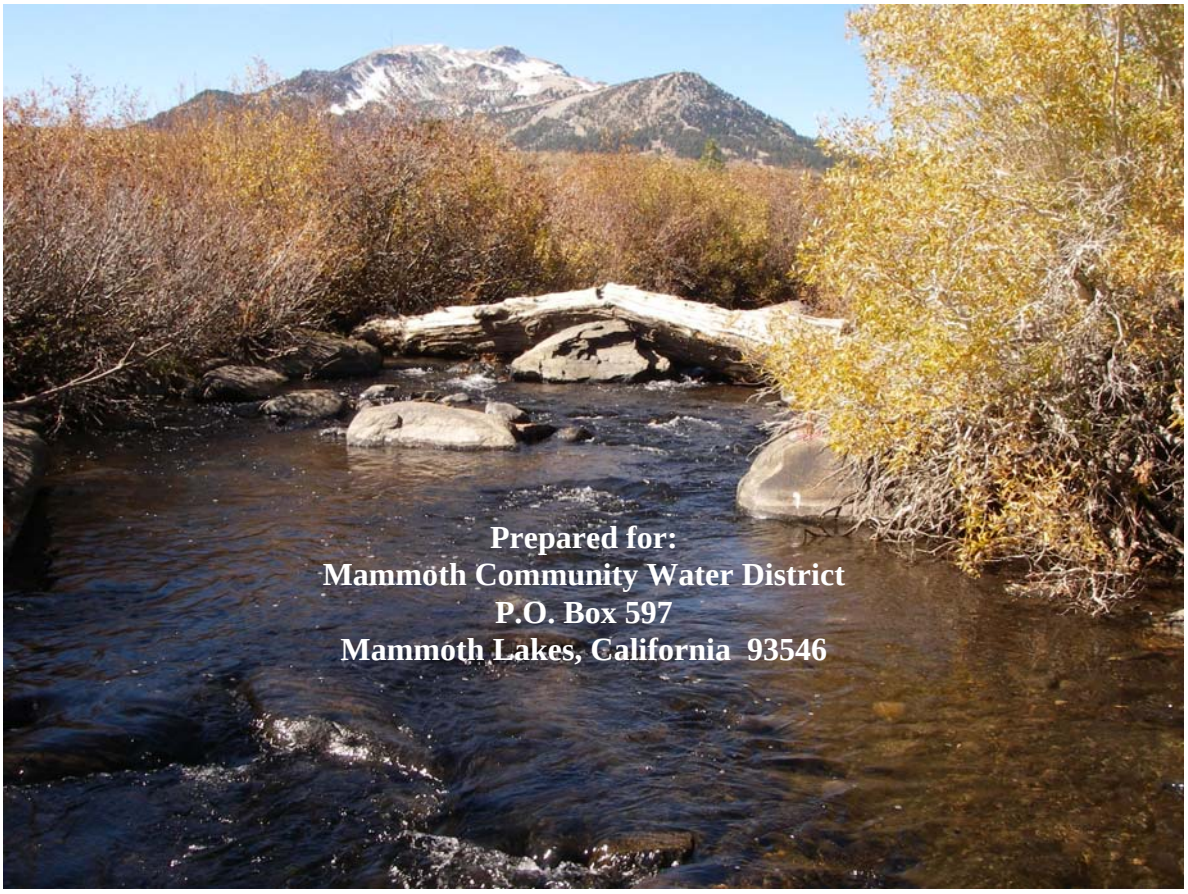
OCTOBER 2007 MAMMOTH CREEK FISH COMMUNITY SURVEY



FINAL REPORT

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December 24, 2007

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Introduction

Since 1992, the fish populations in Mammoth Creek have been systematically surveyed annually each fall (except for 1998) to evaluate the efficacy of the existing bypass flows in maintaining the fish populations throughout the lower basin (Hood 1998, 2001, 2002, 2003, 2004, 2006a, 2006b; Hood et al. 1992, 1993, 1994; Jenkins 1999; Jenkins and Dawson 1996, 1997; Salamunovich 2006). This report presents the results of the latest monitoring effort. The specific objectives of the October 2007 fish community survey were to characterize fishery population (e.g., species composition, abundance, biomass, length frequencies, etc.) at each of the historic Mammoth Creek fish sampling stations and to compare the results of the 2007 survey with those from previous annual surveys.

Study Area/Study Sites

Mammoth Creek drains the Mammoth Crest and several high elevation lakes on the eastern side of the southern Sierra Nevada in Mono County, California. Mammoth Creek basin has a drainage area of about 71 square miles (California Department of Water Resources 1973). Basin elevations range from about 11,000 feet in the headwaters along the Mammoth Crest to 7,000 feet at the Cashbaugh Ranch near its confluence with Hot Creek.

Mammoth Creek is part of the Owens Subprovince of the Great Basin Province (Moyle 2002). The original native fish fauna likely consisted of two species, the Owens sucker (*Catostomus fumeiventris*) and the Owens tui chub (*Gila bicolor snyderi*). The tui chub that now inhabit the lower portion of Mammoth Creek appear to be hybrid forms resulting from crosses with Lahontan tui chub (*G. b. obesa*) that were presumably introduced as baitfish in the 1960's (Chen et al. 2006). Historically, trout were absent from the Owens River watershed, which includes Mammoth Creek (Needham and Cramer 1943; Moyle et al. 1996). It is unknown when rainbow trout (*Oncorhynchus mykiss*) were introduced into the basin, but brown trout (*Salmo trutta*) were likely introduced in the 1890's (Jenkins et al. 1999). Both species have established naturalized populations in Mammoth Creek. In addition to the naturalized rainbow trout, Mammoth Creek populations are supplemented

through regular plants of hatchery rainbow trout made by California Department of Fish and Game (CDFG). Prior to 2007, the CDFG Hot Creek Hatchery planted an average of over 13,000 catchable-sized rainbow trout, totaling almost 7,300 pounds at 12 to 15 locations along Mammoth Creek from Minaret Road (0.3 miles downstream of Site BL) to the Mammoth Creek Flume area (Site EL) each year (Table 1). The Hot Creek Hatchery trout fish were planted about once a week throughout the trout fishing season (late April through mid-October).

Table 1. Levels of catchable-sized rainbow trout stocked in Mammoth Creek for past four years. Data provided by CDFG.

Year	Number	Pounds	Average weight/fish (pounds)
2004	12,426	7,367	0.89
2005	13,109	7,200	0.55
2006	14,583	7,250	0.54
2007	6,917	4,060	0.68
Average	11,759	6,469	0.67

New Zealand mud snails ([NZMS], *Potamopyrgus antipodarum*) are known to occur in Hot Creek below the CDFG Hot Creek State Fish Hatchery. This known infestation site is located near its confluence with Mammoth Creek. In 2007, an infestation of NZMS at the Hot Creek Hatchery forced a discontinuation of that facility's Mammoth Creek planting program (Judy Urrutia, personal communication). During the 2007 trout fishing season, catchable-sized rainbow trout were stocked in Mammoth Creek by CDFG's Mt. Whitney and Fish Springs hatcheries. The number and frequency of the 2007 season hatchery supplementation to Mammoth Creek were lower compared to those made in previous years (Table 1).

The fish survey project area consists of the lower 8.9 miles of Mammoth Creek from the Sherwin Street crossing in the town of Mammoth Lakes downstream to its confluence with Hot Creek (Figure1). The fish survey project area has been divided into four distinct

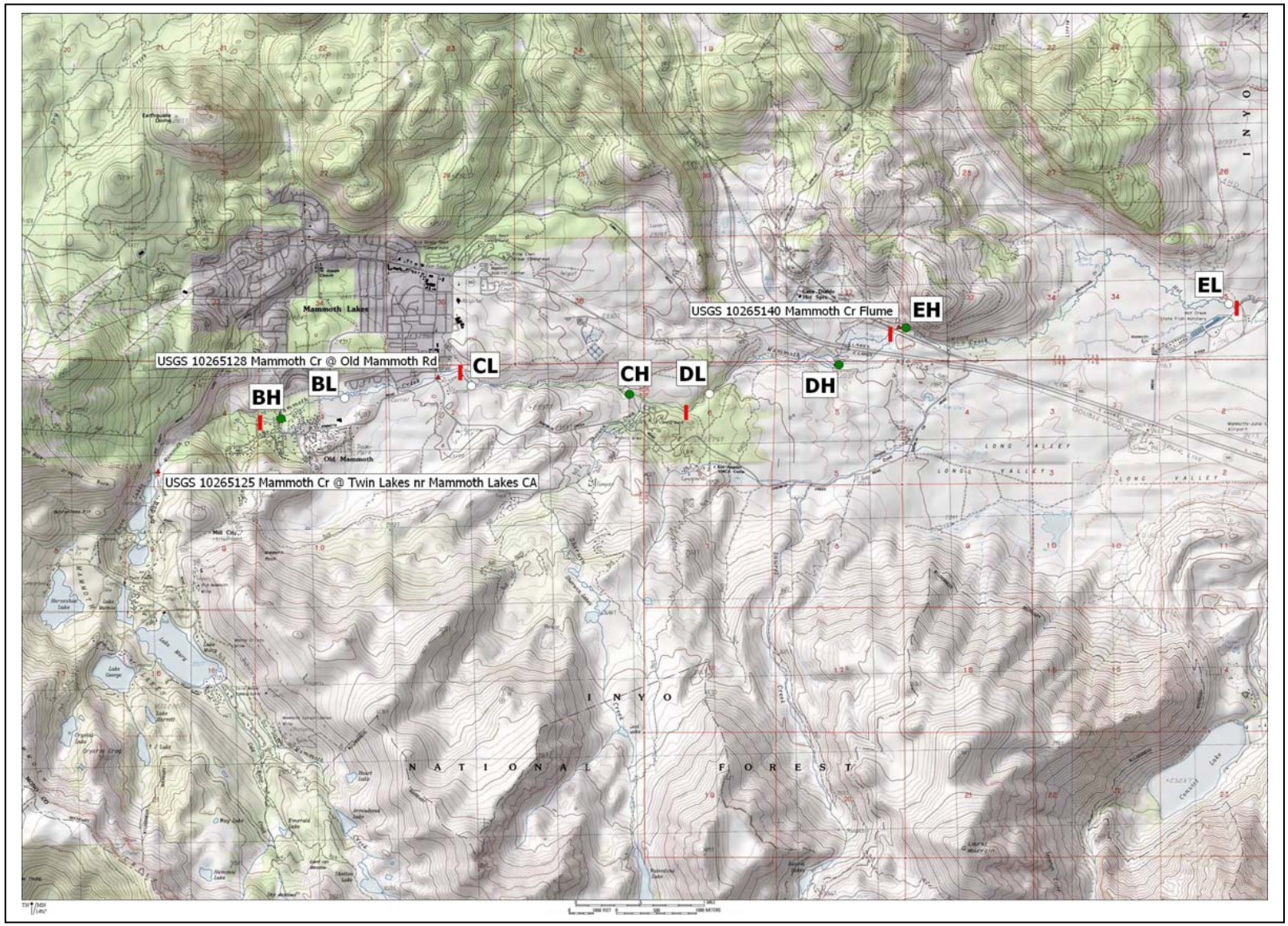

Figure 1. Map showing Mammoth Creek basin and location of the eight fish sampling sites. Red hashes show reach boundaries. Green dots are high riparian density fish samples sites, white dots are low riparian density sites. Red triangles show stream flow gage locations.

reaches based upon an analysis conducted by Beak Consultants (Bratovich et al. 1990). The characteristics of aquatic habitat vary considerably among the four study reaches based upon the combination of channel morphology, riparian vegetation, stream gradient, and bed substrate size and composition. Channel braiding occurs in each study reach and is a result of large woody debris accumulation in lower gradient sections of the channel.

The experimental design and rationale for the original selection of the fish survey sample sites are described in detail in Bratovich et al. (1990). Distinct differences in the amount of riparian cover within each study reach were observed during the habitat mapping survey conducted in 1988 (Bratovich et al. 1990). To ensure representation of riparian cover and dispersion of sampling sections, fish sampling stations were originally located within "high" and "low" density riparian habitat sites within each study reach. For example, Site BH represents high-density riparian cover habitat site within Reach B, while Site EL represents a low-density riparian cover site Reach E. Discretion must be used when comparing and interpreting the results between high and low-density riparian cover sites because of between reach variation in riparian density and tree species and changes in the riparian area over time.

Consistent with previous surveys, eight stations of approximately 300 feet in length were sampled in October 2007, with each site representing a high or low-density riparian vegetation cover habitat within the four study reaches (Figure 1). While over the years several of the sample sites have been moved up or downstream due to changes in landowner access or channel morphology, the habitat areas have remained unchanged (Hood 2006b). The sites sampled in 2007 were identical to those sampled in October 2006 and were easily identified by flagging and rebar left behind from previous surveys. In order to help in locating sites and to gain familiarity with access, TRPA biologists visited each of the eight sites with MCWD personnel immediately prior to the initiation of the surveys.

Methods

Physical Site Data Collection

Habitat dimensions, habitat characteristics, and water quality parameters were measured at all electrofishing sites at the time they were sampled. All data were recorded on standardized data forms. The length of each site was measured to the nearest foot from the bottom boundary to the top boundary using a hip chain. Stream width to the nearest 0.1 foot was measured at a minimum of eleven locations along the sampling station using a surveyors tape. The average of these measurements was used to determine the mean width at each station, which was used in combination with reach length to estimate a total sample area. Depth measurements (to the nearest 0.05 foot) were made using a survey stadia rod at ¼, ½, and ¾ distance across each of the width cross-sections to estimate the average depth for the entire sample station. The maximum depth within each of the stations was also recorded using the deepest reading made within the particular survey unit. Stream gradient over the part or all of the length of each study site was measured using a hand-level and a stadia rod placed on the stream bottom.

Habitat characteristics within each of the survey stations were also recorded at the time of sampling. The percentages of different habitat types (pool, run, riffle, or pocket water) comprising the station were visually estimated, along with the percentages of various substrate types by particle size (fines [<2mm], sand [2-7mm], gravel [8-75mm], cobble [76-300mm], boulder [>300 mm] and bedrock). The percent of the site available as fish cover was also estimated using the categories of surface turbulence, instream object cover, undercut bank, and overhanging vegetation within 48 inches of the water surface. The surface area of suitable trout spawning gravels in the study site was also estimated.

Water temperature was recorded at the time the stations were sampled. Other water quality parameters were also measured, including pH, conductivity (µS/cm), specific conductivity (temperature standardized conductivity), salinity (ppt), and dissolved oxygen concentrations (mg/L), and percent saturation. The pH measurements were made using a

Tetratest® pH freshwater kit available at most aquarium stores. The remaining water quality parameters were measured using Yellow Spring Instruments® handheld meters (Models 30 and 550).

To aid in relocating stations MCWD personnel recorded the latitude and longitude of the top and bottom boundaries at each of the eight sample stations using a Trimble® backpack differential global positioning system. In addition, the top and bottom boundaries along each bank were marked used high-visibility surveyors flagging. Sites were also photographed from multiple vantage points.

Electrofishing

Estimation of the abundance and population characteristics of resident fish in Mammoth Creek was conducted using multiple-pass removal-depletion by backpack electrofishing. The study sites were isolated with $^{3}/_{8}$-inch (9.5 mm) mesh block nets to prevent immigration or emigration of fish during sampling. Two shockers assisted by two netters moved upstream in concert across a unified front during each sampling pass. The shockers used portable backpack electrofishers (Smith-Root® Models 11A and 12A) to stun fish, which were captured by the netters using ⅛-inch mesh dip nets. All captured fish were removed to 5-gallon live buckets filled with river water and equipped with a small bait bucket aerators. Fish in the live buckets were periodically transferred to a ⅛-inch mesh netted live box located in the river outside of the study site and away from the electric field.

A minimum of three passes of equal effort were made by the electrofishing teams within each reach. The target for the three-pass data was to provide a population estimate for the dominant trout species with a standard error that was ten percent (or less) of that estimate. After the third pass, the trout capture data was used to generate the population statistics on a laptop computer using MicroFish 3.0 (Van Deventer and Platts 1989). If the population estimate and standard error criterion was met, no additional passes were made. If the

criterion was not met, another pass would be made and the new estimate and standard error would be re-evaluated.

Following each pass, captured fish were identified, measured and weighed. Prior to handling, fish were anesthetized in a weak CO_2 solution using commercially available effervescent pain-relief tablets (two tablets: ¾ gallons of clean river water). All fish were measured to the nearest millimeter fork length (FL) and weighed to the nearest 0.1 gram on an electronic scale. Fish measurement data and notes were recorded on standardized data sheets.

During processing, fish were inspected for any distinguishing marks (fin clips) or features (e.g. hook scars, deformed fins, tumors; fungus, etc.), which were duly noted on the data sheets. All rainbow trout were examined for physical evidence of hatchery origin, such as frayed fins, deformed fins, missing adipose fins, or abraded skin on snouts or backs. Rainbow trout showing such signs were designated as hatchery rainbow trout. Those rainbow trout not showing these characteristics were considered "wild" rainbow trout. All mortalities were also noted on the data sheets.

After processing, fish were placed in an aerated bucket of cool river water and allowed to recover. Fish in the recovery bucket were regularly transferred to ⅛-inch mesh net floating nylon fish bags located in the river outside the study site. All fish were held in the live bags until fully recovered from the shocking and handling. After the completion of the survey, all fish were distributed back to size-appropriate habitat areas of the study site.

In order to prevent contamination of field equipment with NZMS and their inadvertent spread within the Mammoth Creek basin, several precautionary measures were used during the survey. All gear was thoroughly rinsed and cleaned of vegetation and sediment at each site. We tried to minimize any exposure risks at the lower EL Site (near the hatchery and a known NZMS locale) by using the hatchery foot bridge to cross Hot Creek. Following

sampling at Site EL, all gear was rinsed off and scrubbed with coarse-bristle brushes before leaving the site, and then hosed-off and scrubbed again at the Mammoth Community Water District (MCWD) office before moving to a new site the next day. During the entire survey period, we left the gear (waders/boots/dip nets/block nets/anode pole rings/live carts) outside overnight to freeze during the sub-zero (°C) nighttime temperatures that occurred in Mammoth Lakes at the time.

The length data was used to generate site-specific length-frequency histograms for each species. These plots show the size structure of the population, which tends to be related to the age structure of the specific population.

The multiple-pass capture data were used to generate a population estimate and 95 percent confidence interval for each species using the maximum-likelihood estimator from the microcomputer software program MicroFish 3.0 (Van Deventer and Platts 1989). MicroFish 3.0 cannot provide a population estimate if only a single fish is captured from all passes combined, or if all the fish are captured on the first pass. In these rare cases, the Zippin estimator from the software program CAPTURE (White et al. 1978) was used to calculate the population estimate and associated error. Both software programs generate probability-of-capture estimates based upon capture patterns. The capture probability estimate, which varies between zero and one, is a measure of sampling efficiency, with values greater than 0.40 being generally indicative of effective sampling (White et al. 1982).

Fulton's Condition Factor (K) was calculated for all trout using the formula of Bagenal and Tesch (1978). The condition factor compares the length and weight relationship of individual fish to assess their physical condition (Everhart et al. 1975). Higher condition factors indicate heavier fish for a given length. A value of 1.0 is generally considered normal for a healthy population of trout.

The population estimate data was used to generate abundance and biomass estimates. The abundance estimates were standardized to common indices (fish/mile and fish/acre) to facilitate comparisons between unequal length/area sites within and between years. Biomass estimates for each species at each station were calculated as the product of the estimated fish population and the mean weight of that species captured during electrofishing divided by the surface area of the river at sampled at that site. Biomass estimates were also calculated using several indices (e.g. pounds/mile and pounds/acre) to facilitate comparison with earlier surveys. Biomass is a more meaningful production index, since it takes into account both fish numbers and fish size (as indicated by weight).

Results

The electrofishing surveys of the eight Mammoth Creek study sites were conducted over five consecutive days from October 10-14, 2007. Stream flows in the upper portion of the study reach averaged 6.5 cubic feet per second (cfs) during this period and were about 50% lower than stream flow during the Fall 2006 sampling (Figure 2). The average stream flow in the lower basin (i.e. downstream of Sherwin Creek) as recorded at the Los Angeles Department of Water & Power stream gage below Highway 395 was slightly lower at 5.7 cfs, during the 2007 sample period (MCWD, unpublished data).

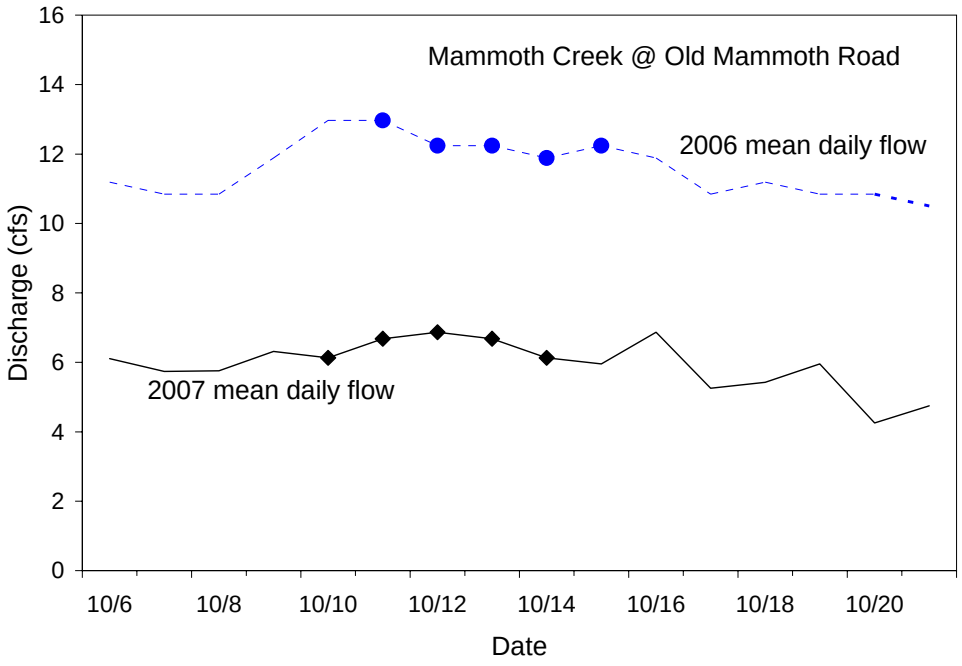

Figure 2. Stream flow records for Mammoth Creek at Old Mammoth Road crossing (near site CL) during the 2006 and 2007 fish surveys. Dark markers show actual fish sampling dates for both years. Data provided by MCWD.

Physical Site Data Collection

The habitat and water quality measurements were conducted at each site following the first electrofishing pass while the remaining crews were processing the captured fish. Copies of the actual data sheets are contained in Appendix A. A summary of the habitat dimensions (i.e. lengths, widths, and depths), water quality parameters, and habitat characteristics (i.e. habitat types, substrate types, and cover types) are presented in Table 2. Site locations are shown on Figure 1.

By the time of the mid-October sampling, water temperatures were relatively cool (<43°F), while dissolved oxygen concentrations were relatively high (>9.0 mg/L) at most of the study sites (Table 2). The combination of cold water temperature and high dissolved oxygen levels likely contributed to the low electrofishing/handling mortality noted during our 2007 surveys (0.3 percent for trout).

Our experience has shown that water conductivities in the 70-150 μS/cm are ideal for effective backpack electrofishing. The water conductivity measured at all sites was within or near this range.

Site BH

This 303-foot long high-density riparian habitat site was located in the town of Mammoth Lakes just downstream of the Sherwin Road crossing (Figure 1). This site was located within a braided section of Mammoth Creek and so carried only a portion of the stream flow. During our survey, this site had a mean width of 12.6 feet and a mean depth of 0.49 feet and was predominantly riffle habitat (Table 2). The site had a relatively low gradient (1.9 percent) and the substrate was dominated by cobble and gravel. About 635 ft^2 of suitable trout spawning gravel deposits were noted in the low flow channel at this site during our survey. Surface turbulence, instream object, and overhanging vegetation were identified as the dominant cover types.

Site BL

This 289-foot long low-density riparian cover habitat site was located in the town of Mammoth Lakes just downstream of the Snow Creek Condominiums access road crossing (Figure 1). This site was located within a braided section of Mammoth Creek and so carried only a portion of the stream flow. During our survey, this site had a mean width of 9.9 feet and a mean depth of 0.46 feet and was predominantly riffle habitat (Table 2). The site had a relatively low gradient (1.6 percent) and the stream bed was dominated by gravel substrate. Over 1,850 ft^2 of suitable trout spawning gravel deposits were noted in the low flow channel at this site during our survey. Overhanging vegetation was identified as the dominant cover type, though little overall cover was available at this site.

Table 2. Summary of habitat and water quality measurements at each of the eight Mammoth Creek electrofishing sites, October 2007.

