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| Turlock Irrigation District | ) | |
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| and | ) | Project No. 2299 |
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| Modesto Irrigation District | ) | |

# 2009 LOWER TUOLUMNE RIVER ANNUAL REPORT

Report 2009-3

2009 Seine Report and Summary Update

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and

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## EXECUTIVE SUMMARY

The 2009 seining survey was conducted at two-week intervals from 13 January to 02 June for a total of 11 sample periods. This was the 24th consecutive annual seining study on the Tuolumne River conducted by the Turlock and Modesto Irrigation Districts.

A total of 779 natural Chinook salmon were caught in the Tuolumne River and none in the San Joaquin River. This was the 8$^{th}$ lowest number of salmon caught during the 1986-2009 period and salmon were captured downstream to the Charles Rd. location (RM 24.9). Peak density of salmon caught in the Tuolumne was 19.2 salmon per 1,000 square feet on 02 June, an anomaly from the usual mid to late February period. Maximum fork length (FL) in the Tuolumne River increased from 41 mm FL to 77 mm FL from 27 January to 07 April and minimum FL was 33 mm.

Flows during the sampling period ranged from about 160 to 950 cubic feet per second (cfs) in the Tuolumne River at La Grange and from about 1,000 to 2,700 cfs in the San Joaquin River at Vernalis. Flows in 2009 were relatively low due to the third consecutive year of below average precipitation.

Water temperature in the Tuolumne ranged from 9.4°C to 22.9°C and in the San Joaquin from 10.3°C to 26.5°C. Conductivity in the Tuolumne River ranged from 35 to 225 µS and in the San Joaquin from 397 to 1,656 µS.

A comparative review of fork length and salmon density for the 2004-2009 period is included. Increase in average fork length in 2009 was typical in timing and magnitude to the pattern observed in other years through March. After that, average fork length remained fairly stable due to low catch numbers and the outmigration of smolts.

Density of fry (≤ 50 mm) peaked on 9 February, about midway in timing to other years of the 2004-2009 period. The density of juveniles (> 50 mm) peaked on 02 June, which was much later than other years in the period. In 2009, the average density of salmon in the Tuolumne River was 4.7 salmon per 1,000 ft$^2$, most similar to 1990 and 1995.

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# 1 INTRODUCTION

Stillwater Sciences with assistance from FISHBIO conducted seine studies in the Tuolumne and San Joaquin Rivers in 2009 for the Turlock and Modesto Irrigation Districts (TID/MID).

Seine sampling was done in both rivers pursuant to the Don Pedro Project river-wide monitoring program. A primary objective was to document juvenile salmonid size, abundance and distribution, including the relationship of flow and other environmental variables. The salmon in 2009 were the progeny of the 2008 fall spawning run, estimated at about 372 fish. This was the 24th consecutive annual TID/MID seining study and a summary of salmonid data since 1986 is contained in this report.

## 1.1 STUDY SITES

The area studied was the Tuolumne River from La Grange Dam (river mile [RM] 52.0) to its confluence (RM 0) with the San Joaquin River at RM 83.8, and the San Joaquin River from Laird Park (RM 90.2) to Gardner Cove (RM 79.4) (Fig. 1). A total of ten sites were sampled each survey period, eight on the Tuolumne and two on the San Joaquin. The locations of the sites were as follows:

| Site | Location | River Mile |
|---|---|---|
| | Tuolumne River | |
| 1 | Old La Grange Bridge (OLGB) | 50.5[a] |
| 2 | Riffle 5 | 48.0 |
| 3 | Tuolumne River Resort (TRR) | 42.4 |
| 4 | Hickman Bridge | 31.6 |
| 5 | Charles Road | 24.9 |
| 6 | Legion Park | 17.2 |
| 7 | Service Rd. | 8.7 |
| 8 | Shiloh Road | 3.4 |
| | San Joaquin River | |
| 9 | Laird Park | 90.2[b] |
| 10 | Gardner Cove | 79.4 |

a. From the confluence with the San Joaquin River.
b. From the confluence with the Sacramento River.

The Tuolumne River was stratified into three sections. The upper section (RM 52 to 34), sites 1-3, is a higher gradient area that includes most of the primary spawning riffles in the river. The middle section (RM 34 to 17), sites 4-6, is the transitional area from the gravel-bedded to sand-bedded river reaches. This section contains much of the in-channel sand/gravel mined areas. The lower section (RM 17 to 0), sites 7-8, is a lower gradient, mostly sand-bottom reach downstream of the Dry Creek confluence.

## 1.2 2009 TUOLUMNE AND SAN JOAQUIN RIVER SAMPLING CONDITIONS

Flows released in the Tuolumne River below La Grange Dam were approximately 165 cfs in January when the surveys began. A significant winter rain runoff event occurred in early March and was evident in flows at Modesto. Releases began increasing on 15 April during the spring pulse flow period (Fig. 2). During April and May, there were two pulse flows of about 670 cfs and 950 cfs. In late May flows began to decrease to about 170 cfs by early June and then to about 105 cfs.

Flows in the San Joaquin River at Vernalis (RM 72.5) ranged from 1,000-2,700 cfs from January through June.

Flows upstream of Vernalis, at Patterson Bridge (RM 98.5) and Maze Road (RM 77.3), represent flow levels at the sampling locations of Laird Park upstream of the Tuolumne and Gardner Cove downstream of the Tuolumne, respectively.

The minimum water temperature recorded in the Tuolumne River during the study period, based on hand-held temperature measurements, was 9.4 °C (48.9 °F) at Hickman Bridge on 13 January, and the maximum temperature was 22.9 °C (73.2 °F) at Shiloh Road on 02 June (Fig. 3). The lowest San Joaquin River water temperature, 10.3 °C (50.5 °F) was at Gardner Cove on 13 January; the highest was 26.5 °C (79.7°F) at Laird Park on 19 May.

Dissolved oxygen concentration in the Tuolumne River ranged from 8.6 to 13.7 mg/L (ppm) and from 9.7 to 14.2 mg/L in the San Joaquin River (Fig. 3).

# 2 METHODS

## 2.1 STUDY TIMING

The 2009 seining study began on 13 January and ended on 02 June. Sampling was done at two-week intervals, with a total of 11 sampling dates.

## 2.2 SAMPLING METHODS AND DATA RECORDING

Seining was done using a 4-ft high, 1/8-inch mesh nylon seine net 20 feet in length. The same general areas were sampled each time, to permit comparisons through the sampling period, but sample areas varied somewhat as a result of changes in flow. Seine hauls were made with the current and parallel to shore. The salmon caught were anesthetized with MS-222, measured (FL in mm) and then revived before being released. Other measurements taken were area sampled, (determined from estimating average length and width of a seine haul) water temperature, visibility, conductivity, turbidity, dissolved oxygen, and maximum depth of the area sampled. Other observations include time of day, weather conditions, habitat type, and substrate type. Other fish species were recorded separately. Any salmon undergoing outward signs of smoltification, such as losing scales during handling, were also noted.

## 2.3 DATA ANALYSIS

Seining catch data was examined by location, river section, and river. Catch densities of salmon were divided into two size groups for analysis. The density index for "fry" (fish ≤50 mm FL) and for "juveniles" (>50 mm), by site and by section, were computed by multiplying the number of salmon caught by 1,000 and dividing it by the area sampled. These indices of population density (relative abundance), were used for comparisons. Densities and sizes of salmon fry and juveniles by upper, middle, and lower river sections were examined.

# 3 RESULTS AND DISCUSSION

## 3.1 SEINE CATCH

A total of 779 salmon were caught in the Tuolumne River and 0 in the San Joaquin (Table 1). 528 salmon were measured and riverwide peak density for the Tuolumne was 19.2 salmon per 1,000 $ft^2$ on 02 June. Peak density is normally observed in February and the late peak in 2009 was an anomaly driven by a high catch at Riffle 5 (RM 48.0).

### 3.1.1 Density of Fry and Juvenile Salmon

Salmon up to 41 mm fork length (FL) were caught in the Tuolumne River on 27 January. The highest density of salmon fry in the Tuolumne was 9.7 fry/1,000 $ft^2$ found on 09 February (Table 2). The highest density of juvenile salmon in the Tuolumne was 15.5 juveniles/1,000 $ft^2$ found on 02 June.

The density of salmon fry exhibited a peak for most sites from 09 February to 10 March. The density of juveniles generally peaked from 10 March to 02 June for most locations (Fig. 4).

The density of salmon fry in the Tuolumne River peaked in the upper section on 09 February, in the middle section on 10 March and none were caught in the lower section (Fig. 5).

The density of juveniles peaked in the upper section on 02 June, the middle section on 24 March and again, none were caught in the lower section. No salmon were caught in the San Joaquin River.

### 3.1.2 Size, Growth, and Smoltification

The fork length of salmon caught ranged from 33 mm to 97 mm. The average fork length (FL) of salmon generally increased from 27 January to 24 March (Fig. 6). An indirect method to estimate growth rate was made by dividing the increase in maximum FL, over a period of time. Maximum FL in the Tuolumne River increased from 41 to 77 mm during the 27 January to 24 March period (Fig. 6), indicating a potential FL increase of approximately .64 mm per day (36 mm / 56 days).

Length frequency distributions by survey period are in Figs. 7 & 8. The change in FL by location generally shows an increase from late January to late April at most of the Tuolumne River sampling locations followed by another increase in late May/early June (Fig. 9). The first

salmon exhibiting smolting characteristics were caught on 24 March. For the year, smolting salmon ranged from 65-97 mm FL. Fry were present through 02 June during the 2009 seine survey period.

### 3.1.3 Conductivity and Turbidity

Conductivity in the Tuolumne River generally increased with increasing distance below La Grange Dam, from a low of 35 µS at OLGB to a high of 225 µS at Shiloh Road (Table 3). Conductivity also decreased as flows increased during the spring pulse flows (Fig. 10).

Conductivity in the San Joaquin River was much higher than in the Tuolumne and ranged from a low of 397 µS at Gardner Cove to a high of 1656 µS at Laird Park.

Turbidity in the Tuolumne River was less than 19.0 Nephelometric Turbidity Units (NTU) except for 3 readings at Legion Park (51.1 NTU), Service Rd.(102 NTU) and Shiloh Rd.(158 NTU) on 05 May that were the result of storm runoff from Lake Rd. (via Peaslee Cr.) and Dry Creek (near Modesto). Turbidity also generally increased with increasing distance below La Grange Dam and generally decreased with higher flows.

Turbidity in the San Joaquin River ranged from 9.7 to 117 NTU, both readings taken at Gardner Cove.

### 3.1.4 Other Fish Species Caught

The numbers of other fish species caught during the seining study by species, location, and date are in Table 4. Fourteen species other than Chinook salmon were caught in the Tuolumne River and 9 other species in the San Joaquin River. Eight of these species were common to both rivers and 15 species were caught overall. Seven rainbow trout fry (26-70 mm FL) were caught in the Tuolumne River between 10 March to 05 May at OLGB and R5.

2009 Rainbow Trout catch

| Date | Location | River Mile | Fork Length (mm) |
|---|---|---|---|
| 10MAR | OLGB | 50.5 | 26 |
| 10MAR | RIFFLE 5 | 48.0 | 36 |
| 24MAR | RIFFLE 5 | 48.0 | 44 |
| 07APR | OLGB | 50.5 | 26 |
| 21APR | RIFFLE 5 | 48.0 | 70 |
| 05MAY | OLGB | 50.5 | 34 |
| 05MAY | RIFFLE 5 | 48.0 | 33 |

The number of fish species caught in the San Joaquin River was again low in comparison to most other years, similar to 2007 and 2008.

# 4 COMPARATIVE REVIEW

## 4.1 SEINE: 1986-2009

Annual TID/MID Tuolumne River seining surveys began in 1986, with the number, location, and sampling frequency of sites having varied over time (Tables 5 & 6). The number of salmon captured in the Tuolumne has ranged from 120 (1991) to 14,825 (1987) - the total number of salmon captured in 2009 (779) is the eighth lowest for all years. In 2009, the average density of salmon in the river was 4.7 salmon per 1,000 $ft^2$ and was most similar to densities found in 1990 and 1995.

The San Joaquin River has been sampled upstream and downstream of the Tuolumne River confluence in each of the study years. The total number of salmon caught has ranged from 0 to 854 with average density much lower than the Tuolumne (Table 5). No salmon were captured in the San Joaquin River this year and in seven other years.

### 4.1.1 Size and Growth

The comparative review of fork length and density is primarily for the 2004-2009 period in this report. Minimum FL found in 2009 remained low, less than 40 mm FL, through the entire study period (Fig. 11). In 2009, the increase in average FL during the January to March period was similar in timing and magnitude to the pattern observed in the 2004-2009 period (Fig. 12). Beginning in April the average FL declined due to low numbers of salmon caught and the outmigration of smolts. Maximum FL in 2009 was about average from January to early June (Fig. 13). The estimated 2009 growth rate of .64 mm per day was slightly above average for 1986-2009 (Table 5).

### 4.1.2 Fry and Juvenile Salmon Density

In 2009, the density of salmon fry (≤ 50 mm) in the Tuolumne River peaked on 09 February at a higher level than 2007 and 2008 (Fig. 14).

The density of salmon juveniles (>50 mm) in 2009 peaked on 02 June at the second highest level for the same period of years (Fig. 15).

Combined fry and juvenile densities for the Tuolumne River are shown for the years 2004-2009 (Fig. 16). The 2009 densities peaked on 02 June, again, driven by the high catch at Riffle 5.

#### 4.1.2.1 Tuolumne River Section Density

Upper section density of fry generally peaks from early February to early March and steadily declines through March (Fig. 17). For 2009, the density of fry peaked on 09 February and gradually declined to low levels in late March. Upper section density of juveniles typically increases beginning in late February and peaks in early April to late May. In 2009, juvenile salmon density was low until late May.

Middle section density of fry generally peaks from early February to mid-March similar timing to the upper section. In 2009, the density of fry peaked on 10 March. Middle section density of

juveniles often peak from late February to late March. In 2009 juvenile density peaked on 24 March.

Lower section density of fry and juvenile salmon has been relatively low in most years. This section was often sampled only at the Shiloh Road location in prior years. Since 1999, two sites have been sampled. Peak density of fry ranged from early March (2005) to mid-March (2006) during the 2004-2009 period. In 2009, no salmon fry were caught in the lower section. Peak density of juveniles ranged from late March (2006) to late April (2005) with no juvenile captured in 2009.

Section abundance indices of fry and juvenile salmon combined were standardized as a percent of the annual riverwide average abundance index and plotted at section midpoints for recent years (Fig. 18). In 2009 the standardized section abundance indices was highest in the upper section similar to 2004 and 2005.

#### 4.1.2.2 San Joaquin River Density

Densities of salmon caught in the San Joaquin River at Laird Park and Gardner Cove or nearby sites were reviewed to compare relative abundance of salmon upstream and downstream of the Tuolumne River confluence. The abundance indices were calculated for fry and juvenile salmon combined due to low numbers caught. The average salmon abundance at Laird Park, downstream of the Merced confluence, was extremely low for all years during the 1986-2009 period (Fig. 19). The total number of wild salmon caught at Laird Park during this period was 148. No salmon were caught at Laird Park in 2009. The average abundance at Gardner Cove, downstream of the Tuolumne River confluence, was much higher in 1986 and 1999 and moderately higher in 1995, 1998, 2001 and 2006. A total of 1082 salmon were caught at this location during the 1986-2009 period, 509 of which were caught in 1999. No salmon were caught at Gardner Cove in 2009.

### 4.1.3 Tuolumne River Fry Density Versus Number of Female Spawners

A polynomial equation analysis of peak fry density in the Tuolumne River and the estimated total number of female spawners (TID/MID data), from the preceding fall-run, resulted in an R-squared of .72 for the 1986-2009 period (Fig. 20, Table 7). A similar result with R-squared of .77 was found using average fry density from 15 January -15 March (Figure 21).

### 4.1.4 Other Fish Species

The number of fish species, other than Chinook salmon, caught during 1986-2009 has ranged from 10 to 16 on the Tuolumne River. Table 4 has the counts from each site and date for fish species caught in 2009. Fourteen other species were caught, including 5 native species, in the Tuolumne; 9 fish species, including 2 native, were caught in the San Joaquin River in 2009. The number of species caught in the San Joaquin River was low, similar to the two previous years.

Of native species, rainbow trout, hardhead, and riffle sculpin were caught only in the Tuolumne River and Sacramento pikeminnow and Sacramento sucker were caught in both rivers. Native

species recorded in prior years, but not caught in either river in 2009, were Pacific lamprey, Sacramento blackfish, hitch, Sacramento splittail, tule perch, and prickly sculpin.

