



**Red Cap and Camp Creek Fisheries Monitoring Project  
Final Report 2009**

**A Cooperative Project Between  
Mid Klamath Watershed Council  
USFS Fisheries, Orleans Ranger District  
Karuk Tribe Fisheries Department  
US Bureau of Reclamation**

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## **Background**

The 2009 implementation of the Red Cap and Camp Creek Fisheries Monitoring Project began 26 March, 2009 and commenced 1 July, 2009 for a total of 26 weeks of monitoring between the two sites. A 2009 Julian Week calendar with corresponding dates is provided in Appendix A. This is the third consecutive year of collaborative Downstream Migrant Screw Trap (DSMT) monitoring at these two locations, although two additional years of trapping were completed by Six Rivers National Forest on Red Cap Creek during 2002 and 2003. The goal of this monitoring project was to provide critical data on salmonid populations in two key tributaries to the Klamath River. Specific objectives for this project included intercepting salmonid and other fish species for a given period of time (mid-March to late July); determining emigration abundance and timing for juvenile salmonids; estimating rotary trap efficiencies for Chinook salmon and producing production estimates; measuring fork length and weight and determining life stage from a sub-sample collected; collecting scales, tissues or individual fish, if required, for genetic analysis and/or monitoring infectious diseases; assessing fish community structure; monitoring the status of Tribal Trust, State or Federally listed species; assessing and evaluating restoration efforts and the overall health of these watersheds; and providing interactive watershed curriculum to local elementary school students.

## **Materials and Methods**

### **Trap Design and Operation**

A rotary screw fish trap manufactured by E.G. Solutions, Inc. was used on both Red Cap and Camp Creek. The traps are powered by water entering a five foot diameter perforated cone, impinging upon an internal auger screw assembly causing the cone to turn. Fish entering the cone are forced into and retained in a live box at the rear of the trap. The cone was raised out of the water during extreme high flows, daily trap maintenance, or when the trap was not being monitored, to prevent the capture of fish. Traps at both sites were anchored to large alders on opposing banks by adjustable braided steel cables and winches. Additional rope was used off the back of the traps as needed for positioning. Both traps were situated at the heads of pools and were repositioned throughout the season as flows fluctuated to best capture the thalweg and maintain proper cone speeds. Monitoring and maintenance of the traps included daily monitoring of cone rotations, daily determination of flow into the cone using a Swiffer velocity meter, cleaning the cone and live box, and a general inspection of trap condition.

### **Trap Site Locations**

The Red Cap Creek trap site was located approximately 2.2 km upstream of the mouth of Red Cap Creek on National Forest land. Figure 1 provides a location map for the 2009 Red Cap Creek trapping site. The Camp Creek trap site was located adjacent to private property, approximately 1.03 km from the mouth of Camp Creek. Access to the trap site is through private property and granted by written agreement with Tom Bouse and a verbal agreement with Laurel Minjiras. Figure 2 provides a location map for the 2009 Camp Creek trapping site.

## Red Cap Creek Downstream Migrant Trap Location Map

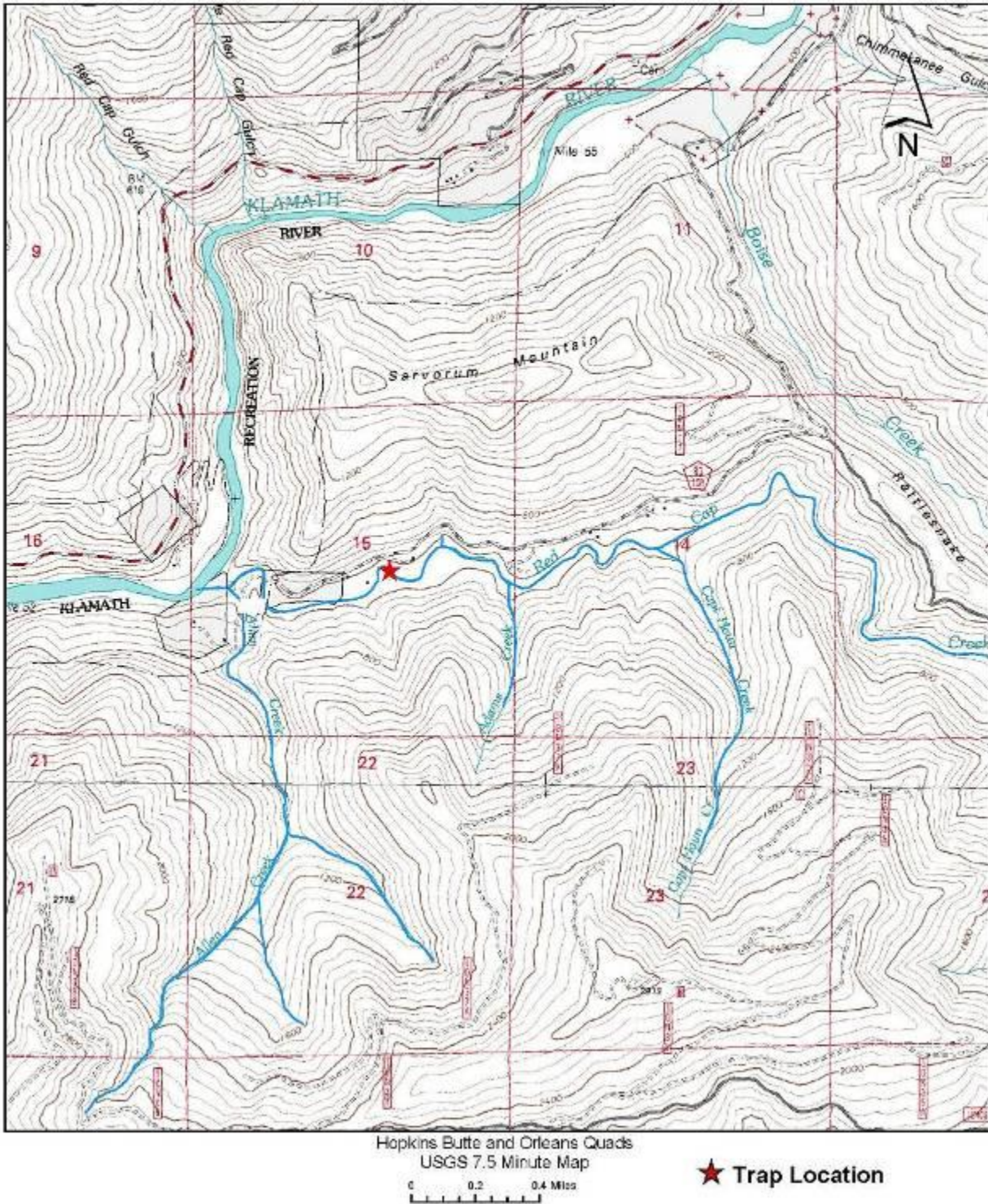


Figure 1. 2009 Red Cap Creek downstream migrant trap location map

## Camp Creek Downstream Migrant Trap Location Map

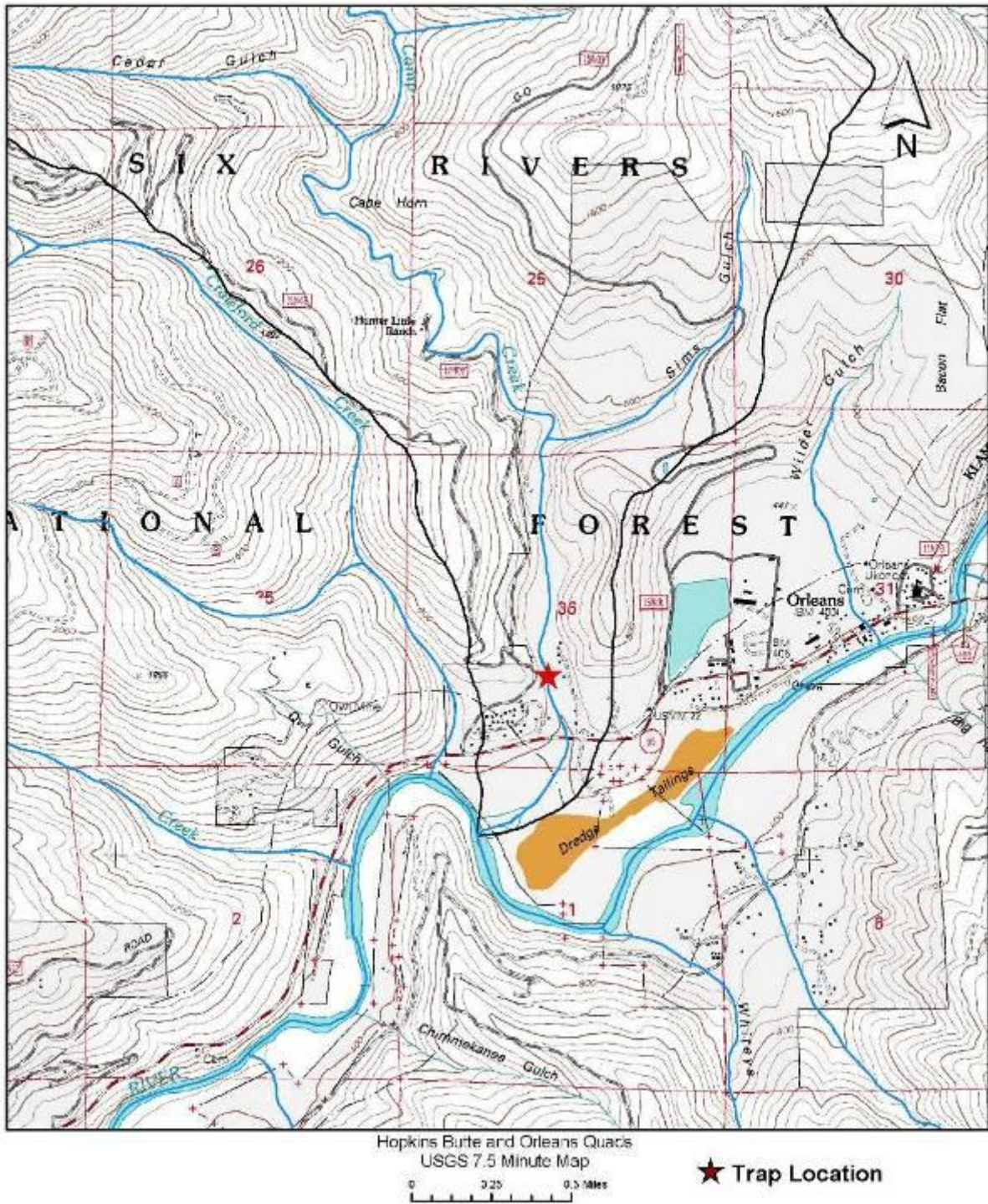


Figure 2. 2009 Camp Creek downstream migrant trap location map

## **Biological Sampling**

Fish sampling included the daily collection of a 30 fish bio-sample of Chinook, steelhead, coho and all other fish and non-fish species.