	BH	BL	CH	CL	DH	DL	EH	EL
HABITAT MEASUREMENTS								
Sample date	10 Oct	11 Oct	13 Oct	11 Oct	14 Oct	13 Oct	12 Oct	12 Oct
Length (ft)	303	289	306	318	326	296	286	315
Mean width (ft)	12.6	9.9	12.8	17.6	11.1	17.8	18.7	15.9
Mean depth (ft)	0.49	0.46	0.55	0.87	0.98	0.76	0.67	0.82
Maximum depth (ft)	2.95	1.05	2.75	2.20	2.95	2.40	1.75	2.80
Surface Area (ft^2)	3,804.0	2,871.6	3,922.4	5,588.1	3,627.5	5,255.4	5,332.6	5,002.8
Gradient (%)	1.86	1.59	3.14	1.40	0.57	2.87	0.74	0.29
WATER QUALITY MEASUREMENTS								
Water temperature (°C)	6.1	3.5	3.6	6.1	3.5	4.2	4.4	9.0
Conductivity (µS/cm)	153.8	146.9	142.3	155.7	120.2	131.5	125.9	149.8
pH	7.5	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Dissolved Oxygen (mg/L)	8.70	9.27	9.91	9.23	9.90	9.77	9.92	9.02
Dissolved Oxygen (% saturation)	70.5	70.0	75.2	74.6	74.7	80.2	76.9	78.5
HABITAT TYPES								
% pool	5	5	20	15	10	15	5	25
% run	30	35	60	25	75	30	70	55
% riffle	65	60	15	35	15	35	25	20
% pocket water	0	0	5	25	0	20	0	0
SUBSTRATE TYPES								
% fines (<2 mm)	5	5	0	5	5	5	10	15
% sands (2 - 7 mm)	10	5	5	5	15	5	10	10
% gravel (7 - 75 mm)	20	75	15	30	50	20	35	60
% cobble (75 - 300 mm)	55	10	50	30	25	40	40	10
% boulder (>300 mm)	10	5	30	30	5	25	5	5
% bedrock	0	0	0	0	0	5	0	0
TROUT SPAWNING								
Surface area (ft^2)	635	1,867	56	309	638	142	518	1,862
COVER TYPES								
% surface turbulence	20	5	5	20	15	25	5	0
% instream object	20	5	45	55	20	40	10	5
% undercut bank	5	5	10	0	5	30	15	20
% overhanging vegetation (<48")	30	15	30	25	45	25	35	0

Site CL

This 318-foot long low-density riparian habitat site was located about 0.4 miles downstream of the MCWD's stream gage site at Old Mammoth Road (Figure 1). This site is near the upstream boundary of the Sherwin Creek Meadows section of Mammoth Creek. This site was located in a single channel area of the creek. During our survey, this site had a mean width of 17.6 feet and a mean depth of 0.87 feet and was composed of a combination of run, riffle, and pocket water habitats (Table 2). The site had a relatively low gradient (1.4 percent) and the substrate was composed of near equal amounts of gravel, cobble, and boulder elements. About 309 ft^2 of suitable trout spawning gravel deposits were noted in the low flow channel at this site during our survey. Instream object cover (mainly boulder and large cobble) was identified as the dominant cover type. Signs of heavy angling pressure, in the form discarded lures and fishing line were evident at the time of the survey. This site is located in a stretch of creek that is regularly planted with catchable-sized rainbow trout from CDFG's Mt. Whitney and Fish Springs hatcheries.

Site CH

This 306-foot long high-density riparian cover habitat site was located in a relatively remote area of Mammoth Creek about 0.1 miles upstream of the Sherwin Creek confluence (Figure 1). This site was located within a single channel, full flow section of Mammoth Creek. During our survey, this site had a mean width of 12.8 feet and a mean depth of 0.55 feet and was predominantly run habitat (Table 2). The site had a relatively moderate gradient (3.1 percent) and the stream bed was dominated by cobble and boulder elements. Only about 56 ft^2 of suitable trout spawning gravel deposits were noted in the low flow channel at this site during our survey. Instream object and overhanging vegetation were identified as the dominant cover types.

Site DL

This 296-foot long low-density riparian habitat site was located in a relatively remote area of Mammoth Creek about 0.6 miles downstream of the Sherwin Creek confluence (Figure 1). While this area was a relatively low-density riparian section, it was located in a forested canyon area of the basin and carried the full stream flow of mammoth Creek. During our survey, this site had a mean width of 17.8 feet and a mean depth of 0.76 feet and was a combination of pool, run, riffle, and pocket water habitats (Table 2). Relatively large amounts of large woody debris were present in this reach, contributed from the adjacent forested hillsides. The site had a relatively moderate gradient (2.9 percent) and the stream bed was dominated by cobble and boulder elements. While gravel was judged to be a significant portion of the substrate, it was distributed among the larger cobble substrate elements and most gravel was not judged available for trout spawning. Only 142 ft^2 of suitable trout spawning gravel deposits were noted in the low flow channel at this site during our survey. Instream object (boulder and cobble elements) and undercut banks were identified as the dominant cover types.

Site DH

This 326-foot long high-density riparian cover habitat site was located about 0.30 miles upstream of the U.S. Highway 395 crossing (Figure 1). This site was located within a single channel area of Mammoth Creek. During our survey, this site had a mean width of 11.1 feet and a mean depth of 0.98 feet and was predominantly run habitat (Table 2). The gradient in this section of Mammoth Creek was relatively low, 0.6 percent. The stream bed in this reach was dominated by gravel and cobble substrates. About 638 ft^2 of suitable trout spawning gravel deposits were noted in the low flow channel at this site during our survey. Overhanging vegetation was identified as the dominant cover type.

Site EH

This 286-foot long high-density riparian habitat site was located downstream of the frontage road (Substation Road) crossing on the northeast side of U.S. Highway 395 (Figure 1). The upstream boundary of the study site was located about 25 feet downstream of the Los Angeles Department of Water and Power stream flow weir facility. During our survey, this site had a mean width of 18.7 feet and a mean depth of 0.67 feet and was composed predominantly of run habitat (Table 2). The gradient in this study section was relatively low (0.7 percent) and the stream bed was dominated by cobble and gravel substrates. About 518 ft^2 of suitable trout spawning gravel deposits were noted in the low flow channel at this site during our survey. Overhanging vegetation was identified as the dominant cover type. The abundance of discarded fishing tackle along the banks and upstream of the site suggests that this area receives substantial angling pressure. This site is located in an area that is regularly planted with catchable-sized rainbow trout by the California Department of Fish and Game.

Site EL

This 315-foot long, single channel, low-density riparian cover habitat site was located in a meadow area of the creek just upstream of the Hot Creek confluence and adjacent to the Hot Creek State Fish Hatchery (Figure 1). The site is just downstream of extensive livestock grazing land. During our survey, this site had a mean width of 15.9 feet and a mean depth of 0.82 feet and was predominantly run habitat (Table 2). Undercut bank was identified as the dominant cover type, though overall, cover was not plentiful at this site. The site had a relatively low gradient (0.3 percent) and the stream bed was dominated by gravel substrate. About 1,862 ft^2 of suitable trout spawning gravel deposits were noted in the low flow channel at this site during our survey. This site also had the highest levels of fine sediment of any study reach. Rooted aquatic vegetation was present growing in the fine sediment areas in this reach. Examination of at least twelve different vegetation areas, as well as thorough searches through the abundant mats of vegetation that fouled the bottom block net following each electrofishing pass, failed to detect any snails.

Electrofishing

The October 2007 survey collected a total of 1,275 fish from four species (Table 3). Copies of the electrofishing data sheets are contained in Appendix B. Brown trout, which were captured at all eight sites, was the most abundant species at all eight sites and accounted for 83.2 percent of the overall total catch. Rainbow trout, also captured at all eight sample sites, was the second most abundant species in the total catch (13.4 percent). Of the 171 rainbow trout captured during the survey, 45 were identified as hatchery-reared fish. No hatchery rainbow trout were identified at either of the two reach B sites, both of which are upstream of the CDFG trout planting area. The greatest concentration of hatchery rainbow trout occurred at site CL. This site is regularly planted with hatchery fish by CDFG. The most contemporary release of hatchery rainbow trout in Mammoth Creek occurred on 2 October (eight days prior to our sampling), when 407 catchable-sized hatchery rainbow trout were released by Mount Whitney Hatchery (Judy Urrutia, personal communication).

Table 3. Numbers of fish captured at each of the electrofishing study sites, Mammoth Creek, Mono County, California, 10-14 October 2007.

Species	BH	BL	CH	CL	DH	DL	EH	EL	Total
Brown trout	247	13	96	36	189	90	218	172	1,061
Rainbow trout (wild)	39	3	7	5	26	24	12	10	126
Rainbow trout (hatchery)	0	0	5	25	2	2	3	8	45
Owens sucker	0	0	0	0	0	0	0	42	42
Tui chub	0	0	0	0	0	0	0	1	1
Total	286	16	108	66	217	116	233	233	1,275

A handful of young-of-the-year (YOY) Owens suckers and one YOY tui chub were captured at the most downstream site (EL) and made up 9.7 percent and 0.4 percent of the total catch, respectively.

Trout Length-frequency

Length-frequency analysis for rainbow trout captured at the various sites shows that multiple size (and presumably age) classes of wild rainbow trout are present at all eight study areas (Figure 3). The YOY size class (fish <100 mm FL) dominated the wild rainbow trout populations at most of the study sites. No smaller rainbow trout were captured at Sites BL or CH. Most of the rainbow trout identified as hatchery trout were greater than 195 mm in length. The one exception was a 149 mm rainbow trout captured below Highway 395 at Site EH. This fish may have been misidentified or perhaps may have been a "runt" among the hatchery trout that were planted.

Examination of the brown trout length-frequencies also shows multiple size/age classes present at all the sites (Figure 4). As was the case for the wild rainbow trout, the YOY size class dominated the brown trout populations at seven of the eight study sites. The exception was Site BL, where few fish were captured, and where about equal numbers of YOY and older brown trout were captured. We captured 872 YOY brown trout during our 2007 compared to 311 YOY brown trout captured in 2006. The large number of YOY brown trout evident at the Mammoth Creek study sites in the early fall of 2007 indicate that conditions beneficial for good reproduction in the fall of 2006 (when the 2007 cohort was spawned), incubation through the winter, and survival of fry through the spring and summer of 2007 were present in Mammoth Creek. The combination of relatively high stream flows in the fall of 2006 and the relatively low (and non-scouring) flows during the spring and summer of 2007 probably fostered the strong 2007 cohort. This strong 2007 year class holds promise for healthy brown trout populations for the Mammoth Creek basin for the next several years.

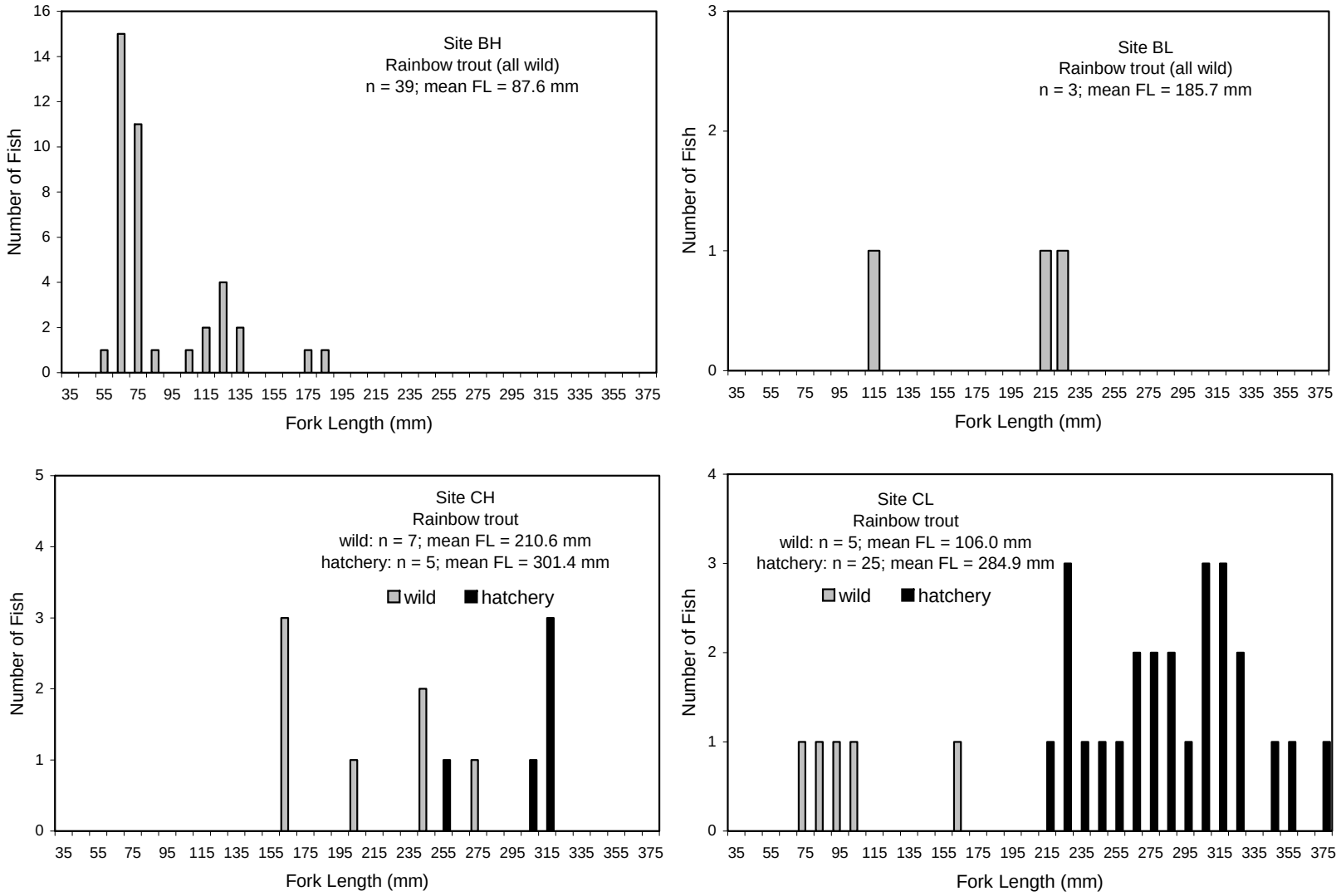

Figure 3. Length-frequency data for wild and hatchery rainbow trout captured during the October 2007 Mammoth Creek electrofishing survey.

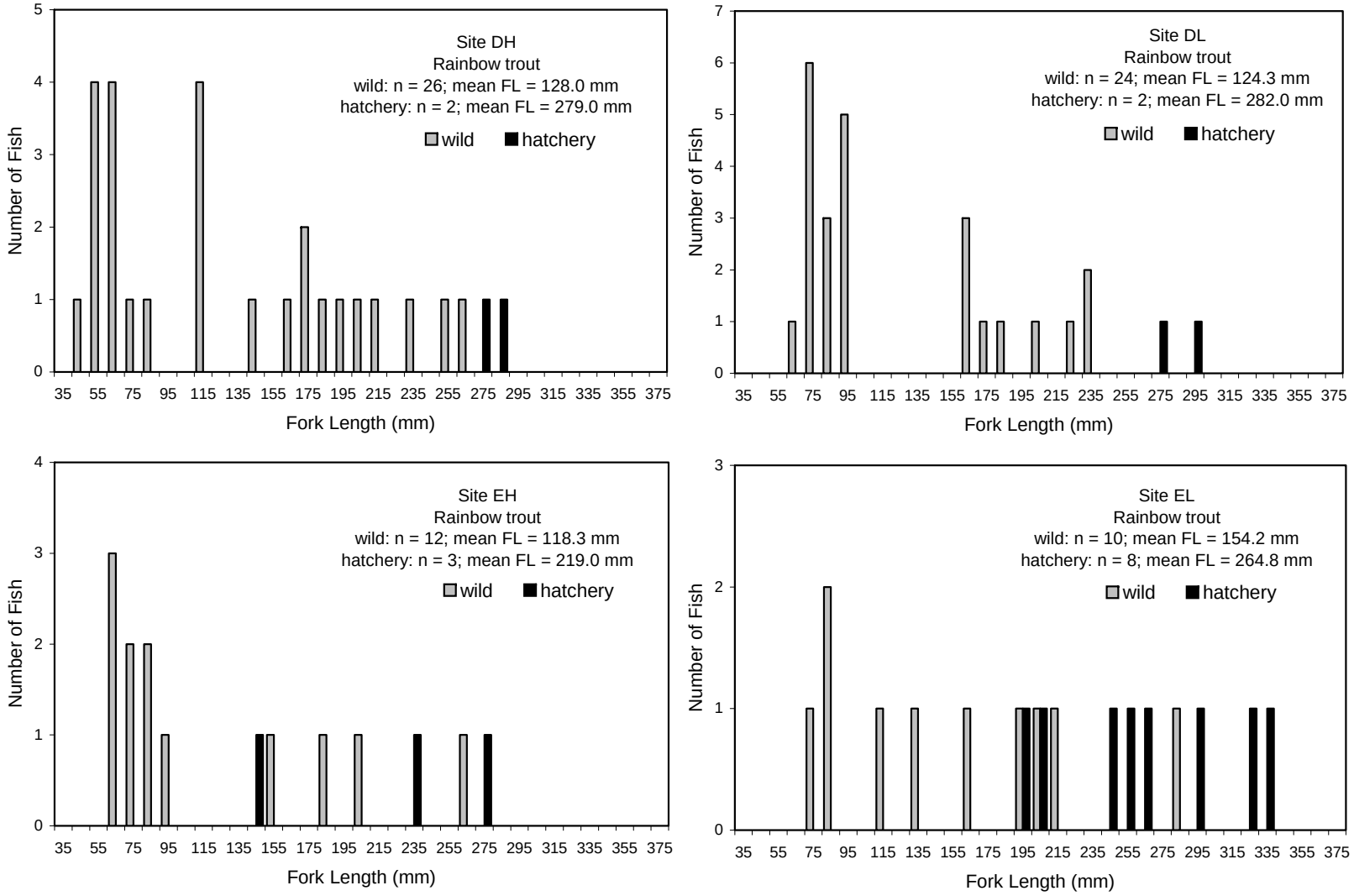

Figure 3. Length-frequency data for wild and hatchery rainbow trout captured during the October 2007 Mammoth Creek electrofishing survey. (continued)

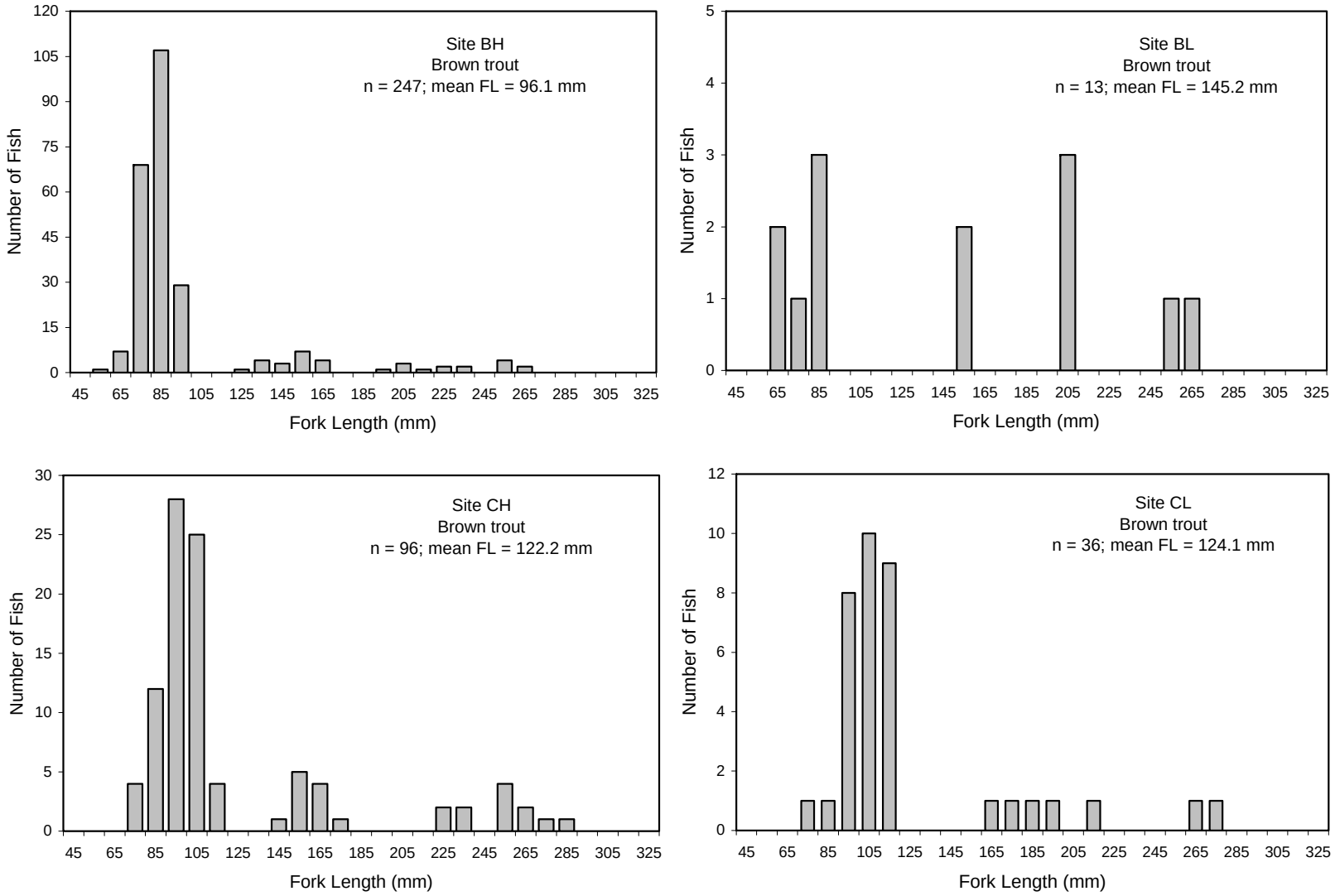

Figure 4. Length-frequency data for brown trout captured during the October 2007 Mammoth Creek electrofishing survey.

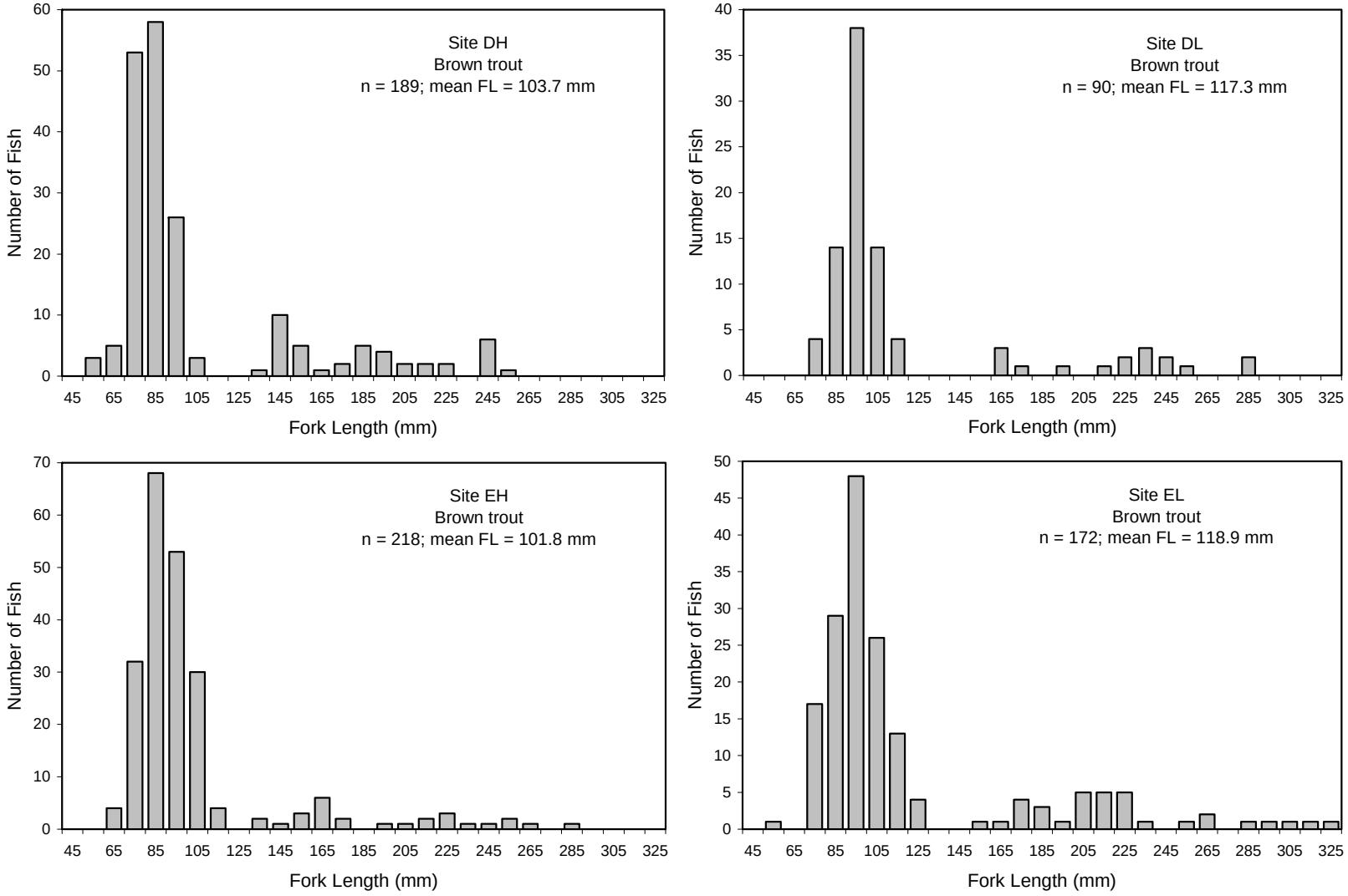

Figure 4. Length-frequency data for brown trout captured during the October 2006 Mammoth Creek electrofishing survey. (continued)

The length-frequency data for the lowermost Site EL show a YOY size class that appeared to be slightly larger than those noted at the other upstream sites. At Site EL YOY brown trout ranged in fork length from 59 to 126 mm, while YOY at the remaining sites were in the 50 to 123 mm size range. This apparent size discrepancy for YOY brown trout at Site EL was not nearly as large as the size differential noted in 2006. The apparent larger YOY brown trout at Site EL may be a function of the warmer water temperatures at this site and its proximity to Hot Creek.