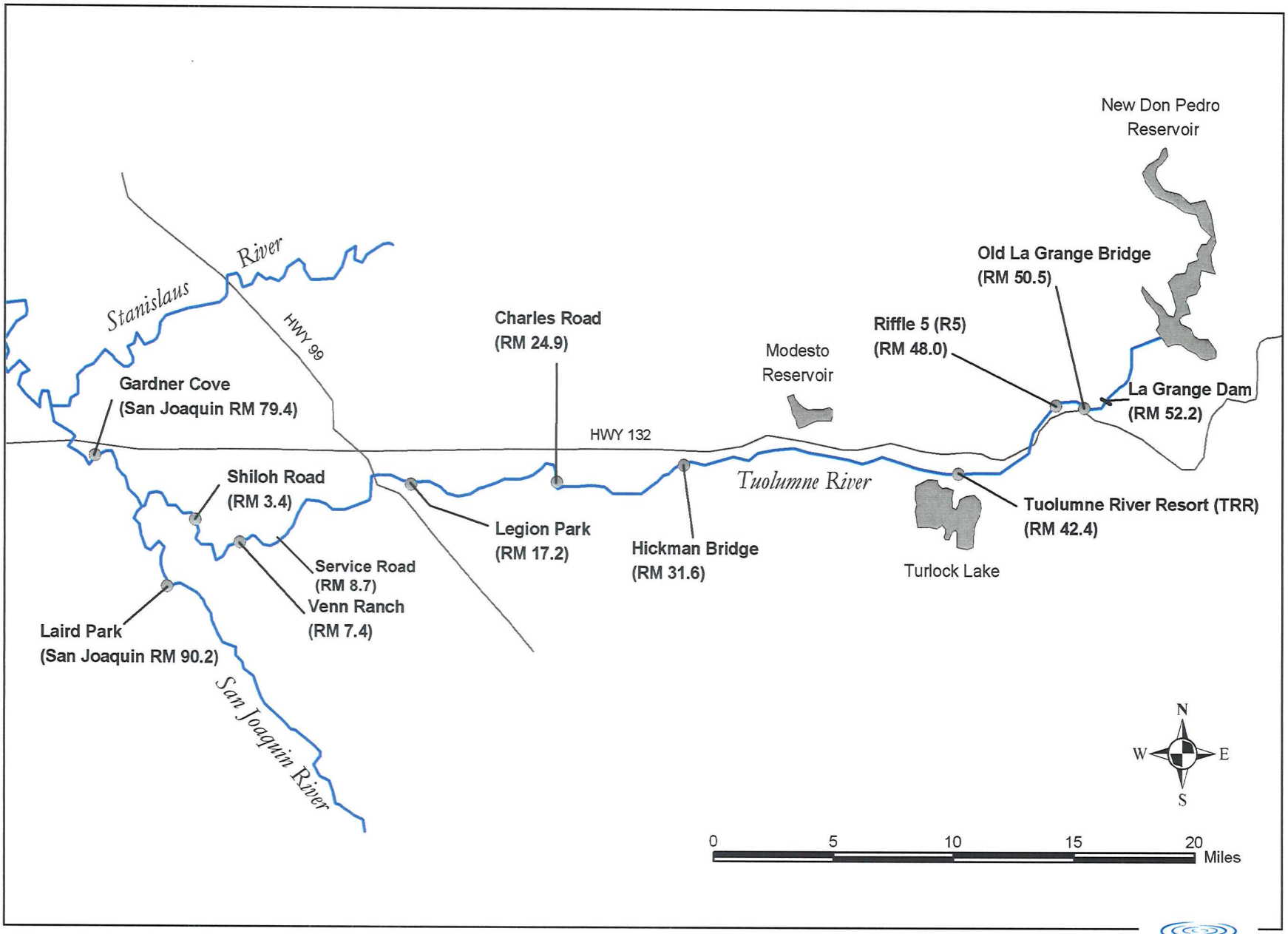


Figure 1. Locations of seine sampling sites on the lower Tuolumne and San Joaquin Rivers, 2009.

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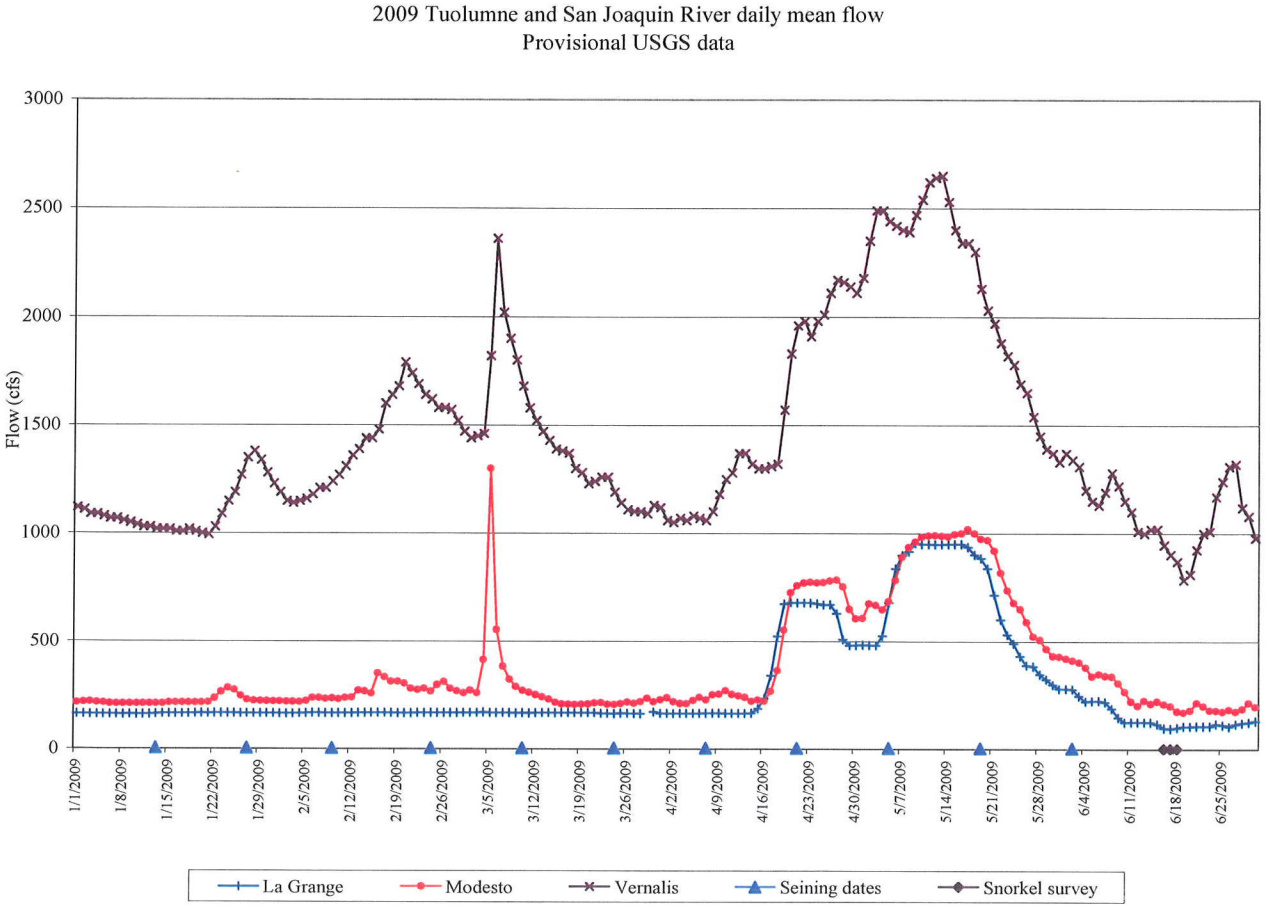


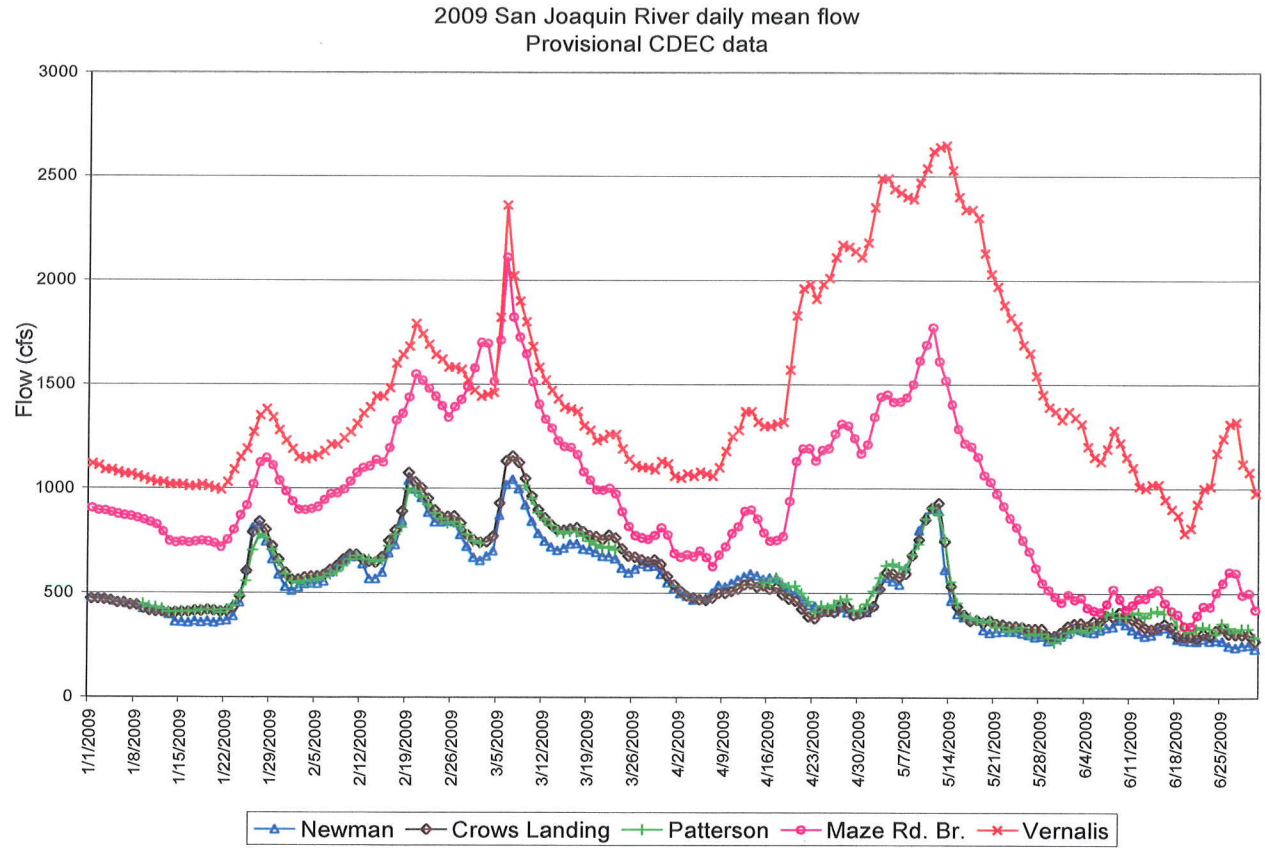
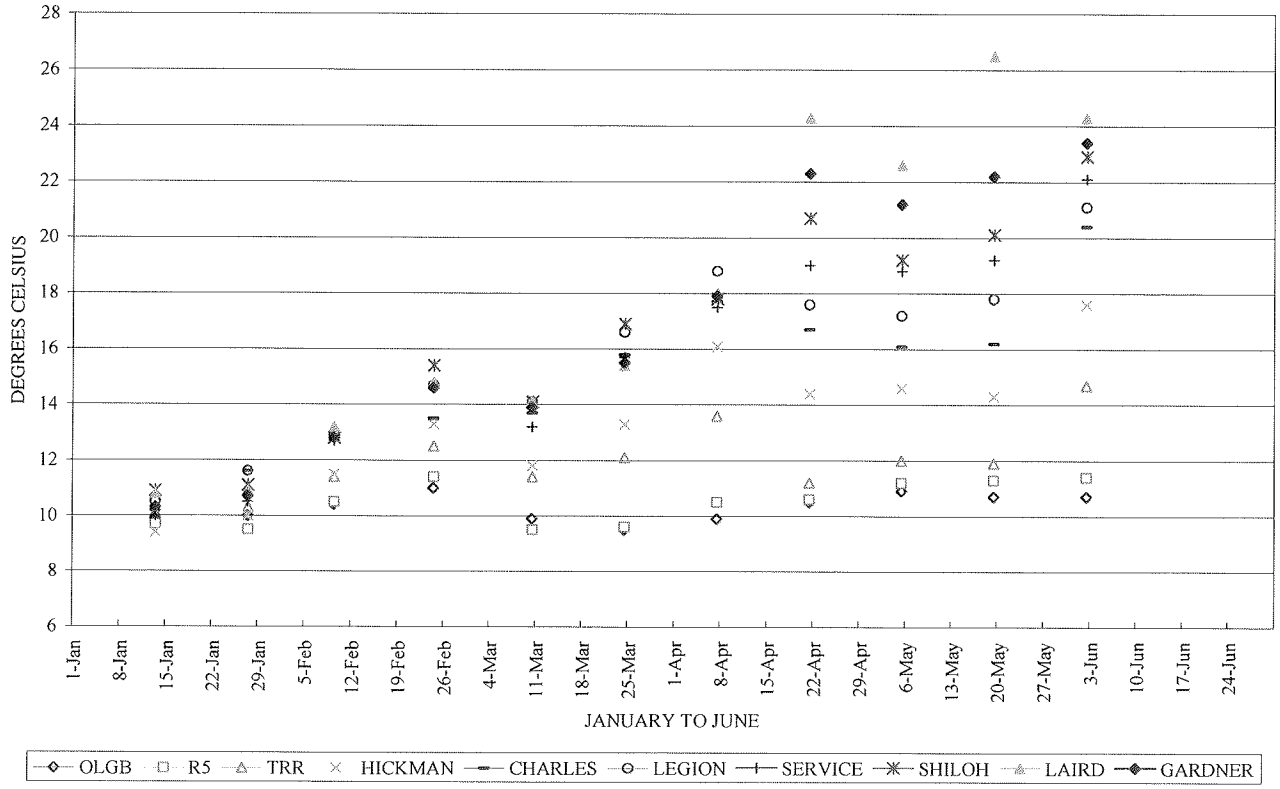




Figure 2. Tuolumne and San Joaquin River daily average flow.

2009 TUOLUMNE AND SAN JOAQUIN RIVER WATER TEMPERATURE




2009 TUOLUMNE AND SAN JOAQUIN RIVER DISSOLVED OXYGEN

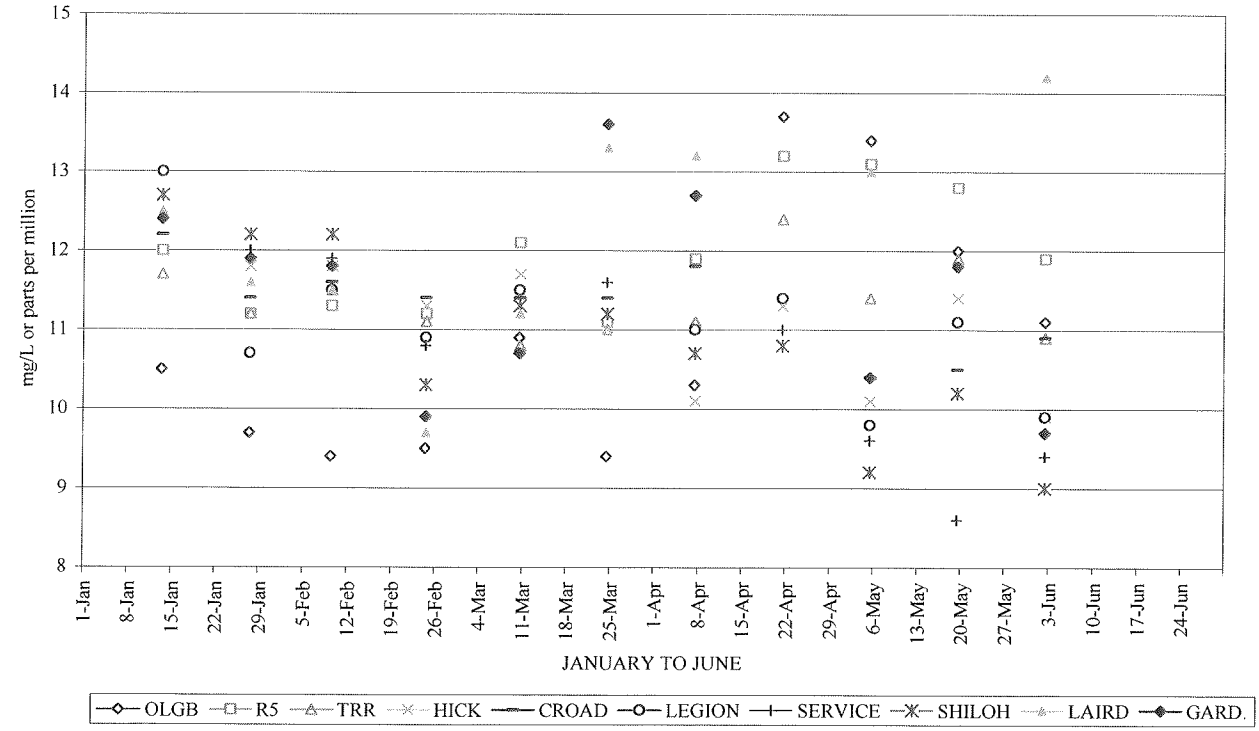



Figure 3. 2009 Tuolumne and San Joaquin River water temperature and dissolved oxygen.