Bio-samples included a determination of developmental stage, fork length (mm) and weight (grams). Developmental stages were broken up as follows:

- Salmonids were determined to be sac fry, fry, parr, silvery parr, or smolts.
- Lamprey were determined to be either ammocoetes or adults, and all other non-game species were determined to be either juveniles or adults.

Bio-sampled fish were measured to fork length individually, and similarly sized individuals (within 5mm) were weighed together in groups of five, and then divided out to an individual weight for the greatest efficiency. In order to ensure a complete bio-sample of thirty individuals per species, all bio-sampled salmonids and non-game species were processed and recorded prior to tallying the remaining fish.

Fish tallies consisted of counting and measuring all remaining fish and non-fish species that were not in the bio-sample. All fish species, excluding lamprey, were measured to fork length, while all non-fish species were measured from nose to vent. Because of the difficulty in quickly identifying the vent on juvenile lamprey, a total length was determined for each individual. The size classifications of each salmonid were recorded in increments of 10mm; from  $\geq 30$ mm up to 120mm for Chinook and coho, and  $\leq 30$ mm up to 200mm for steelhead.

## **Mark and Recapture Sampling**

Mark and recapture trap efficiency testing occurred every Thursday, the first day of each Julian Week. Marked fish remained detectable up to four days following marking, and releasing marked fish at the beginning of each Julian Week avoided overlap of weekly recaptures. With the exception of the first week of trap operation, Julian Week 13, mark and recapture sampling occurred every week throughout the sampling period on Red Cap Creek. Mark and recapture began Julian Week 15 on Camp Creek. A minimum of 50 fish were used for each marked sample. Only Chinook fry were marked.

When it was determined that enough fry were available in the live well for both a complete bio-sample and a marking sample, fish to be marked were tallied by size on the data sheet and relocated by bucket approximately 200 yards upstream of the trap location for marking. Fish were marked by placing them into a solution of 0.4g Bismark Brown dye per five gallons of water. Fish remained in the dye solution for 20 minutes, and then were transferred to a screened recovery bucket in the stream where they remained for a minimum of two hours before being released. As marked fish were recaptured throughout the week they were either recorded within the daily bio-sample or tallied by size, but recaptures were not added to the daily totals in order to avoid double counting.

## **Flow Monitoring**

Weekly streamflow monitoring occurred at both trap sites from Julian Week 14 to Julian Week 20. Due to equipment failure, flow monitoring was abandoned after Julian Week 20. Stream discharge was calculated using a hand-held Swiffer velocity meter and a velocity-area approach to determining discharge at each trap location.

Favorable sample locations (i.e. unobstructed flow, consistent channel depth, ease of access) were located near each trap site and used consistently. Stream flow entering the trap cones was measured daily, but the effort was also abandoned after Julian Week 20.

### Temperature Monitoring

Technicians recorded daily temperatures for ambient air, creek, and water inside the live box using a hand held thermometer. All temperatures were collected upon arriving at the trap site, generally around eight a.m. at the Camp Creek site and 11 a.m. at the Red Cap Creek site. Minimum and maximum weekly temperatures were determined and recorded for each site’s database.

### Trapping Mortalities

Trapping mortalities were recorded daily at each trap site. Technicians determined whether a mortality was new or old, whether it had died while in the trap or before entering the trap. Eye color (cloudy or clear) and stage of decomposition were used to make the determination. New mortalities were added to the daily catch total and old mortalities were not. If new mortalities exceeded 5% of the total daily catch, trap operation would cease until the problem could be solved. Usually, this would be attributable to high flows or excessive debris build-up in the live box. Mortalities never reached 5% for either trap during the 2009 season. There were no coho mortalities at either trap for the 2009 season. Figure 3 charts total trapping mortalities for the 2009 trapping season.

	<b>Chinook</b>	<b>Coho</b>	<b>Steelhead</b>
<b>Red Cap</b>	<b>109</b>	<b>0</b>	<b>22</b>
<b>Camp</b>	<b>234</b>	<b>0</b>	<b>8</b>

**Figure 3. Trapping mortalities**

## **Red Cap Creek Rotary Screw Trap Summary**

### Introduction

Red Cap Creek drains a Key Watershed, as defined by the Aquatic Conservation Strategy under the Northwest Forest Plan, and is a fifth order tributary of the Klamath River, located in northeastern Humboldt County, California. The mouth of Red Cap Creek is located at Lat 41 15’ 32” N, Lon 123 36’ 16” W, and T10N R5E S15 on the USGS Orleans 7.5” Quadrangle. The watershed runs predominately through Six Rivers National Forest land, although there are a number of private parcels within the first few kilometers above the mouth, and the watershed has several forest roads running through it. Historically, the creek was heavily mined, and still shows evidence of mining activity. This watershed drains the western Trinity Alps Wilderness Area, and ranges in elevation from 98 meters at the mouth to 1,365 meters at the headwaters. (USDA, 1995)

Red Cap Creek has experienced some level of Chinook spawning survey effort yearly since 1984, with consistent surveys of spawning activity in the four established reaches since 1994. Habitat enhancement work was performed on Red Cap Creek from 1975 to present, and included the placement of in-stream structures,

gravel recruitment, and riparian planting. All enhancement projects were aimed at restoring pre-mining fish passage and spawning conditions to Red Cap Creek, which has been heavily affected by gold mining activity, including extensive hydraulic placer mining. Previous downstream migrant trapping efforts occurred on Red Cap Creek in 2002, 2003, 2007 and 2008. (Cyr, 2008) Additionally, from 1994 through the present, fisheries crews from the Mid Klamath Watershed Council (in coordination with the Karuk Tribe, the California Department of Fish and Game, and the US Forest Service) has performed manual creek mouth enhancement, as needed, in all anadromous Mid Klamath tributaries (including Red Cap Creek) to facilitate both juvenile and adult fish passage and increase cold water refugia for migrating salmonids in the mainstem Klamath River during the low flows of late summer and early fall.

## Results

The Red Cap Creek rotary trap began sampling seven days per week on March 24, 2009. With the exception of two high flow days in early May when the cone was pulled, daily sampling continued until July 1, 2009, when the trap was removed due to low flows. The trap fished for a total of 94 days. A total of 4,102 steelhead, 62 coho, and 27,380 Chinook were captured. Figure 4 shows the total catch for all species on Red Cap Creek.

<b>Species</b>	<b>Total</b>
Coho <i>Onchorhynchus kisutch</i>	62
Chinook <i>Onchorhynchus tshawytscha</i>	27,380
Steelhead <i>Onchorhynchus mykiss</i>	4,102
Lamprey <i>Entosphenus, Lampetra spp.</i>	146
Speckled dace <i>Rhinichthys osculus</i>	620
Klamath small scale sucker <i>Catostomus rimiculus</i>	2
Pacific giant salamander <i>Dicamptodon tenebrosus</i>	23
Sculpin <i>Cottus spp.</i>	98
Sharp-tailed snake <i>Contia tenuis</i>	3
Western toad <i>Bufo boreas</i>	7
Ring-necked snake <i>Diadophis puntatus</i>	1
Northern alligator lizard <i>Elgaria coerulea</i>	1
Tailed frog <i>Ascaphus truei</i>	4
Tree frog <i>Pseudacris regilla</i>	5

**Figure 4. Red Cap totals - all species**

## Water Temperature

Figure 5 shows weekly minimum and maximum stream temperatures for the Red Cap DSMT site during the 2009 sampling period.