The poor 2004 and 2005 year classes noted in the brown trout population structure at Site EL in the previous two surveys (2005 and 2006) were no longer evident in the 2007 capture data. Compensatory growth and survival of subsequent cohorts along with emigration of trout from upstream and downstream areas have likely readjusted the population structure at this site.

The Owens suckers and tui chub captured at Site EL in October 2007 were all small, recently hatched YOY of the year fish (Figure 5). No adult suckers or minnows were observed or captured.

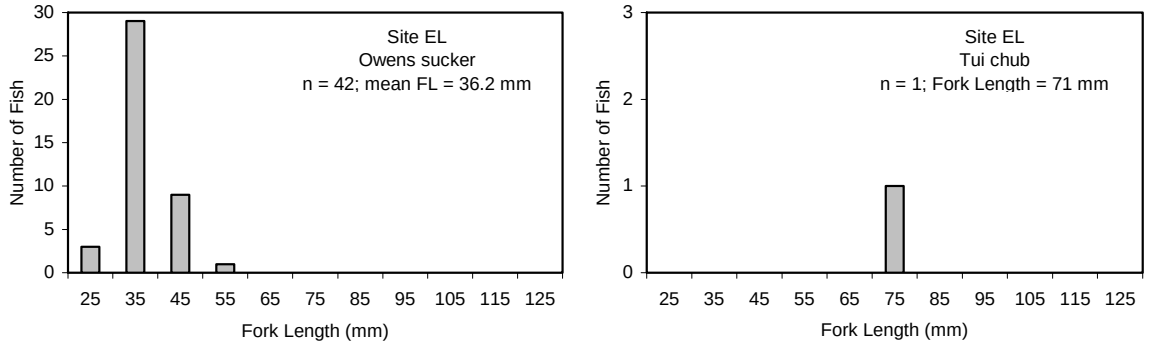

Figure 5. Length-frequency data for Owens sucker, and tui chub captured during the October 2007 Mammoth Creek electrofishing survey

Trout Condition Factors

The condition factor-frequency analysis suggests healthy populations of both rainbow and brown trout were present at all the study sites in October 2007, with mean condition factors all well above the 1.0 "healthy trout" threshold. Only 3.6 percent of the calculated condition values were less than this critical value. The mean condition factors for wild rainbow trout from the eight study sites ranged from 1.13 to 1.30, while those for hatchery rainbow trout ranged from 1.03 to 1.35 (Figure 6). The brown trout condition factors at the eight Mammoth Creek sites ranged from 1.15 to 1.21 (Figure 7).

Population Estimation

The MicroFish 3.0 (or CAPTURE) output, including the population estimates and associated statistics for each species at each site can be found in Appendix C. The model output is summarized below in Table 4.

The population estimates and their associated confidence intervals appear to be reasonably good for all the species at most sites (Table 4). Our sampling goal of obtaining a standard error of the population estimate for the dominant trout species that was ≤10 percent of the population estimate after three electrofishing passes was met at seven of the eight sites. After three passes at Site CL, the brown trout estimate was judged to be unsatisfactory enough (40±19) to require a fourth pass. After four passes the estimate improved slightly (44±15), but there was not enough daylight left to make a fifth pass. Twenty-one of the twenty-three of the probabilities of capture surpassed the 0.4 "effective sampling" threshold (White et al. 1982). The two exceptions were for brown trout at Sites CH and Owens sucker at Site EL.

The estimated brown trout populations in the sampling sections ranged from 13 fish at Site BL to 284 fish at Site BH (Table 4). The estimates for wild rainbow trout ranged from a low of 3 fish at Site BL to a high of 39 fish at Site BH. Hatchery rainbow trout

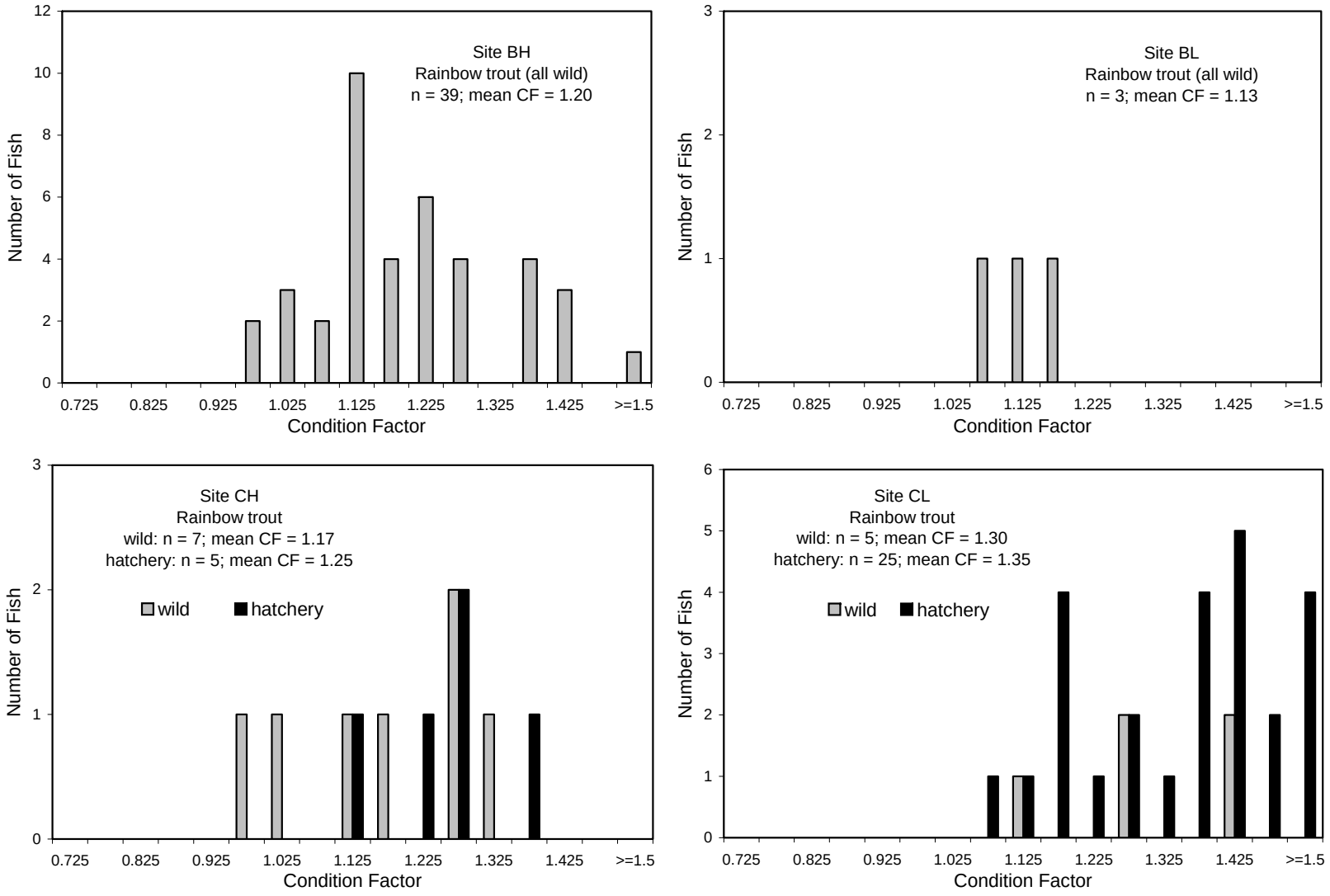

Figure 6. Condition factor-frequency data for wild and hatchery rainbow trout captured during the October 2007 Mammoth Creek electrofishing survey.

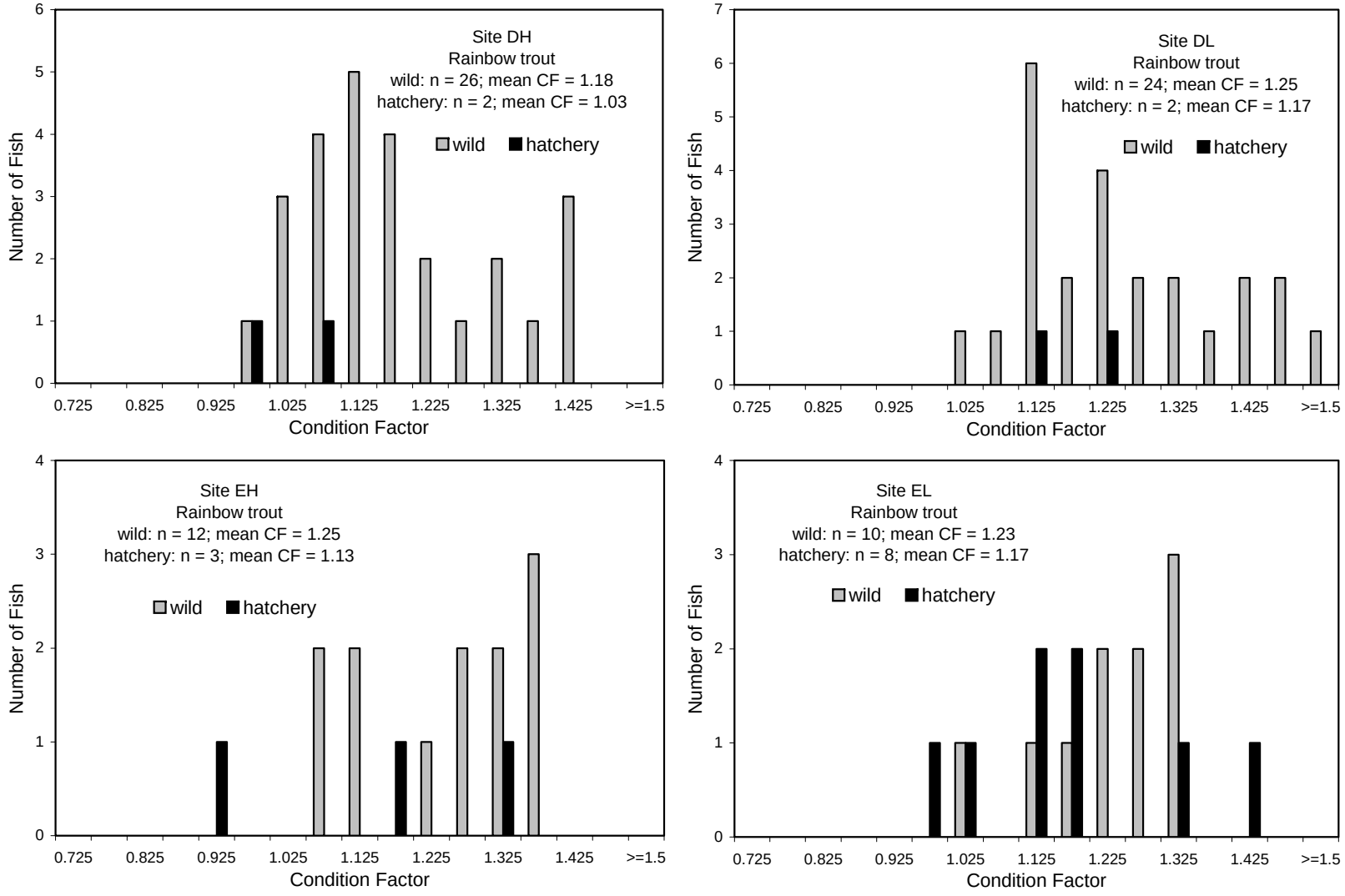

Figure 6. Condition factor-frequency data for wild and hatchery rainbow trout captured during the October 2007 Mammoth Creek electrofishing survey. (continued)

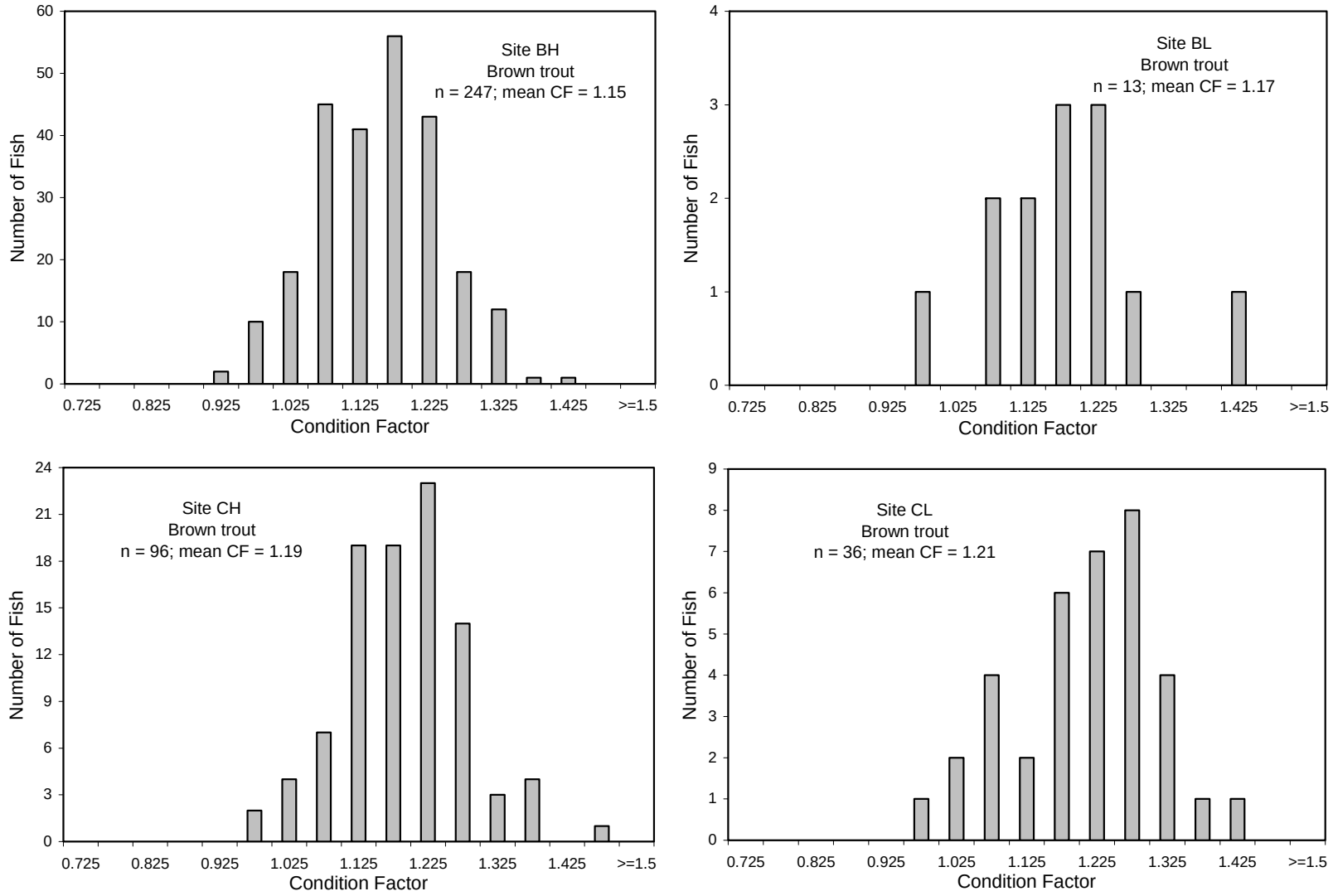

Figure 7. Condition factor-frequency data for brown trout captured during the October 2007 Mammoth Creek electrofishing survey.

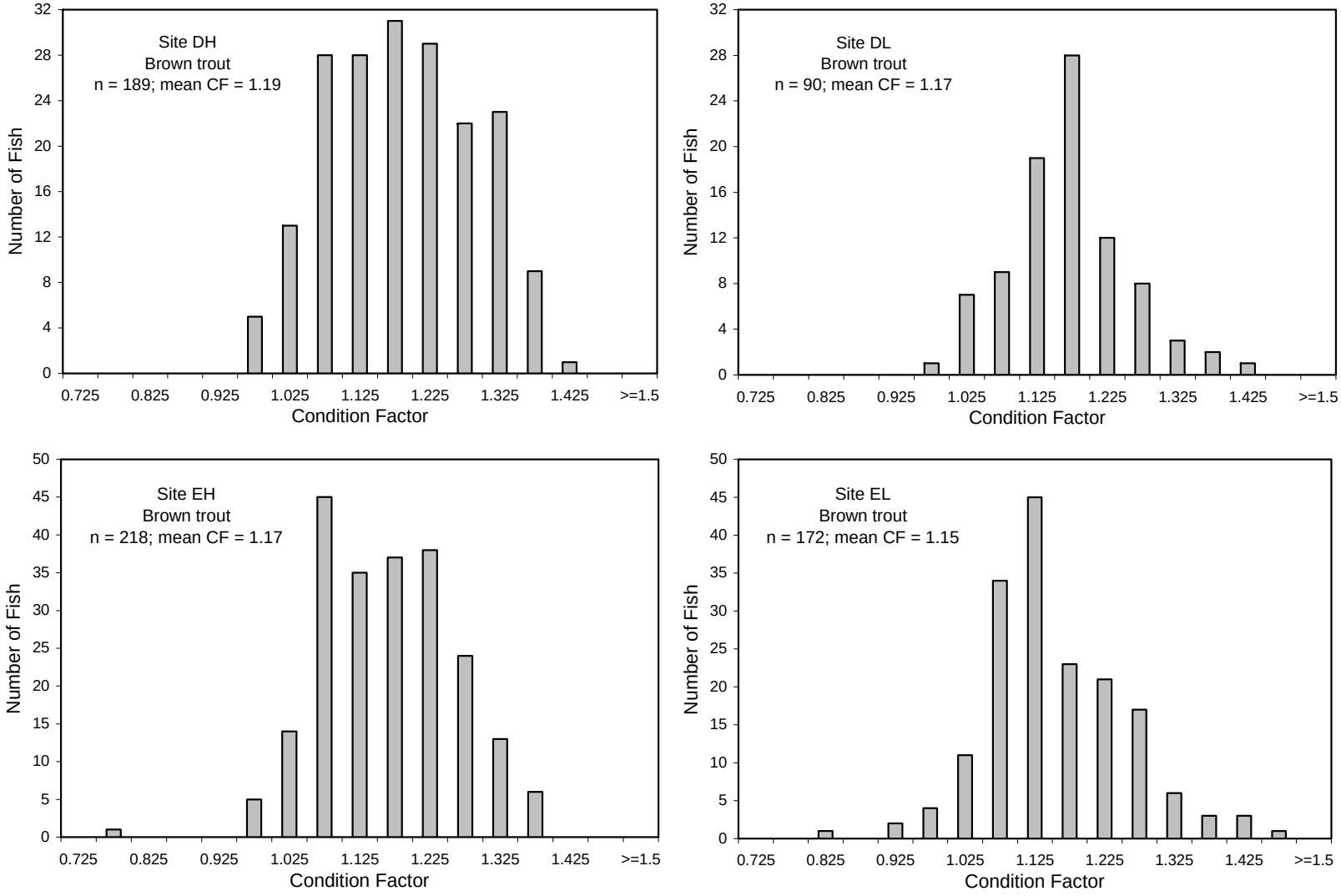

Figure 7. Condition factor-frequency data for brown trout captured during the October 2007 Mammoth Creek electrofishing survey. (continued)

Table 4. Multiple pass removal-depletion patterns and electrofishing statistics for various fish species captured at the eight Mammoth Creek sites, October 2007. Unless noted, all estimates were generated using the program MicroFish 3.0.

Species	Removal Pattern	Total Catch	Population Estimate	Probability of Capture Estimate
	Site BH			
Brown trout	141 – 67 – 39	247	284 ± 26	0.491 ± 0.087
Rainbow trout (wild)	30 – 8 – 1	39	39 ± 1	0.796 ± 0.134
	Site BL			
Brown trout	9 – 4 – 0	13	13 ± 1	0.765 ± 0.270
Rainbow trout (wild)*	3 – 0 – 0	3	3 ± 1	0.9998
	Site CH			
Brown trout	70 – 18 – 8	96	98 ± 4	0.706 ± 0.101
Rainbow trout (wild)	5 – 2 – 0	7	7 ± 1	0.778 ± 0.401
Rainbow trout (hatchery)*	5 – 0 – 0	5	5 ± 1	0.9999
	Site CL			
Brown trout	14 – 11 – 6 – 5	36	44 ± 15	0.340 ± 0.215
Rainbow trout (wild)	2 – 2 – 1 – 0	5	5 ± 2	0.556 ± 0.644
Rainbow trout (hatchery)*	25 – 0 – 0 – 0	25	25 ± 1	0.99998
	Site DH			
Brown trout	135 – 42 – 12	189	194 ± 6	0.700 ± 0.072
Rainbow trout (wild)	17 – 7 - 2	26	26 ± 2	0.703 ± 0.205
Rainbow trout (hatchery)*	2 – 0 – 0	2	2 ± 1	0.9998
	Site DL			
Brown trout	57 – 17 – 16	90	99 ± 11	0.542 ± 0.136
Rainbow trout (wild)	18 – 5 – 1	24	24 ± 1	0.774 ± 0.185
Rainbow trout (hatchery)*	2 – 0 – 0	2	2 ± 1	0.9998
	Site EH			
Brown trout	141 – 51– 26	218	233 ± 13	0.596 ± 0.080
Rainbow trout (wild)	9 – 2 – 1	12	12 ± 1	0.750 ± 0.294
Rainbow trout (hatchery)*	3 – 0 – 0	3	3 ± 1	0.9998
	Site EL			
Brown trout	138 – 25– 9	172	173 ± 3	0.789 ± 0.063
Rainbow trout (wild)	9 – 1 – 0	10	10 ± 0	0.909 ± 0.202
Rainbow trout (hatchery)	7 – 1 – 0	8	8 ± 0	0.889 ± 0.260
Owens sucker	14 – 23 – 5	42	61 ± 35	0.318 ± 0.268
Tui chub**	0 – 1 – 0	1	1 (assumed)	---

* Estimate derived using Program CAPTURE

** No estimation model works with this removal pattern

population estimates ranged from zero fish at both Reach B Sites to a high of 25 hatchery trout at Site CL. Site CL is located in an area of Mammoth Creek that is regularly stocked by CDFG with hatchery rainbow trout.

The calculated population estimates for each species were examined as the relative population abundance at each site (Figure 8). At all eight sample sites brown trout dominated the populations in the fall 2007 surveys, contributing between 59 and 94 percent of the estimated number of fish. The survey data indicates that brown trout made up a larger proportion of the total fish populations at the high riparian density sites (mean contribution of 89.6 percent of the total populations) compared to the low riparian density sites (mean contribution of 72.1 percent).

Wild rainbow trout typically made up less than 15 percent of the fall 2007 fish populations in Mammoth Creek. Hatchery rainbow trout were a minor component of the fish populations at seven of the eights sites, contributing between zero and 7 percent of the estimated fish numbers. Site CL was the only location where hatchery rainbow trout contributed a large proportion of the fish population, making up almost 34 percent of the estimated fish numbers. As was previously mentioned, Site CL is located in an area of Mammoth Creek that is regularly stocked by CDFG with hatchery rainbow trout. Both wild and hatchery rainbow trout tended to make up a larger proportion of the fish populations at the low riparian density sites (12.2 percent and 10.6 percent, respectively) compared to the high riparian density sites (8.8 and 1.7 percent).