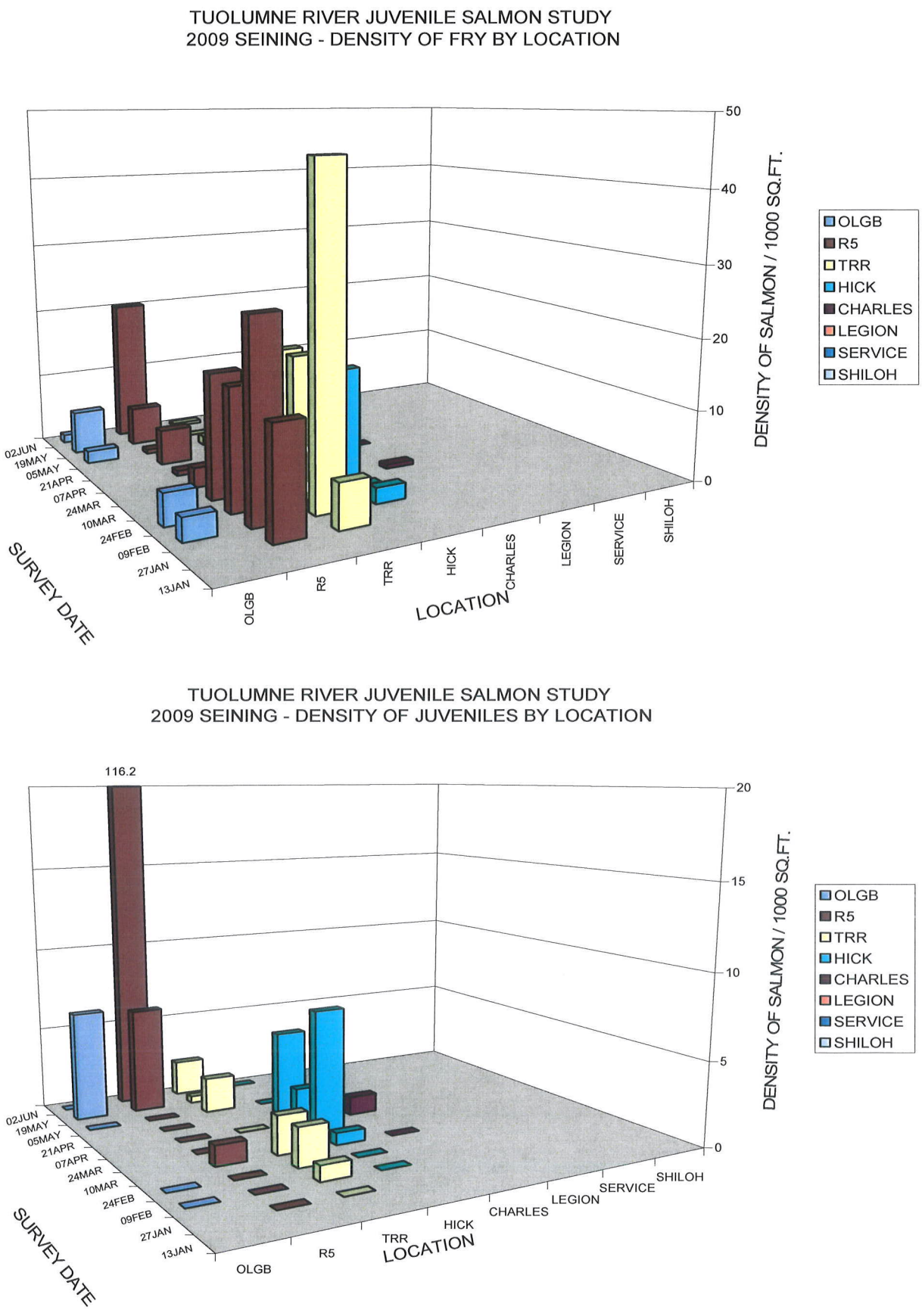



Figure 4. Tuolumne River density of fry and juvenile salmon by location.

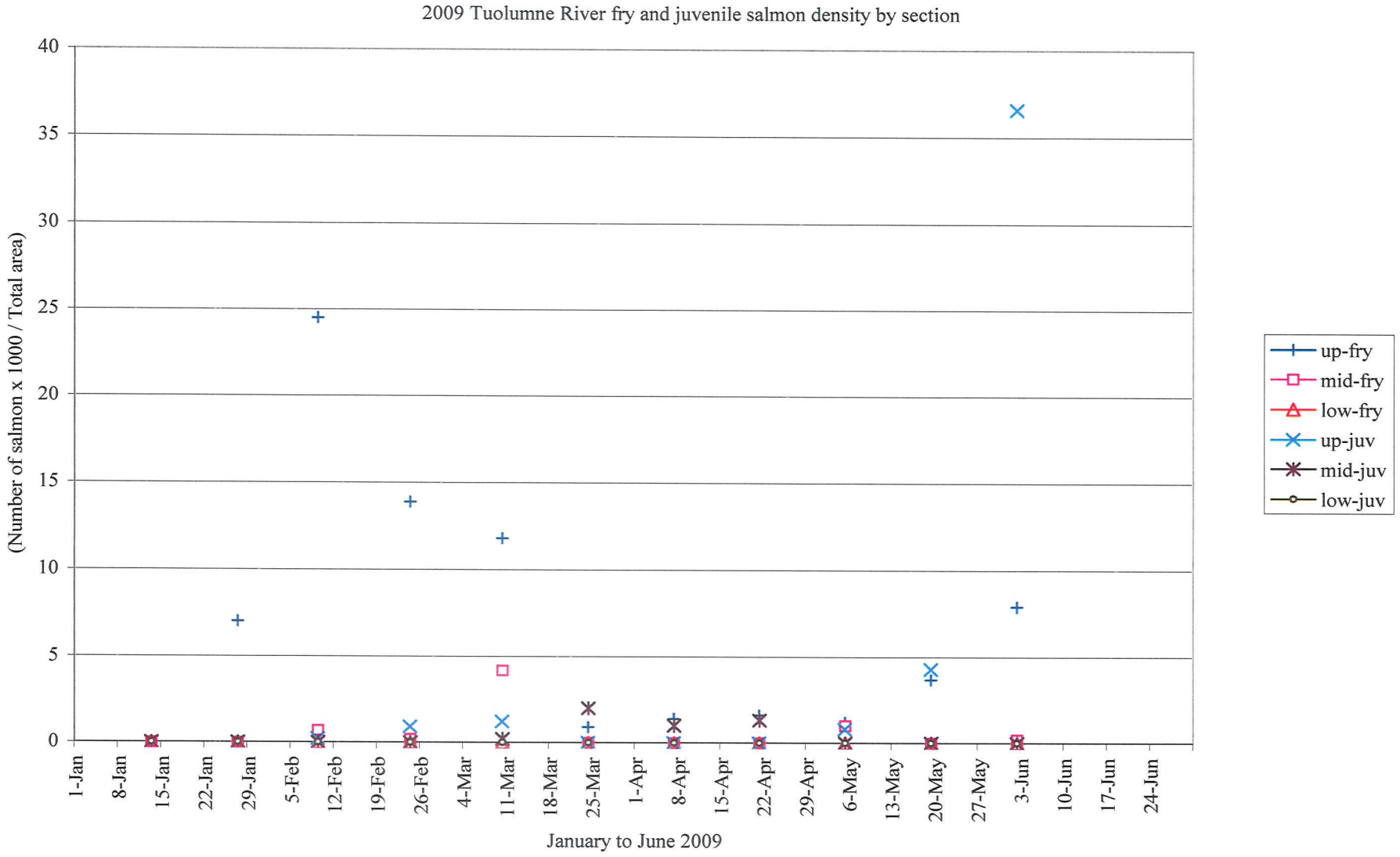



Figure 5. 2008 Tuolumne River fry and juvenile salmon density by section.

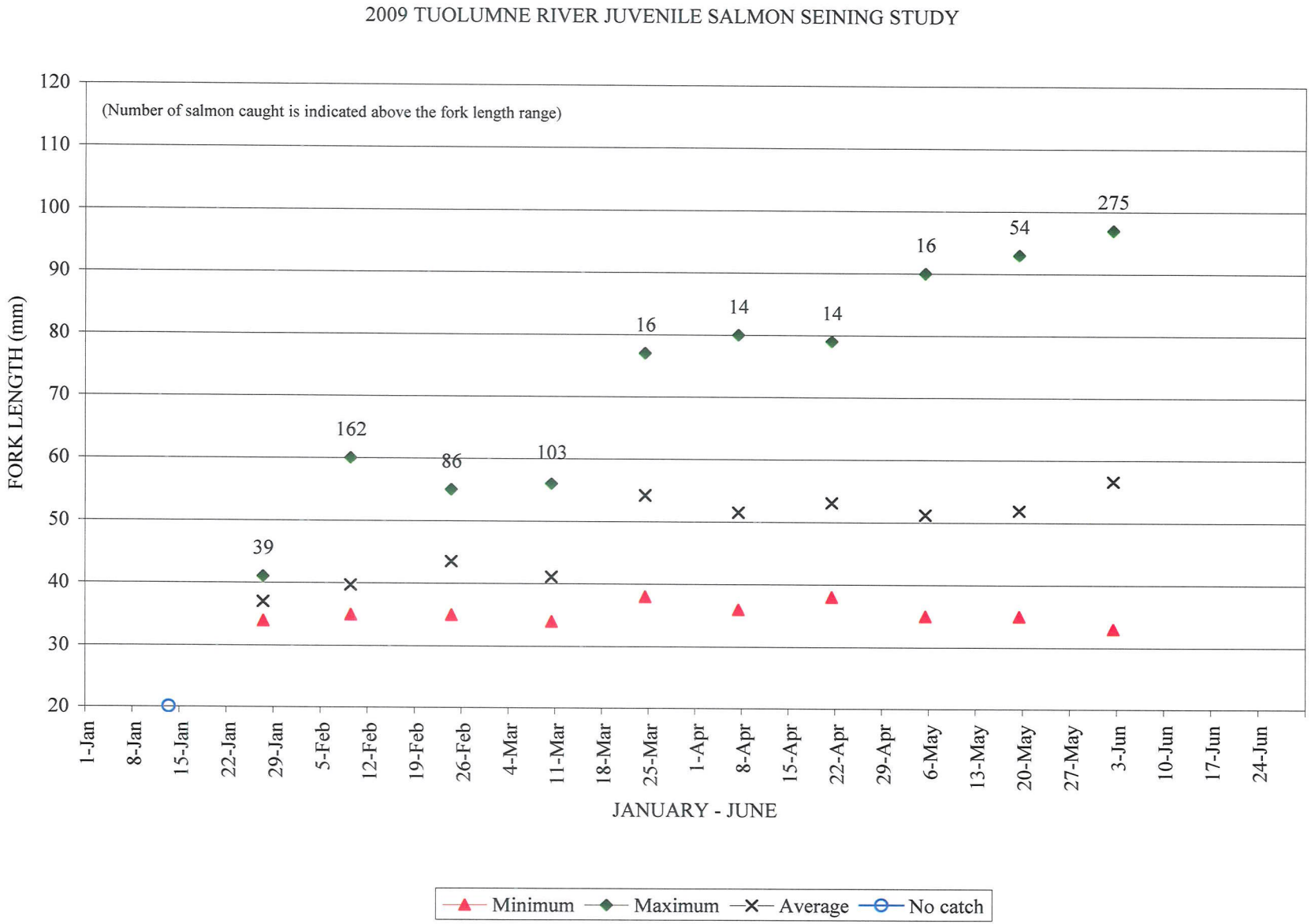



Figure 6. Fork length ranges of wild salmon in the Tuolumne River, 2009.

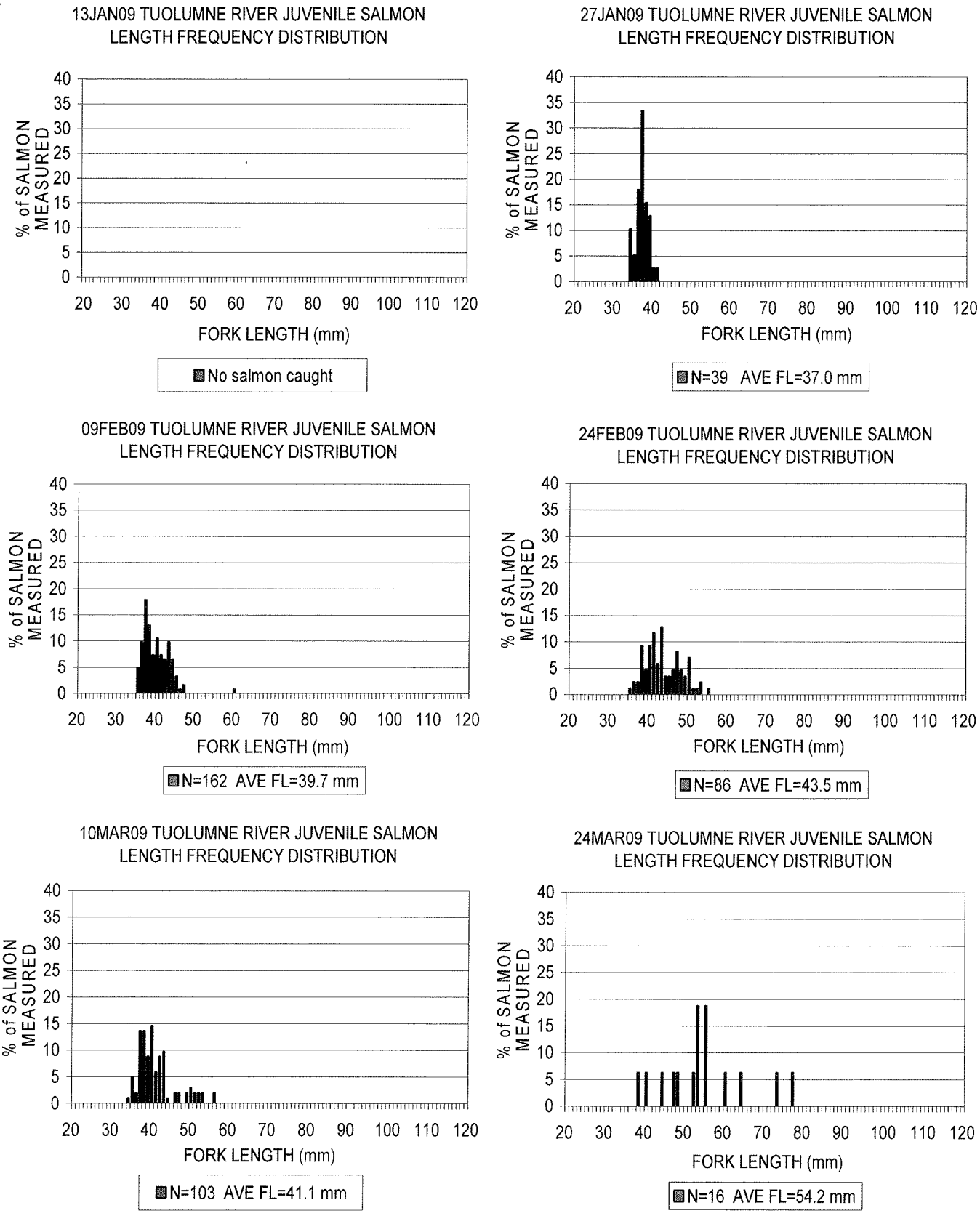



Figure 7. Length frequency distribution by date of salmon in the Tuolumne River, 2009.

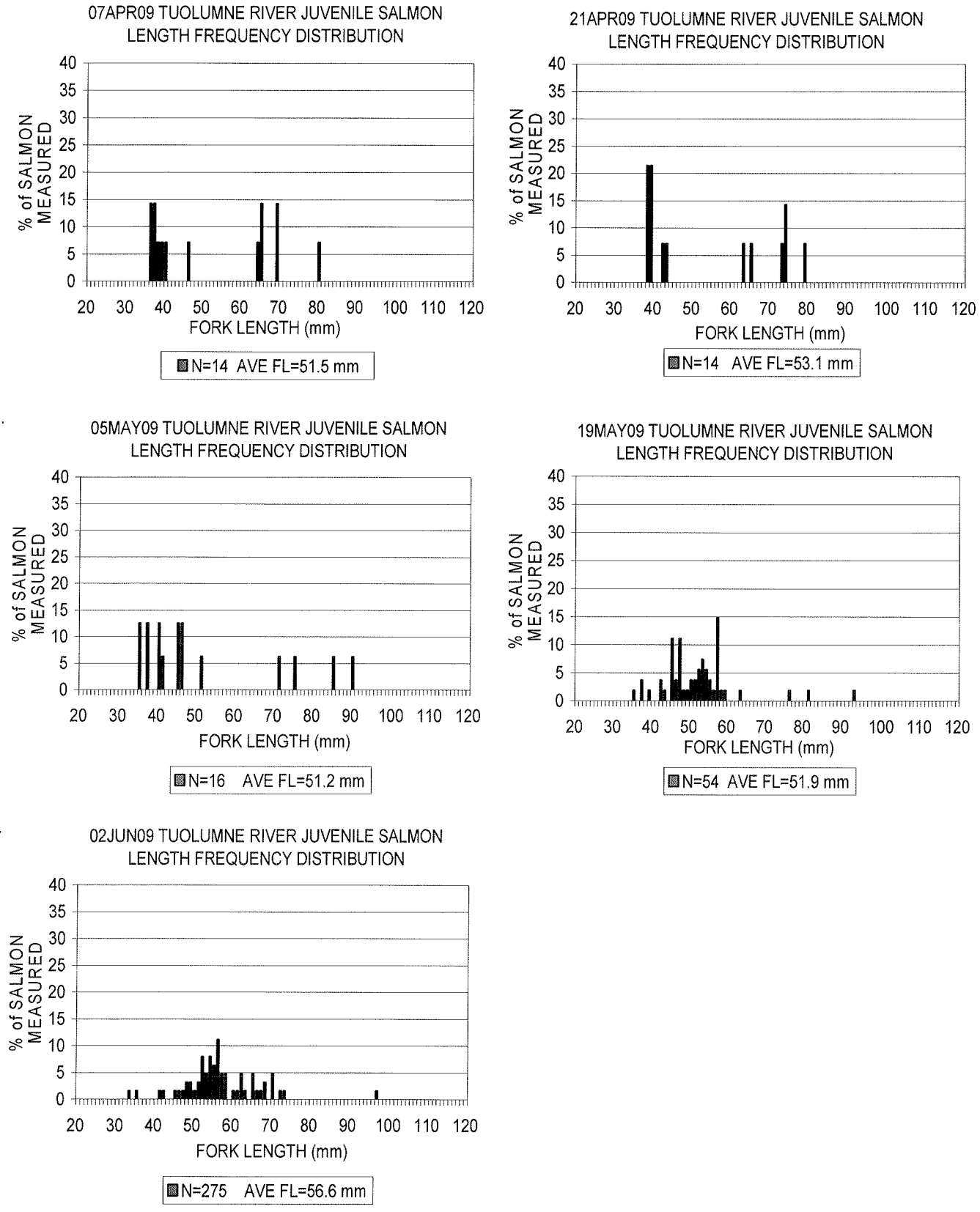



Figure 8. Length frequency distribution by date of salmon in the Tuolumne River, 2009.