Julian Week	H <sub>2</sub> O Temp (°F)	
	Min	Max
13	41.4	46.5
14	41.4	46.4
15	43.0	49.4
16	45.4	52.3
17	43.0	50.0
18	43.0	50.0
19	43.0	47.0
20	54.0	55.0
21	51.0	56.8
22	56.3	60.4
23	55.3	61.4
24	57.5	61.1
25	57.5	61.9
26	57.2	63.8

**Figure 5. Red Cap Creek Minimum and maximum weekly temperatures**

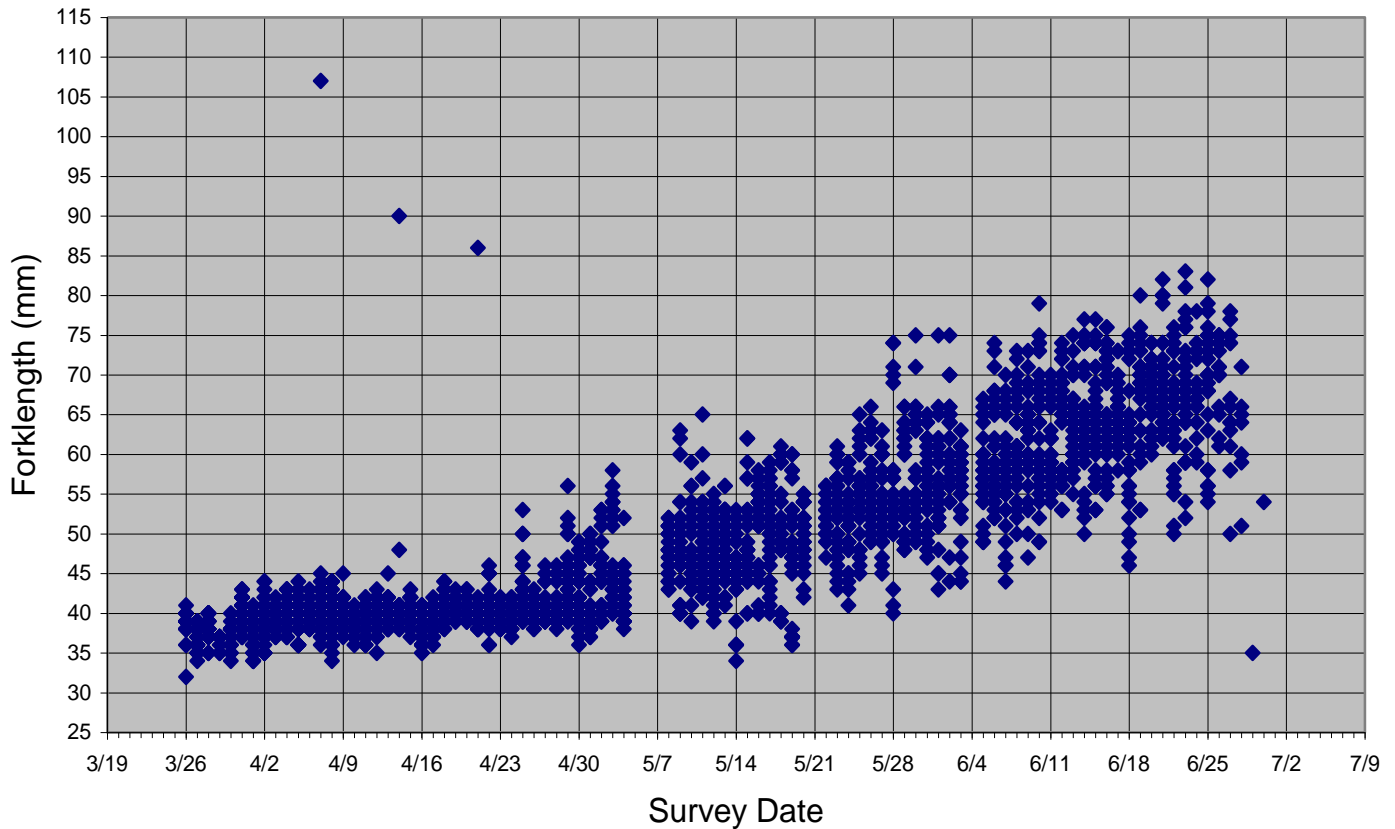
## Salmonids

### Chinook Salmon

A total of 27,380 Chinook were captured during the trapping season. Previous year totals were 28,392 for 2008, 542 for 2003, and 11,231 for 2002. The average catch per unit effort (CPUE) for the 2009 season was 336 Chinook per day. The weekly peak (week when the greatest number of Chinook were caught in the trap) occurred during Julian Week 16. A total of 7,199 Chinook were captured, of which 7,158 were YOY and one was age one. The CPUE for that week was 1,028.4 Chinook per day. The highest number of Chinook captured in one day was 1,889 on April 21, and the lowest number captured was 0 on July 1, the final day of trapping.

Between Julian Weeks 14 and 26, 12 mark and recapture tests were completed to determine trap efficiencies. A total of 679 Chinook were marked and released, and 132 were recaptured during this sampling period. Recapture results varied between 2% in Julian Week 14 and 38% in Julian Weeks 18 and 21, yielding an average of 18% for the season. Using the Carlson population estimate template (Carlson et al. 1998), the expanded population of Chinook estimated to have emigrated between April 2 and July 1 is 100,595. Figure 6 gives Chinook fork lengths over time for the 2009 trapping period.

**2009 Red Cap Creek DSMT  
Chinook Biosample Forklengths**

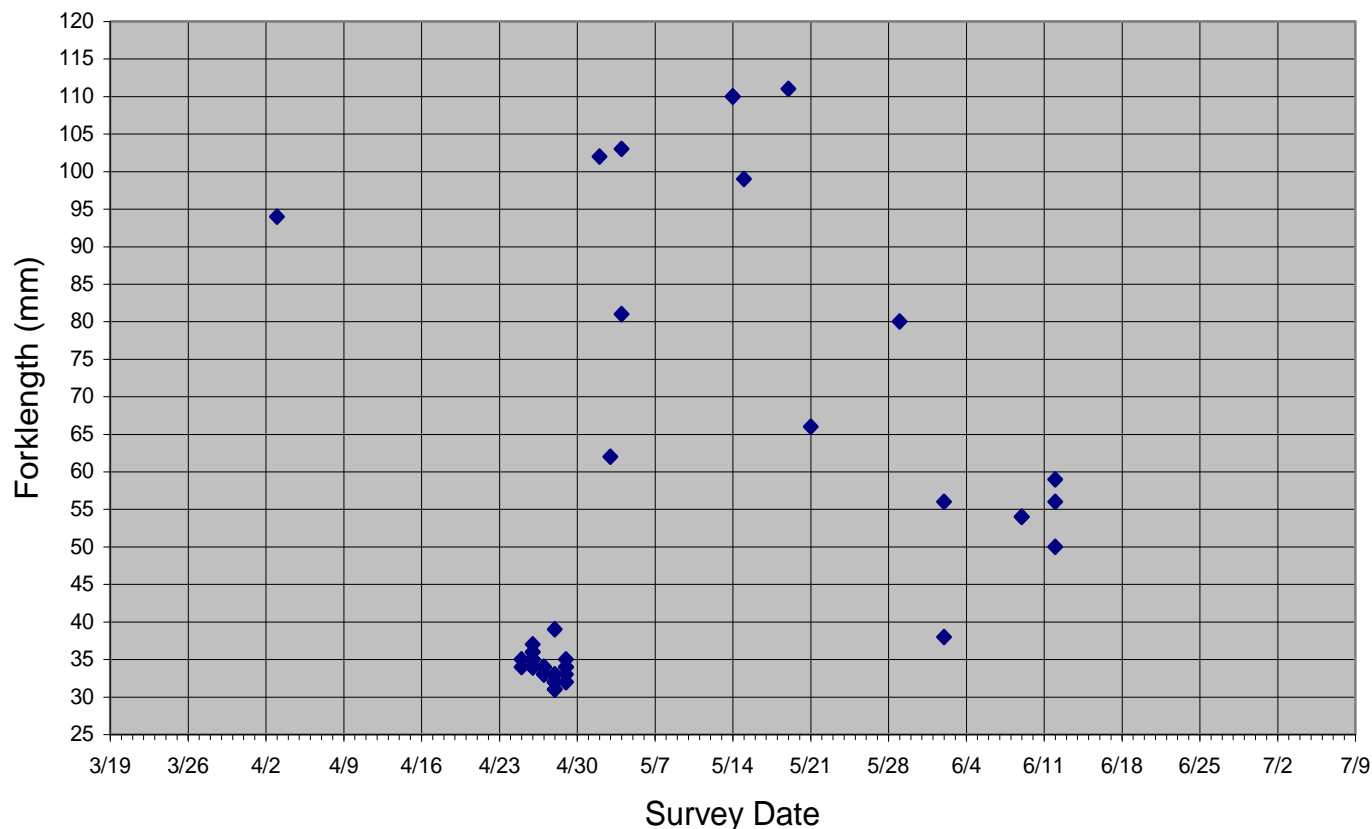


**Figure 6. Chinook fork lengths over 2009 sampling period**

**Coho Salmon**

A total of 62 coho were captured during the trapping period, 52 of which were YOY and 10 were one-year-olds (1+), ranging between 51mm and 130mm. The mean CPUE for the period was 0.7 coho per day. There were no coho mortalities during the trapping period. Julian Week 17 saw the peak of coho YOY migration with 43 of the season's 52 YOY captured. No YOY coho entered the trap prior to Julian Week 17, and eight of the ten one-year-old coho were captured between Julian Week 18 and 20. Figure 7 gives coho fork lengths over time for the 2009 trapping period.