The population estimates and reach lengths were used to extrapolate the population numbers to abundance estimates of fish per mile (Table 5). This extrapolation resulted in total trout (wild and hatchery fish) abundance estimates ranging from 293 to 5,629 trout per mile, with average of 2,832 trout per mile. If only wild trout (both rainbow and brown) are considered, the abundance estimates for all sites average 2,737 wild trout per mile, and ranged from 293 wild trout per mile at Site BL to 5,629 fish per mile at Site BH.

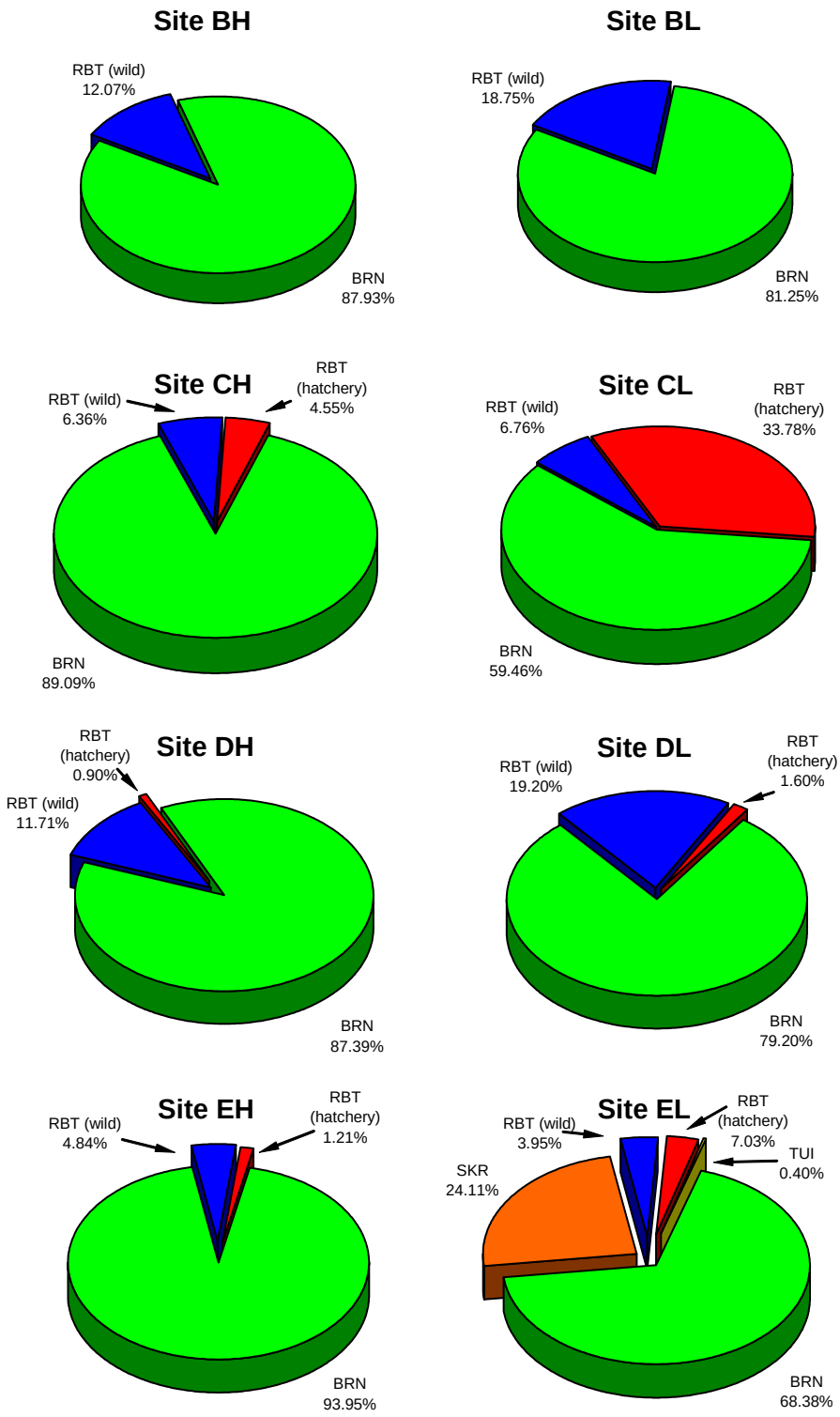

Figure 8. Relative species abundance presented as percentage of total study reach population estimates for Mammoth Creek October 2007 electrofishing surveys.

Table 5. Mean weights and standardized abundance and biomass estimates for various fish species captured at the eight Mammoth Creek electrofishing sites, October 2007.

Species	Mean wt (grams)	Abundance Estimates		Biomass Estimates	
		Fish/mile	Fish/acre	Pounds/mile	Pounds/acre
		Site BH			
Brown trout	17.09	4,949	3,252	186.45	122.52
Rainbow trout (wild)	12.04	680	447	18.04	11.85
Total		5,629	3,699	204.49	134.38
		Site BL			
Brown trout	61.09	238	197	31.99	26.56
Rainbow trout (wild)	84.03	55	46	10.15	8.43
Total		293	243	42.14	34.99
		Site CH			
Brown trout	36.02	1,691	1,088	134.27	86.42
Rainbow trout (wild)	117.53	121	78	31.29	20.14
Rainbow trout (hatchery)	347.82	86	56	66.15	42.58
Total		1,898	1,222	231.71	149.14
		Site CL			
Brown trout	34.37	731	343	55.35	25.99
Rainbow trout (wild)	19.96	83	39	3.65	1.71
Rainbow trout (hatchery)	330.84	415	195	302.74	142.13
Total		1,229	577	361.74	
		Site DH			
Brown trout	22.07	3,142	2,330	152.87	113.34
Rainbow trout (wild)	44.30	421	312	41.12	30.49
Rainbow trout (hatchery)	224.05	32	24	16.00	11.86
Total		3,595	2,666	209.99	155.69
		Site DL			
Brown trout	31.66	1,766	821	123.25	57.27
Rainbow trout (wild)	38.04	428	199	35.90	16.68
Rainbow trout (hatchery)	264.95	36	17	20.84	9.68
Total		2,230	1,037	179.99	83.63
		Site EH			
Brown trout	19.59	4,302	1,903	185.77	82.20
Rainbow trout (wild)	43.23	222	98	21.11	9.34
Rainbow trout (hatchery)	133.10	55	25	16.25	7.16
Total		4,579	2,026	223.13	98.73
		Site EL			
Brown trout	34.65	2,900	1,506	221.50	115.06
Rainbow trout (wild)	71.20	168	87	26.31	13.67
Rainbow trout (hatchery)	244.34	134	70	72.23	37.32
Owens sucker	0.62	1,022	531	1.41	0.73
Tui chub	5.40	17	9	0.20	0.10
Total trout		3,202	1,663	320.04	166.05
Total Fish		4,241	2,203	321.65	166.88

Examination of the abundance index by species showed that brown trout estimates averaged 2,465 brown trout per mile, with range of 238 to 4,949 fish per mile (Table 5). Wild rainbow trout abundance estimates averaged 272 wild rainbow trout per mile and ranged from 55 to 680 fish per mile. Hatchery rainbow abundance estimates averaged 95 hatchery fish per mile and ranged from zero to 415 fish per mile. The highest hatchery rainbow trout abundance estimate occurred at Site CL, just downstream of an area regularly stocked with hatchery rainbow trout.

The total trout (including hatchery fish) abundance estimates in sites characterized by high-density riparian cover ranged from 1,898 trout per mile at Site CH up to 5,629 trout per mile at Site BH (Table 5). The low-density riparian cover population estimates for all trout ranged from 293 trout per mile at site BL to 3,202 trout per mile at Site EL. The average abundance for all trout at the high-density riparian cover sites was 3,925 trout per mile compared to an average of 1,739 trout per mile for the low-density riparian cover sites. If the comparison is limited to wild trout only (brown and wild rainbow), the discrepancy between the average abundances in the two different riparian areas is even greater. The average abundance for wild trout at the high-density riparian cover sites was 3,882 wild trout per mile compared to an average of 1,592 wild trout per mile for the low-density riparian cover sites. The 2007 data suggested that the density of wild trout was 2.4 times greater in the high-density riparian Mammoth Creek sites compared with the low-density sites. This is remarkably consistent with the results of the 2006 survey, where the density differential was 2.5 times for the two different types of riparian habitats (Salamunovich 2006).

An opposite trend was apparent for the hatchery fish, with lower densities of planted trout in the high-density riparian areas (Table 5). The average abundance for hatchery rainbow trout at the high-density riparian cover sites survey was 43 trout per mile compared to an average of 146 hatchery trout per mile for the low-density riparian sites. It is not clear if this trend has any biological significance, or instead is an artifact of the tendency to release

hatchery fish in areas that have little or no riparian cover such as road crossings and areas where a truck can access the creek.

The calculated population estimates were also used in combination with the site-specific mean weights for each species to generate a relative population biomass at each site (Figure 9). In terms of biomass, brown trout dominated the fish populations at seven of the eight sample sites, where this species contributed between 58 and 91 percent of the estimated total weight. Site CL was the only location where hatchery rainbow trout dominated the population biomass, making up almost 84 percent of the estimated fish weight. Site CL is located in an area that is regularly stocked with hatchery rainbow trout throughout the summer and early fall.

The reach biomass estimates were used to generate standardized biomass estimates of pounds per mile and pounds per acre that could be compared across sites and potentially across years (Table 5). The most commonly used biomass estimate, pounds of fish per acre, is the most representative, since it takes into account differences in sample areas at each of the Mammoth Creek sites. Total trout biomass estimates for all trout species combined, averaged 124.1 pounds per acre, and ranged from 35 pounds per acre at Site BL to 169.8 pounds per acre at Site CL. If only wild trout (both rainbow and brown) are considered, the biomass estimates for all sites average 92.7 pounds of wild trout per acre, and ranged from 35 pounds per acre at Site BL to 143.8 pounds per acre at Site DH.

Examination of trout biomass by species showed that brown trout biomass estimates averaged 78.7 pounds per acre, with range of 26 to 122.5 pounds per acre (Table 5). Wild rainbow trout biomass estimates averaged 14.0 pounds per acre and ranged from 1.7 to 30.5 pounds per acre. Hatchery rainbow biomass estimates averaged 31.3 pounds per acre and ranged from zero to 142.1 pounds per acre (at Site CL, which was located in a recently stocked area of Mammoth Creek).

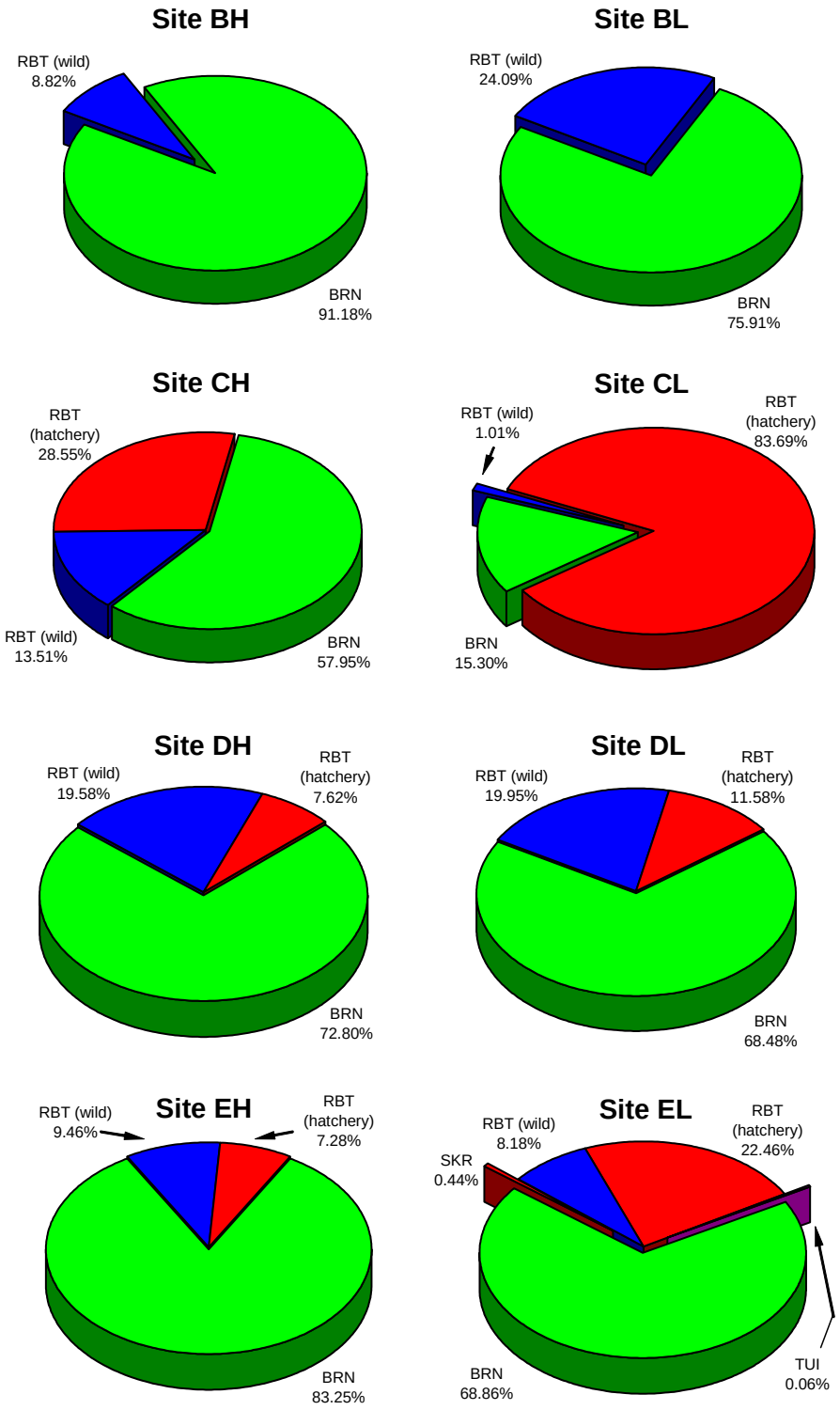

Figure 9. Relative species biomass presented as percentage of total study reach biomass estimates for Mammoth Creek October 2007 electrofishing surveys.

The total trout (including hatchery fish) biomass estimates in sites characterized by high-density riparian cover ranged from 98.7 pounds per acre at Site EH up to 155.7 pounds per acre at Site DH (Table 5). The low-density riparian cover biomass estimates for all trout ranged from 35 pounds per acre at Site BL to 169.8 pounds per acre at Site CL. The average biomass estimate for all trout at the high-density riparian cover sites was 134.5 pounds per acre compared to an average of 113.6 pounds per acre at the low-density riparian cover sites. If the comparison is limited to wild trout only (brown and wild rainbow), the discrepancy between the average biomass estimates in the two different riparian cover areas is even greater. The average biomass for wild trout at the high-density riparian cover sites was 119.1 pounds of wild trout per acre compared to an average of 66.3 pounds per acre for the low-density riparian cover sites. The 2007 data suggested that the biomass of wild trout was 1.8 times greater in the high-density riparian Mammoth Creek sites compared with the low-density sites. This 2007 ratio is slightly higher than that noted in 2006, when the density biomass differential was 1.4 times for the two different types of riparian habitats (Salamunovich 2006).

An opposite trend was apparent for the hatchery fish, with lower biomass in the high-density riparian areas. The average abundance for hatchery rainbow trout at the high-density riparian cover sites was 15.4 pounds per acre compared to an average of 47.3 pounds per acre at the low-density riparian sites. As was the case for the abundance estimates, it is not clear if this trend has any biological significance, or instead is a result of the hatchery planting site selection (i.e., favoring truck accessible areas that have little or no riparian cover).

Discussion

The October 2007 fish population sampling in Mammoth Creek demonstrated that multiple-pass removal-depletion sampling using electrofishing techniques can produce resident fish population estimates with tight confidence intervals and a high probability of accuracy.

The electrofishing survey showed the fall 2007 resident fish population in the project area was dominated by brown trout, which made up the largest fraction of the abundance estimates (fish per mile) at all eight sample sites, and the largest fraction of the biomass estimates (pounds per acre) at seven of the eight sample sites. Wild rainbow trout while found at all eight sites, were only a minor component of the fish populations either numerically or gravimetrically (biomass). The results of the October 2007 survey also suggested higher densities and biomass of wild trout tended to be associated with the high-density riparian cover habitats. Hatchery rainbow trout dominated the fish populations both numerically and by biomass at one of the sites that located in an area that is regularly stocked with hatchery rainbow trout. Hatchery rainbow trout tended to have higher abundance and biomass indices at the low-density riparian sites, though this may likely more a function of supplementation program and not due to habitat preference.

In October 2007, native fish (suckers and chubs) were found at only the most downstream sample site. Due to their low numbers and small size, native fish contributed little to the overall fish population abundance or biomass indices. Suckers and chubs have only been present in relatively high numbers in the Mammoth Creek surveys in one year (2004) out of the past ten years of record (Table 6). The relatively high numbers of native fish noted in lower Mammoth Creek in the early 1990's was likely due to lower stream flows and higher water temperatures that prevailed in the basin during the extended six-year long drought over that time span (Table 6). Moyle et al. (1996) speculated that native, non-game fishes in the Owens River basin did not generally occur in streams above 4,900 feet elevation. If this is true, the native fishes in lower Mammoth Creek are probably near the limits of their physical range and are able to expand their populations into higher elevation areas during those periods when stream flows remain low for extended periods of time.

Table 6. Numbers of Owens sucker and tui chub captured during the recent electrofishing surveys in Reach E of Mammoth Creek.

Year	Owens sucker	Tui chub
1992	205	417
1993	425	855
1994	524	392
1995	58	69
1996	84	48
1997	2	2
1999	49	6
2000	18	2
2001	6	2
2002	2	2
2003	54	19
2004	122	30
2005	18	2
2006	11	6
2007	42	1

The October 2007 length frequency data demonstrated the presence of multiple size/age classes of both brown trout and wild rainbow trout at all the survey sites. The presence of young-of-the-year brown and wild rainbow trout at the survey sites demonstrated that both these species had successful reproduction during 2007. The large numbers of YOY brown trout at most sites suggests that stream flow and habitat conditions conducive for the reproduction and first year survival of this species were present throughout the Mammoth Creek basin during the 2007 water year. The condition factors for both wild rainbow trout and brown trout at all the sample areas were all well above the 1.0 "healthy" trout threshold. The combination of successful reproduction, presence of multiple size/age classes, and high condition factors, suggest that the resident trout fishery in Mammoth Creek are healthy and continue to be maintained in good condition.

A comparison of the standardized abundance estimates (i.e. number of trout per mile) for the October 2007 survey with values from previous surveys showed an increase in brown trout abundance over the 2006 levels in seven of the eight study sites, as well as the yearly

mean (Table 7). The brown trout abundances estimates for the October 2007 surveys were well above the fifteen year average in all but one study area (Site BL). Despite the relatively low brown trout abundance estimate at Site BL, the 2007 brown trout abundances averaged almost 1.7 times the fifteen year average at the eight Mammoth Creek study sites. In fact, the 2007 brown trout abundance estimates were the highest on record at three of the eight study sites, and for the yearly mean abundance as well.

Table 7. Standardized abundance estimates (trout/mile) for brown trout captured at the eight Mammoth Creek electrofishing sites, 1992-2007. Bold numbers indicate the highest value for each site. Numbers in parenthesis indicate where the 2007 survey results ranked among the fifteen surveys.

	Sample Site								
	BH	BL	CH	CL	DH	DL	EH	EL	Yrly Mean
2007	4,949 (5th)	238 (14th)	1,691 (2nd)	731 (5th)	3,142 (2nd)	**1,766** (1st)	**4,302** (1st)	**2,900** (1st)	**2,465** (1st)
2006	3,241	313	475	290	1,155	287	1,297	1,411	1,059
2005	1,320	792	634	194	387	862	704	563	682
2004	3,186	440	1,302	845	880	1,549	1,355	581	1,267
2003	2,869	458	**1,901**	933	616	1,426	1,390	616	1,276
2002	5,826	898	1,056	246	563	1,672	1,866	264	1,549
2001	4,717	1,707	1,496	246	1,144	1,162	1,461	528	1,558
2000	6,670	634	1,074	88	810	1,162	1,179	2,253	1,734
1999	5,333	1,338	1,443	299	2,200	616	2,182	2,200	1,951
1997	**8,589**	704	1,690	211	616	1,654	3,819	1,795	2,385
1996	4,840	158	1,302	158	1,901	634	898	1,144	1,379
1995	1,760	546	334	88	616	18	334	1,038	592
1994	4,171	2,253	810	528	**4,418**	1,584	2,464	405	2,079
1993	2,957	**2,658**	510	**1,232**	1,056	510	1,232	158	1,289
1992	3,042	1,848	563	845	1,390	1,584	3,978	194	1,681
mean	4,232	999	1,085	462	1,393	1,099	1,897	1,070	1,530

The brown trout population increases are due to the higher levels of YOY trout observed in the October 2007 surveys. As was mentioned earlier, (and bears repeating) the combination of relatively high stream flows in the fall of 2006 and the relatively low (and non-scouring) flows during the spring and summer of 2007 probably fostered the strong

2007 cohort. This strong 2007 year class holds promise for healthy brown trout populations for the Mammoth Creek basin for the next several years.

The 2007 Mammoth Creek abundance estimates for wild rainbow trout were lower than those from 2006 at six of the eight study sites (Table 8). Despite the general decrease over 2006 levels, the 2007 Mammoth Creek wild rainbow trout abundance estimates were still above the fifteen year average four of the eight study sites.

Table 8. Standardized abundance estimates (trout/mile) for wild rainbow trout captured at the eight Mammoth Creek electrofishing sites, 1992-2007. Bold numbers indicate the highest value for each site. Numbers in parenthesis indicate where the 2007 survey results ranked among the fifteen surveys.

	Sample Site								
	BH	BL	CH	CL	DH	DL	EH	EL	Yrly Mean
2007	680 (3rd)	55 (10th)	121 (10th)	83 (10th)	421 (8th)	428 (6th)	222 (8th)	168 (6th)	272 (9th)
2006	819	110	282	239	413	359	902	366	436
2005	493	282	70	0	158	158	141	475[a]	222
2004	422	246	123	35	229	246	88	18	176
2003	669	194	106	35	211	282	158	0	207
2002	**1,039**	**810**	123	123	528	475	229	18	418
2001	616	106	88	722	563	422	493	18	379
2000	35	616	405	**6,354**	528	669	**2,253**	158	**1,377**
1999	123	669	546	1,179	686	510	334	194	530
1997	123	123	810	933	722	**1,021**	810	88	579
1996	282	18	**1,690**	528	**933**	229	458	**563**	588
1995	158	0	53	59	18	88	53	194	78
1994	35	0	581	1,654	387	616	106	0	422
1993	18	0	70	0	299	35	53	18	62
1992	70	0	141	651	546	229	141	0	222
mean	372	215	347	840	443	385	429	152	398

[a] hatchery and wild trout not differentiated at this site; all trout assumed to be wild fish

Fewer hatchery rainbow trout were captured in the 2007 surveys compared to the October 2006 surveys (Table 9). Stocked fish tend to have higher angler catch rates and poorer survival compared to wild rainbow trout. The lower numbers in the 2007 surveys may

have been an artifact of the timing of the planting schedules between the two years. In 2006 when more hatchery rainbow trout were captured, trout had been planted in Mammoth Creek five days prior to our surveys and again during the surveys. In 2007 when fewer hatchery rainbow trout were captured, trout had been planted in Mammoth Creek eight days prior to our surveys.

Table 9. Numbers of hatchery rainbow trout captured, most proximal fish planting events, and the surveys dates for the 2006 and 2007 Mammoth Creek fish surveys.

Year	Number	Trout Planting Dates	Survey Dates
2006	77	6 October & 12 October	11 - 15 October
2007	45	2 October	10 - 14 October

Additional support for categorizing the Mammoth Creek wild trout fishery as in good condition can be derived from a comparison of the October 2007 biomass estimates in Table 5 to those from Gerstung (1973) shown in Table 10.

Table 10. Relationship between stream width and trout biomass in California waters (Gerstung 1973).

Average Stream Width (feet)	Trout Biomass (pounds per acre)
2 – 5	76
6 – 10	70
11 – 15	35
16 – 25	33
26 – 40	24
41 – 70	13

The stream widths of seven of the eight Mammoth Creek sites are in the 11 to 20 foot ranges (Table 2). These seven sites had an average wild trout (both brown and rainbow) biomass estimate of 96.6 pounds per acre, and ranged from a low of 27.7 (Site CL) to a high of 143.8 pounds per acre (Site DH). The 2007 biomass estimates at six of these seven "wider" Mammoth Creek sites are all well in excess of the 33 to 35 pounds per acre reported by Gerstung (1973) for similarly sized California trout streams. Site BL, with a

mean width just less than 10 feet, had a wild trout biomass estimate of 36.0 pounds per acre, which was only about 50 percent of Gerstung's (1973) biomass threshold for this sized stream. Despite the "lower than average" biomass at Sites BL and CL, the body of evidence from the October 2007 survey data continues to suggest that the Mammoth Creek basin trout populations are being maintained in good condition.