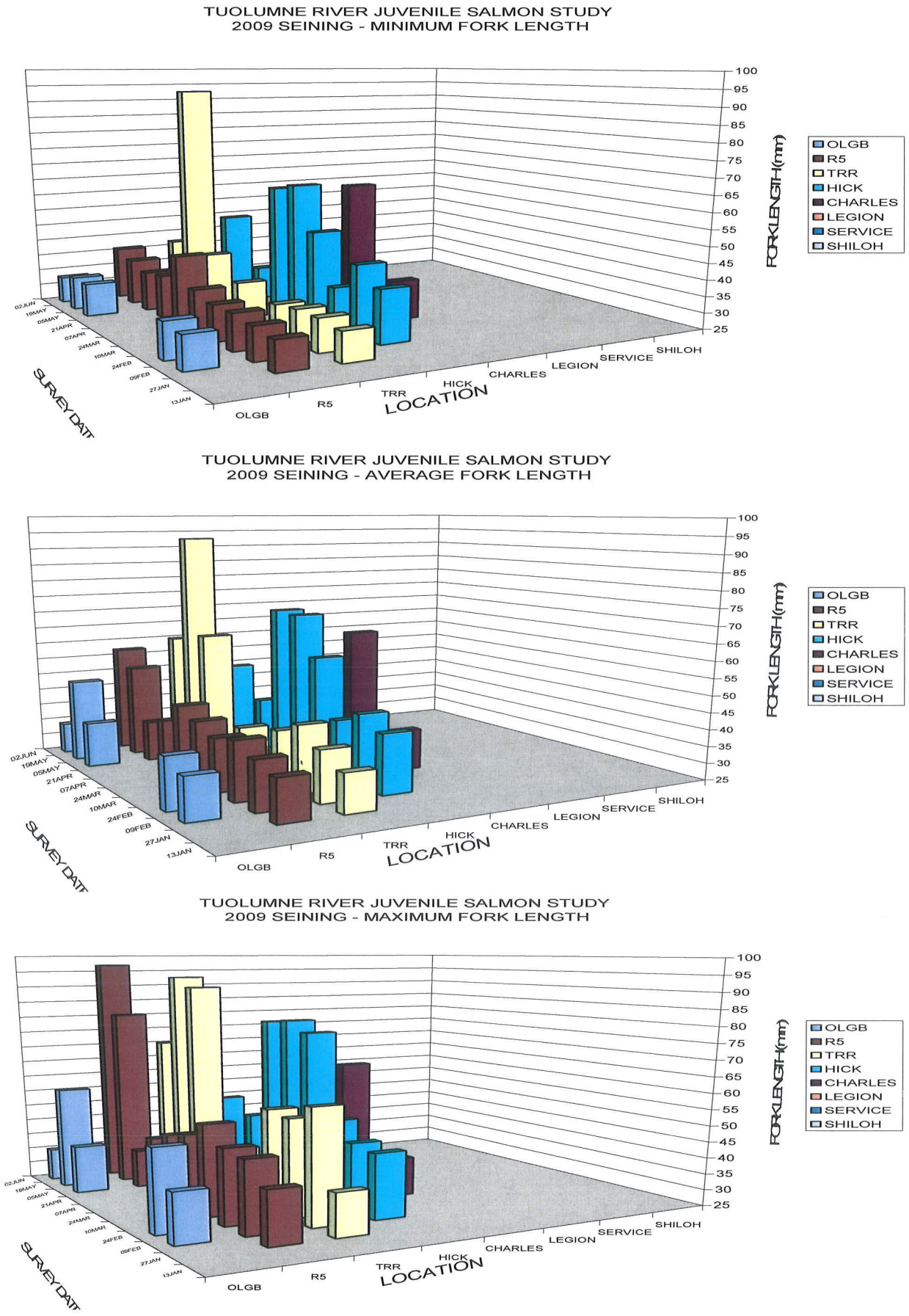
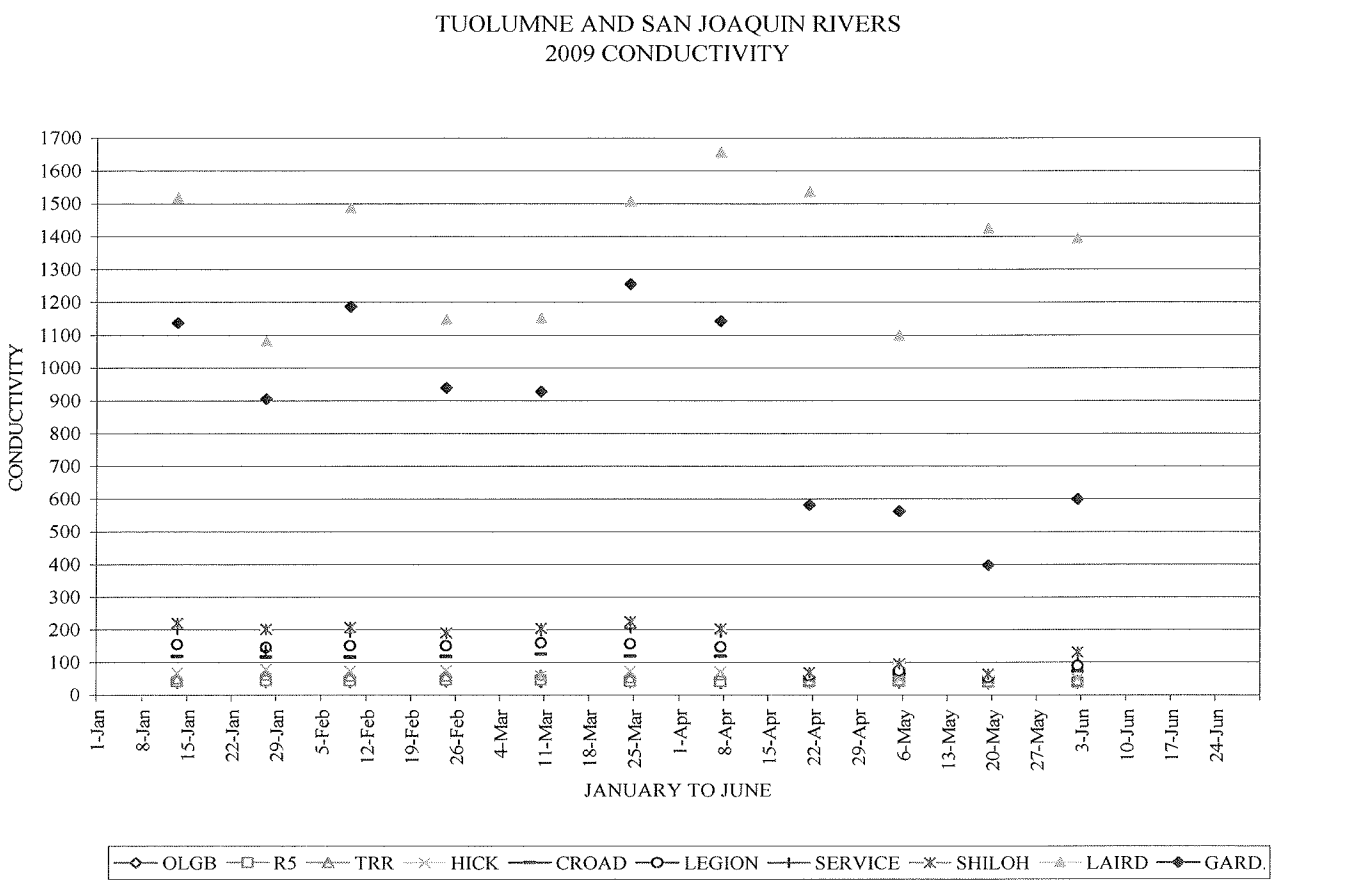



Figure 9. Minimum, average, and maximum fork length by location and survey period, 2009.



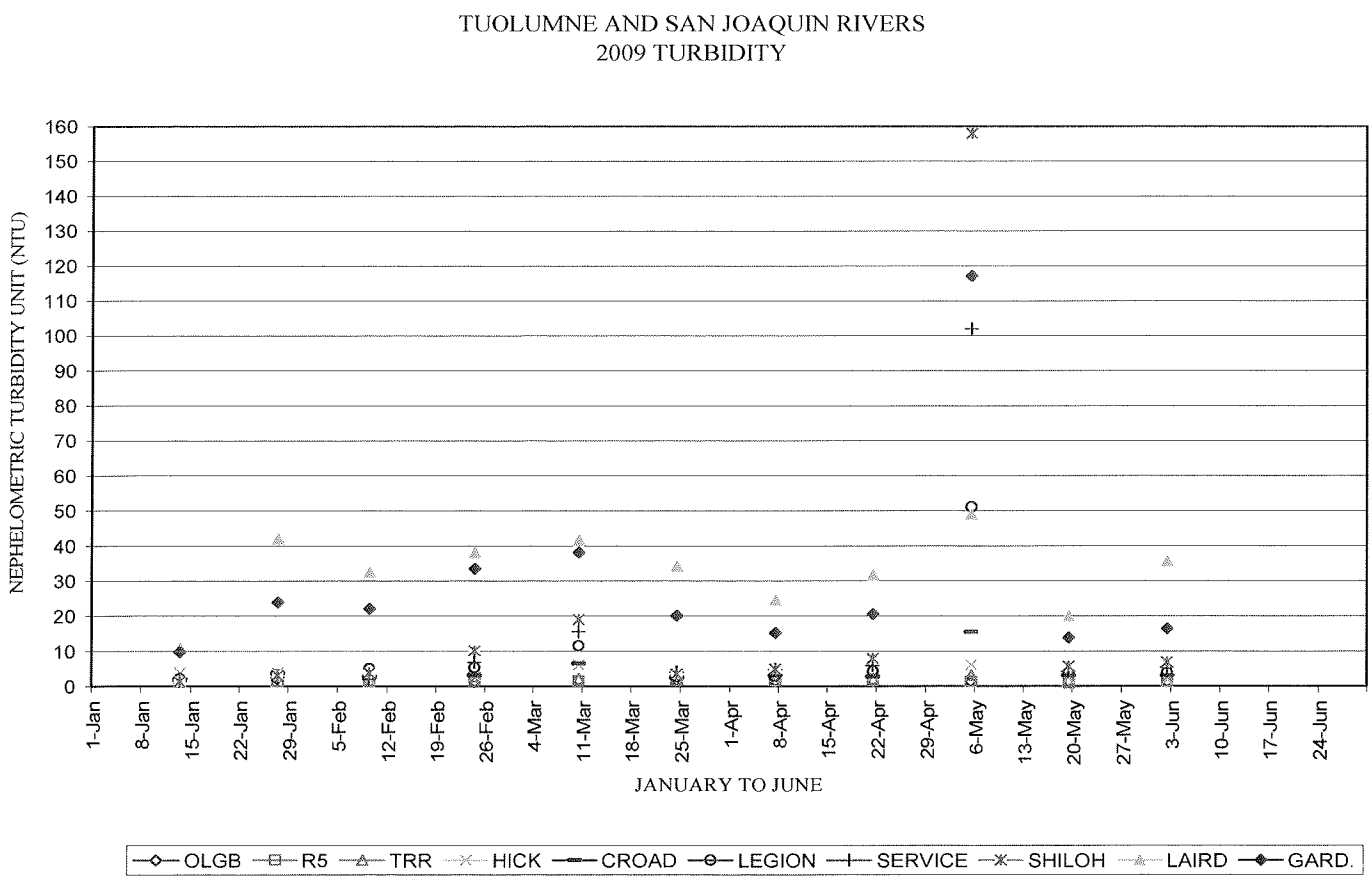
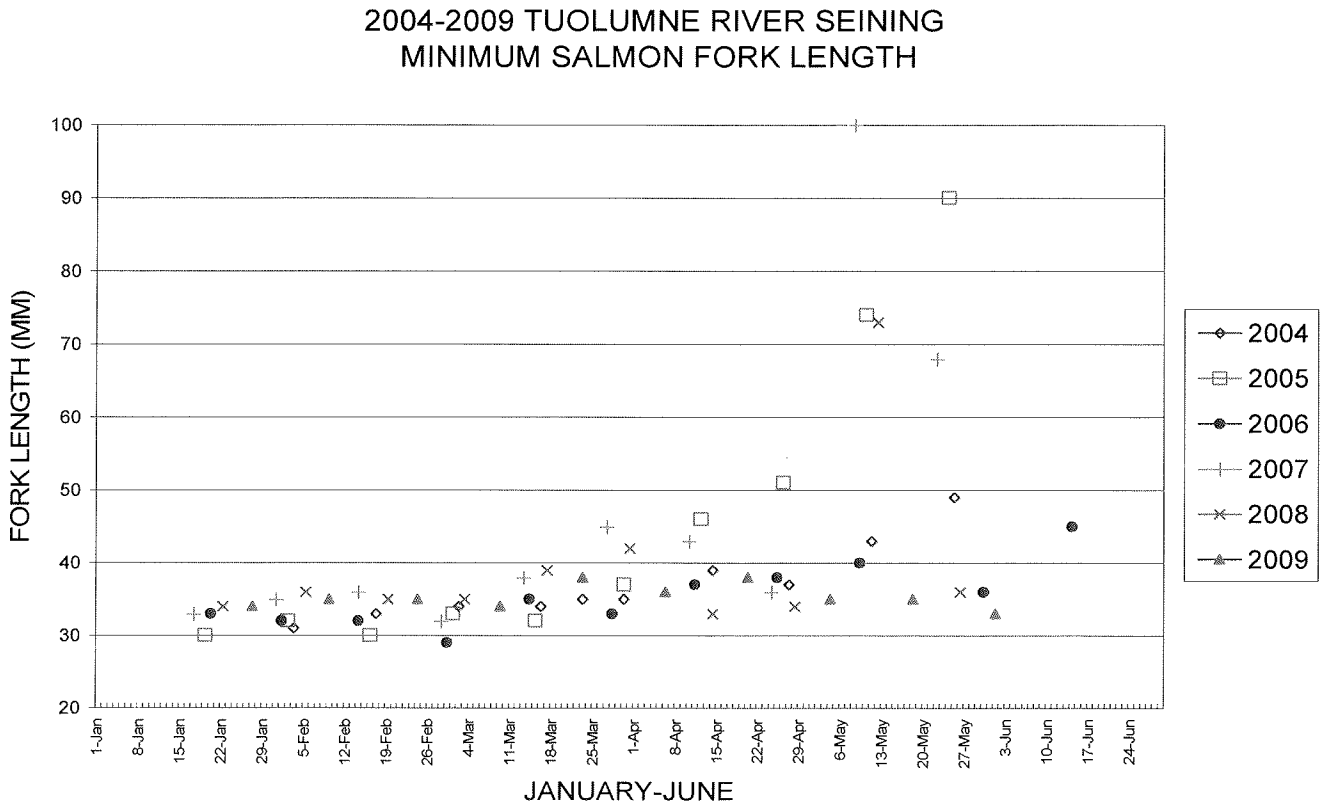
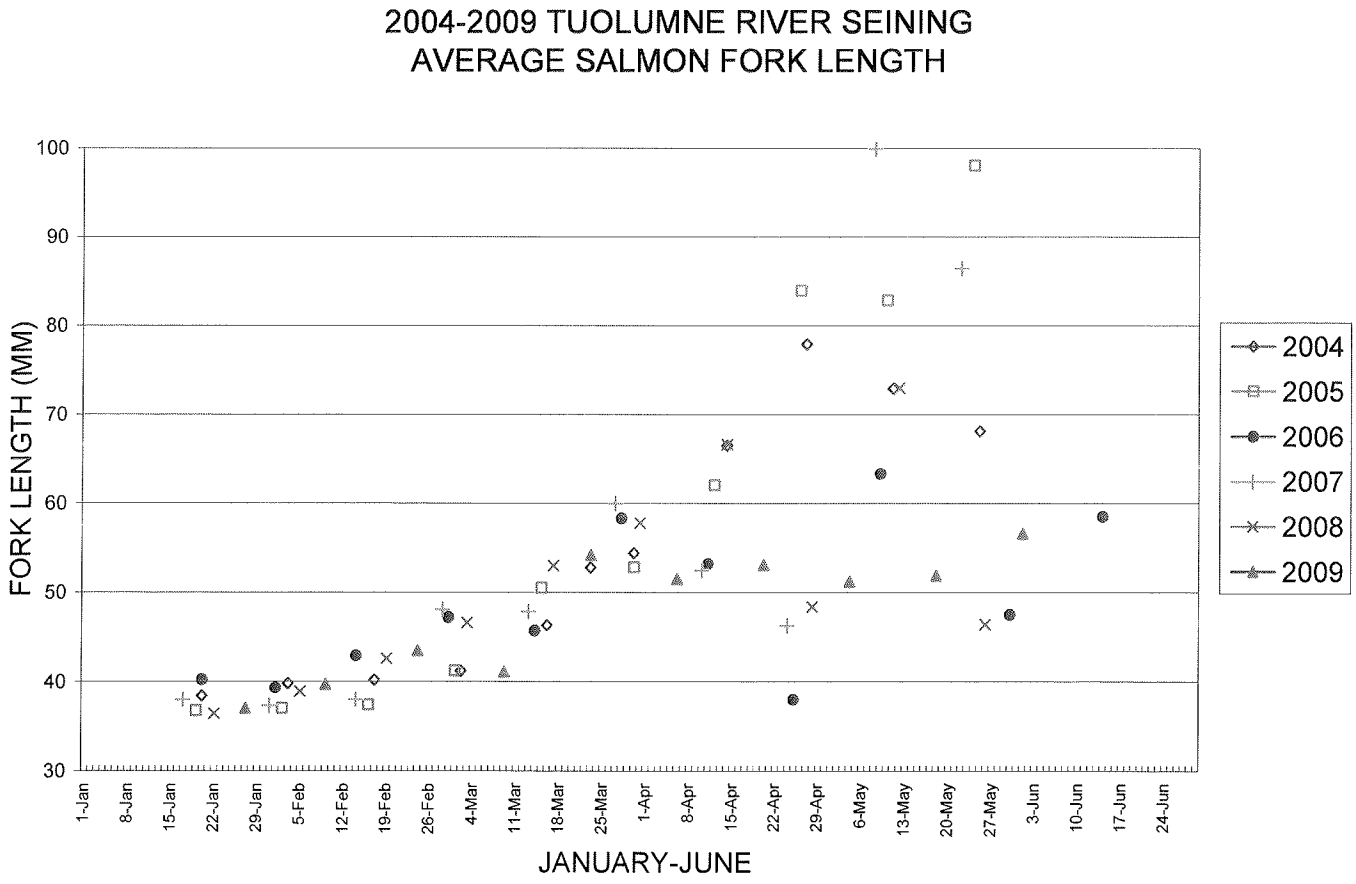
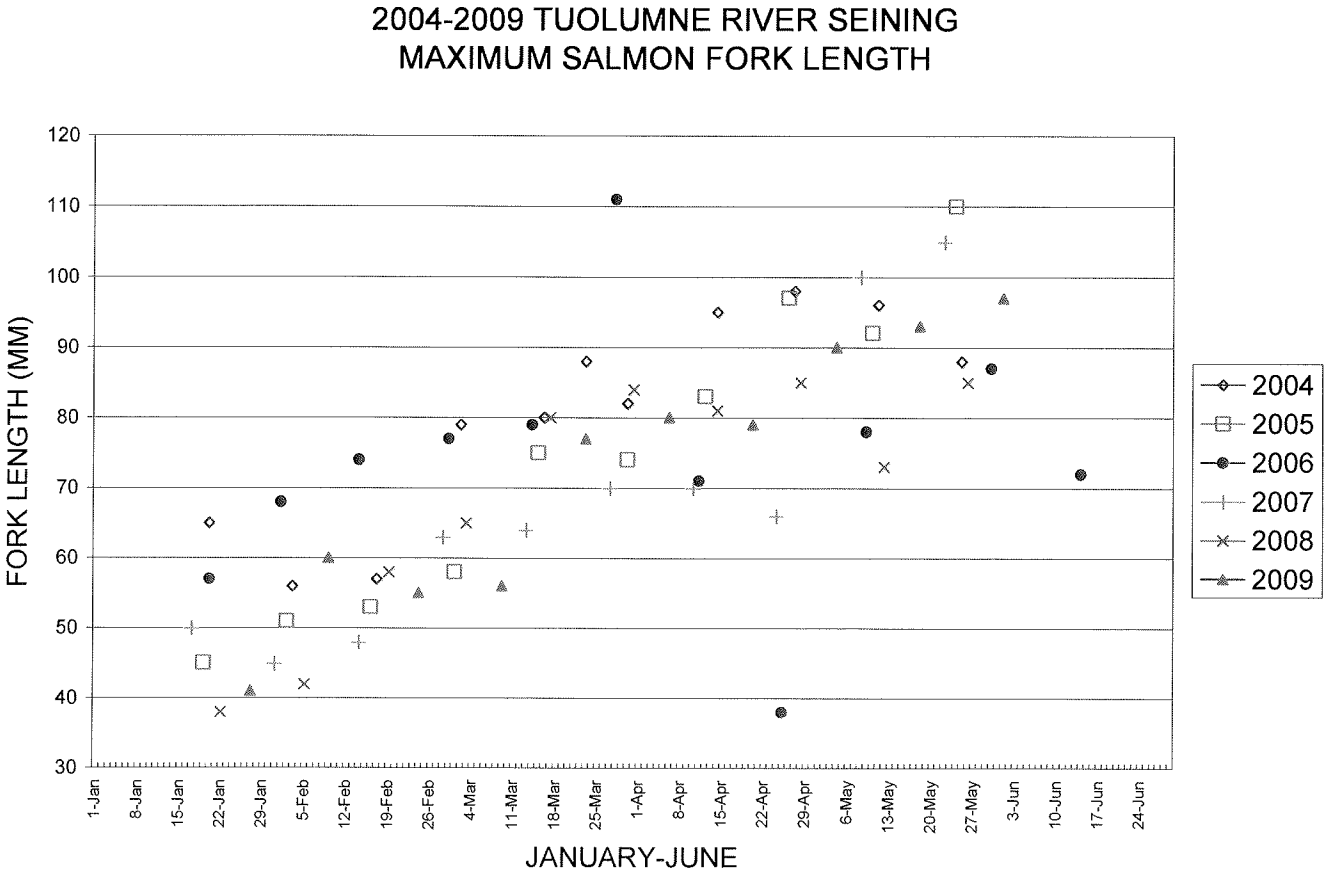