**2009 Red Cap Creek DSMT  
Coho Biosample Forklengths**

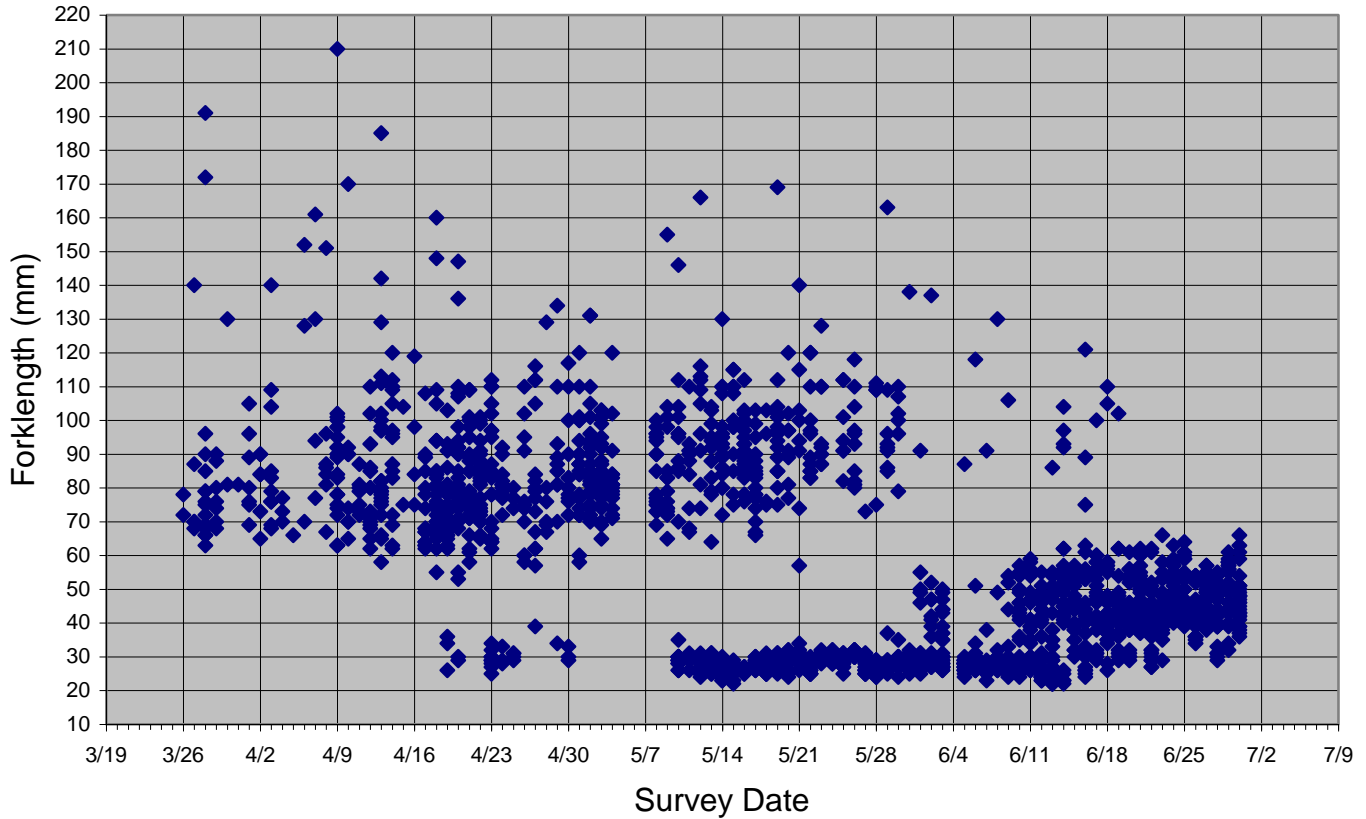


**Figure 7. Coho fork lengths over 2009 sampling period**

**Steelhead**

A total of 4,089 steelhead were captured during the trapping period. The CPUE for the period was 42.9 steelhead per day. The weekly peak occurred during Julian Week 21 when total of 766 steelhead were captured, of which 686 were YOY, 70 were age 1, and 10 were YOY trapping mortalities. The CPUE for that week was 109.4 steelhead per day. The highest number of steelhead captured in one day was 183 on May 23rd, and the lowest number captured was zero on July 1<sup>st</sup>. Figure 8 gives steelhead fork lengths over time for the 2009 trapping period.

**2009 Red Cap Creek DSMT  
Steelhead Biosample Forklengths**



**Figure 8. Steelhead fork lengths over 2009 trapping period**

**Other Species**

**Lamprey**

An effort was made this year to identify lamprey juveniles to genus, as there are believed to be populations of both Pacific lamprey (*Entosphenus tridentata*) and river lamprey (*Lampetra ayresi*) occupying both creeks. Surveyors used a preliminary identification key of lamprey species in the Klamath River developed by Stewart Reid, (Reid, 2005).

The total number of lamprey juveniles sampled in Red Cap Creek was 146. Of these, 121 were identified as Pacific lamprey (*Entosphenus tridentata*) and 25 were identified as river lamprey (*Lampetra ayresi*). Until a final, peer reviewed key is published, our findings should not be cited.

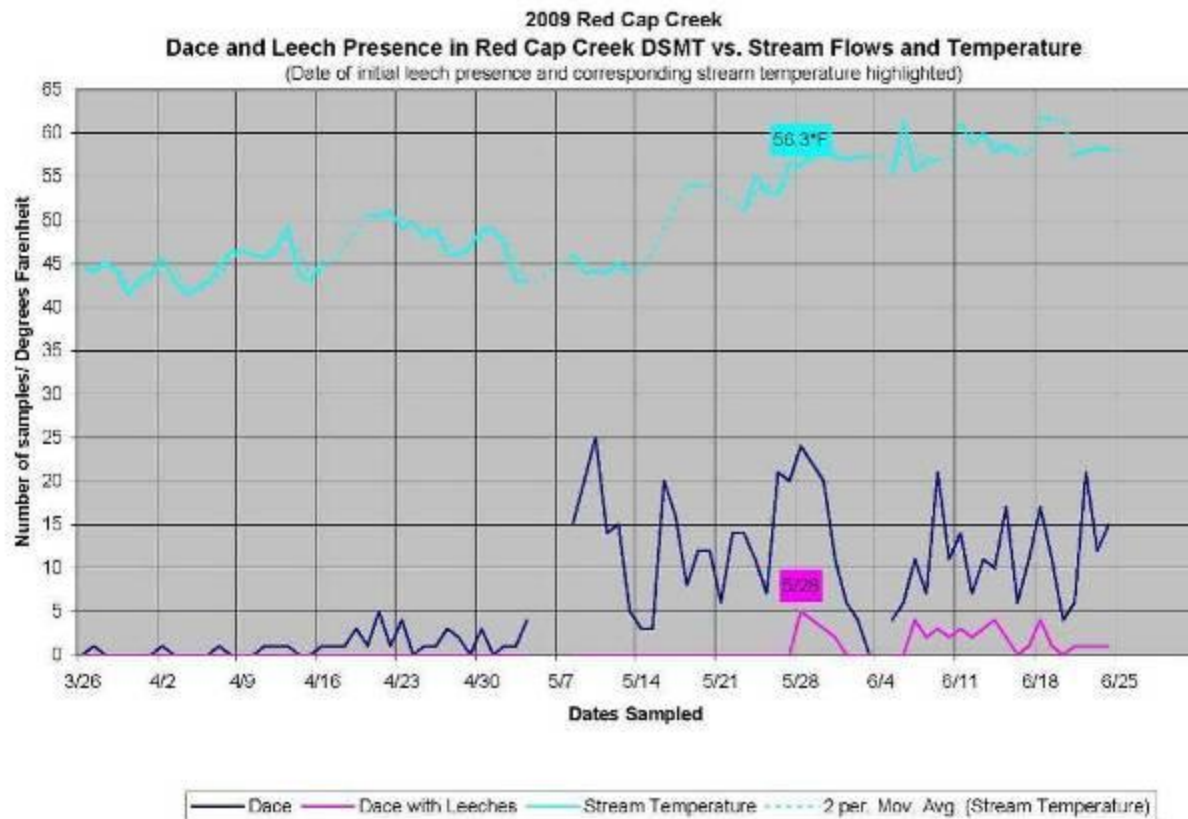
**Speckled dace**

Special attention was given to speckled dace this year due to a high frequency of parasitic leeches present. Leeches were found on dace in both Camp and Red Cap Creeks. A preliminary identification of this taxa showed that they are probably *Piscicola salmonitica*, a parasite common on California salmonids (Foott, 2009). In these two tributaries, gill leeches were found only on speckled dace and no other fish species. On Red

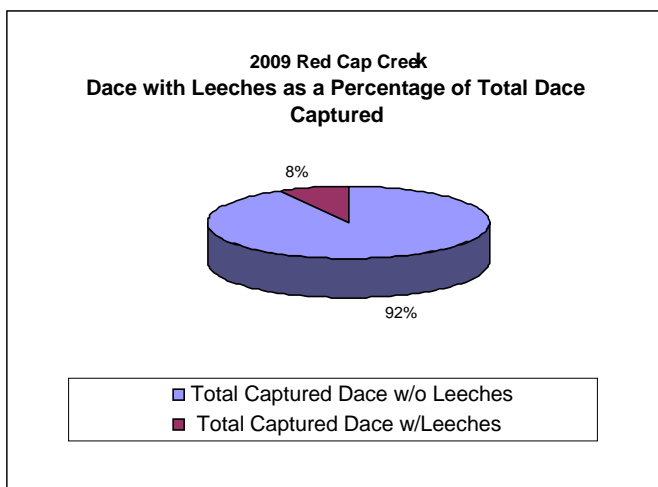
Cap Creek, 609 speckled dace were biosampled, 49 of which had leeches attached on or near the gills. The first appearance of leeches occurred on May 28, Julian Week 22. The minimum and maximum water temperatures for that week were 56.3 degrees and 60.4 degrees Fahrenheit. The percentage of total dace affected was similar for both creeks (Camp Creek: 7%, Red Cap Creek: 8%). Figure 9 is a photo of a typical occurrence of a parasitic leech attached to its host. Figure 10 shows leech presence vs. streamflow and temperature. Figure 11 charts the presence of dace with leeches as a percentage of the total dace captured for the 2009 trapping season.