Prior to 2006, width measurements at the Mammoth Creek sites were not recorded (or reported). In addition, weights for many of the larger trout were not recorded, making meaningful and accurate weight estimates impossible. The lack of this information prevents any back calculation of density and biomass estimates from the earlier MCWD sponsored surveys.

The 2007 density and biomass estimates were compared to those from the 2006 survey and from comparable values available in the literature (Table 11). The literature sources included CDFG electrofishing population surveys conducted throughout the Owens River basin (including Mammoth Creek) in the early 1980's (Deinstadt et al. 1985, 1986). The USFS conducted an analysis of trout populations throughout the western US and reported density and biomass data for Mammoth Creek as well as for numerous streams and rivers throughout the Sierra Nevada Ecoregion (Platts and McHenry 1988).

The average 2007 Mammoth Creek abundance and density estimates for either the all trout or wild trout only categories exceed any of the estimates recorded for in the Mammoth basin for previous surveys (Table 11). The 2007 biomass estimates are about average for the available Mammoth Creek values. The large proportion of smaller YOY brown trout in the 2007 Mammoth Creek populations contributed to moderating the biomass estimates. The 2007 Mammoth Creek estimates are at or near levels expected for the Owens River basin based upon previous surveys and greatly exceed the average density and biomass estimates for the Sierra Nevada region. These comparisons suggest that the current trout

populations in Mammoth Creek are in good condition compared to historical basin or regional standards.

Table 11. Average abundance, density and biomass estimates for trout in Mammoth Creek, the Owens River Basin, and the Sierra Nevada Forest Ecoregion derived from recent Mammoth Community Water District surveys and other literature sources.

		Abundance (trout/mile)	Density (trout/m^2)	Biomass (grams trout/m^2)
Mammoth Creek				
2007 MCWD surveys (8 sites) [1/]	all trout	2,832	0.41	13.9
	wild trout only	2,737	0.39	10.4
2006 MCWD surveys (8 sites) [2/]	all trout	1,666	0.23	13.5
	wild trout only	1,497	0.21	10.1
1988 USFS analysis [3/]		---	0.23	18.0
1985 CDFG surveys (5 sites below Lake Mary) [4/]		2,244	0.37	13.3
1984 CDFG surveys (2 sites) [5/]		1,490	0.16	25.0
1983 CDFG surveys (3 sites) [5/]		1,531	0.16	13.6
Owens River Basin				
1985 CDFG surveys (43 sites) [4/]		2,530	0.35	13.9
1984 CDFG surveys (24 sites) [5/]		2,336	0.30	19.9
1983 CDFG surveys (45 sites) [4/ & 5/]		1,362	0.27	13.2
1982 CDFG surveys (2 sites) [5/]		1,940	0.40	6.4
1981 CDFG surveys (4 sites) [5/]		1,334	0.20	12.4
1980 CDFG surveys (12 sites) [4/ & 5/]		2,184	0.11	14.6
Sierra Nevada Ecoregion				
streams w/brown/rainbow trout populations (24 sites) [3/]		---	0.13	8.5
all streams (53 sites) [3/]		---	0.16	9.0

[1/] this report [2/] Salamunovich 2006 [3/] Platts and McHenry 1988 (includes hatchery trout)
[4/] Deinstadt et al. 1986 (includes hatchery trout) [5/] Deinstadt et al. 1985 (includes hatchery trout)

The fifteen year record of abundance data suggests that the trout populations in Mammoth Creek exhibit wide variations both between years and even between sites within years. These annual variations are probably controlled by a wide variety of environmental and biological variables including stream flows, water temperatures, habitat availability, food availability, reproductive success, year class strength, recruitment, overwinter survival, hatchery stocking practices, and angling pressure. Despite the spatial and temporal

variations in trout abundance, evident in the long term Mammoth Creek fish survey data, the wild trout populations in the basin still appear to be in good physical condition.

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Appendix A

October 2007 Habitat Characteristic Data Sheets

Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: MAMMOTH CR County: MONO Date: 10 / 10 / 2007
Reach: BH Est. Q: ~3 cfs Page: 1 of 1
Air Temp.: 52°F @ 1305 H20 Temp.: 6.1°C @ 1305 Conductivity: 153.8 µS/cm
Air Temp.: @ H20 Temp.: @ Specific Cond.: 240.4 µS/cm
Length: 303 gradient: 1.86% Salinity: 0.1 ppt
D.O.: 8.70 mg/L
D.O.: 70.5 % Saturation
pH: 7.5

(ft) / m Distance	(ft) / m Width	ft / m 1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
0	16.4	0.65	0.70	0.50	
30	12.3	0.40	0.40	0.45	
69	18.1	0.40	0.45	0.55	
90	16.4	0.05	0.45	0.60	
120	13.9	0.30	0.40	0.50	
150	9.1	0.65	0.40	0.35	
180	7.2	0.70	0.40	0.35	
210	10.40	0.35	0.50	0.45	
240	11.3	0.35	0.40	0.60	
~~270~~	16.3	0.40	0.45	0.55	
303	6.7	0.55	1.15	0.75	

Mean Width: 12.55 ft Mean Depth: 0.49 ft
Total Area: 3804.03 ft² Total Volume: 1,861.67 ft³

GPS Coord.

Photos: 1 COVER
2 TOP
3 ~~BOTTOM~~ FOOTBRIDGE DOWN
4 & 5 BOTTOM
6 UP FROM BOTTOM

Maximum Depth: 2.95

Reach Habitat Characterization:

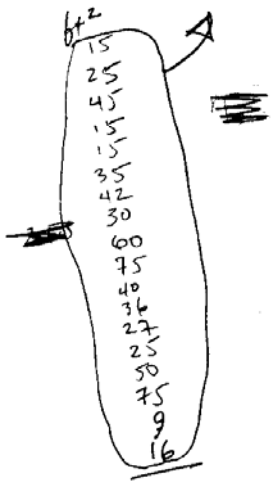
Habitat types		
Pool	5	%
Run	30	%
Riffle	65	%
POW	—	%
		%

Substrate types		
fines (< 2mm or 1/16")	5	%
sand (2-7mm or 1/16-1/4")	10	%
gravel (7-75mm or 1/4-3")	20	%
cobble (75-300mm or 3-12")	55	%
boulder (>300mm or >12")	10	%
bedrock		%

trout spawning: 635 ft²

Fish Cover		
Surface turbulence	20	%
Instream object	20	%
Undercut bank	5	%
Overhanging vegetation (<48")	30	%

Gradient	
FS to top	4.20
FS to bottom	8.10
Elev change	3.90
Distance	210
Gradient	1.86



Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: MAMMOTH County: MONO Date: 10 / 11 / 2007

Reach: BL Est. Q: 3 cfs Page: 1 of

Air Temp.: @ H20 Temp.: @ Conductivity: µS/cm

Air Temp.: @ H20 Temp.: @ Specific Cond.: µS/cm

Length: 289 gradient: Salinity: ppt

D.O.: mg/L

D.O.: % Saturation

pH:

(ft) m Distance	(ft) m Width	(ft) m 1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
B 0	13.3	0.70	0.50	0.30	
29	9.6	0.25	0.30	0.45	
58	8.4	0.75	0.70	0.75	
87	8.9	0.35	0.45	0.40	
116	9.6	0.20	0.25	0.45	
145	9.5	0.45	0.40	0.35	
174	8.7	0.35	0.55	0.55	
203	8.7	0.40	0.45	0.55	
232	10.1	0.45	0.40	0.30	
261	10.9	0.40	0.40	0.60	
T 289	11.6	0.65	0.50	0.50	

Mean Width: 9.94 ft Mean Depth: 0.46 ft

Total Area: 2,871.61 ft² Total Volume: 1,309.63 ft³

GPS Coord.

Photos: 1 COVER
2 SEE FISH DATA
3 SHEET
4
5
6
7

Maximum Depth: 1.05

1.05

Reach Habitat Characterization:

Habitat types		
Pool	5	%
Run	35	%
Riffle	60	%
POW		%
		%

Substrate types		
fines (< 2mm or 1/16")	5	%
sand (2-7mm or 1/16-1/4")	5	%
gravel (7-75mm or 1/4-3")	75	%
cobble (75-300mm or 3-12")	10	%
boulder (>300mm or >12")	5	%
bedrock		%

trout spawning: 1,867 ft²

Fish Cover		
Surface turbulence	5	%
Instream object	5	%
Undercut bank	5	%
Overhanging vegetation (<48")	15	%

Gradient	
FS to top	4.00
FS to bottom	8.60
Elev change	4.60
Distance	289
Gradient	1.59

Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: MAMMOTH County: MONO Date: 10/13/2007

Reach: CH Est. Q: ~10 cFS Page: 1 of

Air Temp.: @ H20 Temp.: @ Conductivity: µS/cm

Air Temp.: @ H20 Temp.: @ Specific Cond.: µS/cm

Length: 306 ft gradient: 3.14% Salinity: ppt

D.O.: mg/L

D.O.: % Saturation

pH:

(ft)/m Distance	(ft)/m Width	ft/m 1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
0	18.4	0.40	0.70	0.75	
30	19.7	1.65	1.35	0.50	
60	14.6	0.10	0.95	1.10	
90	10.6	1.20	1.20	1.95	
120	10.9	0.45	0.95	0.75	
150	14.3	0.25	0.80	0.70	
180	9.8	0.50	0.95	0.60	
210	11.8	0.90	0.80	0.35	
240	11.4	1.05	1.30	1.05	
270	9.8	0.65	1.20	0.90	
306	9.7	0.80	0.65	0.50	

Mean Width: 12.82 ft Mean Depth: 0.85 ft

Total Area: 3,922.36 ft² Total Volume: 3,328.07 ft³

GPS Coord.

Photos: ① COVER
②&③ X BOTTOM
④ UP @ BOTTOM
⑤ DOWN @ 120
⑥ UP @ 120
⑦ DOWN @ TOP
⑧ X @ TOP

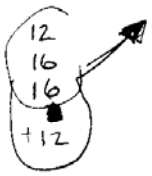
Maximum Depth: 2.75

Reach Habitat Characterization:

Habitat types		
Pool	20	%
Run	60	%
Riffle	15	%
POW	5	%
		%

Substrate types		
fines (< 2mm or 1/16")	0	%
sand (2-7mm or 1/16-1/4")	5	%
gravel (7-75mm or 1/4-3")	15	%
cobble (75-300mm or 3-12")	50	%
boulder (>300mm or >12")	30	%
bedrock		%

trout spawning: 56 [redacted] ft²



Fish Cover		
Surface turbulence	5	%
Instream object	45	%
Undercut bank	10	%
Overhanging vegetation (<48")	30	%

Gradient	
FS to top	2.10
FS to bottom	7.75
Elev change	5.65
Distance	180
Gradient	3.14%

210 - 30

Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: MAMMOTH CRK County: MONO Date: 10 / 11 / 2007

Reach: CL Est. Q: ~10 CFS Page: 1 of 1

Air Temp.: @ H20 Temp.: @ Conductivity: µS/cm

Air Temp.: @ H20 Temp.: @ Specific Cond.: µS/cm

Length: 318 gradient: Salinity: ppt

moved lower net downstream ~ 10 ft D.O.: mg/L

D.O.: % Saturation

pH:

(ft) m Distance	(ft) m Width	(ft) m 1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
0	12.5	1.05	1.20	0.85	
31	8.3	0.80	0.85	0.95	
62	24.9	0.50	0.65	0.35	
93	22.7	0.50	0.85	0.20	
124	12.3	1.20	1.25	0.85	
155	16.6	1.15	0.80	0.70	
186	16.8	0.70	0.85	0.90	
217	26.8	0.75	0.40	0.50	
248	17.8	1.05	0.90	0.65	
279	20.8	1.20	1.15	0.60	
318	13.8	1.55	1.70	1.25	

Mean Width: 17.57 ft Mean Depth: 0.87 ft

Total Area: 5,588.13 ft² Total Volume: 4,885.38 ft³

GPS Coord.

Photos:

Maximum Depth: 2.20

Reach Habitat Characterization:

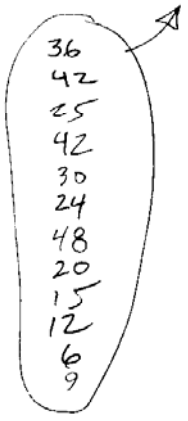
Habitat types		
Pool	15	%
Run	25	%
Riffle	35	%
POW	25	%
		%

Substrate types		
fines (< 2mm or 1/16")	5	%
sand (2-7mm or 1/16-1/4")	5	%
gravel (7-75mm or 1/4-3")	30	%
cobble (75-300mm or 3-12")	30	%
boulder (>300mm or >12")	30	%
bedrock		%

trout spawning: 309 ft²

Fish Cover		
Surface turbulence	20	%
Instream object	55	%
Undercut bank	0	%
Overhanging vegetation (<48")	25	%

Gradient	
FS to top	4.00
FS to bottom	7.15
Elev change	3.15
Distance	225
Gradient	1.40%



318
93
225

Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: MAMMOTH County: MONO Date: 10 / 14 / 2007

Reach: DH Est. Q: ~10 CFS Page: 1 of

Air Temp.: 55°F @ 1032 H20 Temp.: 3.5°C @ 1027 Conductivity: 120.2 µS/cm

Air Temp.: @ H20 Temp.: @ Specific Cond.: 204.2 µS/cm

Length: 326 ft gradient: 0.57% Salinity: 0.1 ppt

D.O.: 9.90 mg/L

D.O.: 74.7 % Saturation

pH: 8.0

(ft) m Distance	(ft) m Width	(ft) m 1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
BT 0	14.3	1.25	1.55	0.95	
32	13.6	1.20	1.45	1.05	
64	13.8	1.90	2.95	2.20	
96	12.8	1.45	1.30	0.70	
128	10.8	0.75	0.90	0.75	
160	11.3	0.90	0.60	0.35	
192	9.8	0.35	0.80	0.35	
224	11.5	0.85	1.00	0.50	
TX 256	10.2	0.50	1.05	0.90	
288	6.3	0.60	0.70	0.55	
326	8.0	0.45	1.00	0.70	

Mean Width: 11.13 ft Mean Depth: 0.98 ft

Total Area: 3,627.49 ft² Total Volume: 3,572.53 ft³

GPS Coord.

Photos:
1. COVER
2. B X @ BOTTOM
3. UP @ BOTTOM
4. DOWN @ 180
5. UP @ 180

Maximum Depth: [redacted] 295

Reach Habitat Characterization:

Habitat types		
Pool	10	%
Run	75	%
Riffle	15	%
POW		%
		%

Substrate types		
fines (< 2mm or 1/16")	5	%
sand (2-7mm or 1/16-1/4")	15	%
gravel (7-75mm or 1/4-3")	50	%
cobble (75-300mm or 3-12")	25	%
boulder (>300mm or >12")	5	%
bedrock		%

trout spawning: 638 ft²

28 = 28
5 x 30 = 150
6 x 30 = 180
6 x 25 = 150
4 x 12 = 48
6 x 8 = 48
4 x 4 = 16
3 x 6 = 18
538

288
192
96

Fish Cover		
Surface turbulence	15	%
Instream object	20	%
Undercut bank	5	%
Overhanging vegetation (<48")	45	%

Gradient	
FS to top	580
FS to bottom	635
Elev change	055
Distance	96
Gradient	0.57%

206 RUN 75 28 POOL 75 29 RUN 76 20 POOL 116 59 RUN 175 33 RF 240 RUN 240 RF 247 RUN 280 RF 292 RUN 326

RUN 75 P 28 RF 33 RUN 23 P 20 RF 7 RUN 54 P - RF 12 RUN 30 P - RF - RUN 5 P 45 RF 54 - 5 RUN 10 P - RF -

Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: MAMMOTH County: MONO Date: 10 / 13 / 2007

Reach: [redacted]DL Est. Q: ~10 CFS Page: [redacted] of

Air Temp.: 55°F @ 1457 H20 Temp.: @ Conductivity: µS/cm

Air Temp.: @ H20 Temp.: @ Specific Cond.: µS/cm

Length: 296 ft gradient: Salinity: ppt

D.O.: mg/L

D.O.: % Saturation

pH: 8.0

(ft) m	(ft) m	(ft) m			
Distance	Width	1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
0	20.3	0.45	0.9	0.65	
30	22.4	0.60	0.75	0.50	
60	9.2	1.20	1.25	1.05	
90	18.9	0.30	0.65	1.15	
120	18.8	0.40	1.05	0.9	
150	16.5	0.50	0.95	1.10	
180	13.9	1.05	0.65	0.55	
210	24.7	0.45	0.50	0.70	
240	16.5	1.5	0.75	0.50	
270	11.3	0.75	0.95	0.60	
[redacted]296	22.8	0.40	0.55	0.90	

Mean Width: 17.75 ft Mean Depth: 0.76 ft

Total Area: 5,255.35 ft² Total Volume: 4,005.21 ft³

GPS Coord.

Photos:
1. COVER
2. X @ TOP
3. DOWN @ TOP
4. X @ BOTTOM
5. UP @ BOTTOM
6. DOWN @ 150'
7. UP @ 150'

Maximum Depth: 2.40

2.40

Reach Habitat Characterization:

Habitat types	
Pool	[redacted]15 %
Run	30 %
Riffle	[redacted]35 %
POW	20 %
	%

Substrate types	
fines (< 2mm or 1/16")	5 %
sand (2-7mm or 1/16-1/4")	5 %
gravel (7-75mm or 1/4-3")	20 %
cobble (75-300mm or 3-12")	40 %
boulder (>300mm or >12")	25 %
bedrock	5 %

trout spawning: 142 ft²

36
9
25
36
36

296 - 120

Fish Cover	
Surface turbulence	25 %
Instream object	40 %
Undercut bank	30 %
Overhanging vegetation (<48")	25 %

Gradient	
FS to top	2.90
FS to bottom	7.95
Elev change	5.05
Distance	176
Gradient	

Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: MAMMOTH CRK County: MONO Date: 10 / 12 / 2007

Reach: EH Est. Q: ~10 CFS GH=0.49 @0900 Page: 1 of

Air Temp.: 48°F @0900 H20 Temp.: 4.4°C @ 0900 Conductivity: 125.9 µS/cm

Air Temp.: @ H20 Temp.: @ Specific Cond.: 207.0 µS/cm

Length: 286 ft gradient: 0.74% Salinity: 0.1 ppt

D.O.: 9.92 mg/L

D.O.: 76.9 % Saturation

pH: 8.0

GPS Coord.

(ft) m Distance	(ft) m Width	(ft) m 1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
0	15.8	0.80	0.90	0.95	
28	19.5	0.55	0.80	0.85	
56	21.2	0.50	0.45	0.35	
84	19.9	0.80	0.70	0.65	
112	18.0	0.95	0.70	0.45	
140	12.5	0.95	0.80	0.45	
168	14.4	0.80	0.80	0.35	
196	16.2	0.45	0.65	0.40	
224	33.6	1.10	1.35	0.60	
252	13.8	0.55	0.50	0.55	
286	20.2	0.80	0.45	0.30	

Mean Width: 18.65 ft Mean Depth: 0.67 ft

Total Area: 5,332.66 ft² Total Volume: 3,595.47 ft³

Photos: (1) COVER
(2) DOWN FROM TOP
(3) X @ TOP
(4) UP FROM MID
(5) DOWN FROM MID
(6) X @ BOTTOM
(7) UP FROM BOTTOM.
8 & 9 BUNCH OF WORK-UP PHOTOS

Maximum Depth: 1.75

Reach Habitat Characterization:

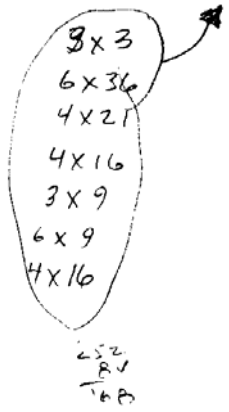
Habitat types	
Pool	5 %
Run	70 %
Riffle	25 %
POW	%
	%

Substrate types	
fines (< 2mm or 1/16")	10 %
sand (2-7mm or 1/16-1/4")	10 %
gravel (7-75mm or 1/4-3")	35 %
cobble (75-300mm or 3-12")	40 %
boulder (>300mm or >12")	5 %
bedrock	%

trout spawning: 518 ft²

Fish Cover	
Surface turbulence	5 %
Instream object	10 %
Undercut bank	15 %
Overhanging vegetation (<48")	35 %

Gradient	
FS to top	4.55
FS to bottom	5.80
Elev change	1.25
Distance	168
Gradient	0.74%



Thomas R. Payne & Associates Electrofishing Survey - Habitat Characteristic Data Form

Stream: MAMMOTH County: MONO Date: 10 / 12 / 2007

Reach: EL Est. Q: ~10 CFS Page: .1 of

Air Temp.: 59°F @ 1410 H20 Temp.: 9.0°C @ 1413 Conductivity: 149.8 µS/cm

Air Temp.: @ H20 Temp.: @ Specific Cond.: 215.1 µS/cm

Length: 315 ft gradient: Salinity: 0.1 ppt

D.O.: 9.02 mg/L

D.O.: 78.5 % Saturation

pH: 8.0

GPS Coord.