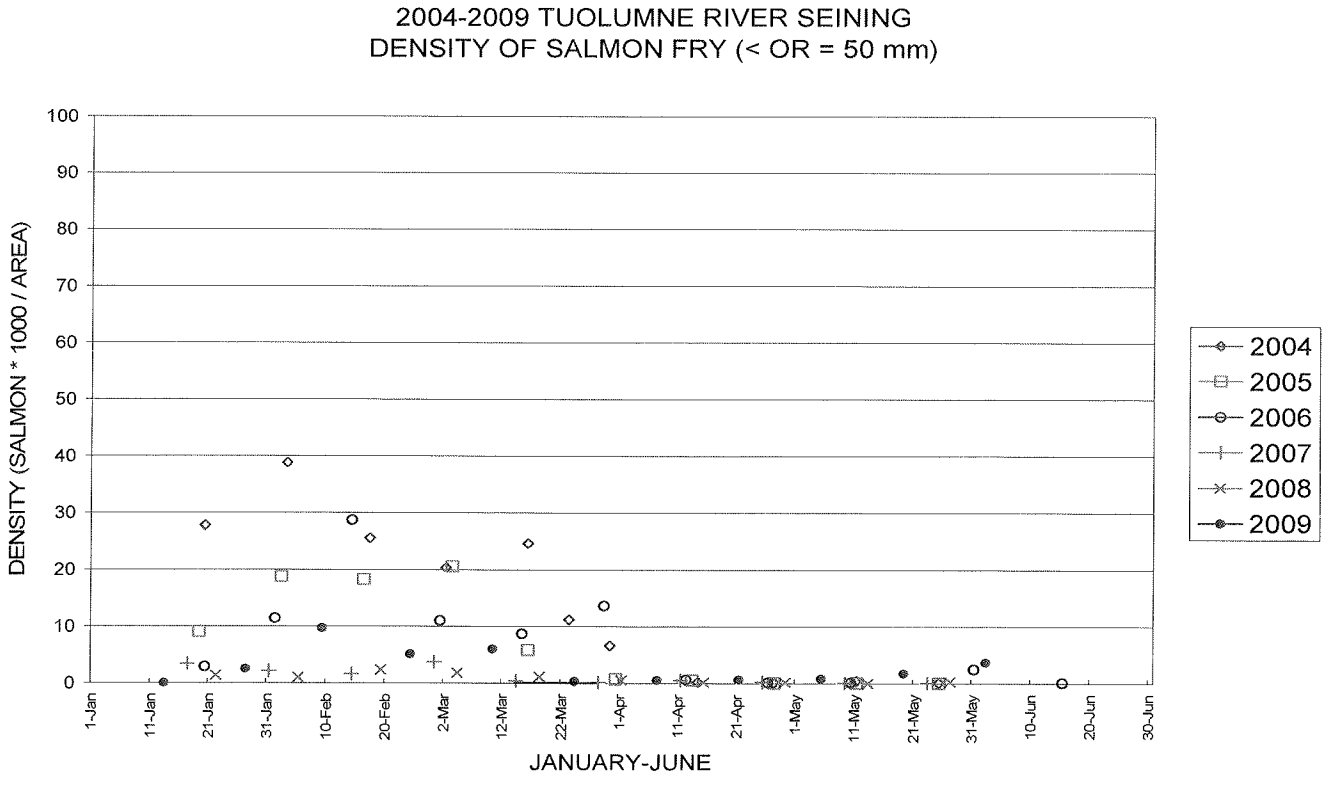

Figure 10. Conductivity and turbidity in the Tuolumne and San Joaquin Rivers, 2009



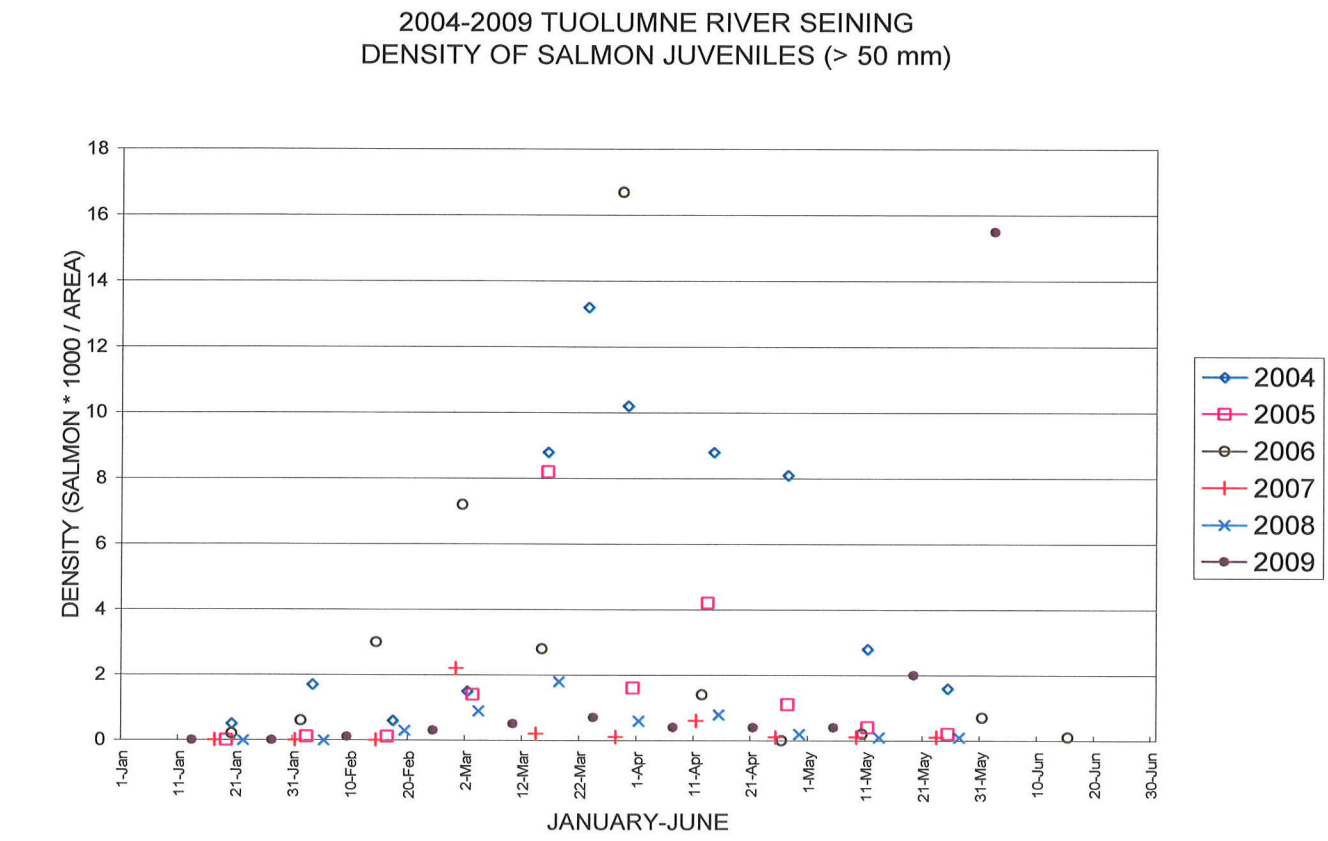



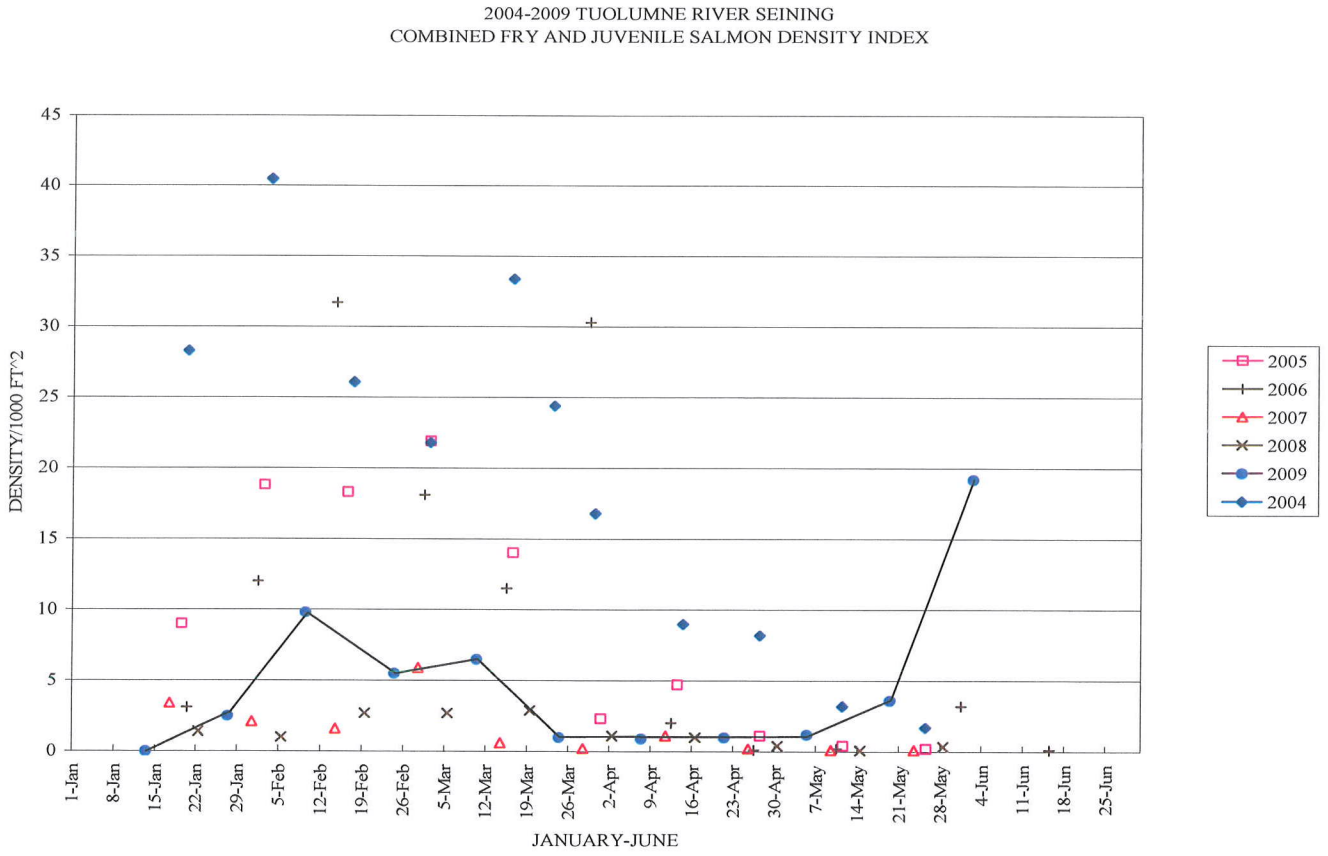

Figures 11 & 12. Minimum and average fork lengths of Tuolumne River salmon, 2004-2009.