**Figure 9. Speckled dace with gill leeches found on Red Cap Creek during the 2009 season**



**Figure 10. Speckled dace presence vs. streamflow and temperature**



**Figure 11. Dace with leeches total percentage, Red Cap Creek**

## Camp Creek Rotary Screw Trap Summary

### Introduction

Camp Creek is a Key Watershed, as defined by the Aquatic Conservation Strategy (ACS) under the Northwest Forest Plan, and fourth order tributary of the Klamath River, located in northeastern Humboldt County, California. The mouth of Camp Creek is located at 41 17'30" north latitude and 123 33'44" west longitude, T10N, R5E, S1 on the USGS Orleans 7.5' quadrangle. Appendix C provides a watershed map for Camp Creek. The watershed drains the Klamath Mountains and ranges in elevation between 975 meters at its headwaters and 122 meters at its mouth. Camp Creek runs predominately through federal land within the Six Rivers National Forest, and has been managed primarily for timber, with limited small-scale mining continuing in the upper watershed. The first few kilometers above the mouth are privately owned and densely populated. State Highway Route 96 crosses Camp Creek .6 kilometers upstream of the mouth. Habitat enhancement work was performed on Camp Creek from 1979 to 1994, with the construction of several in-stream structures including boulder weirs, log and boulder deflectors, and secured large woody debris (Cyr, 2008). In addition, due to heavy mining related aggradation at the mouth of Camp Creek, handwork has been performed seasonally since 1994 to improve both juvenile and adult fish passage into and out of Camp Creek. This work is done in a collaborative effort between the California Department of Fish and Game, the US Forest Service, the Karuk Tribe, and the Mid Klamath Watershed Council.

### Results

The Camp Creek rotary trap began sampling seven days per week on April 8, 2009. With the exception of two high flow days in early May when the cone was pulled, daily sampling continued through July 1, 2009, when the trap was pulled due to low flows. The trap was fished for a total of 83 days. A total of 1,742 steelhead, 28 coho and 19,838 Chinook were trapped. Figure 12 shows the total catch for all species.

Species	Total
Coho <i>Onchorhynchus kisutch</i>	28
Chinook <i>Onchorhynchus tshawytscha</i>	19,838
Steelhead <i>Onchorhynchus mykiss</i>	1,742
Lamprey <i>Lampetra spp</i>	71
Speckled dace <i>Rhinichthys osculus</i>	1,066
Klamath small scale sucker <i>Catostomus rimiculus</i>	2
Pacific giant salamander <i>Dicamptodon tenebrosus</i>	4
Sculpin <i>Cottus spp.</i>	29
Western toad <i>Bufo boreas</i>	22
Foothills yellow-legged frog <i>Rana boylei</i>	5
Tree frog <i>Pseudacris regilla</i>	101

**Figure 12. Camp Creek totals, all species**

## Water Temperature

Figure 13 shows the weekly minimum and maximum stream temperatures for the Camp Creek trap site during the 2009 trapping season.

Julian Week	H <sub>2</sub> O Temp (*F)	
	Min	Max
15	41.3	46.9
16	43.6	49.9
17	45.0	54.0
18	43.0	49.0
19	42.0	44.0
20	45.0	54.0
21	46.0	53.0
22	53.7	55.0
23	51.8	58.4
24	52.9	55.0
25	56.5	52.7
26	58.5	55.8

**Figure 13. Camp Creek minimum and maximum weekly stream temperatures**

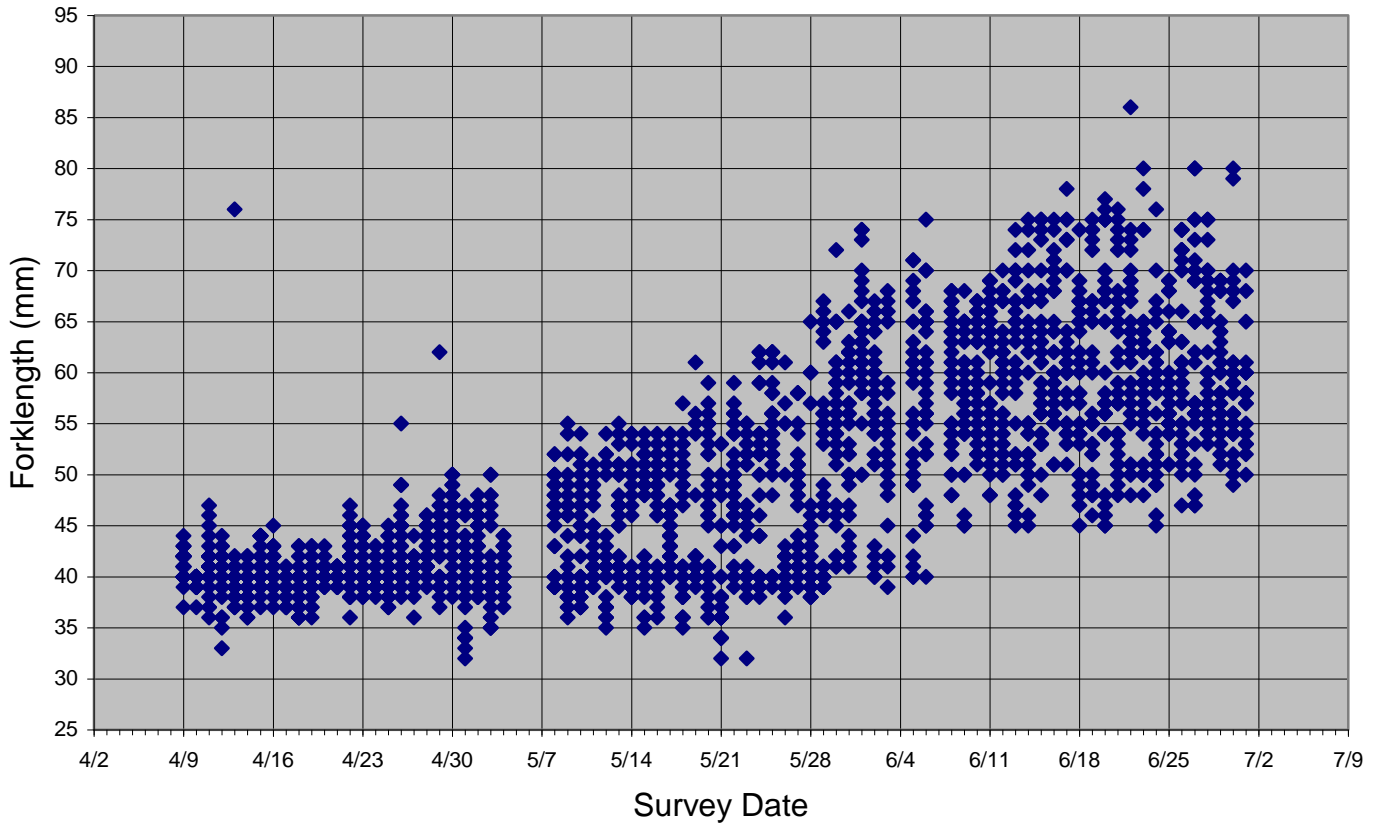
## Salmonids

### Chinook

A total of 19,676 Chinook were captured during the trapping season. Previous year totals were 49,434 for 2008 and 10,339 for 2007. The average catch per unit effort (CPUE) for the 2009 season was 242.4 Chinook per day. The weekly peak (week when the greatest number of Chinook were caught in the trap) occurred during Julian Week 16. A total of 5,225 Chinook were captured, of which 5,215 were YOY, one was age 1, and nine were trapping mortalities. The CPUE for that week was 746.4 Chinook per day. The highest number of Chinook captured in one day was 1,194 on April 21, and the lowest number captured was zero on June 7.

12 mark and recapture tests were completed throughout the season to determine trap efficiencies. A total of 648 Chinook were marked and released, and 135 were recaptured during this sampling period. Weekly returns varied between 6% and 42%, yielding an average of 14.7% for the season. Using a Carlson population estimate (Carlson et al. 1998), the expanded population of Chinook estimated to have out migrated between April 9 and July 1 was 93,895. Figure 14 shows Chinook fork lengths over time for 2009 trapping period.