(ft) m Distance	(ft) m Width	(ft) m 1/4 Depth	1/2 Depth	3/4 Depth	Mean Depth
Top 0	17.2	0.60	0.60	0.45	
30	17.4	0.60	0.35	0.20	
60	16.7	0.50	0.60	0.25	
90	12.8	0.35	2.10	0.95	
120	14.7	1.10	0.55	0.75	
150	13.9	1.40	0.65	0.15	
180	12.7	1.30	1.05	0.65	
210	16.1	0.40	0.45	0.30	
240	16.0	0.90	1.15	0.85	
270	14.9	0.95	1.15	1.00	
bottom 315	22.3	1.35	1.80	1.65	

Mean Width: 15.88ft Mean Depth: 0.82 ft

Total Area: 5,002.77ft² Total Volume: 4,108.34ft³

Photos: ① COVER
2 & 3 WORK UP SHOTS
4 & 5 TOP
6 DOWN @ TOP
7 DOWN @ MID
8 UP @ MID
9-13 BOTTOM NET
(14) UP @ BOTTOM

Maximum Depth: 2.80

Reach Habitat Characterization:

Habitat types		
Pool	25	%
Run	55	%
Riffle	20	%
POW		%
		%

Substrate types		
fines (< 2mm or 1/16")	15	%
sand (2-7mm or 1/16-1/4")	10	%
gravel (7-75mm or 1/4-3")	60	%
cobble (75-300mm or 3-12")	10	%
boulder (>300mm or >12")	5	%
bedrock		%

trout spawning: 1,862 ft²

Fish Cover		
Surface turbulence	Ø	%
Instream object	5	%
Undercut bank	20	%
Overhanging vegetation (<48")	0	%

Gradient	
FS to top	5.95
FS to bottom	6.85
Elev change	0.90
Distance	315
Gradient	

[redacted]
32
75
30
16
150→45x15
90
6x24
30x16

Appendix B

October 2007 Electrofishing Fish Data Sheets

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CREEK | County: MONO | Date: 10 / 10 / 2007

Reach: B-H | Est. Q: ~3 CFS | Page: 1 of 8

Air Temp.: @ | H20 Temp.: @ | Conductivity: microSiemens

Blocknets: BOTTOM ONLY - TOP @ CULVERT | Specific Cond.: microSiemens

Reach Length: 303 | Salinity: ppt

Electroshocker Type: 11-A ↓ | 12-A ↓ | D.O.: mg/L

Personnel: Shockers: SEAN THOBABIN | STEVE EGGERS | % saturation

pH:

Photos:

Netters: TIM SALAMUNOVICH | CINDY GLASE

Shocker	S.T.	S.E.							
Model	11-A	12-A							
Battery ID	KUATTE	J.CLEHM							
Voltage:	60	60							
Frequency:	300	300							
1st Pass	1891	1762							
2nd Pass	1635	1591							
3rd Pass	1270	1262							
4th Pass									
5th Pass									

Lengths are fork lengths or total lengths in millimeters **Weights are in grams**

Pass#	Species	Length	Weight	Scale Sample	Notes
1	BRN	266	202.7		
	BRN	257	184.2		
	BRN	232	135.0		
	BRN	209	97.1		
	BRN	81	7.1		
	BRN	84	7.3		
	BRN	145	34.0		
	BRN	222	141.0		
	BRN	257	182.1		
	BRN	156	43.8		
	BRN	196	85.7		
	BRN	155	43.3		
	(RBT)	69	3.7		WILD
	BRN	91	8.7		
	(RBT)	71	4.4		WILD
	BRN	96	9.6		
	BRN	91	8.6		
	BRN	87	7.8		
	BRN	90	8.4		
	(RBT)	73	4.7		WILD
	BRN	89	7.3		
	(RBT)	73	4.3		WILD
	BRN	81	6.1		
	BRN	89	9.1		
	BRN	83	7.2		

BRN: 1 RBT: 4

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH Date: 10/10/2007 Page: 2 of 8

Reach: B-H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	89	8.2		
	BRN	83	7.1		
	RBT	125	22.4		WILD
	BRN	80	6.4		
	BRN	90	9.7		
	BRN	152	38.6		
	BRN	77	4.2		
	BRN	83	7.1		
	BRN	87	8.3		
	BRN	82	6.8		
	BRN	79	6.2		
	BRN	86	7.5		
	BRN	84	7.1		
	RBT	75	4.5		WILD
	BRN	88	7.4		
	BRN	80	6.2		
	RBT	132	28.2		WILD
	BRN	80	5.5		
	BRN	88	7.8		
	BRN	82	7.2		
	BRN	80	6.7		
	BRN	97	11.1		
	BRN	94	9.9		
	BRN	97	11.1		
	BRN	87	7.6		
	BRN	82	6.2		
	BRN	92	8.5		
	BRN	89	7.7		
	BRN	78	5.8		
	BRN	87	7.0		
	RBT	70	5.2		WILD
	RBT	65	3.5		WILD
	BRN	82	5.6		
	BRN	84	7.0		
	RBT	62	2.5		WILD
	RBT	64	3.6		WILD
	BRN	149	39.7		
	BRN	137	26.1		
	BRN	134	27.2		
	RBT	117	18.2		WILD
	BRN	90	9.3		
	RBT	69	4.2		WILD
	RBT	76	5.0		WILD
	BRN	73	4.2		
	RBT	70	3.9		WILD

BRN = 34 RBT = 11

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: MAMMOTH CRK Date: 10 / 10 / 2007 Page: 3 of 8

Reach: B-H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	78	5.5		
	BRN	78	5.5		
	BRN	76	4.9		
	BRN	79	5.4		
	BRN	77	5.5		
	RBT	61	2.5		WILD
	RBT	66	3.9		WILD
	BRN	76	5.1		
	BRN	75	4.3		
	BRN	209	102.8		
	BRN	215	100.7		
	BRN	164	51.6		
	BRN	256	159.7		
	BRN	262	198.8		
	BRN	209	103.2		
	RBT	189	96.9		WILD
	BRN	83	6.6		
	BRN	85	6.4		
	BRN	77	4.5		
	BRN	73	4.4		
	RBT	65	3.0		WILD
	BRN	92	9.2		
	RBT	68	4.0		WILD
	BRN	123	20.5		
	BRN	87	8.1		
	RBT	68	3.6		WILD
	RBT	79	5.7		WILD
	BRN	82	6.5		
	BRN	97	10.1		
	BRN	72	3.9		
	BRN	151	36.1		
	BRN	162	49.9		
	BRN	146	37.6		
	BRN	156	41.1		
	BRN	157	42.0		
	RBT	59	2.9		WILD
	BRN	82	7.2		
	BRN	74	5.6		
	BRN	90	8.5		
#1	BRN	95	10.1		
	BRN	73	4.7		
	BRN	89	8.2		
	BRN	85	6.4		
	BRN	86	7.7		

BRN = 36 RBT = 8

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: MAMMOTH Date: 10 / 10 / 2007 Page: 4 of 8

Reach: B-H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	91	8.7		
	BRN	79	5.2		
	BRN	86	6.5		
	BRN	83	6.6		
	BRN	81	6.4		
	BRN	89	8.1		
	BRN	90	8.1		
	BRN	82	6.0		
	BRN	131	26.3		
	BRN	92	7.8		
	RBT	68	3.1		WILD
	BRN	77	5.2		
	BRN	84	7.6		
	BRN	82	6.0		
	BRN	94	8.5		
	BRN	80	6.1		
	BRN	86	7.6		
	BRN	71	4.3		
	BRN	73	4.5		
	BRN	75	5.2		
	BRN	86	6.8		
	BRN	78	5.4		
	BRN	83	6.7		
	BRN	96	9.9		
	BRN	83	6.6		
	BRN	84	6.5		
	BRN	85	7.0		
	BRN	84	6.1		
	BRN	80	6.0		
	BRN	85	6.6		
	BRN	135	28.1		
	BRN	74	4.8		
	RBT	129	23.9		WILD
	RBT	65	3.8		WILD
	BRN	79	5.8		
	BRN	76	5.2		
	BRN	86	7.9		
	BRN	77	4.4		
	BRN	85	6.8		
	BRN	80	6.3		
	BRN	83	6.9		
	RBT	77	6.4		WILD
	BRN	66	3.5		
	BRN	84	6.9		

BRN = 40 RBT = 4

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: MAMMOTH CRK Date: 10/10/2007 Page: 5 of 8

Reach: B-11 (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	81	6.6		
	BRN	84	6.3		
	BRN	90	8.3		
	RBT	66	3.6		WILD
	BRN	87	6.8		
	RBT	65	3.3		WILD
	BRN	76	5.3		
	BRN	75	4.5		
#1	BRN	67	3.2		
	BRN	85	6.4		
	BRN	88	7.1		
	BRN	77	5.0		
	RBT	67	3.7		WILD BRN RBT
					Pg 1 21 4
					Pg 2 34 11 Totals/Pg
	BRN = 141				Pg 3 36 8
PASS# 1	RBT = 30				Pg 4 40 4
TOTALS					Pg 5 10 3
					141 30
PASS# 2					
2	BRN	90	8.6		
	BRN	72	4.0		
	BRN	94	8.9		
	RBT	105	11.0		Wild
	BRN	94	10.1		
	BRN	87	7.0		
	BRN	79	5.8		
	BRN	76	5.1		
	BRN	164	48.1		
	BRN	72	3.7		
	RBT	86	7.6		Wild
	BRN	80	5.9		
	BRN	89	7.2		
	BRN	74	4.4		
	BRN	83	6.0		
	RBT	74	4.7		Wild
	BRN	78	5.7		
	BRN	83	6.0		
	BRN	88	8.2		
	BRN	81	5.1		
	BRN	236	146.2		
	BRN	73	4.9		
	BRN	86	7.5		
	BRN	89	7.0		

1st PASS BRN = 10 RBT = 4 2nd pass BRN = 21 RBT = 3

Thomas R. Payne & Associates Electrofishing Survey Form

Stream: MAMMOTH Date: 10 / 10 / 2007 Page: 6 of 8

Reach: B-H (continued)

Pass#	Species	Length	Weight g	Scale Sample	Notes
2	BRN	90	7.8		
	BRN	79	6.6		
	BRN	68	3.6		
	BRN	82	6.3		
	RBT	115	15.9		Wild
	BRN	96	9.4		
	BRN	83	6.8		
	BRN	77	4.8		
	RBT	132	27.2		Wild
	BRN	160	44.3		
2	BRN	226	124.5		
	BRN	255	165.1		
	RBT	178	63.2		Wild
	RBT	124	19.9		Wild
	BRN	86	7.1		
	BRN	78	5.6		
	BRN	66	3.6		
	BRN	80	5.7		
	BRN	83	6.4		
	BRN	85	7.3		
	BRN	82	6.2		
	BRN	71	3.9		
	BRN	95	10.8		
	BRN	74	4.7		
	BRN	77	5.7		
	BRN	71	5.1		
	BRN	79	5.6		
	BRN	92	9.8		
	BRN	82	5.9		
	BRN	76	5.0		
	RBT	74	4.9		Wild
	BRN	84	7.0		
	BRN	90	8.2		
	BRN	81	5.7		
	BRN	72	4.7		
	BRN	76	5.3		
	BRN	82	6.8		
	BRN	74	5.0		
	BRN	65	3.3		
	BRN	80	6.2		
	BRN	84	6.3		
	BRN	78	5.6		
	BRN	71	4.8		
2	BRN	77	5.9		

pass 2 Pass 39 [illegible] 5

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10/10/2007 Page: 7 of 8

Reach: B-H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
2	BRN	81	6.0		PASS #2 BRN RBT
	BRN	74	5.3		pg 5 21 3
	BRN	88	8.0		pg 6 39 5
	BRN	82	6.4		pg 7 7 0
	BRN	77	5.2		67 8
	BRN	83	6.2		
	BRN	158	44.4		
PASS 2 TOTALS	BRN = 67				
	RBT = 8				
#3	BRN	87	8.0		
	BRN	74	5.1		
	BRN	80	5.6		
	BRN	82	6.2		
	BRN	84	7.2		
	BRN	85	7.4		
	BRN	87	6.9		
	BRN	78	4.7		
	BRN	83	6.3		
	BRN	76	5.4		
	BRN	73	4.3		
	BRN	89	8.6		
3	BRN	72	3.6		
	BRN	59	2.4		
	RBT	125	26.6		
	BRN	77	6.0		
	BRN	72	4.4		
	BRN	79	6.1		
	BRN	68	4.1		
	BRN	80	6.5		
	BRN	83	5.5		
	BRN	69	4.1		
	BRN	85	6.8		
	BRN	85	7.4		
	BRN	83	6.7		
	BRN	71	4.6		
	BRN	78	5.6		
	BRN	76	4.8		
	BRN	91	8.0		
	BRN	82	5.2		
	BRN	73	4.8		
3	~~RBT~~				

PASS 2: BRN = 7 RBT = 0

PASS 3 = BRN = 31 RBT = 1

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10 / 10 / 2007 Page: 8 of 8

Reach: B-H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
3	BRN	81	6.5		
	BRN	84	7.1		PASS #3 BRN RBT
	BRN	74	5.2		pg 7 30 1
	BRN	82	6.5		pg 8 9 0
	BRN	78	6.3		40 1
	BRN	84	7.3		
	BRN	70	4.1		
	BRN	73	4.5		
	BRN	82	7.2		
	Pass 3 Totals = BRN = 40				RBT = 1
	PASS 1 = BRN = 141			RBT = 30	
	PASS 2 = BRN = 67			RBT = 8	
	PASS 3 = BRN = 39			RBT = 1	
		Σ = 247		39	BRN = 284 ± 26 P = 0.491
					RBT = 39 ± 1 P = 0.796

[Pass 3 = BRN = 1 CRT 6]

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK County: MONO Date: 10 / 11 / 2007

Reach: B-L Est. Q: Page: 1 of

Air Temp.: 36°F @ 8:20 AM H20 Temp.: 3.5 C° @ 8:20 AM Conductivity: 146.9 microSiemens

Blocknets: ONE AT TOP / ONE AT BOTTOM Specific Cond.: 248.3 microSiemens

Reach Length: Salinity: 0.1 ppt

Electroshocker Type: S.T. - 11-A / SE - 12-A D.O.: 9.27 mg/L

Personnel: Shockers: SEAN THOMSABIEN - (11-A) "ORIGINAL YAKIMA" 70.0 % saturation

STEVE EGGERS - (12-A) pH: 8

Netters: TIM SALAMUNOVICH Photos: #1 COVERSHEET "B-L"

CINDY GLASE #2 TOP LOOKING ACROSS (Left Bank To Right Bank)

*Left Bank Looking Downstream #3 TOP LOOKING DOWNSTREAM

Right Bank #4 MID REACH LOOKING UP STRM

#5 MID REACH LOOKING D.S.

#6 BOTTOM LOOKING ACROSS (LB To RB)

#7 BOTTOM LOOKIN UP STRM

Shocker	S.T.	S.E.							
Model	11-A	12-A							
Battery ID	J.CLEM	KUATTE							
Voltage:	60	60							
Frequency:	300	300							
1st Pass	1112	1171							
2nd Pass	1177	1164							
3rd Pass	834	938							
4th Pass									
5th Pass									

Lengths are fork lengths or total lengths in millimeters Weights are in grams

Pass#	Species	Length	Weight g	Scale Sample	Notes
#1	BRN	262	174.4		PASS 1 TOTALS = BRN (9) RBT (3)
	BRN	209	100.7		
	BRN	200	98.5		PASS 2 TOTALS = BRN (4) RBT (0)
	BRN	251	187.1		WILD NON-HATCHERY
	RBT	220	114.7		
	BRN	156	53.6		PASS 3 TOTALS = BRN Ø RBT Ø
	RBT	218	117.3	WILD-NON-HATCHERY	
	BRN	151	41.4		NON-HATCHERY
	RBT	119	20.1	WILD	
	BRN	88	8.4		
	BRN	83	6.8		
	BRN	72	4.1		
#2	BRN	63	2.7		
	BRN	67	3.5		
	BRN	81	6.1		
	BRN	204	106.9		
#3	Ø				

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK. County: MONO Date: 10 / 13 / 2007

Reach: C-H Est. Q: Page: 1 of 3

Air Temp.: 46°F @ 9:30AM H20 Temp.: 5.6°C @ 9:32AM Conductivity: 142.3 microSiemens

Blocknets: ONE AT TOP / ONE AT BOTTOM * (BRING 1 Rope for bottom net) Specific Cond.: 240.3 microSiemens

Reach Length: Salinity: 0.1 ppt

Electroshocker Type: 11 A (S.T.) 12 A (S.E) D.O.: 9.91 mg/L

75.2 % saturation

Personnel: Shockers: DEAN THORBABEW pH: 8

STEVE EGGERS Photos:

Netters: TM SALAMUNOVICH

CINDY GLASE

Shocker	S.T.	S.E				PASS TOTALS		BRN	RBT (H)	RBT (N.H)
Model	11 A	12 A				PASS #1		70	5	5
Battery ID	"GASSY"	"KLAMATH"								
Voltage:	60	60				PASS #2		18	0	2
Frequency:	300	300								
1st Pass	1550	1590				PASS #3		8	0	0
2nd Pass	1299	1253								
3rd Pass	966	1003								
4th Pass										
5th Pass										

Lengths are fork lengths or total lengths in millimeters **Weights are in grams**

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	270	220.5		
	BRN	295	195.2		
	BRN	266	194.3		
	BRN	264	192.5		
	BRN	253	201.8		
	BRN	256	167		
	RBT	304	340.4		HATCHERY (H) SHOCKED AT BOT. NET AFTER 1st PASS
	RBT	244	140.2		N.H - NON HATCHERY
	RBT	315	427.6		H
	RBT	246	177.6		N.H.
	RBT	315	398.1		H
	RBT	255	201.2		H
	RBT	315	363.8		H
	BRN	227	119.1		
	BRN	232	134.3		
	BRN	283	243.8		
	RBT	276	232.9		N.H
	BRN	105	16.9		
	BRN	101	13.3		
	BRN	114	20.1		
	BRN	116	19.0		
	BRN	81	5.9		
	BRN	94	10.2		
	BRN	90	8.6		
#1	BRN	98	12.4		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10 / 13 / 2007 Page: 2 of 3

Reach: C-H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	102	11.9		
	BRN	104	13.2		
	BRN	152	49.1		
	BRN	173	63.0		
	BRN	164	52.1		
	BRN	230	132.8		
	BRN	104	13.9		
	BRN	100	12.6		
	RBT	168	60.1		N.H
	BRN	81	5.9		
	BRN	113	17.9		
	BRN	85	7.2		
	BRN	95	11.1		
	BRN	84	7.0		
	BRN	101	12.8		
	BRN	97	11.2		
	BRN	109	16.6		
	BRN	100	11.5		
	BRN	82	7.0		
	BRN	164	56.5		
	BRN	164	54.9		
	BRN	150	40.1		
	BRN	101	12.5		
	BRN	96	11.2		
	BRN	93	10.3		
	BRN	89	7.8		
	BRN	91	10.3		
	BRN	85	7.7		
	BRN	105	12.9		
	BRN	96	9.9		
	BRN	80	5.5		
	BRN	88	8.2		
	BRN	93	9.3		
	BRN	107	14.8		
	BRN	86	8.0		
	BRN	92	8.0		
	BRN	104	13.9		
	BRN	105	14.1		
	BRN	105	12.8		
	BRN	149	41.2		
	BRN	157	46.1		
	BRN	152	44.1		
	BRN	152	43.6		
	BRN	104	12.5		
#1	RBT	165	57.0		N.H

#1 Totals pass #1 BRN: 113 RBT: 2 — H: 0, N.H: 2

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10/31/2007 Page: 3 of 3

Reach: C-H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	107	14.1		
	BRN	76	5.2		
	BRN	107	15.5		
	BRN	10	9.4		
	BRN	104	12.5		
	BRN	96	10.1		
	BRN	112	15.9		
	BRN	97	11.1		
	BRN	103	11.7		
▼	BRN	76	5.4		MORT - FOUND ON 2nd PASS - WAS 1st PASS FISH
#2	BRN	225	132.3		*ONE BRN SHOCKED AT BOTTOM NET AFTER 2nd PASS.
	BRN	250	194.0		
	BRN	90	9.4		
	BRN	77	5.4		
	BRN	100	11.7		
	BRN	97	10.0		
	RBT	168	62.2		N.H.
▼	RBT	207	92.7		N.H.
	BRN	92	9.5		
	BRN	110	15.8		
	BRN	81	6.0		
	BRN	93	9.4		
	BRN	161	54.2		
	BRN	97	10.3		
	BRN	109	18.0		
	BRN	95	10.0		
	BRN	100	11.1		
	BRN	105	12.4		
▼	BRN	92	10.3		
#2	BRN	94	9.3		
#3	BRN	91	9.1		
	BRN	82	6.8		
	BRN	90	8.7		
	BRN	92	9.5		
▼	BRN	75	5.2		
	BRN	97	9.1		
	BRN	101	11.8		
	BRN	93	10.4		
				//	
				END PASS	3

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK | County: MONO | Date: 10 / 11 / 2007

Reach: C-L | Est. Q: ~10 CFS | Page: 1 of 2

Air Temp.: 69 °F @ 12:15 | H20 Temp.: 6.1°C @ 12:13 | Conductivity: 155.7 microSiemens

Blocknets: ONE AT TOP / ONE AT BOTTOM | Specific Cond.: 243.7 microSiemens

Reach Length: | Salinity: 0.1 ppt

Electroshocker Type: 11-A 12-A | D.O.: 9.23 mg/L ← 9.23

Personnel: Shockers: ~~SEAN THOBABEN~~ TIM SALAMUNOVICH - 11-A | 74.6 % saturation ← 74.6%

STEVE EGGERS - 12-A | pH: 8.0

Photos: #1 COVERSHEET
#2 TOP LOOKING ACROSS LB TO RB
#3 TOP LOOKING D.S.
#4 MID REACH LOOKING UpStr.
#5 MID REACH LOOKING D.S.
#6 BOTTOM LOOKING ACROSS LB → RB
#7 BOTTOM LOOKING UpS

Netters: ~~TIM SALAMUNOVICH~~ SEAN THOBABEN
CINDY GLASE

Shocker	T.S.	SE						
Model	11-A	12-A						
Battery ID	"GASSY"	KLAMATH						
Voltage:	60	60						
Frequency:	300	300						
1st Pass	1889	1692						
2nd Pass	1731	1605						
3rd Pass	1364	1249						
4th Pass	1202	1086						
5th Pass								

Lengths are fork lengths or total lengths in millimeters — Weights are in grams

Pass#	Species	Length	Weight g	Scale Sample	Notes
#1	RBT	220	156.2		HATCHERY ("H")
	RBT	357	541.2		H
	RBT	288	298.6		H
	RBT	246	230.9		H
	BRN	271	209.3		—
	BRN	163	56.2		—
↓	BRN	101	14.9		—
	RBT	252	227.7		H
#1	RBT	276	323.2		H
	RBT	237	184.8		H
	RBT	291	349.6		H
	RBT	306	332.5		H
	RBT	310	450.8		H
	RBT	321	393.3		H
	BRN	116	16.7		
	BRN	94	9.9		
	BRN	97	11.4		
	BRN	100	10.2		
	BRN	109	15.8		
	RBT	220	157.8		H
	RBT	283	245.6		H
	RBT	267	247.2		H
	BRN	113	15.5		
↓	BRN	112	16.6		
#1	RBT	86	7.1		NON-HATCHERY

	BRN	RBT
PASS #1 TOTALS:	14	27
PASS #2 TOTALS	11	2
PASS #3 TOTALS	6	1
PASS #4 TOTALS	5	0

PAGE #1 BRN = 10 RBT = 15 } pg Totals [illegible] 1st pass [illegible] BRN 1st pass

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH Date: 10 / 11 / 2007 Page: 2 of 2

Reach: C - L (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	RBT	271	282.2		HATCHERY ("H")
	RBT	213	131.0		H
	BRN	214	107.8		
	RBT	308	383.4		H
	RBT	223	158.3		H
	RBT	374	721.9		H
	RBT	340	659.9		H
	RBT	310	417.1		H
	RBT	167	58.6		NON-HATCHERY
	BRN	119	20.9		
	BRN	116	21.7		
	BRN	175	63.5		
	RBT	300	304.2		H
	RBT	269	238.4		H
	RBT	325	405.5		H
#1	RBT	315	429.6		H
#2	BRN	182	77.1		
	BRN	190	91.8		
	BRN	265	231.4		
	RBT	101	14.8		NON HATCHERY
	BRN	104	14.7		
	BRN	111	17.2		
	RBT	98	13.2		NON HATCHERY
	BRN	104	12.4		
	BRN	108	16.2		
	BRN	98	11.1		
	BRN	98	9.2		
	BRN	91	9.5		
#2	BRN	95	11.5		
#3	BRN	99	11.7		
	BRN	110	14.3		
	BRN	107	14.9		
	BRN	109	16.7		
	BRN	117	19.3		PASS #3 BRN = 6 RBT = 1
	BRN	100	12.9		
	RBT	78	6.1		NON HATCHERY
#4	BRN	108	15.4		PASS #4 BRN = 5 RBT = 0
	BRN	99	11.5		
	BRN	83	7.5		
	BRN	78	4.9		
	BRN	110	15.7		

Pass #1 BRN = 4 RBT = 12 page Totals

BRN = 11 RBT = 2 page totals

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH County: MONO Date: 10/14/2007

Reach: DH Est. Q: ~10 CFS Page: 1 of 6

Air Temp.: @ H20 Temp.: @ Conductivity: microSiemens

Blocknets: ONE AT TOP / ONE AT BOTTOM / ONE SMALL NET AT BOTTOM SIDE CHANNEL Specific Cond.: microSiemens

Reach Length: Salinity: ppt

Electroshocker Type: 11A 12A D.O.: mg/L

Personnel: Shockers: STEVE Eggers / Sean Tholaken % saturation

pH: 8.0

Photos:

Netters: Cindy Glase / Tim Salamunovich

Shocker	STEVE	SEAN			PASS TOTALS		BRN	RBT(H)	RBT(N.H)
Model	12A	11A			pass#1		135	2	17
Battery ID	KLAITE	CLEMM							
Voltage:	300	300			pass#2		42	Ø	7
Frequency:	60	60							
1st Pass	2258	1574			pass#3		12	Ø	2
2nd Pass	1740	980							
3rd Pass	1742	745							
4th Pass									
5th Pass									

Lengths are fork lengths or total lengths in millimeters Weights are in grams

Pass#	Species	Length	Weight g	Scale Sample
#1	BRN	223	133.9	
	BRN	186	81.1	
	BRN	175	56.4	
	BRN	220	111.7	
	BRN	213	115.0	
	BRN	253	161.3	
	BRN	243	158.9	
	BRN	79	5.6	
	RBT	231	117.7	
	BRN	85	8.0	
	BRN	78	5.6	
	BRN	86	8.1	
	BRN	89	9.3	
	BRN	82	7.0	
	BRN	92	8.2	
	BRN	95	11.1	
	BRN	91	8.9	
	BRN	80	6.3	
	BRN	85	7.4	
	BRN	85	8.4	
	BRN	92	10.6	
	BRN	72	4.4	
	BRN	77	6.3	
#1	BRN	77	5.4	

Notes: H = HATCHERY NH = NON HATCHERY

* (1) RBT (3) BRNS SHOCKED AT BOTTOM NET AT END OF 1ST PASS

	Page totals	BRN	RBT(H)	RBT(N.H.)
pass#1	pg1	23	Ø	1
N.H	pg2	43	Ø	2
	pg3	35	2	8
	pg4	34	Ø	6
		(135)	(2)	(17)
pass#2	pg4	3	Ø	Ø
	pg5	39	Ø	6
	pg6	Ø	Ø	1
		(42)	Ø	(7)
pass#3	pg6	(12)	Ø	(2)

[page total pass#1 - BRN = 23 RBT: 1 — H = Ø, NH = 1]