Figures 13 & 14. Maximum fork length and Density index of salmon fry, 2004-2009.




Figures 15 & 16. Density index of salmon juveniles and total river salmon catch, 2004-2009.

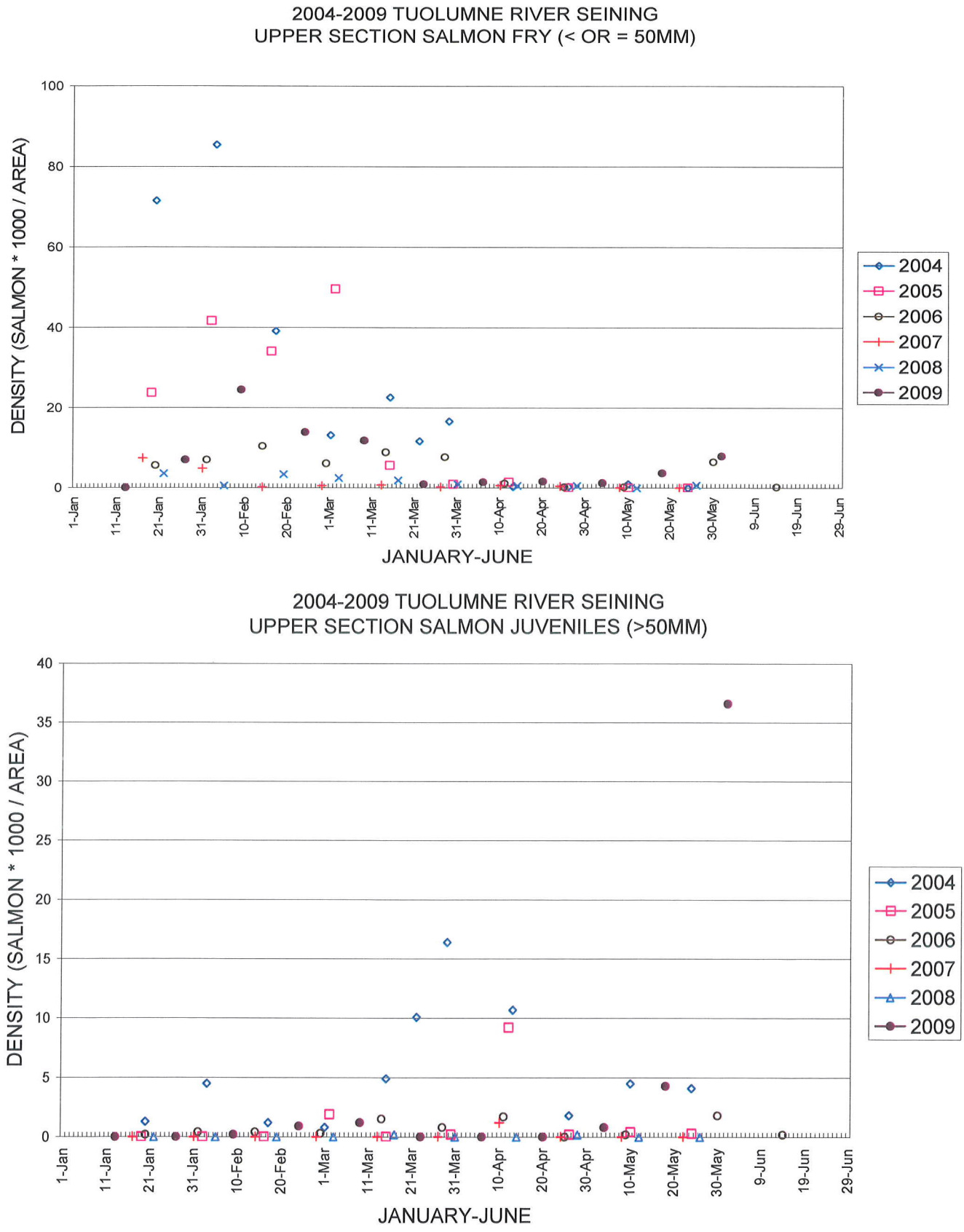



Figure 17. Upper section density indices for salmon fry and juveniles, 2004-2009

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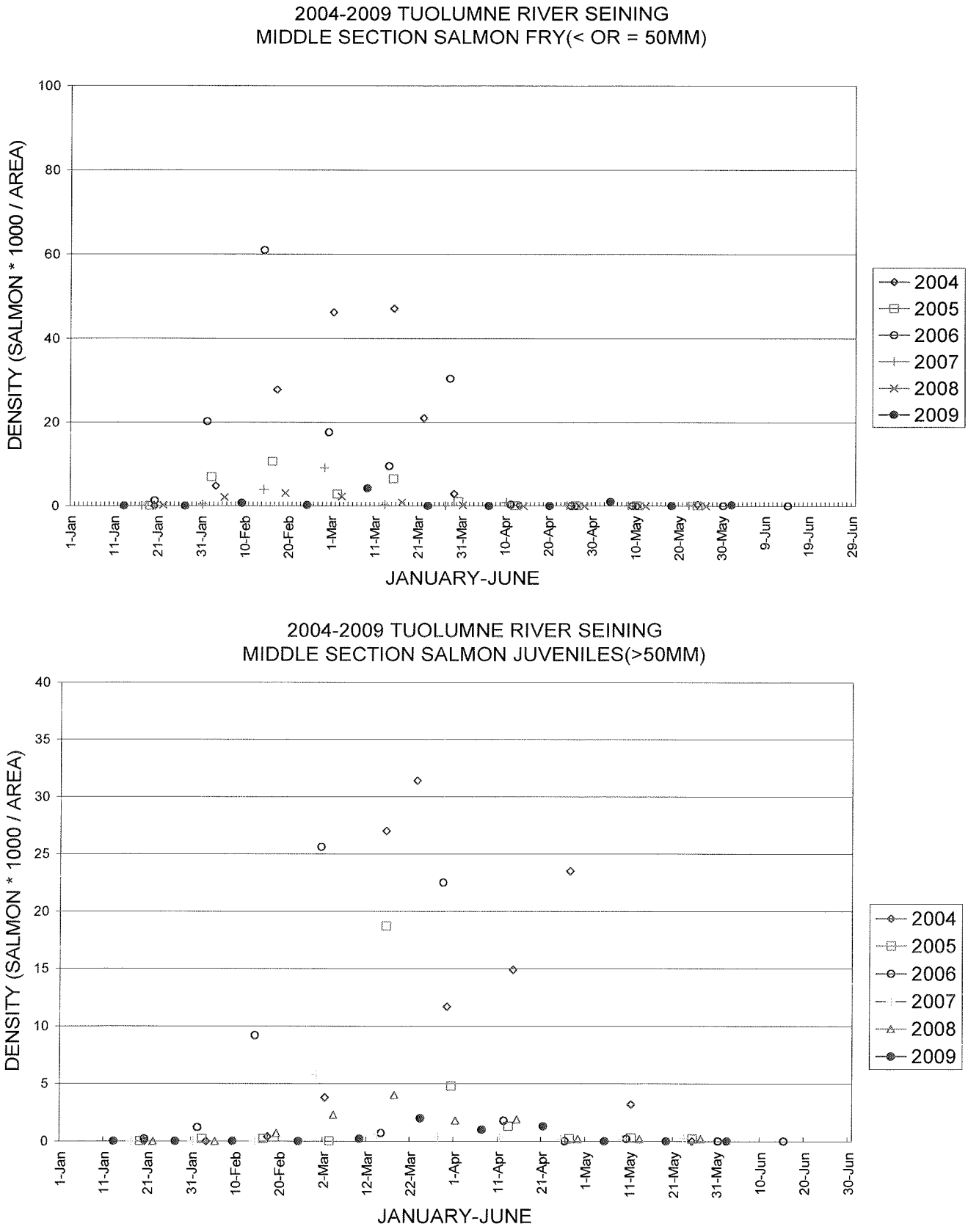
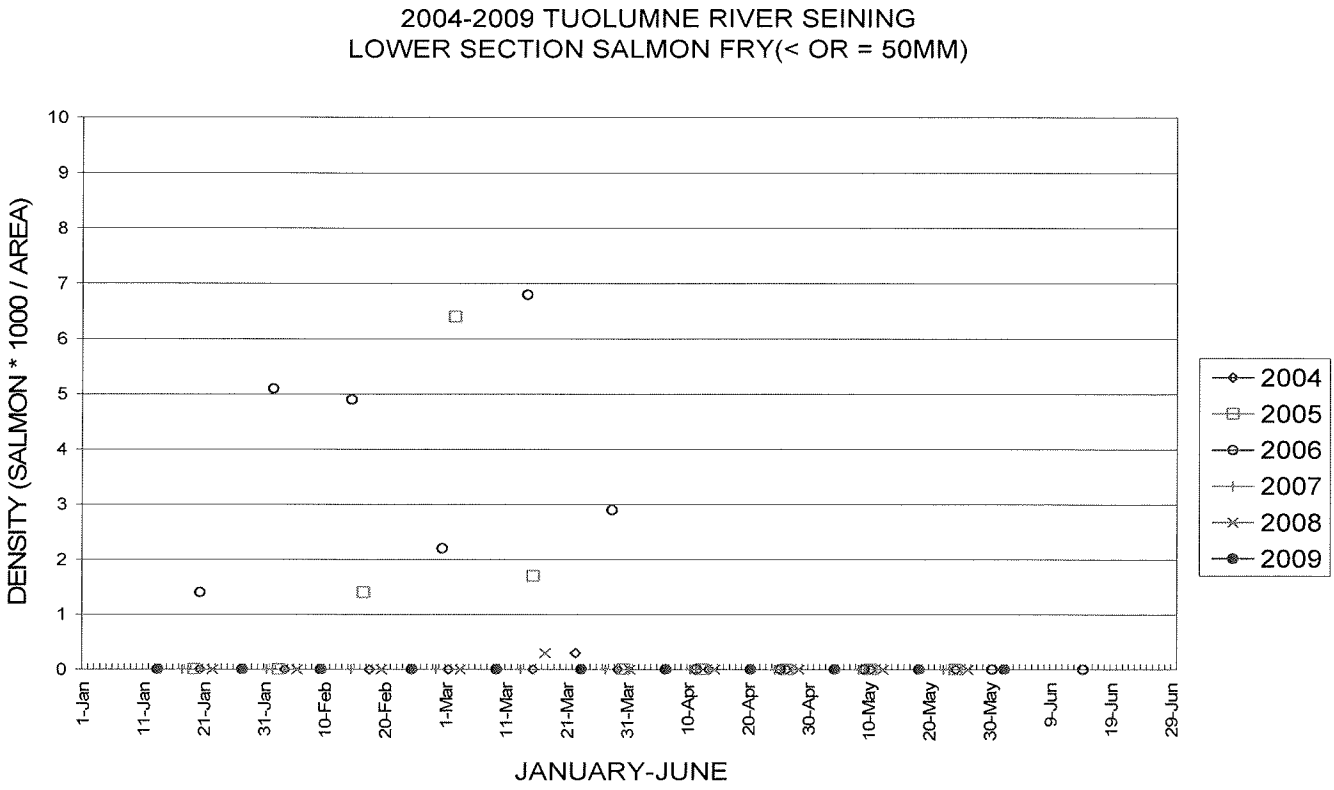



Figure 17. Middle section density indices for salmon fry and juveniles, 2004-2009.



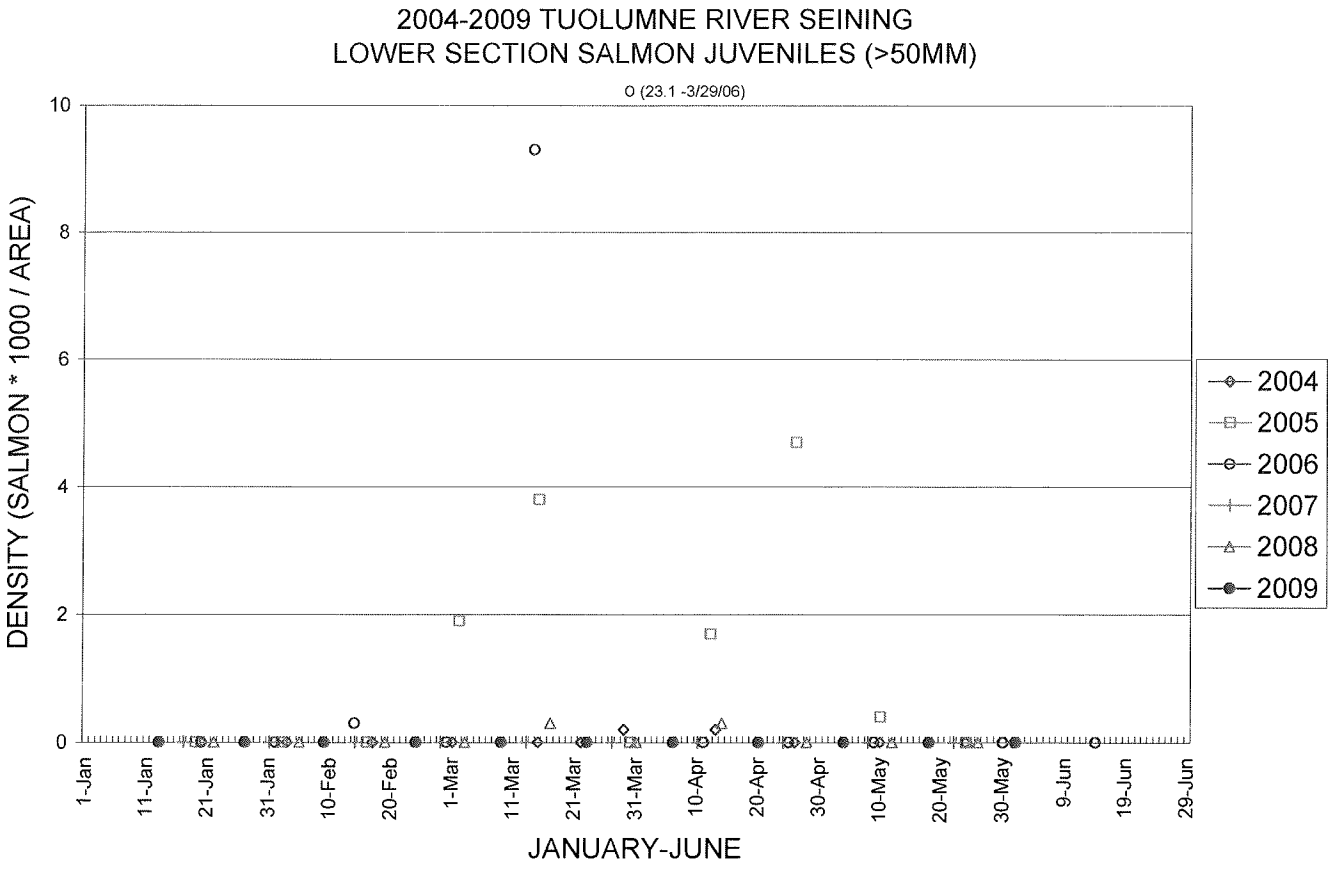




Figure 17. Lower section density indices for salmon fry and juveniles, 2004-2009.

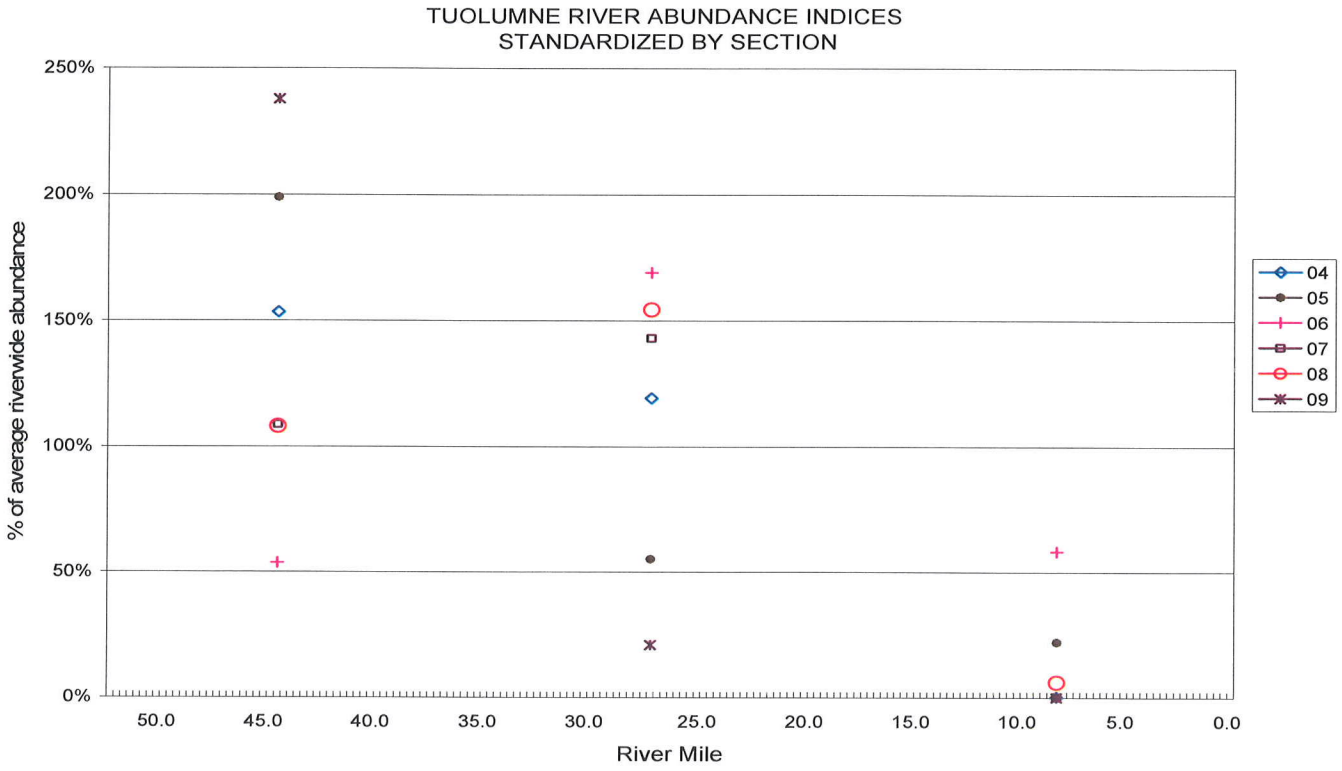



Figure 18. Tuolumne River abundance indices standardized by section, 2004-2009.