**2009 Camp Creek DSMT  
Chinook Biosample Forklengths**

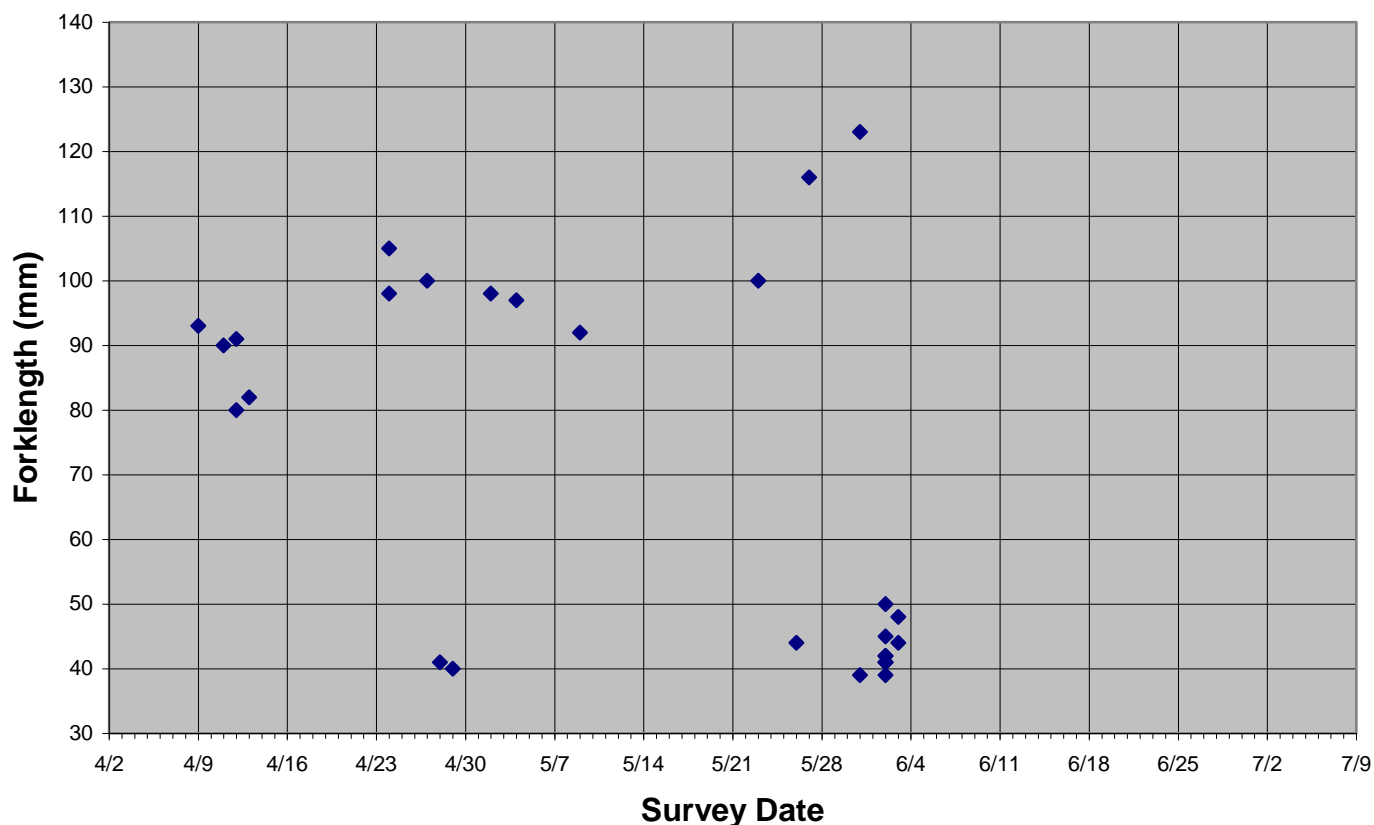


**Figure 14. Camp Creek Chinook fork lengths over the 2009 sampling period**

**Coho**

A total of 28 coho were captured during the trapping period, 14 of which were YOY and 14 were age 1 fish, ranging between 51mm and 130mm. The mean CPUE for the period was 0.3 coho per day. All coho emigrated before Julian Week 23. YOY coho peaked in Julian Week 22 with 11 of the 14 fish captured, and age 1 coho peaked during Julian Week 15 with five of the 15 coho captured. No coho mortalities were recorded throughout the trapping season. Figure 15 shows coho fork lengths over time for the 2009 trapping period.

### 2009 Camp Creek DSMT Coho Biosample Forklengths

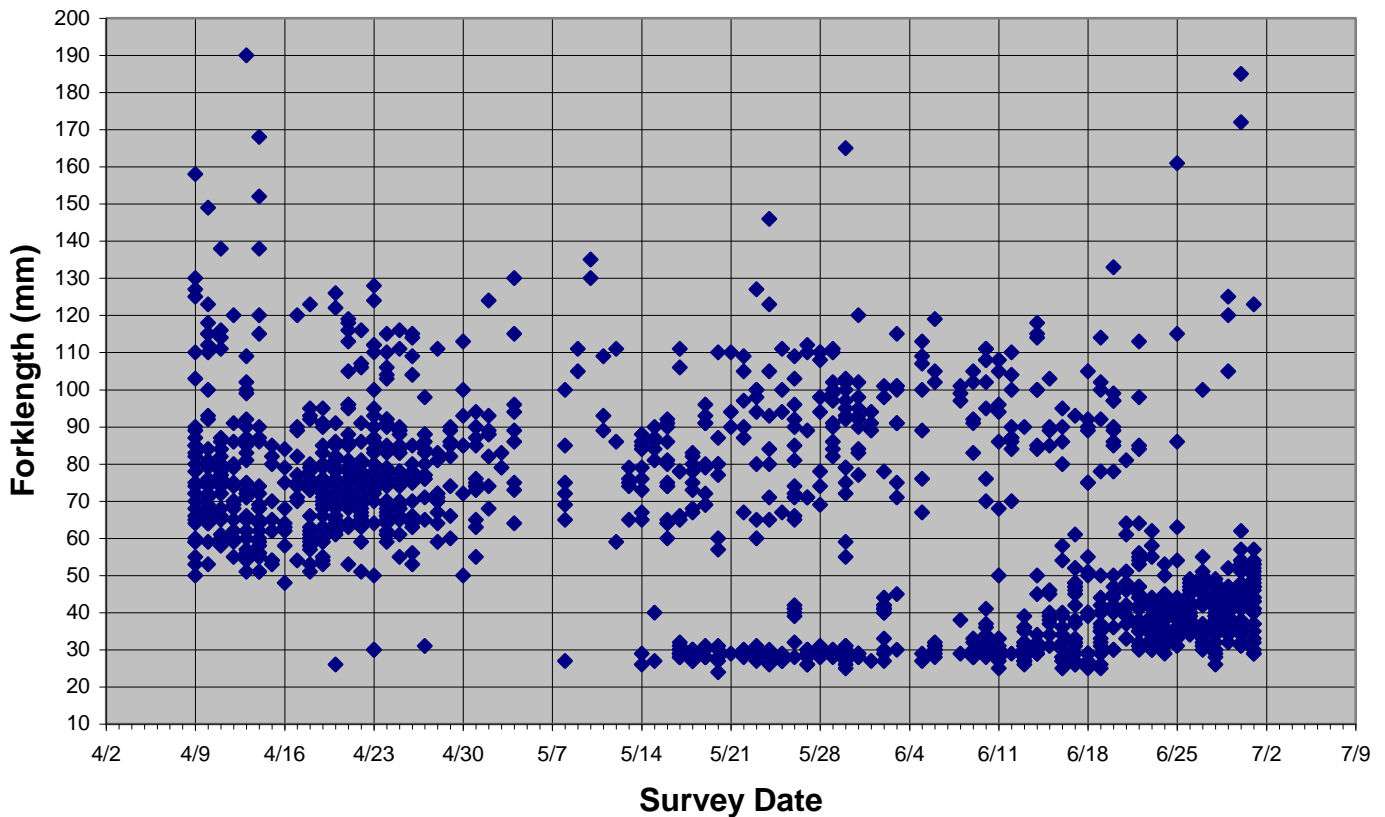


**Figure 15. Camp Creek coho fork lengths over the 2009 sampling period**

### Steelhead

A total of 1,742 steelhead were captured during the trapping period. The CPUE for the period was 21.1 steelhead per day. The peak migration periods for YOY and age 1+ steelhead were markedly different. 1+ steelhead emigration peaked during Julian Week 15, the first week of trapping, with 208 fish captured, while YOY emigration peaked during Julian Week 26, the final week of trapping, with 315 fish captured. Figure 16 shows steelhead fork lengths over time for the 2009 sampling period.