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10 / 14 / 2007 Page: 2 of 6

Reach: D-4 (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	81	5.4		
	BRN	69	4.5		
	BRN	89	9.3		
	BRN	76	5.9		
	BRN	88	8.1		
	BRN	81	6.6		
	BRN	84	7.2		
	BRN	91	8.0		
	BRN	208	103.6		
	BRN	84	6.9		
	BRN	85	7.4		
	BRN	81	6.6		
	BRN	85	7.9		
	BRN	76	5.5		
	BRN	73	4.7		
	BRN	85	6.8		
	BRN	70	4.7		
	BRN	90	8.7		
	BRN	73	5.1		
	BRN	92	10.4		
	BRN	90	9.6		
	BRN	89	8.7		
	BRN	73	4.3		
	BRN	75	4.8		
	BRN	85	8.2		
	BRN	90	9.3		
	BRN	89	7.6		
	BRN	89	8.3		
	BRN	86	8.5		
	BRN	82	7.3		
	BRN	77	5.7		
	BRN	72	4.2		
	BRN	153	41.1		
	BRN	144	36.6		
	BRN	148	37.4		
	BRN	181	65.1		
	BRN	85	6.5		
	BRN	84	7.6		
	BRN	76	5.5		
	BRN	90	8.1		
	BRN	75	4.6		
	BRN	99	11.5		
	RBT	57	2.6		N.H.
	RBT	58	2.8		N.H.
#1	BRN	71	4.7		

page totals pass #1 BRN = 43. RBT = (2) H = 0 NH = 2

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10 / 14 / 2007 Page: 3 of 6

Reach: DH (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	71	4.4		
	BRN	80	6.5		
	BRN	76	5.3		
	BRN	79	5.3		
	BRN	79	6.2		
	BRN	92	8.8		
	BRN	84	7.8		
	BRN	87	8.8		
	BRN	75	4.6		
	BRN	74	4.8		
	BRN	90	8.8		
	BRN	96	11.4		
	BRN	86	7.8		
	BRN	83	6.2		
	RBT	57	2.1		N.H.
	BRN	149	37.4		
	BRN	181	65.0		
	BRN	177	65.9		
	BRN	246	180.6		
	BRN	240	133.4		
	BRN	245	~~180.9~~	162.9	
	BRN	247	153.7		
	BRN	246	161.1		
	BRN	151	45.3		
	RBT	174	57.3		N.H.
	BRN	193	74.8		
	BRN	183	64.2		
	BRN	210	184.4		
	BRN	156	46.2		
	BRN	142	34.3		
	BRN	185	72.8		
	RBT	161	54.4		N.H.
	RBT	205	98.1		N.H.
	RBT	286	231.4		H
	RBT	272	216.7		H.
	BRN	147	37.3		
	BRN	201	81.9		
	BRN	190	76.0		
	BRN	84	7.2		
	BRN	76	4.9		
	RBT	144	37.2		N.H
	BRN	84	6.3		
	RBT	173	59.9		N.H
	RBT	182	68.5		N.H.
#1	RBT	211	101.2		N.H.

page totals pass #1 BRN = 35 RBT = 10 H = 2, N.H. 8

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10 / 14 / 2007 Page: 4 of 6

Reach: D H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	85	8.7		
	BRN	81	6.6		
	BRN	94	11.3		
	BRN	80	6.7		
	BRN	87	7.9		
	BRN	84	7.1		
	BRN	81	6.3		
	RBT	50	1.3		N.H
	RBT	73	5.2		N.H.
	RBT	110	16.2		N.H.
	BRN	88	7.7		
	BRN	83	7.0		
	BRN	80	5.1		
	BRN	84	7.5		
	BRN	61	2.5		
	BRN	78	5.1		
	BRN	70	3.8		
	BRN	50	1.6		
	BRN	78	6.6		
	BRN	80	6.0		
	BRN	78	5.7		
	BRN	71	3.5		
	BRN	78	4.8		
	BRN	74	4.9		
	RBT	45	1.3		N.H.
	BRN	101	11.2		
	BRN	67	3.7		
	BRN	54	1.6		
	RBT	67	4.1		N.H.
	BRN	90	9.5		
	BRN	100	9.7		
	BRN	90	9.8		
	RBT	116	18.0		N.H.
	BRN	94	8.9		
	BRN	59	2.4		
	BRN	160	45.3		
	BRN	144	32.4		
	BRN	146	35.5		
	BRN	152	36.6		
#1	BRN	143	33.7		
#2	BRN	75	4.6		* ONE BROWN SHOCKED AT BOTTOM NET AFTER 2nd PASS
	BRN	86	7.8		
	BRN	78	5.5		

pass totals pass# 1 BRN = (34) RBT = (6) H = Ø, N.H = (6)

pass totals pass# 2 BRN = 3, RBT = Ø, H = Ø, N.H = Ø

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH Date: 10 / 14 / 2007 Page: 5 of 6

Reach: DH (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#2	BRN	98	11.1		
	BRN	90	9.4		
	BRN	89	8.9		
	BRN.	77	6.1		
	BRN	105	12.4		
	BRN	84	7.6		
	BRN	76	4.9		
	RBT	62	2.7		N.H.
	BRN	135	29.1		
	BRN	77	5.6		
	BRN	76	6.1		
	BRN	75	4.9		
	BRN	81	6.8		
	BRN	77	4.9		
	BRN	93	8.8		
	BRN	80	6.6		
	BRN	91	9.0		
	BRN	89	8.1		
	BRN	82	6.1		
	BRN	78	5.4		
	BRN	145	38.6		
	BRN	142	31.7		
	BRN	195	76.4		
	BRN	190	75.0		
	BRN	80	5.8		
	BRN	90	8.2		
	BRN	75	5.3		
	BRN	71	4.7		
	BRN	76	5.1		
	RBT	268	202.9		N.H.
	RBT	256	171.7		N.H.
	BRN	93	10.8		
	BRN	71	3.8		
	RBT	192	81.5		N.H.
	RBT	84	7.5		N.H.
	BRN	90	7.9		
	BRN	77	5.6		
	BRN	88	8.4		
	BRN	85	6.4		
	BRN	64	2.7		
	RBT	110	15.3		N.H.
	BRN	81	5.6		
	BRN	72	4.9		
	BRN	75	5.4		
#2	BRN	71	4.2		

page totals pass #2 BRN = 39 RBT = H = 7 N.H. = 6

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10 / 14 / 2007 Page: 6 of 6

Reach: DH (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#2	RBT	116	16.9		N.H.
#3	BRN	85	8.1		
	BRN	76	4.5		
	BRN	96	10.5		
	BRN	70	3.7		
	BRN	71	3.9		
	BRN	85	8.2		
	BRN	81	5.5		
	BRN	151	41.8		
	BRN	70	4.1		
	BRN	67	3.4		
	RBT	62	2.7		N.H
	BRN	75	4.8		
	BRN	88	9.5		
#3	RBT	65	2.8		N.H.

page total pass #2 BRN = Ø RBT = (1) H = N.H = (1)

page total pass #3 BRN = (2) RBT = (2) H = NH = 2

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK County: MONO Date: 10 / 13 / 2007
Reach: D-L Est. Q: Page: 1 of 4
Air Temp.: @ H20 Temp.: 6.6°C @ 2:56pm Conductivity: 131.5 microSiemens
Blocknets: ONE AT TOP (LONGER NET) / ONE AT BOTTOM (BRING ROPE) Specific Cond.: 202.9 microSiemens
Reach Length: Salinity: 0.1 ppt
Electroshocker Type: 11-A (T.S.) 12-A (S.E.) D.O.: 9.77 mg/L
80.2 % saturation
Personnel: Shockers: TIM SALAMUNOVICH pH: 8.0
STEVE EGGERS
Photos:
Netters: SEAN THOBAREN
CINDY GLASE

Shocker	T.S	S.E			PASS	TOTALS	BRN	RBT(H)	RBT(NH)
Model	11-A	12-A							
Battery ID	WATTE	J.CLEMME			PASS #1		57	2	18
Voltage:	60	60							
Frequency:	300	300			PASS #2		17	Ø	5
1st Pass	1641	1464							
2nd Pass	1387	1179			PASS #3		16	Ø	1
3rd Pass	1213								
4th Pass									
5th Pass									

Lengths are fork lengths or total lengths in millimeters Weights are in grams

Pass#	Species	Length	Weight	Scale Sample	Notes H = HATCHERY NH = NON HATCHERY
#1	BRN	246	152.1		
	BRN	215	119.3		
	BRN	199	91.0		
	BRN	255	172.1		
	BRN	236	152.7		
	BRN	246	164.4		2 BRNS SHOCKED AT BOTTOM
	BRN	280	251.9		NET AFTER PASS #1
	BRN	94	9.8		
	RBT	189	83.8		N.H. PAGE TOTALS BRN RBT(H) RBT(NH)
	RBT	204	97.2		N.H PASS #1 pg.1 20 Ø 5
	BRN	94	10.1		pg.2 31 2 12
	RBT	69	4.5		N.H. pg.3 6 Ø 1
	BRN	132	12.3		(57) (2) (18)
	BRN	90	8.7		
	BRN	92	8.8		
	BRN	102	12.2		
	BRN	81	7.3		9
	BRN	93	9.8		
	BRN	89	8.1		15
	RBT	94	10.6		N.H
	RBT	75	6.0		N.H
	BRN	98	11.2		
	BRN	164	44.6		
	BRN	79	4.8		
#1	BRN	96	5.1		

PG. TOTAL PASS #1 BRNS 20 RBT 5 (N.H.)

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10/13/2007 Page: 2 of 4

Reach: D-L (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
1	BRN	93	9.6		
	BRN	106	13.8		
	BRN	101	13.2		
	BRN	94	10.8		
	BRN	100	11.2		
	BRN	75	5.5		
	BRN	102	12.3		
	BRN	88	8.1		
	BRN	89	8.4		
	BRN	104	13.4		
	BRN	97	9.7		
	BRN	165	53.4		
	RBT	70	3.9		N.H
	BRN	170	57.4		
	RBT	70	3.9		N.H.
	RBT	225	126.3		N.H.
	RBT	291	297.9		H
	RBT	237	150.3		N.H.
	RBT	273	232.0		H
	BRN	230	124.6		
	BRN	282	254.6		
	BRN	95	9.9		
	BRN	94	9.7		
	RBT	172	67.3		N.H.
	RBT	160	49.8		N.H.
	RBT	160	47.4		N.H
	BRN	95	10.1		
	BRN	97	11.6		
	BRN	99	13.1		
	BRN	97	10.3		
	BRN	99	11.2		
	RBT	95	12.5		N.H
	RBT	87	8.5		N.H.
	RBT	78	5.8		N.H
	BRN	100	12.3		
	BRN	94	9.0		
	BRN	89	9.1		
	BRN	234	145.2		
	BRN	165	51.2		
	BRN	220	124.5		
	BRN	225	128.6		
	BRN	87	7.8		
	BRN	96	10.1		
	RBT	162	49.7		N.H.
	RBT	75	6.2		N.H.

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10/13/2007 Page: 3 of 4

Reach: D-L (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	RBT	84	6.5		N.H.
	BRN	87	8.5		
	BRN	111	15.6		
	BRN	107	13.0		
	BRN	95	9.4		
	BRN	90	8.0		
	BRN	99	13.7		
#2	BRN	95	10.3		
	BRN	105	13.3		
	BRN	98	12.1		
	BRN	93	8.5		
	BRN	110	17.9		
	RBT	95	11.5		N.H
	RBT	95	12.2		N.H
	BRN	79	6.1		
	RBT	91	11.3		N.H.
	BRN	95	10.0		
	BRN	100	13.7		
	BRN	88	7.4		
	BRN	91	8.2		
	BRN	95	10.2		
	RBT	79	5.6		N.H.
	BRN	85	7.3		
	BRN	93	8.4		
	BRN	89	8.5		
	BRN	110	15.2		
	BRN	96	9.2		
	BRN	95	10.1		
#2	RBT	232	124.9		N.H.
#3	BRN	100	11.4		
	BRN	98	11.8		
	BRN	91	11.1		
	BRN	99	10.0		
	BRN	87	8.1		
	BRN	101	12.0		
	BRN	116	15.7		
	RBT	84	7.2		N.H.
#3	BRN	106	13.1		
#3	BRN	96	11.4		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10/31/2007 Page: 4 of 4

Reach: D-L (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#3	BRN	98	11.7		
	BRN	87	8.1		
	BRN	88	8.1		
	BRN	86	7.7		
	BRN	96	11.3		
	BRN	90	8.9		
#3	BRN	91	8.4		

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK | County: MONO | Date: 10 / 12 / 2007

Reach: E-H | Est. Q: ~10 CFS | Page: 1 of 6

Air Temp.: @ | H20 Temp.: @ GH= 0.49 @ 090 | Conductivity: microSiemens

Blocknets: ONE AT BOTTOM / ONE AT TOP BELOW WEIR | Specific Cond.: microSiemens

Reach Length: | Salinity: ppt

Electroshocker Type: 11-A (S.T.) 12-A (S.E.) | D.O.: mg/L

Personnel: Shockers: SEAN THOMPSEN, STEVE EGGERS | % saturation

Netters: TIM SALAMUNOVICH, CINDY GLASE | pH: | Photos:

Shocker	S.T.	S.E.			PASS #1	TOTALS	BRN	RBT (H)	RBT N.H
Model	11-A	12-A					141	3	9
Battery ID					PASS #2	TOTALS	50	0	2
Voltage:	60	60			PASS #3	TOTALS	26	0	1
Frequency:	300	300			BRN → N = 233	+/- 13	P = .596		
1st Pass	1879	2052							
2nd Pass	1496	1662							
3rd Pass	1107	1052							
4th Pass									
5th Pass									

Lengths are fork lengths or total lengths in millimeters **Weights are in grams**

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	91	10.3		~~PASS #1 TOTALS BRN RBT~~
	BRN	82	7.0		
	BRN	76	4.9		
	BRN	90	8.8		
	BRN	85	6.7		
	BRN	98	11.4		
	BRN	89	8.0		
	BRN	115	19.2		
	RBT	202	110.2		N.H (NON HATCHERY)
	BRN	201	88.7		
	BRN	86	7.6		
	BRN	95	11.1		
	BRN	90	8.2		
	BRN	101	12.4		
	RBT	68	3.9		N.H
	BRN	110	15.3		
	BRN	74	4.2		
	BRN	115	16.7		
	BRN	157	47.4		
	BRN	166	58.1		
	BRN	267	~~207.8~~		
	BRN	81	7.0		
	BRN	86	8.1		
	BRN	78	5.2		
#1	BRN	77	5.7		

TOTALS	Pass #1	BRN	H RBT	N.H RBT
	pg 1	23	0	2
	pg 2	43	0	2
	pg 3	41	1	3
	pg 4	34	2	2
		141	3	9
PAGE 6	PASS #2			
	pg 4	6	0	0
	pg 5	43	0	2
	pg 6	~~42~~	0	0
		50	0	2

Erase totals pass #1 BRN = 23 RBT = 2 + N.H.

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10/12/2007 Page: 2 of 6

Reach: E-H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	91	8.5		
	BRN	76	5.8		
	BRN	76	5.4		
	BRN	105	14.8		
	BRN	97	9.8		
	BRN	81	5.7		
	BRN	103	11.5		
	BRN	79	5.2		
	BRN	166	54.9		
	BRN	226	121.0		
	BRN	106	12.6		
	BRN	83	6.8		
	BRN	81	5.3		
	BRN	102	12.4		
	BRN	101	11.1		
	BRN	80	6.1		
	BRN	95	9.4		
	BRN	81	5.7		
	BRN	79	6.0		
	RBT	75	5.3		N.H. (NON HATCHERY)
	BRN	95	9.9		
	BRN	137	28.1		
	BRN	215	121.2		
	BRN	101	12.0		
	BRN	100	11.9		
	BRN	105	12.3		
	BRN	100	12.6		
	BRN	106	12.6		
	BRN	97	9.9		
	BRN	82	6.2		
	BRN	89	7.3		
	BRN	73	4.4		
	BRN	79	5.2		
	BRN	158	47.1		
	BRN	169	56.5		
	BRN	193	81.7		
	BRN	258	193.2		
	BRN	70	4.6		
	BRN	93	10.0		
	BRN	88	8.4		
	BRN	104	15.5		
	BRN	92	9.6		
	BRN	90	9.1		
	BRN	88	9.2		
#1	RBT	85	8.5		N.H.

Page totals pass #1 BRN=43 RBT=2 — 2 NH

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH Date: 10/12/2007 Page: 3 of 6

Reach: E-H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	83	6.8		
	BRN	77	5.7		
	RBT	69	3.7		N.H.
	BRN	85	7.6		
	BRN	80	5.8		
	BRN	85	6.3		
	BRN	96	9.3		
	BRN	81	6.2		
	BRN	93	10.3		
	BRN	167	53.3		
	BRN	213	116.8		
	BRN	90	8.7		
	BRN	85	7.3		
	BRN	101	14.2		
	BRN	81	5.7		
	BRN	94	9.0		
	BRN	88	9.2		
	BRN	82	5.4		
	BRN	84	6.9		
	BRN	136	28.9		
	BRN	92	8.3		
	BRN	68	3.5		
	BRN	94	9.9		
	BRN	76	5.0		
	BRN	170	60.8		
	BRN	167	58.3		
	BRN	259	204.6		
	BRN	102	10.9		
	BRN	90	9.8		
	BRN	102	11.5		
	BRN	87	7.3		
	BRN	77	6.0		
	BRN	96	10.5		
	BRN	74	5.1		
	BRN	92	7.7		
	BRN	90	9.2		
	BRN	104	13.7		
	BRN	98	10.2		
	BRN	239	139.2		
	BRN	100	11.3		
	RBT	76	5.6		N.H. (NON-HATCHERY)
	RBT	98	13.0		N.H.
	BRN	94	10.9		
	BRN	86	7.2		
#1	RBT	274	238.2		HATCHERY

page totals pass #1 BRN=41 RBT=4 → 3 N.H, 1 H.

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10 / 12 / 2007 Page: 4 of 6

Reach: E - H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	RBT	149	43.3		HATCHERY (H)
	BRN	90	8.0		
	BRN	104	14.1		
	BRN	102	10.6		
	RBT	234	117.8		HATCHERY (H)
	BRN	74	4.2		
	BRN	93	9.3		
	BRN	100	10.7		
	BRN	82	6.3		
	BRN	96	10.6		
	BRN	76	4.9		
	BRN	85	7.3		
	BRN	155	46.9		
	BRN	177	73.7		
	BRN	82	6.5		
	BRN	108	14.2		
	BRN	90	9.5		
	BRN	105	11.8		
	BRN	84	6.5		
	BRN	100	10.2		
	BRN	149	38.9		
	BRN	165	50.4		
	RBT	61	2.4		N.H. (NON HATCHERY) - MORT
	BRN	85	6.8		
	BRN	95	9.4		
	BRN	82	6.2		
	BRN	82	6.8		
	BRN	77	4.9		
	BRN	89	7.4		
	BRN	89	7.8		
	RBT	155	40.5		N.H.
	BRN	81	6.5		
	BRN	96	9.7		
	BRN	105	13.5		
	BRN	95	10.3		
	BRN	90	7.9		
	BRN	81	5.4		
#1	BRN	75	5.2		
#2	BRN	92	9.1		
	BRN	90	8.9		
	BRN	82	6.6		
	BRN	106	14.1		
	BRN	93	8.9		
	BRN	81	6.1		

page totals pass #1 BRN = 34 RBT = 4 (2 H, 2 N.H)

page total pass #2 BRN = 6 RBT = 0

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10/12/2007 Page: 5 of 6

Reach: E-H (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#2	BRN	78	6.1		
	BRN	101	11.3		
	BRN	80	5.4		
	BRN	86	8.1		
	BRN	79	5.8		
	BRN	102	10.7		
	BRN	80	6.0		
	BRN	94	9.3		
	BRN	72	4.7		
	BRN	87	6.9		
	RBT	84	8.1		NON HATCHERY (N.H.)
	BRN	87	7.1		
	BRN	84	6.6		
	BRN	76	5.6		
	BRN	69	3.8		
	BRN	86	7.8		
	BRN	104	11.9		
	BRN	85	6.6		
	BRN	80	6.3		
	BRN	88	8.2		
	BRN	101	12.5		
	BRN	95	10.8		
	BRN	111	14.3		
	BRN	82	7.0		
	BRN	98	10.3		
	BRN	79	3.9		
	BRN	91	9.0		
	BRN	86	7.7		
	BRN	81	6.4		
	BRN	90	8.8		
	BRN	88	8.5		
	BRN	84	7.2		
	BRN	99	12.4		
	BRN	65	2.7		
	BRN	85	6.3		
	BRN	82	7.1		
	BRN	90	9.4		
	BRN	89	9.4		
	BRN	81	5.7		
	RBT	180	65.5		N.H.
	BRN	97	12.2		
	BRN	74	4.9		
	BRN	100	11.1		
	BRN	82	7.5		
	BRN	97	11.2		

page totals pass #2 BRN=43 RBT= 2 H = 0 NH = 2

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH Date: 10/12/2007 Page: 6 of 6

Reach: E-11 (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#2	BRN	246	169.3		
#	BRN	68	3.7		MORT FOUND IN ROCKS ON 3RD PASS NT 2nd pass
#3	BRN	227	149.9		[redacted]
	BRN	282	259.2		
	BRN	221	117.1		
*	~~BRN~~	~~68~~	~~3.7~~		~~MORT (FROM 2nd PASS)~~ *
	BRN	87	7.1	→ 7.1	
	BRN	74	5.3		
	BRN	99	11.3		
	RBT	267	252.1		NON HATCHERY (N.H.)
	BRN	91	9.4		
	BRN	87	7.5		
	BRN	74	4.9		
	BRN	76	4.8		
	BRN	96	10.4		
	BRN	81	6.8		
	BRN	89	8.6		
	BRN	82	6.7		
	BRN	94	9.2		
	BRN	73	4.4		
	BRN	76	5.0		
	BRN	90	8.6		
	BRN	95	11.3		
	BRN	74	4.4		
	BRN	93	9.5		
	BRN	90	8.1		
	BRN	80	5.6		
	BRN	79	5.6		
	BRN	84	7.1		
	BRN	84	7.7		

pass #2 pg total BRN = 1/2 RBT = Ø

pass #3 pg totals BRN = 26 RBT = 1 H = Ø N.H. (1)

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK County: MONO Date: 10 / 12 / 2007

Reach: E-1 Est. Q: _____ Page: 1 of 6

Air Temp.: _____ @ _____ H20 Temp.: _____ @ _____ Conductivity: _____ microSiemens

Blocknets: ONE AT TOP / ONE AT BOTTOM Specific Cond.: _____ microSiemens

Reach Length: _____ Salinity: _____ ppt

Electroshocker Type: 11-A (T.S.) 12-A (S.E.) D.O.: _____ mg/L

Personnel: Shockers: TIM SALAMUNOVICH _____ % saturation

STEVE EGGERS pH: _____

Photos: _____

Netters: SEAN THOBABEN

CINDY GLASE

Shocker	T.S.	S.E.				PASS TOTALS =		BRN	RBT(H)	RBT(NH)
Model	11-A	12-A				PASS	#1	138	6	10
Battery ID	KLATTE	J.CLEMMÉ				PASS	#2	26	Ø	2
Voltage:	60	60				PASS	#3	9	Ø	Ø
Frequency:	300	300								
1st Pass	1475	1309								
2nd Pass	984	888								
3rd Pass	770	661								
4th Pass										
5th Pass										

Lengths are fork lengths or total lengths in millimeters **Weights are in grams**

Pass#	Species	Length	Weight g	Scale Sample	Notes
#1	BRN	266	210.1		
	BRN	303	283.9		
	BRN	228	144.0		
	BRN	209	89.2		
	BRN	198	86.1		
	RBT	320	473.4		HATCHERY ("H")
	RBT	256	222.2		HATCHERY (H)
	RBT	332	417.4		H
	BRN	210	106.7		
	BRN	203	90.9		
	BRN	212	116.0		
	BRN	224	115.4		
	RBT	200	89.3		H
	BRN	222	117.2		
	BRN	291	269.2		
	BRN	175	64.8		
	RBT	212	125.3		NON HATCHERY (N.H.)
	RBT	280	265.6		NH
	BRN	75	5.7		
	BRN	180	69.8		
	BRN	175	63.0		
	BRN	212	100.9		
	BRN	227	141.7		
	BRN	232	147.8		
#1	BRN	267	199.4		

Pg totals PASS #1 BRN = 19 RBT = 6 (H=4) NH = 2

Pass #1	BRN	RBT(H)	RBT(NH)
pg 1	19 ~~RBT 7~~	4	2
pg 2	43	0	2
pg 3	40	1	3
pg 4	35	1	2
pg 5	1	0	1

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CR Date: 10/12/2007 Page: 2 of 6