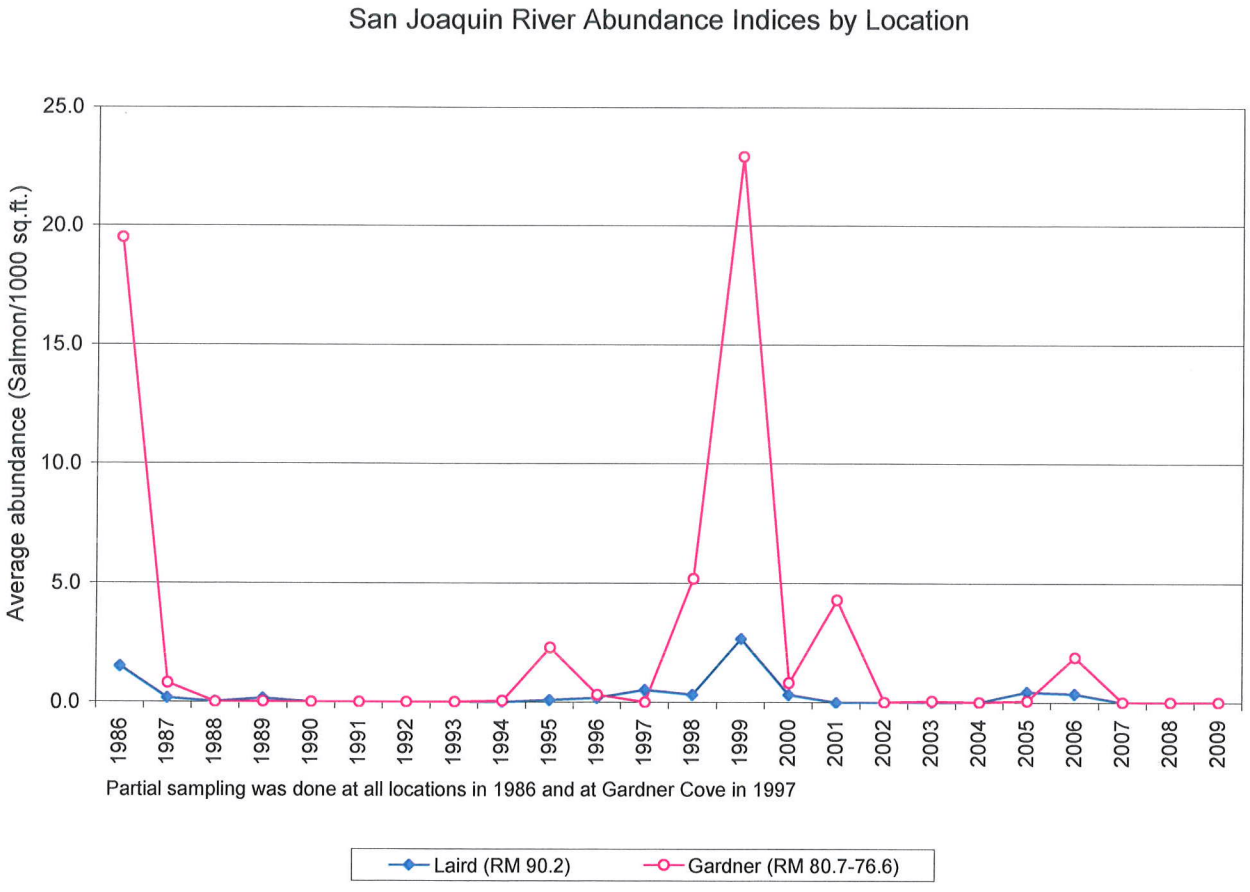



Figure 19. San Joaquin River abundance indices by location, 1986-2009.

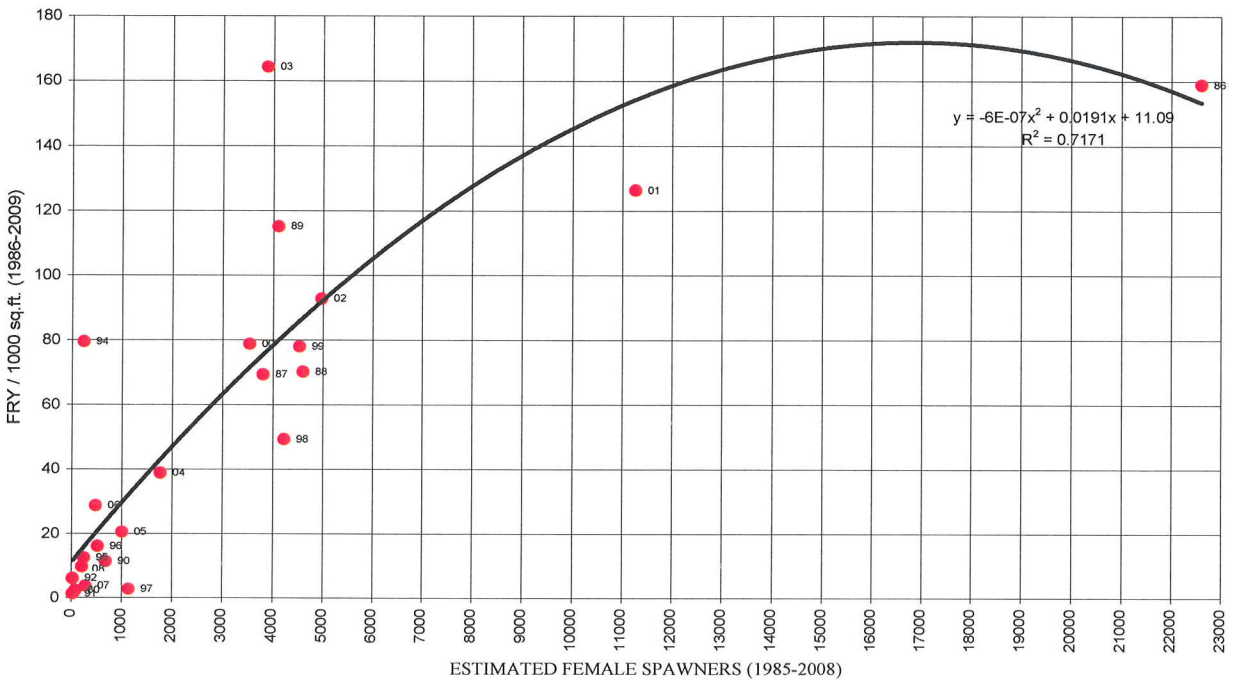



Figure 20. Tuolumne River peak fry density vs female spawners.

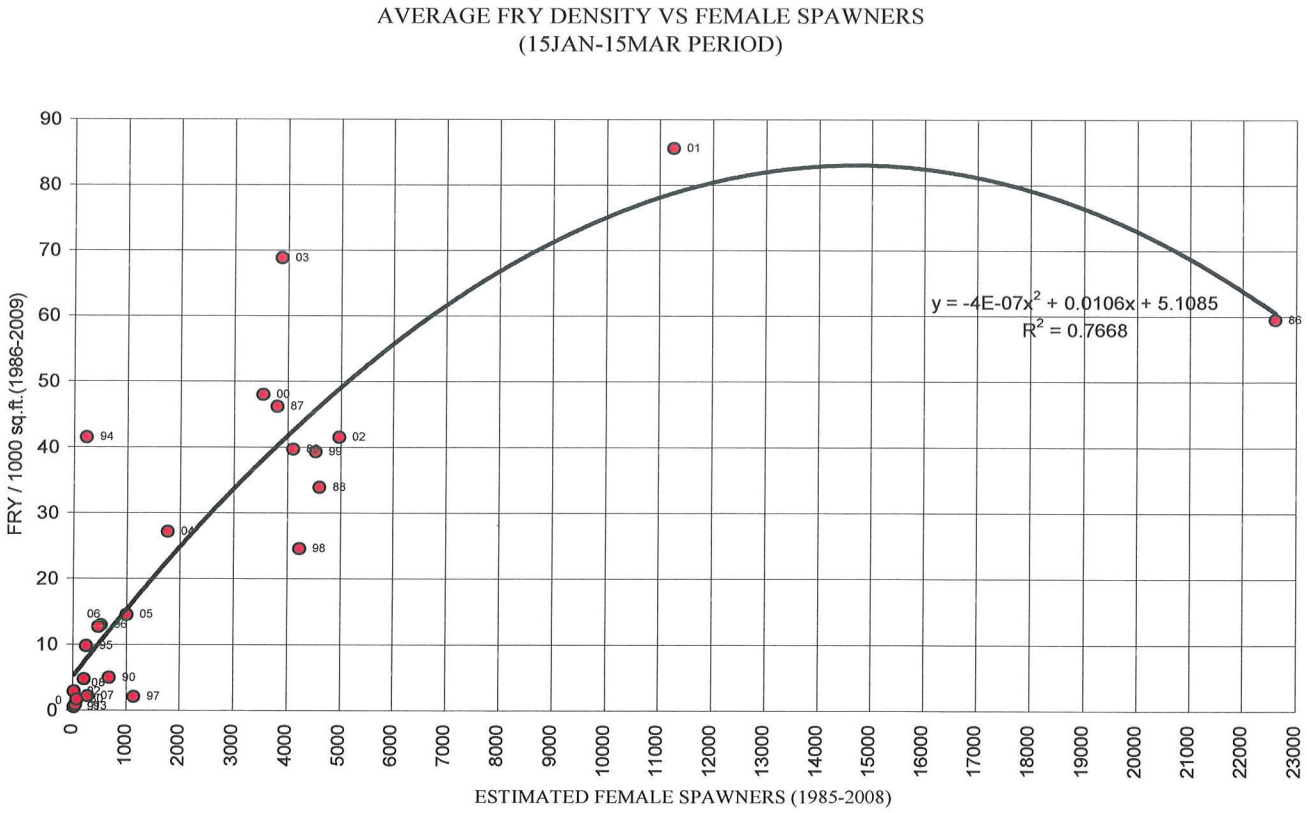



Figure 21. Tuolumne River average fry density vs female spawners.

Table 1. Summary table of weekly seine catch for the Tuolumne and San Joaquin rivers

2009 JUVENILE SALMON SEINING STUDY (TID/MID)

TUOLUMNE RIVER

| DATE | SALMON CATCH | AREA (SQ. FT.) | DENSITY (/1000 ft^2) | MINIMUM FL | MAXIMUM FL | AVERAGE FL | NUMBER MEAS. | SACFRY | NUMBER KILLED |
|---|---|---|---|---|---|---|---|---|---|
| 13JAN | 0 | 15,000 | 0.0 | | | | | | |
| 27JAN | 39 | 15,600 | 2.5 | 34 | 41 | 37.0 | 39 | 0 | 2 |
| 09FEB | 162 | 16,600 | 9.8 | 35 | 60 | 39.7 | 123 | 0 | 8 |
| 24FEB | 86 | 15,750 | 5.5 | 35 | 55 | 43.5 | 86 | 0 | 1 |
| 10MAR | 103 | 15,900 | 6.5 | 34 | 56 | 41.1 | 103 | 0 | 0 |
| 24MAR | 16 | 15,400 | 1.0 | 38 | 77 | 54.2 | 16 | 0 | 0 |
| 07APR | 14 | 15,400 | 0.9 | 36 | 80 | 51.5 | 14 | 0 | 0 |
| 21APR | 14 | 13,850 | 1.0 | 38 | 79 | 53.1 | 14 | 0 | 0 |
| 05MAY | 16 | 13,400 | 1.2 | 35 | 90 | 51.2 | 16 | 0 | 0 |
| 19MAY | 54 | 14,850 | 3.6 | 35 | 93 | 51.9 | 54 | 0 | 0 |
| 02JUN | 275 | 14,350 | 19.2 | 33 | 97 | 56.6 | 63 | 0 | 6 |
| TOTAL: | 779 | 166,100 | 4.7 | | | | 528 | 0 | 17 |

SAN JOAQUIN RIVER

| DATE | SALMON CATCH | AREA (SQ. FT.) | DENSITY (/1000 ft^2) | MINIMUM FL | MAXIMUM FL | AVERAGE FL | NUMBER MEAS. | SACFRY | NUMBER KILLED |
|---|---|---|---|---|---|---|---|---|---|
| 13JAN | 0 | 3,300 | 0.0 | | | | | | |
| 27JAN | 0 | 2,800 | 0.0 | | | | | | |
| 09FEB | 0 | 3,100 | 0.0 | | | | | | |
| 24FEB | 0 | 2,700 | 0.0 | | | | | | |
| 10MAR | 0 | 2100 | 0.0 | | | | | | |
| 24MAR | 0 | 2,700 | 0.0 | | | | | | |
| 07APR | 0 | 2,700 | 0.0 | | | | | | |
| 21APR | 0 | 2,700 | 0.0 | | | | | | |
| 05MAY | 0 | 2,650 | 0.0 | | | | | | |
| 19MAY | 0 | 3,600 | 0.0 | | | | | | |
| 02JUN | 0 | 3,600 | 0.0 | | | | | | |
| TOTAL: | 0 | 31,950 | 0.0 | | | | | | |

# Table 2. Summary table of weekly seine catch by location for the Tuolumne and San Joaquin Rivers, 2009

2009 Weekly Summary of TID/MID Seining Study
Salmon Density is the Number of Salmon / 1000 sq. ft.

| Date | Location | Total Catch | Area | Measured Fry | Measured Juvenile | Extrapolated Density Fry | Extrapolated Density Juvenile | Density Total | Average FL | EXTRAPOLATED UPPER SECTION Density Fry | MIDDLE SECTION Density Fry | LOWER SECTION Density Fry | UPPER SECTION Density Juvenile | MIDDLE SECTION Density Juvenile | LOWER SECTION Density Juvenile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13JAN | OLGB | 0 | 1,800 | | | | | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 13JAN | R5 | 0 | 1,950 | | | | | 0.0 | | | | | | | |
| 13JAN | TRR | 0 | 1,800 | | | | | 0.0 | | | | | | | |
| 13JAN | HICKMAN | 0 | 1,800 | | | | | 0.0 | | | | | | | |
| 13JAN | CHARLES | 0 | 1,800 | | | | | 0.0 | | | | | | | |
| 13JAN | LEGION | 0 | 2,250 | | | | | 0.0 | | | | | | | |
| 13JAN | SERVICE | 0 | 1,800 | | | | | 0.0 | | | | | | | |
| 13JAN | SHILOH | 0 | 1,800 | | | | | 0.0 | | | | | | | |
| 13JAN | LAIRD | 0 | 1,500 | | | | | 0.0 | | | | | | | |
| 13JAN | GARDNER | 0 | 1,800 | | | | | 0.0 | | | | | | | |
| TUOL.TOT. | | 0 | 15000 | 0 | 0 | | | 0.0 | | | | | | | |
| SJR. TOT. | | 0 | 3300 | 0 | 0 | | | 0.0 | | | | | | | |

2009 Weekly Summary of TID/MID Seining Study
Salmon Density is the Number of Salmon / 1000 sq. ft.

| Date | Location | Total Catch | Area | Measured Fry | Measured Juvenile | Extrapolated Density Fry | Extrapolated Density Juvenile | Density Total | Average FL | EXTRAPOLATED UPPER SECTION Density Fry | MIDDLE SECTION Density Fry | LOWER SECTION Density Fry | UPPER SECTION Density Juvenile | MIDDLE SECTION Density Juvenile | LOWER SECTION Density Juvenile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27JAN | OLGB | 0 | 1800 | | | | | 0.0 | | 7.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 27JAN | R5 | 27 | 1800 | 27 | 0 | 15.0 | 0.0 | 15.0 | 37.3 | | | | | | |
| 27JAN | TRR | 12 | 1950 | 12 | 0 | 6.2 | 0.0 | 6.2 | 36.3 | | | | | | |
| 27JAN | HICKMAN | 0 | 1950 | | | | | 0.0 | | | | | | | |
| 27JAN | CHARLES | 0 | 2100 | | | | | 0.0 | | | | | | | |
| 27JAN | LEGION | 0 | 2100 | | | | | 0.0 | | | | | | | |
| 27JAN | SERVICE | 0 | 1950 | | | | | 0.0 | | | | | | | |
| 27JAN | SHILOH | 0 | 1950 | | | | | 0.0 | | | | | | | |
| 27JAN | LAIRD | 0 | 600 | | | | | 0.0 | | | | | | | |
| 27JAN | GARDNER | 0 | 2200 | | | | | 0.0 | | | | | | | |
| TUOL.TOT. | | 39 | 15600 | 39 | 0 | 2.5 | 0.0 | 2.5 | 37.0 | | | | | | |
| SJR. TOT. | | 0 | 2800 | | | | | 0.0 | | | | | | | |