**2009 Camp Creek DSMT  
Steelhead Biosample Forklengths**



**Figure 16. Camp Creek steelhead fork lengths over the 2009 sampling period**

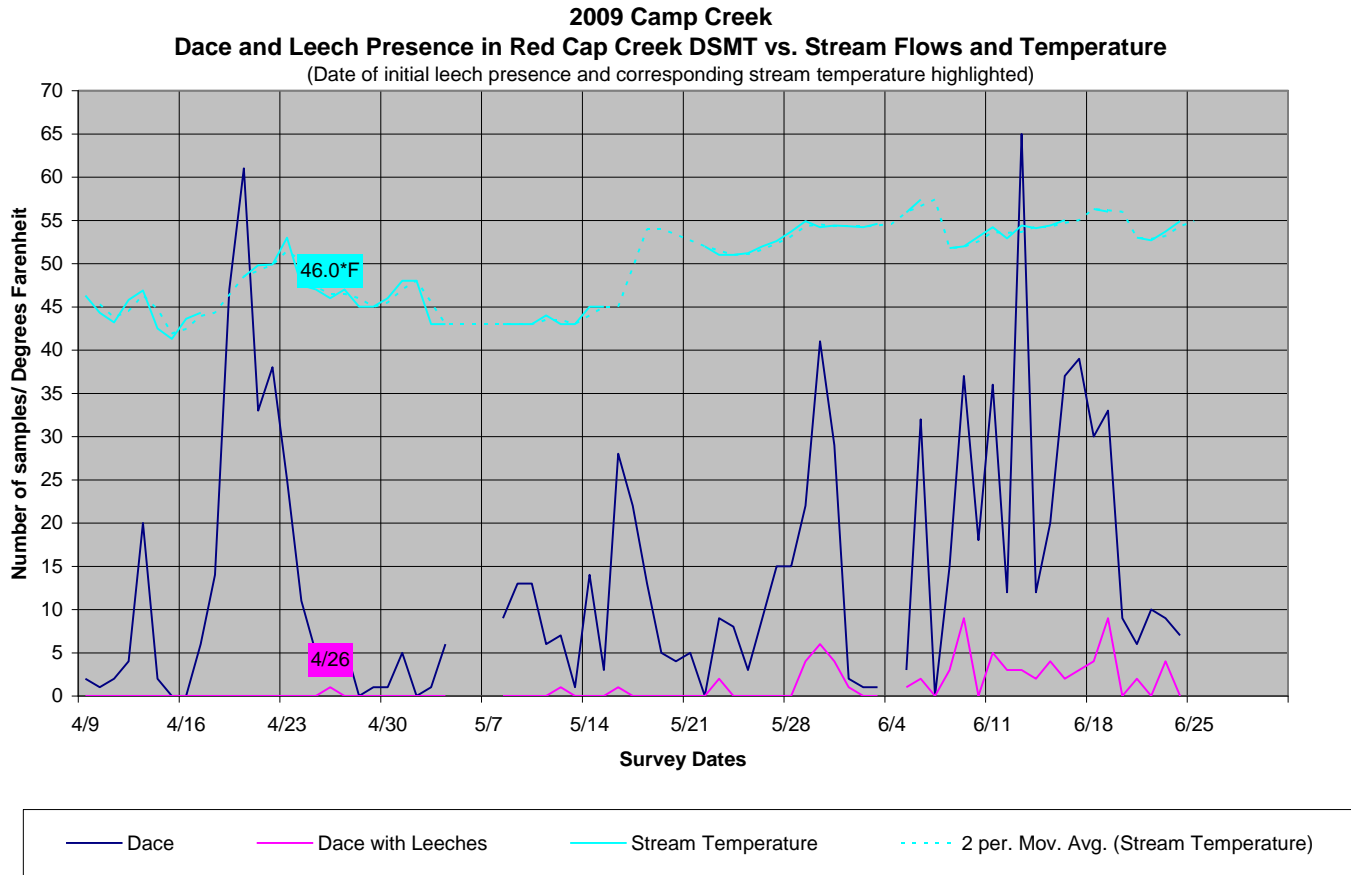
**Other Species**

**Lamprey**

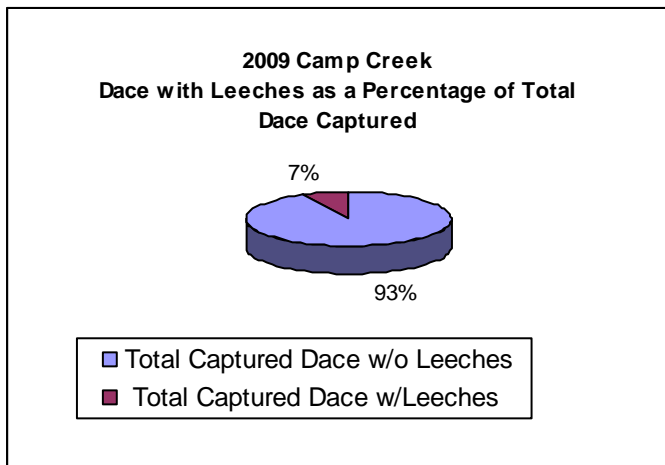
The total number of lamprey juveniles sampled in Camp Creek was 71. Of these, 52 were identified as Pacific lamprey (*Entosphenus tridentata*) and 19 were identified as river lamprey (*Lampetra ayresi*). Until a final, peer reviewed key is published, our findings should not be cited.

**Speckled dace**

On Camp Creek 1,024 speckled dace were biosampled, 76 of which had leeches attached on or near the gills. The appearance of leeches occurred on April 26, Julian Week 17. The minimum and maximum water temperature for that week was 45 degrees Fahrenheit and 54 degrees Fahrenheit, and stream flows were recorded as 89.5 Figure 17 shows leech presence vs. streamflow and temperature for the sampling period. Figures 18 charts the presence of dace with leeches as a percentage of the total dace catch for the 2009 trapping season.



**Figure 17. Dace and leech presence vs. stream flow and temperature on Camp Creek**



**Figure 18. Dace with leeches as percentage of total catch, Camp Creek**

## Discussion

### Fall Chinook spawning distribution below trap sites

Due to limited access near the mouth of Red Cap Creek, the trap site is located approximately 2.2 km above the mouth. On Camp Creek, the trap site is located approximately 1.03 km from the mouth of the creek. These locations prevent us from capturing YOY emigration from approximately 3 km of historic Chinook spawning habitat below the current trap sites. Figures 19 and 20 provide tables showing the number of redds recorded below each trap site during fall Chinook redd surveys for corresponding trapping years.

<b>Trapping Year Affected</b>	<b>Redd Survey Year</b>	<b>Redd Count Below Trap Site</b>
2002	2001-2002	17
2003	2002-2003	30
2007	2006-2007	5
2008	2007-2008	0
2009	2008-2009	28

**Figure 19. Fall Chinook spawning below Camp trap site**

<b>Trapping Year Affected</b>	<b>Redd Survey Year</b>	<b>Redd Count Below Trap Site</b>
2007	2006-2007	16
2008	2007-2008	8
2009	2008-2009	20

**Figure 20. Fall Chinook spawning below Red Cap trap site**

**Steelhead YOY migration peaks**

Though most trapping years seem to capture migration peaks for Chinook and coho, records indicate that steelhead YOY emigration peaks occur late in the trapping season and possibly continue after the traps are pulled due to low flows. Figure 21 shows steelhead migration peaks for each year trapping has occurred on Red Cap Creek. 2003 showed significant migration peaks occurring after Julian Week 26, and 2002 and 2008 both show rising catch numbers at or after Julian Week 26. The 2009 season ended Julian Week 26 without showing these late season peaks.

## Steelhead YOY Totals by Julian Week

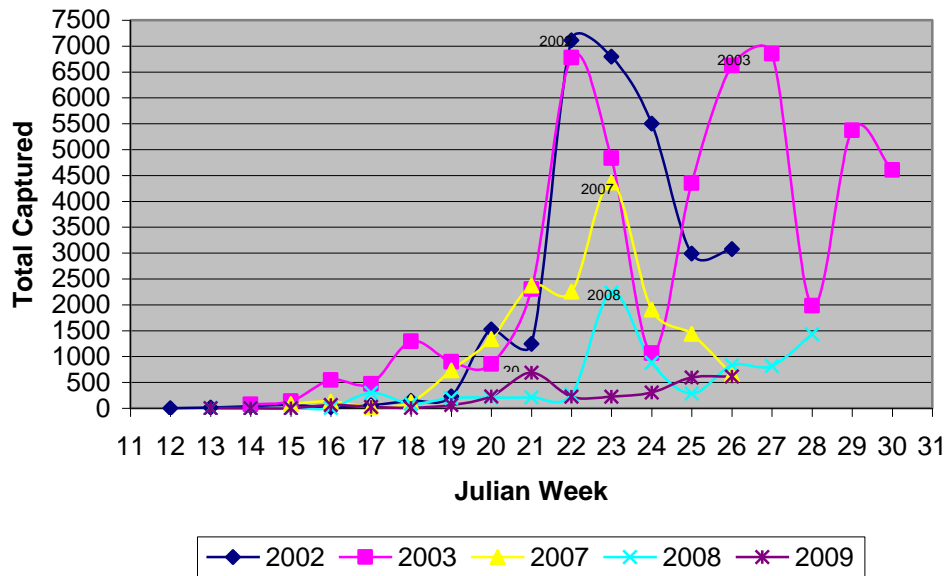


Figure 21. Steelhead YOY Totals by Julian Week

### Lamprey monitoring

As more and more interest in, and research on, lampreys builds in the Pacific Northwest in general and in the Klamath Basin in particular, it seems possible to integrate limited population and distribution studies into our trapping efforts. Both Red Cap and Camp Creek have been shown to contain populations of *Entosphenus* and *Lampetra Spp.*

### Speckled dace

We feel it is important to continue monitoring the occurrence of gill leeches on speckled dace in these two tributaries. No mortalities of dace affected with leeches were found this season, but dace were notably stressed by their presence. Because incomplete data were collected in 2008, we think it is important to continue monitoring in order to determine any increase in the frequency of these leeches and any possible deleterious affect they may have on speckled dace.

### Coho

Since 2008 the Karuk Tribe, in collaboration with the Yurok Tribe, has been monitoring coho smolt migration in the Mid and Lower Klamath Subbasins using freeze branding, PIT tagging and radio telemetry (Soto, 2009). In 2008, MKWC collaborated with the Karuk Tribe with limited monitoring of coho smolt migration on Camp and Red Cap Creeks by scanning trap captured coho smolts for PIT tags and by identifying and recording freeze branded smolts. We feel this work should continue and be expanded in order to maximize the efficiency of our trapping efforts and our contribution to the important coho life history studies being conducted on the Mid Klamath.

## References

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Red Cap Creek Watershed Analysis. USDA, Six Rivers National Forest. 1995.

Stewart Reid, Western Lamprey Program. *Lamprey of the Klamath River Field ID Key (a living document)*, version – 31 December 2005

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J. Scott Foott. U.S. Fish & Wildlife Service, CA-NV Fish Health Center. Project Leader. 2009.

