvey.apr : 99/00 - 2

Spawning Ground Survey Reaches
Mattole River Watershed
1999 - 2000 Season
Map 3 of 3: Honeydew to Pacific Ocean



1 0 1 2 3 4 5 Miles

Mattole Restoration Council GIS
for the Mattole Salmon Group
7/28/2000
msg/spawnsurvey.apr : 99/00 - 3

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. Escapement Index (average 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: salmon@humboldt.net). Data summary prepared March 2000 by Gary D. Peterson, MSG fisheries biologist.

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						Escapement Index (ave # 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.)	*not surveyed*																		*not surveyed*
	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	1.0	–	–	–	–	–	7	–	–	–	–	1	–	–	–	–	1	2.0
	lower mainstem Mattole River (downstream from Honeydew Creek)	0.6	0.6	15	–	–	–	–	–	–	–	–	–	3	–	–	–	–	3	5.0
	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
	ALL REACHES COMBINED 1994-95 SEASON	**26.4**	**39.4**	**32**	**7**	**–**	**2**	**–**	**10**	**3**	**–**	**–**	**–**	**40**	**15**	**10**	**2**	**3**	**70**	**2.7**
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)	4.0	4.0	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
	ALL REACHES COMBINED 1995-96 SEASON	**44.4**	**65.4**	**77**	**8**	**–**	**9**	**7**	**14**	**–**	**–**	**–**	**–**	**39**	**7**	**–**	**1**	**8**	**55**	**1.2**
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.)	*not surveyed*																		*not surveyed*
	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.)	*not surveyed*																		*not surveyed*
	middle mainstem below Ettersburg (Bear Creek to Honeydew Creek)	*not surveyed*																		*not surveyed*
	lower mainstem Mattole River (downstream from Honeydew Creek)	*not surveyed*																		*not surveyed*
	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
	ALL REACHES COMBINED 1996-97 SEASON	**28.15**	**47.7**	**47**	**21**	**3**	**9**	**–**	**29**	**11**	**1**	**1**	**1**	**80**	**50**	**14**	**–**	**10**	**154**	**5.5**

Table continued on following page

Mattole Salmon Group
Box 188, Petrolia, CA 95558

Table 5 (continued from previous page)

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						Escapement Index (ave. # of redds per mile)
				KS	SS	UN	SH	ND	KS	SS	UN	SH	ND	KS	SS	UN	SH	ND	Total Redds	
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.)	*not surveyed*																		*not surveyed*
	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	0.0
	lower mainstem Mattole River (downstream from Honeydew Creek)	*not surveyed*																		*not surveyed*
	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
	ALL REACHES COMBINED 1997-98 SEASON	**45.2**	**95.4**	**21**	**22**	**9**	**–**	**2**	**10**	**3**	**5**	**–**	**–**	**85**	**34**	**45**	**–**	**21**	**185**	**4.1**
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	6.0
	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	0.0
	tributaries (except Bear Creek)	20.0	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
	ALL REACHES COMBINED 1998-99 SEASON	**66.85**	**141.0**	**47**	**14**	**6**	**66**	**2**	**13**	**7**	**–**	**–**	**–**	**27**	**8**	**16**	**11**	**25**	**87**	**1.3**
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	1.0
	lower mainstem Mattole River (downstream from Honeydew Creek)	12.0	24.0	1	–	–	1	–	2	–	–	–	–	–	–	–	–	–	0	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
	ALL REACHES COMBINED 1999-2000 SEASON	**68.35**	**151.0**	**43**	**29**	**28**	**19**	**3**	**32**	**2**	**5**	**–**	**–**	**57**	**23**	**45**	**13**	**35**	**173**	**2.5**

Key to Abbreviations:

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

Mattole Salmon Group
Box 188, Petrolia, CA 95558