Reach: E-L (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	115	21.3		
	BRN	75	6.1		
	BRN	59	2.8		
	BRN	101	11.3		
	BRN	110	14.8		
	BRN	100	11.2		
	BRN	92	8.7		
	BRN	100	11.3		
	BRN	98	10.4		
	BRN	96	9.5		
	BRN	103	13.3		
	BRN	84	7.1		
	RBT	76	4.6		N.H.
	BRN	92	8.9		
	BRN	94	8.5		
	BRN	114	16.5		
	BRN	107	15.5		
	BRN	92	8.9		
	BRN	84	7.5		
	BRN	92	8.7		
	BRN	93	9.3		
	BRN	98	10.2		
	BRN	87	7.9		
	BRN	80	5.9		
	BRN	184	66.7		
	BRN	175	57.3		
	BRN	117	18.7		
	BRN	213	103.1		
	BRN	208	99.0		
	BRN	109	16.4		
	BRN	104	11.5		
	RBT	167	53.5		N.H.
	BRN	95	10.4		
	BRN	104	13.1		
	BRN	107	13.8		
	BRN	93	9.8		
	BRN	93	9.3		
	BRN	75	5.3		
	BRN	79	5.2		
	BRN	90	8.0		
	BRN	90	8.3		
	BRN	104	13.3		
	BRN	83	6.0		
	BRN	80	5.6		
#1	BRN	82	5.7		

Page totals pass #1 BRN = 43 RBT = 2 H = 0 NH = 2

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10/12/2007 Page: 3 of 6

Reach: E-L (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	BRN	85	6.3		
	BRN	79	6.0		
	BRN	75	4.7		
	BRN	79	5.3		
	BRN	70	4.4		
	BRN	84	4.8		
	BRN	86	6.9		
	BRN	80	5.6		
	BRN	81	5.0		
*	SKR	53	2.0		
	BRN	73	4.9		
	BRN	90	8.3		
	BRN	85	8.5		
	BRN	90	8.0		
	BRN	83	3.7		
	BRN	104	11.2		
	BRN	91	9.6		
	BRN	206	107.6		
	BRN	217	112.7		
	BRN	229	131.5		
	BRN	250	182.4		
	BRN	286	273.5		
	BRN	88	8.9		
	BRN	97	9.7		
	RBT	204	108.8		N.H.
	RBT	249	156.3		HATCHERY
	BRN	70	5.1		
	BRN	94	10.1		
	RBT	295	299.4		[redacted] HATCHERY
	BRN	82	7.2		
	BRN	97	11.0		
	BRN	104	11.8		
	BRN	100	11.4		
	BRN	83	5.7		
	BRN	97	10.1		
	BRN	92	9.7		
	BRN	91	8.7		
	BRN	95	9.5		
	BRN	97	11.6		
	BRN	110	12.7		
	BRN	106	12.9		
	BRN	84	8.4		
	RBT	82	6.6		N.H.
	BRN	79	6.5		
#1	BRN	91	8.2		

Page totals pass #1 BRN = 40 RBT = 4 H = 2 NH = 2

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH CRK Date: 10/12/2007 Page: 4 of 6

Reach: E-L (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	RBT	198	75.4		HATCHERY ✓
	BRN	203	87.8		
	BRN	95	9.6		
	BRN	94	9.3		
	BRN	84	7.5		
	RBT	135	32.5		N.H. ✓
	RBT	195	90.5		N.H. ✓
	BRN	103	12.3		
	BRN	95	9.6		
	BRN	109	15.7		
	BRN	93	9.7		
	BRN	92	9.8		
	BRN	88	7.9		
	BRN	72	4.4		
*	SKR	32	0.5		
*	SKR	31	0.4		
*	SKR	25	0.2		
	BRN	104	12.5		
	BRN	108	13.3		
	BRN	100	11.1		
	BRN	94	9.2		
	BRN	85	6.8		
*	SKR	37	0.8		
*	SKR	34	0.4		
	BRN	159	45.7		
	BRN	92	9.2		
	BRN	84	6.4		
	BRN	94	10.5		
	BRN	95	9.6		
	BRN	115	17.3		
	BRN	102	11.5		
*	SKR	37	0.6		
	BRN	101	11.2		
	BRN	107	15.1		
	BRN	172	54.8		
	BRN	126	22.9		
	BRN	115	17.1		
	BRN	90	8.1		
	BRN	121	22.3		
	BRN	112	16.0		
	BRN	166	46.6		
	BRN	119	19.0		
	BRN	81	6.3		
	BRN	95	9.9		
* #1	SKR	35	N.Wt.		— H = 1

B. totals pass #1 BRN = 35 RBT = 3 N4 = 2

Thomas R. Payne & Associates Electrofishing Survey - Fish Data Form

Stream: MAMMOTH Date: 10/12/2007 Page: 5 of 6

Reach: E-L (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#1	SKR	40	0.8		
	SKR	33			
	SKR	35	1.8		COLLECTIVE WEIGHT
	SKR	41			
	SKR	38	0.4		
	SKR	37	0.5		
	RBT	110	17.9		N.H.
	BRN	312	401.8		
#2	BRN	106	13.1		
	BRN	87	6.7		
	BRN	83	6.9		
	BRN	85	7.8		
	BRN	95	9.7		
	BRN	102	13.4		
	BRN	79	6.3		
	BRN	81	6.8		
	BRN	184	75.3		
	BRN	91	10.1		
	BRN	93	9.1		
	BRN	86	8.4		
	BRN	98	10.6		
	BRN	94	9.9		
	SKR	42	0.9		
	SKR	45	1.0		
	BRN	120	18.6		
	[redacted]				[redacted]
	BRN	79	5.8		
	BRN	110	14.8		
	BRN	75	4.6		
	SKR	38	0.8		
	SKR	32	0.4		
	SKR	34	0.4		
	SKR	38	0.6		
	SKR	32	0.3		
	CHUB	71	5.4		
	BRN	105	14.0		
	BRN	112	15.6		
	RBT	268	221.3		[redacted] HATCHERY
	RBT	81	6.7		N.H.
	BRN	92	8.3		
	BRN	90	8.7		
	BRN	110	14.0		
	BRN	94	8.6		
	SKR	40			WEIGHTS ON NEXT PAGE
#2	SKR	33			

Pg. totals pass #1 BRN = 1 RBT = 1 H = 0 NH = 1

Pg totals pass # 2 BRN = 25 RBT = 2 H = 0 NH = 2

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Stream: MAMMOTH CRK Date: 10/12/2007 Page: 6 of 6

Reach: E-L (continued)

Pass#	Species	Length	Weight	Scale Sample	Notes
#2	SKR	36	2.4		plus 2** from bottom pg. 5 collective weight
	SKR	33			
	SKR	36			
	SKR	33	1.8		COLLECTIVE WT.
	SKR	32			
	SKR	28			
	SKR	37			
	SKR	42			
	SKR	38	4.3		COLLECTIVE WT.
	SKR	45			
	SKR	32			
	SKR	33			
	SKR	35	1.3		COLLECTIVE WT.
	SKR	42			
#2	BRN	124	23.1		MORT
#3	BRN	92	8.8		
	BRN	110	15.1		
	BRN	73	4.4		
	BRN	76	5.6		
	BRN	87	7.9		
	BRN	94	8.3		
	BRN	103	12.7		BRN TOTAL PASS #3 = (9)
	BRN	91	8.1		
	BRN	325	321.3		
	SKR	44	1.2		
	SKR	26	0.2		
	SKR	36	0.5		
	SKR	36	0.6		
	SKR	35	0.4		

Pg Total - Pass #2 SKR = 14 BRN = 1 DRBT

Appendix C

MicroFish 3.0 and Program CAPTURE Output for the October 2007 Electrofishing Data

Stream: Mammoth Creek, Site BH, 10 October 2007
Species: All trout

Removal Pattern: 171 75 40
Total Catch = 286
Population Estimate = 318

Chi Square = 0.478
Pop Est Standard Err = 10.833
Lower Conf Interval = 296.659
Upper Conf Interval = 339.341

Capture Probability = 0.533
Capt Prob Standard Err = 0.039
Lower Conf Interval = 0.456
Upper Conf Interval = 0.609

Stream: Mammoth Creek, Site BH, 10 October 2007
Species: Rainbow trout (all wild - no hatchery trout captured)

Removal Pattern: 30 8 1
Total Catch = 39
Population Estimate = 39

Chi Square = 0.542
Pop Est Standard Err = 0.664
Lower Conf Interval = 39.000
Upper Conf Interval = 40.344

Capture Probability = 0.796
Capt Prob Standard Err = 0.066
Lower Conf Interval = 0.662
Upper Conf Interval = 0.930

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 37.65619 .

Stream: Mammoth Creek, Site BH, 10 October 2007

Species: Brown trout

Removal Pattern: 141 67 39
Total Catch = 247
Population Estimate = 284

Chi Square = 0.470
Pop Est Standard Err = 13.026
Lower Conf Interval = 258.340
Upper Conf Interval = 309.660

Capture Probability = 0.491
Capt Prob Standard Err = 0.044
Lower Conf Interval = 0.404
Upper Conf Interval = 0.578

Stream: Mammoth Creek, Site BL, 11 October 2007
Species: All trout

Removal Pattern: 12 4 0
Total Catch = 16
Population Estimate = 16

Chi Square = 1.373
Pop Est Standard Err = 0.410
Lower Conf Interval = 16.000
Upper Conf Interval = 16.875

Capture Probability = 0.800
Capt Prob Standard Err = 0.103
Lower Conf Interval = 0.581
Upper Conf Interval = 1.019

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 15.12531 .

Stream: Mammoth Creek, Site BL, 11 October 2007
Species: Rainbow trout (all wild - no hatchery trout captured)

Removal Pattern: 3 0 0
Total Catch = 3
Population Estimate = 3 (**Using Program CAPTURE**)

Chi Square = 0.000
Pop Est Standard Err = 0.000
Lower Conf Interval = 3.000
Upper Conf Interval = 4.000

Capture Probability = 0.9998

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 2.00.

Stream: Mammoth Creek, Site BL, 11 October 2007
Species: Brown trout

Removal Pattern: 9 4 0
Total Catch = 13
Population Estimate = 13

Chi Square = 1.821
Pop Est Standard Err = 0.495
Lower Conf Interval = 13.000
Upper Conf Interval = 14.078

Capture Probability = 0.765
Capt Prob Standard Err = 0.124
Lower Conf Interval = 0.495
Upper Conf Interval = 1.034

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 11.92187 .

Stream: Mammoth Creek, Site CH, 13 October 2007
Species: All trout

Removal Pattern: 80 20 8
Total Catch = 108
Population Estimate = 110

Chi Square = 0.740
Pop Est Standard Err = 1.999
Lower Conf Interval = 108.000
Upper Conf Interval = 113.959

Capture Probability = 0.720
Capt Prob Standard Err = 0.047
Lower Conf Interval = 0.627
Upper Conf Interval = 0.813

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 106.0412 .

Stream: Mammoth Creek, Site CH, 13 October 2007
Species: Rainbow trout (all)

Removal Pattern: 10 2 0
Total Catch = 12
Population Estimate = 12

Chi Square = 0.410
Pop Est Standard Err = 0.201
Lower Conf Interval = 12.000
Upper Conf Interval = 12.445

Capture Probability = 0.857
Capt Prob Standard Err = 0.101
Lower Conf Interval = 0.634
Upper Conf Interval = 1.080

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 11.55471 .

Stream: Mammoth Creek, Site CH, 13 October 2007
Species: Rainbow trout (wild)

Removal Pattern: 5 2 0

Total Catch = 7
Population Estimate = 7

Chi Square = 0.822
Pop Est Standard Err = 0.327
Lower Conf Interval = 7.000
Upper Conf Interval = 7.801

Capture Probability = 0.778
Capt Prob Standard Err = 0.164
Lower Conf Interval = 0.377
Upper Conf Interval = 1.178

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 6.199153 .

Stream: Mammoth Creek, Site CH, 13 October 2007
Species: Rainbow trout (hatchery)

Removal Pattern: 5 0 0
Total Catch = 5
Population Estimate = 5 (**Using Program CAPTURE**)

Chi Square = 0.000
Pop Est Standard Err = 0.000
Lower Conf Interval = 5.000
Upper Conf Interval = 6.000

Capture Probability = 0.9999

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 4.00.

Stream: Mammoth Creek, Site CH, 13 October 2007
Species: Brown trout

Removal Pattern: 70 18 8
Total Catch = 96

Population Estimate = 98

Chi Square = 0.962
Pop Est Standard Err = 2.080
Lower Conf Interval = 96.000
Upper Conf Interval = 102.128

Capture Probability = 0.706
Capt Prob Standard Err = 0.051
Lower Conf Interval = 0.605
Upper Conf Interval = 0.807

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 93.87186 .

Stream: Mammoth Creek, Site CL, 11 October 2007
Species: All trout

Removal Pattern: 41 13 7 5
Total Catch = 66
Population Estimate = 68

Chi Square = 2.122
Pop Est Standard Err = 2.093
Lower Conf Interval = 66.000
Upper Conf Interval = 72.177

Capture Probability = 0.569
Capt Prob Standard Err = 0.062
Lower Conf Interval = 0.445
Upper Conf Interval = 0.692

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 63.82254 .

Stream: Mammoth Creek, Site CL, 11 October 2007
Species: Rainbow trout (all)

Removal Pattern: 29 2 1 0
Total Catch = 32
Population Estimate = 32

Chi Square = 1.675
Pop Est Standard Err = 0.070
Lower Conf Interval = 32.000
Upper Conf Interval = 32.144

Capture Probability = 0.889
Capt Prob Standard Err = 0.053
Lower Conf Interval = 0.781
Upper Conf Interval = 0.997

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 31.85627 .

Stream: Mammoth Creek, Site CL, 11 October 2007
Species: Rainbow trout (wild)

Removal Pattern: 2 2 1 0
Total Catch = 5
Population Estimate = 5

Chi Square = 1.315
Pop Est Standard Err = 0.619
Lower Conf Interval = 5.000
Upper Conf Interval = 6.717

Capture Probability = 0.556
Capt Prob Standard Err = 0.232
Lower Conf Interval = -.088
Upper Conf Interval = 1.200

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 3.282795 .

Stream: Mammoth Creek, Site CL, 11 October 2007
Species: Rainbow trout (hatchery)

Removal Pattern: 25 0 0 0
Total Catch = 25
Population Estimate = 25 (**Using Program CAPTURE**)

Chi Square = 0.000
Pop Est Standard Err = 0.000
Lower Conf Interval = 25.000
Upper Conf Interval = 26.000

Capture Probability = 0.99998

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 24.00.

Stream: Mammoth Creek, Site CL, 11 October 2007
Species: Brown trout

Removal Pattern: 14 11 6 5
Total Catch = 36
Population Estimate = 44

Chi Square = 0.347
Pop Est Standard Err = 7.383
Lower Conf Interval = 36.000
Upper Conf Interval = 58.891

Capture Probability = 0.340
Capt Prob Standard Err = 0.106
Lower Conf Interval = 0.125
Upper Conf Interval = 0.554

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 29.10858 .

Stream: Mammoth Creek, Site DH, 14 October 2007
Species: All trout

Removal Pattern: 154 49 14
Total Catch = 217
Population Estimate = 223

Chi Square = 0.085

Pop Est Standard Err = 3.364
Lower Conf Interval = 217.000
Upper Conf Interval = 229.626

Capture Probability = 0.696
Capt Prob Standard Err = 0.034
Lower Conf Interval = 0.628
Upper Conf Interval = 0.763

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 216.3736 .

Stream: Mammoth Creek, Site DH, 14 October 2007
Species: Rainbow trout (all)

Removal Pattern: 19 7 2
Total Catch = 28
Population Estimate = 28

Chi Square = 0.487
Pop Est Standard Err = 1.023
Lower Conf Interval = 28.000
Upper Conf Interval = 30.100

Capture Probability = 0.718
Capt Prob Standard Err = 0.093
Lower Conf Interval = 0.527
Upper Conf Interval = 0.909

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 25.9003 .

Stream: Mammoth Creek, Site DH, 14 October 2007
Species: Rainbow trout (wild)

Removal Pattern: 17 7 2
Total Catch = 26
Population Estimate = 26

Chi Square = 0.651
Pop Est Standard Err = 1.094

Lower Conf Interval = 26.000
Upper Conf Interval = 28.255

Capture Probability = 0.703
Capt Prob Standard Err = 0.099
Lower Conf Interval = 0.498
Upper Conf Interval = 0.908

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 23.74535 .

Stream: Mammoth Creek, Site DH, 14 October 2007
Species: Rainbow trout (hatchery)

Removal Pattern: 2 0 0
Total Catch = 2
Population Estimate = 2 (**Using Program CAPTURE**)

Chi Square = 0.000
Pop Est Standard Err = 0.000
Lower Conf Interval = 2.000
Upper Conf Interval = 3.000

Capture Probability = 0.9998

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 1.00.

Stream: Mammoth Creek, Site DH, 14 October 2007
Species: Brown trout

Removal Pattern: 135 42 12
Total Catch = 189
Population Estimate = 194

Chi Square = 0.048
Pop Est Standard Err = 3.045
Lower Conf Interval = 189.000

Upper Conf Interval = 199.998

Capture Probability = 0.700
Capt Prob Standard Err = 0.037
Lower Conf Interval = 0.628
Upper Conf Interval = 0.772

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 188.0022 .

Stream: Mammoth Creek, Site DL, 13 October 2007
Species: All trout

Removal Pattern: 77 22 17
Total Catch = 116
Population Estimate = 124

Chi Square = 4.156
Pop Est Standard Err = 4.783
Lower Conf Interval = 116.000
Upper Conf Interval = 133.471

Capture Probability = 0.592
Capt Prob Standard Err = 0.056
Lower Conf Interval = 0.481
Upper Conf Interval = 0.703

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 114.5287 .

Stream: Mammoth Creek, Site DL, 13 October 2007
Species: Rainbow trout (all)

Removal Pattern: 20 5 1
Total Catch = 26
Population Estimate = 26

Chi Square = 0.119
Pop Est Standard Err = 0.580
Lower Conf Interval = 26.000
Upper Conf Interval = 27.196

Capture Probability = 0.788
Capt Prob Standard Err = 0.083
Lower Conf Interval = 0.617
Upper Conf Interval = 0.959

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 24.80437 .

Stream: Mammoth Creek, Site DL, 13 October 2007
Species: Rainbow trout (wild)

Removal Pattern: 18 5 1
Total Catch = 24
Population Estimate = 24

Chi Square = 0.178
Pop Est Standard Err = 0.624
Lower Conf Interval = 24.000
Upper Conf Interval = 25.291

Capture Probability = 0.774
Capt Prob Standard Err = 0.089
Lower Conf Interval = 0.590
Upper Conf Interval = 0.959

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 22.70946 .

Stream: Mammoth Creek, Site DL, 13 October 2007
Species: Rainbow trout (hatchery)

Removal Pattern: 2 0 0
Total Catch = 2
Population Estimate = 2 (**Using Program CAPTURE**)

Chi Square = 0.000
Pop Est Standard Err = 0.000
Lower Conf Interval = 2.000
Upper Conf Interval = 3.000

Capture Probability = 0.9998

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 1.00.

Stream: Mammoth Creek, Site DL, 13 October 2007
Species: Brown trout

Removal Pattern: 57 17 16
Total Catch = 90
Population Estimate = 99

Chi Square = 4.548
Pop Est Standard Err = 5.717
Lower Conf Interval = 90.000
Upper Conf Interval = 110.343

Capture Probability = 0.542
Capt Prob Standard Err = 0.068
Lower Conf Interval = 0.406
Upper Conf Interval = 0.678

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 87.65675 .

Stream: Mammoth Creek, Site EH, 12 October 2007
Species: All trout

Removal Pattern: 153 53 27
Total Catch = 233
Population Estimate = 247

Chi Square = 1.330
Pop Est Standard Err = 6.060
Lower Conf Interval = 235.061
Upper Conf Interval = 258.939

Capture Probability = 0.610

Capt Prob Standard Err = 0.038
Lower Conf Interval = 0.534
Upper Conf Interval = 0.686

Stream: Mammoth Creek, Site EH, 12 October 2007
Species: Rainbow trout (all)

Removal Pattern: 12 2 1
Total Catch = 15
Population Estimate = 15

Chi Square = 0.531
Pop Est Standard Err = 0.435
Lower Conf Interval = 15.000
Upper Conf Interval = 15.933

Capture Probability = 0.789
Capt Prob Standard Err = 0.109
Lower Conf Interval = 0.556
Upper Conf Interval = 1.023

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 14.06696 .

Stream: Mammoth Creek, Site EH, 12 October 2007
Species: Rainbow trout (wild)

Removal Pattern: 9 2 1
Total Catch = 12
Population Estimate = 12

Chi Square = 0.371
Pop Est Standard Err = 0.532
Lower Conf Interval = 12.000
Upper Conf Interval = 13.175

Capture Probability = 0.750
Capt Prob Standard Err = 0.133

Lower Conf Interval = 0.456
Upper Conf Interval = 1.044

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 10.82469 .

Stream: Mammoth Creek, Site EH, 12 October 2007
Species: Rainbow trout (hatchery)

Removal Pattern: 3 0 0
Total Catch = 3
Population Estimate = 3 (**Using Program CAPTURE**)

Chi Square = 0.000
Pop Est Standard Err = 0.000
Lower Conf Interval = 3.000
Upper Conf Interval = 4.000

Capture Probability = 0.9998

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 2.00.

Stream: Mammoth Creek, Site EH, 12 October 2007
Species: Brown trout

Removal Pattern: 141 51 26
Total Catch = 218
Population Estimate = 233

Chi Square = 0.985
Pop Est Standard Err = 6.411
Lower Conf Interval = 220.370
Upper Conf Interval = 245.630

Capture Probability = 0.596
Capt Prob Standard Err = 0.041
Lower Conf Interval = 0.516

Upper Conf Interval = 0.675

Stream: Mammoth Creek, Site EL, 12 October 2007
Species: All trout

Removal Pattern: 154 27 9
Total Catch = 190
Population Estimate = 191

Chi Square = 1.737
Pop Est Standard Err = 1.439
Lower Conf Interval = 190.000
Upper Conf Interval = 193.835

Capture Probability = 0.798
Capt Prob Standard Err = 0.030
Lower Conf Interval = 0.740
Upper Conf Interval = 0.857

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 188.165 .

Stream: Mammoth Creek, Site EL, 12 October 2007
Species: Rainbow trout (all)

Removal Pattern: 16 2 0
Total Catch = 18
Population Estimate = 18

Chi Square = 0.254
Pop Est Standard Err = 0.139
Lower Conf Interval = 18.000
Upper Conf Interval = 18.294

Capture Probability = 0.900
Capt Prob Standard Err = 0.070
Lower Conf Interval = 0.753
Upper Conf Interval = 1.047

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 17.70582 .

Stream: Mammoth Creek, Site EL, 12 October 2007
Species: Rainbow trout (wild)

Removal Pattern: 9 1 0
Total Catch = 10
Population Estimate = 10

Chi Square = 0.112
Pop Est Standard Err = 0.090
Lower Conf Interval = 10.000
Upper Conf Interval = 10.202

Capture Probability = 0.909
Capt Prob Standard Err = 0.090
Lower Conf Interval = 0.707
Upper Conf Interval = 1.112

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 9.797528 .

Stream: Mammoth Creek, Site EL, 12 October 2007
Species: Rainbow trout (hatchery)

Removal Pattern: 7 1 0
Total Catch = 8
Population Estimate = 8

Chi Square = 0.145
Pop Est Standard Err = 0.110
Lower Conf Interval = 8.000
Upper Conf Interval = 8.260

Capture Probability = 0.889
Capt Prob Standard Err = 0.110
Lower Conf Interval = 0.629
Upper Conf Interval = 1.148

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 7.74039 .

Stream: Mammoth Creek, Site EL, 12 October 2007
Species: Brown trout

Removal Pattern: 138 25 9
Total Catch = 172
Population Estimate = 173

Chi Square = 1.926
Pop Est Standard Err = 1.483
Lower Conf Interval = 172.000
Upper Conf Interval = 175.922

Capture Probability = 0.789
Capt Prob Standard Err = 0.032
Lower Conf Interval = 0.726
Upper Conf Interval = 0.852

The population estimate lower confidence interval was set equal to the total catch. Actual calculated lower CI was 170.078 .

Stream: Mammoth Creek, Site EL, 12 October 2007
Species: Owens sucker

Removal Pattern: 14 23 5
Total Catch = 42
Population Estimate = 61

Chi Square = 10.512
Pop Est Standard Err = 17.532
Lower Conf Interval = 42.000
Upper Conf Interval = 96.063

Capture Probability = 0.318
Capt Prob Standard Err = 0.134
Lower Conf Interval = 0.050
Upper Conf Interval = 0.586

The population estimate lower confidence interval was set equal

to the total catch. Actual calculated lower CI was 25.93681 .

Stream: Mammoth Creek, Site EL, 12 October 2007
Species: Tui chub (hybrid)

Removal Pattern: 0 1 0
Total Catch = 1
Population Estimate = 1 (**Assumed – No model works with this removal pattern**)

Lower Conf Interval = 1.000 (**Assumed – No model works with this removal pattern**)
Upper Conf Interval = 2.000 (**Assumed – No model works with this removal pattern**)

Capture Probability = unknown (**No model works with this removal pattern**)