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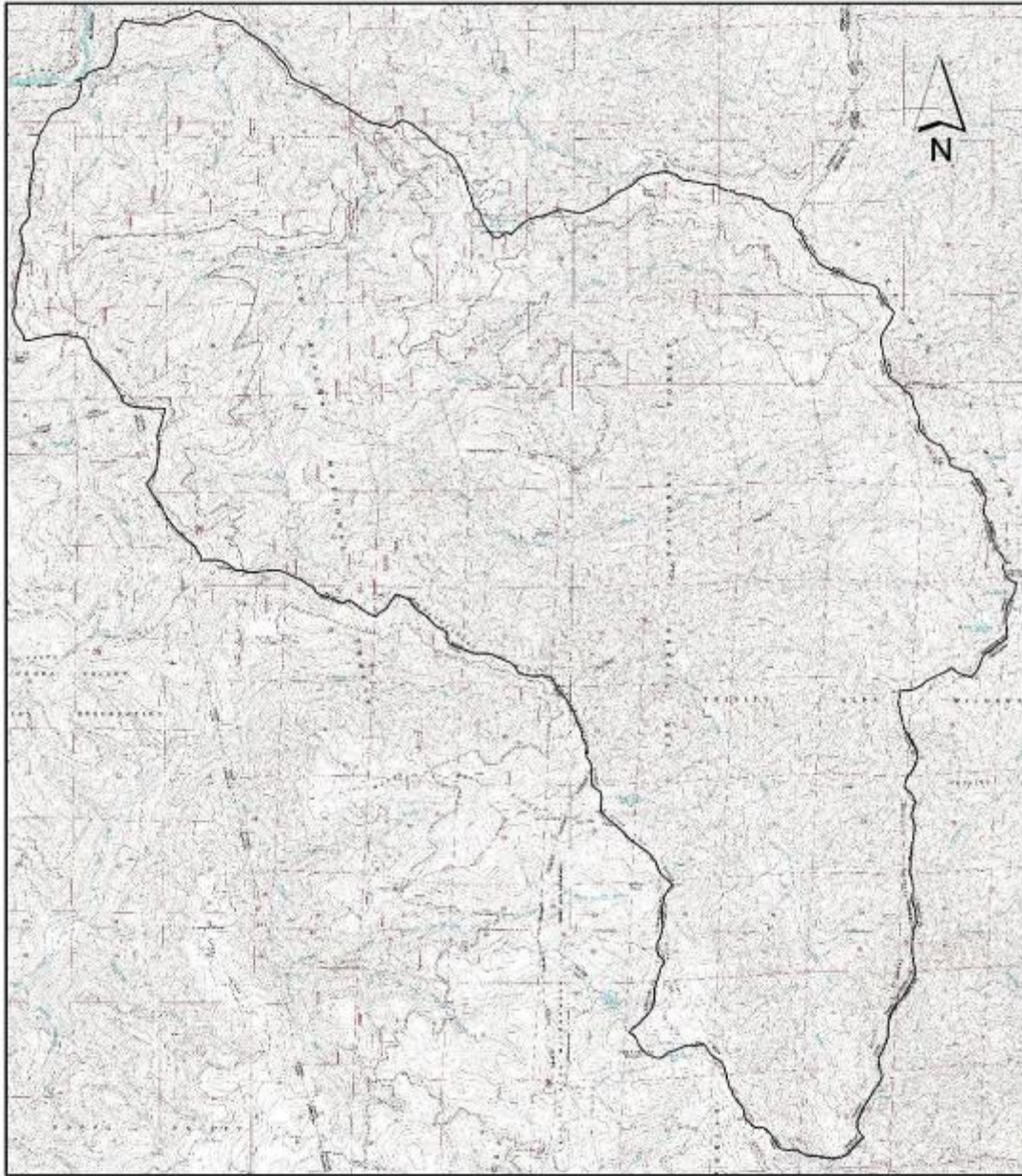
Toz Soto. Karuk Tribe of California. Fisheries Biologist. 2009.

## Appendix A. Julian Week calendar with corresponding dates

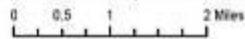
<b>Week</b>	<b>Date</b>	<b>Julian Week</b>	<b>Date</b>	<b>Julian Week</b>	<b>Date</b>
<b>13</b>	03/26/09	<b>18</b>	04/30/09	<b>23</b>	06/04/09
	03/27/09		05/01/09		06/05/09
	03/28/09		05/02/09		06/06/09
	03/29/09		05/03/09		06/07/09
	03/30/09		05/04/09		06/08/09
	03/31/09		05/05/09		06/09/09
	04/01/09		05/06/09		06/10/09
<b>14</b>	04/02/09	<b>19</b>	05/07/09	<b>24</b>	06/11/09
	04/03/09		05/08/09		06/12/09
	04/04/09		05/09/09		06/13/09
	04/05/09		05/10/09		06/14/09
	04/06/09		05/11/09		06/15/09
	04/07/09		05/12/09		06/16/09
	04/08/09		05/13/09		06/17/09
<b>15</b>	04/09/09	<b>20</b>	05/14/09	<b>25</b>	06/18/09
	04/10/09		05/15/09		06/19/09
	04/11/09		05/16/09		06/20/09
	04/12/09		05/17/09		06/21/09
	04/13/09		05/18/09		06/22/09
	04/14/09		05/19/09		06/23/09
	04/15/09		05/20/09		06/24/09
<b>16</b>	04/16/09	<b>21</b>	05/21/09	<b>26</b>	06/25/09
	04/17/09		05/22/09		06/26/09
	04/18/09		05/23/09		06/27/09
	04/19/09		05/24/09		06/28/09
	04/20/09		05/25/09		06/29/09
	04/21/09		05/26/09		06/30/09
	04/22/09		05/27/09		07/01/09
<b>17</b>	04/23/09	<b>22</b>	05/28/09		
	04/24/09		05/29/09		
	04/25/09		05/30/09		
	04/26/09		05/31/09		
	04/27/09		06/01/09		
	04/28/09		06/02/09		
	04/29/09		06/03/09		

## Appendix B. Red Cap Creek watershed map

### Red Cap Creek Watershed Map

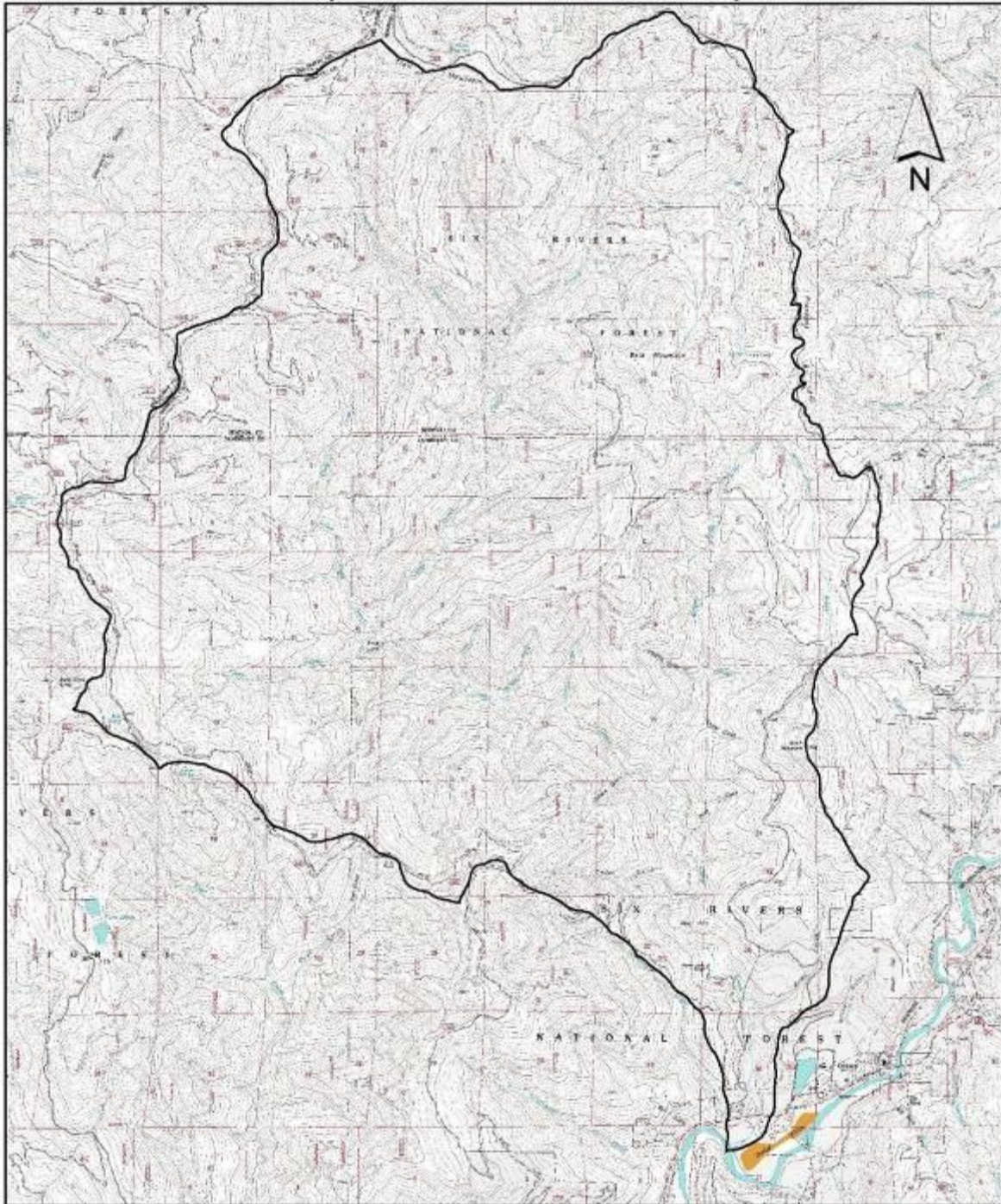


Project Site - Red Cap Creek Watershed

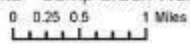


# Appendix C. Camp Creek watershed map

## Camp Creek Watershed Map



Project Site - Camp Creek Watershed



## **Appendix D. List of data worksheets provided as digital reference**

- **Weekly Catch Summary**
- **Mark and Recapture Summary**
- **Daily Catch Summary, coho**
- **Daily Catch Summary, Chinook**
- **Daily Catch Summary, steelhead**
- **Salmonid Biosample Summary**
- **Other Biosample Summary**
- **CFS Sample Summary**

**\*Summaries are provided for both Camp and Red Cap Creek.**