2009 Weekly Summary of TID/MID Seining Study
Salmon Density is the Number of Salmon / 1000 sq. ft.

| Date | Location | Total Catch | Area | Measured Fry | Measured Juvenile | Extrapolated Density Fry | Extrapolated Density Juvenile | Density Total | Average FL | EXTRAPOLATED UPPER SECTION Density Fry | MIDDLE SECTION Density Fry | LOWER SECTION Density Fry | UPPER SECTION Density Juvenile | MIDDLE SECTION Density Juvenile | LOWER SECTION Density Juvenile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 09FEB | OLGB | 7 | 2200 | 7 | 0 | 3.2 | 0.0 | 3.2 | 37.3 | 24.5 | 0.7 | 0.0 | 0.2 | 0.0 | 0.0 |
| 09FEB | R5 | 59 | 2200 | 59 | 0 | 26.8 | 0.0 | 26.8 | 39.5 | | | | | | |
| 09FEB | TRR | 92 | 2000 | 52 | 1 | 45.1 | 0.9 | 46.0 | 40.1 | | | | | | |
| 09FEB | HICKMAN | 4 | 1800 | 4 | 0 | 2.2 | 0.0 | 2.2 | 42.5 | | | | | | |
| 09FEB | CHARLES | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 09FEB | LEGION | 0 | 2400 | | | | | 0.0 | | | | | | | |
| 09FEB | SERVICE | 0 | 2200 | | | | | 0.0 | | | | | | | |
| 09FEB | SHILOH | 0 | 2000 | | | | | 0.0 | | | | | | | |
| 09FEB | LAIRD | 0 | 900 | | | | | 0.0 | | | | | | | |
| 09FEB | GARDNER | 0 | 2200 | | | | | 0.0 | | | | | | | |
| TUOL.TOT. | | 162 | 16600 | 122 | 1 | 9.7 | 0.1 | 9.8 | 39.7 | | | | | | |
| SJR. TOT. | | 0 | 3100 | 0 | 0 | | | 0.0 | | | | | | | |

2009 Weekly Summary of TID/MID Seining Study
Salmon Density is the Number of Salmon / 1000 sq. ft.

| Date | Location | Total Catch | Area | Measured Fry | Measured Juvenile | Extrapolated Density Fry | Extrapolated Density Juvenile | Density Total | Average FL | EXTRAPOLATED UPPER SECTION Density Fry | MIDDLE SECTION Density Fry | LOWER SECTION Density Fry | UPPER SECTION Density Juvenile | MIDDLE SECTION Density Juvenile | LOWER SECTION Density Juvenile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24FEB | OLGB | 8 | 1800 | 8 | 0 | 4.4 | 0.0 | 4.4 | 40.1 | 13.9 | 0.2 | 0.0 | 0.9 | 0.0 | 0.0 |
| 24FEB | R5 | 30 | 1800 | 30 | 0 | 16.7 | 0.0 | 16.7 | 42.3 | | | | | | |
| 24FEB | TRR | 47 | 2150 | 42 | 5 | 19.5 | 2.3 | 21.9 | 44.7 | | | | | | |
| 24FEB | HICKMAN | 1 | 1650 | 1 | 0 | 0.6 | 0.0 | 0.6 | 46.0 | | | | | | |
| 24FEB | CHARLES | 0 | 1950 | | | | | 0.0 | | | | | | | |
| 24FEB | LEGION | 0 | 2400 | | | | | 0.0 | | | | | | | |
| 24FEB | SERVICE | 0 | 2200 | | | | | 0.0 | | | | | | | |
| 24FEB | SHILOH | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 24FEB | LAIRD | 0 | 900 | | | | | 0.0 | | | | | | | |
| 24FEB | GARDNER | 0 | 1800 | | | | | 0.0 | | | | | | | |
| TUOL.TOT. | | 86 | 15750 | 81 | 5 | 5.1 | 0.3 | 5.5 | 43.5 | | | | | | |
| SJR. TOT. | | 0 | 2700 | 0 | 0 | | | 0.0 | | | | | | | |

2009 Weekly Summary of TID/MID Seining Study
Salmon Density is the Number of Salmon / 1000 sq. ft.

| Date | Location | Total Catch | Area | Measured Fry | Measured Juvenile | Extrapolated Density Fry | Extrapolated Density Juvenile | Density Total | Average FL | EXTRAPOLATED UPPER SECTION Density Fry | MIDDLE SECTION Density Fry | LOWER SECTION Density Fry | UPPER SECTION Density Juvenile | MIDDLE SECTION Density Juvenile | LOWER SECTION Density Juvenile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10MAR | OLGB | 0 | 2100 | | | | | 0.0 | | 11.8 | 4.2 | 0.0 | 1.2 | 0.2 | 0.0 |
| 10MAR | R5 | 31 | 1700 | 29 | 2 | 17.1 | 1.2 | 18.2 | 40.7 | | | | | | |
| 10MAR | TRR | 47 | 2200 | 42 | 5 | 19.1 | 2.3 | 21.4 | 41.0 | | | | | | |
| 10MAR | HICKMAN | 24 | 1500 | 23 | 1 | 15.3 | 0.7 | 16.0 | 42.2 | | | | | | |
| 10MAR | CHARLES | 1 | 1800 | 1 | 0 | 0.6 | 0.0 | 0.6 | 37.0 | | | | | | |
| 10MAR | LEGION | 0 | 2400 | | | | | 0.0 | | | | | | | |
| 10MAR | SERVICE | 0 | 2400 | | | | | 0.0 | | | | | | | |
| 10MAR | SHILOH | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 10MAR | LAIRD | 0 | 900 | | | | | 0.0 | | | | | | | |
| 10MAR | GARDNER | 0 | 1200 | | | | | 0.0 | | | | | | | |
| TUOL.TOT. | | 103 | 15900 | 95 | 8 | 6.0 | 0.5 | 6.5 | | | | | | | |
| SJR. TOT. | | 0 | 2100 | 0 | 0 | | | 0.0 | | | | | | | |

## Table 2 (Continued)

2009 Weekly Summary of TID/MID Seining Study

Salmon Density is the Number of Salmon / 1000 sq. ft.

| Date | Location | Total Catch | Area | Measured Fry | Measured Juvenile | Extrapolated Density Fry | Extrapolated Density Juvenile | Density Total | Average FL | EXTRAPOLATED UPPER SECTION Density Fry | MIDDLE SECTION Density Fry | LOWER SECTION Density Fry | UPPER SECTION Density Juvenile | MIDDLE SECTION Density Juvenile | LOWER SECTION Density Juvenile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24MAR | OLGB | 0 | 1800 | | | | | 0.0 | | 0.9 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| 24MAR | R5 | 5 | 1800 | 5 | 0 | 2.8 | 0.0 | 2.8 | 43.4 | | | | | | |
| 24MAR | TRR | 0 | 2100 | | | | | 0.0 | | | | | | | |
| 24MAR | HICKMAN | 11 | 1500 | 0 | 11 | 0.0 | 7.3 | 7.3 | 59.1 | | | | | | |
| 24MAR | CHARLES | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 24MAR | LEGION | 0 | 2200 | | | | | 0.0 | | | | | | | |
| 24MAR | SERVICE | 0 | 2400 | | | | | 0.0 | | | | | | | |
| 24MAR | SHILOH | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 24MAR | LAIRD | 0 | 900 | | | | | 0.0 | | | | | | | |
| 24MAR | GARDNER | 0 | 1800 | | | | | 0.0 | | | | | | | |
| TUOL.TOT. | | 16 | 15400 | 5 | 11 | 0.3 | 0.7 | 1.0 | | | | | | | |
| SJR. TOT. | | 0 | 2700 | 0 | 0 | | | 0.0 | | | | | | | |

2009 Weekly Summary of TID/MID Seining Study

Salmon Density is the Number of Salmon / 1000 sq. ft.

| Date | Location | Total Catch | Area | Measured Fry | Measured Juvenile | Extrapolated Density Fry | Extrapolated Density Juvenile | Density Total | Average FL | EXTRAPOLATED UPPER SECTION Density Fry | MIDDLE SECTION Density Fry | LOWER SECTION Density Fry | UPPER SECTION Density Juvenile | MIDDLE SECTION Density Juvenile | LOWER SECTION Density Juvenile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07APR | OLGB | 0 | 1800 | | | | | 0.0 | | 1.4 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| 07APR | R5 | 1 | 1500 | 1 | 0 | 0.7 | 0.0 | 0.7 | 46.0 | | | | | | |
| 07APR | TRR | 7 | 2400 | 7 | 0 | 2.9 | 0.0 | 2.9 | 37.6 | | | | | | |
| 07APR | HICKMAN | 4 | 1900 | 0 | 4 | 0.0 | 2.1 | 2.1 | 70.8 | | | | | | |
| 07APR | CHARLES | 2 | 1800 | 0 | 2 | 0.0 | 1.1 | 1.1 | 64.5 | | | | | | |
| 07APR | LEGION | 0 | 2400 | | | | | 0.0 | | | | | | | |
| 07APR | SERVICE | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 07APR | SHILOH | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 07APR | LAIRD | 0 | 900 | | | | | 0.0 | | | | | | | |
| 07APR | GARDNER | 0 | 1800 | | | | | 0.0 | | | | | | | |
| TUOL.TOT. | | 14 | 15400 | 8 | 6 | 0.5 | 0.4 | 0.9 | 51.5 | | | | | | |
| SJR. TOT. | | 0 | 2700 | | | | | 0.0 | | | | | | | |

2009 Weekly Summary of TID/MID Seining Study

Salmon Density is the Number of Salmon / 1000 sq. ft.

| Date | Location | Total Catch | Area | Measured Fry | Measured Juvenile | Extrapolated Density Fry | Extrapolated Density Juvenile | Density Total | Average FL | EXTRAPOLATED UPPER SECTION Density Fry | MIDDLE SECTION Density Fry | LOWER SECTION Density Fry | UPPER SECTION Density Juvenile | MIDDLE SECTION Density Juvenile | LOWER SECTION Density Juvenile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21APR | OLGB | 0 | 1650 | | | | | 0.0 | | 1.6 | 0.0 | 0.0 | 0.0 | 1.3 | 0.0 |
| 21APR | R5 | 8 | 1600 | 8 | 0 | 5.0 | 0.0 | 5.0 | 39.5 | | | | | | |
| 21APR | TRR | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 21APR | HICKMAN | 6 | 1200 | 0 | 6 | 0.0 | 5.0 | 5.0 | 71.3 | | | | | | |
| 21APR | CHARLES | 0 | 1200 | | | | | 0.0 | | | | | | | |
| 21APR | LEGION | 0 | 2400 | | | | | 0.0 | | | | | | | |
| 21APR | SERVICE | 0 | 2200 | | | | | 0.0 | | | | | | | |
| 21APR | SHILOH | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 21APR | LAIRD | 0 | 900 | | | | | | | | | | | | |
| 21APR | GARDNER | 0 | 1800 | | | | | 0.0 | | | | | | | |
| TUOL.TOT. | | 14 | 13850 | 8 | 6 | 0.6 | 0.4 | 1.0 | 53.1 | | | | | | |
| SJR. TOT. | | 0 | 2700 | | | | | 0.0 | | | | | | | |

## Table 2 (Continued)

2009 Weekly Summary of TID/MID Seining Study

Salmon Density is the Number of Salmon / 1000 sq. ft.

| Date | Location | Total Catch | Area | Measured Fry | Measured Juvenile | Extrapolated Density Fry | Extrapolated Density Juvenile | Density Total | Average FL | EXTRAPOLATED UPPER SECTION Density Fry | MIDDLE SECTION Density Fry | LOWER SECTION Density Fry | UPPER SECTION Density Juvenile | MIDDLE SECTION Density Juvenile | LOWER SECTION Density Juvenile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 05MAY | OLGB | 3 | 1800 | 3 | 0 | 1.7 | 0.0 | 1.7 | 38.3 | 1.2 | 1.0 | 0.0 | 0.8 | 0.0 | 0.0 |
| 05MAY | R5 | 1 | 1800 | 1 | 0 | 0.6 | 0.0 | 0.6 | 37.0 | | | | | | |
| 05MAY | TRR | 8 | 2400 | 3 | 5 | 1.3 | 2.1 | 3.3 | 63.0 | | | | | | |
| 05MAY | HICKMAN | 4 | 1300 | 4 | 0 | 3.1 | 0.0 | 3.1 | 40.8 | | | | | | |
| 05MAY | CHARLES | 0 | 1200 | | | | | 0.0 | | | | | | | |
| 05MAY | LEGION | 0 | 1700 | | | | | 0.0 | | | | | | | |
| 05MAY | SERVICE | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 05MAY | SHILOH | 0 | 1400 | | | | | 0.0 | | | | | | | |
| 05MAY | LAIRD | 0 | 700 | | | | | 0.0 | | | | | | | |
| 05MAY | GARDNER | 0 | 1950 | | | | | 0.0 | | | | | | | |
| TUOL.TOT. | | 16 | 13400 | 11 | 5 | 0.8 | 0.4 | 1.2 | 51.2 | | | | | | |
| SJR. TOT. | | 0 | 2650 | | | | | 0.0 | | | | | | | |

2009 Weekly Summary of TID/MID Seining Study

Salmon Density is the Number of Salmon / 1000 sq. ft.

| Date | Location | Total Catch | Area | Measured Fry | Measured Juvenile | Extrapolated Density Fry | Extrapolated Density Juvenile | Density Total | Average FL | EXTRAPOLATED UPPER SECTION Density Fry | MIDDLE SECTION Density Fry | LOWER SECTION Density Fry | UPPER SECTION Density Juvenile | MIDDLE SECTION Density Juvenile | LOWER SECTION Density Juvenile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19MAY | OLGB | 25 | 2000 | 12 | 13 | 6.0 | 6.5 | 12.5 | 49.4 | 3.7 | 0.0 | 0.0 | 4.3 | 0.0 | 0.0 |
| 19MAY | R5 | 28 | 2400 | 13 | 15 | 5.4 | 6.3 | 11.7 | 52.6 | | | | | | |
| 19MAY | TRR | 1 | 2400 | 0 | 1 | 0.0 | 0.4 | 0.4 | 93.0 | | | | | | |
| 19MAY | HICKMAN | 0 | 750 | | | | | 0.0 | | | | | | | |
| 19MAY | CHARLES | 0 | 1500 | | | | | 0.0 | | | | | | | |
| 19MAY | LEGION | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 19MAY | SERVICE | 0 | 2000 | | | | | 0.0 | | | | | | | |
| 19MAY | SHILOH | 0 | 2000 | | | | | 0.0 | | | | | | | |
| 19MAY | LAIRD | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 19MAY | GARDNER | 0 | 1800 | | | | | 0.0 | | | | | | | |
| TUOL.TOT. | | 54 | 14850 | 25 | 29 | 1.7 | 2.0 | 3.6 | 51.9 | | | | | | |
| SJR. TOT. | | 0 | 3600 | | | | | 0.0 | | | | | | | |

2009 Weekly Summary of TID/MID Seining Study

Salmon Density is the Number of Salmon / 1000 sq. ft.

| Date | Location | Total Catch | Area | Measured Fry | Measured Juvenile | Extrapolated Density Fry | Extrapolated Density Juvenile | Density Total | Average FL | EXTRAPOLATED UPPER SECTION Density Fry | MIDDLE SECTION Density Fry | LOWER SECTION Density Fry | UPPER SECTION Density Juvenile | MIDDLE SECTION Density Juvenile | LOWER SECTION Density Juvenile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 02JUN | OLGB | 2 | 1800 | 2 | 0 | 1.1 | 0.0 | 1.1 | 34.0 | 7.9 | 0.2 | 0.0 | 36.6 | 0.0 | 0.0 |
| 02JUN | R5 | 266 | 1950 | 8 | 46 | 20.2 | 116.2 | 136.4 | 57.2 | | | | | | |
| 02JUN | TRR | 6 | 2400 | 1 | 5 | 0.4 | 2.1 | 2.5 | 59.8 | | | | | | |
| 02JUN | HICKMAN | 1 | 1400 | 1 | 0 | 0.7 | 0.0 | 0.7 | 49.0 | | | | | | |
| 02JUN | CHARLES | 0 | 1200 | | | | | 0.0 | | | | | | | |
| 02JUN | LEGION | 0 | 2000 | | | | | 0.0 | | | | | | | |
| 02JUN | SERVICE | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 02JUN | SHILOH | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 02JUN | LAIRD | 0 | 1800 | | | | | 0.0 | | | | | | | |
| 02JUN | GARDNER | 0 | 1800 | | | | | 0.0 | | | | | | | |
| TUOL.TOT. | | 275 | 14350 | 12 | 51 | 3.7 | 15.5 | 19.2 | 56.6 | | | | | | |
| SJR. TOT. | | 0 | 3600 | | | | | 0.0 | | | | | | | |

# Table 3. Summary table of weekly seine catch by location for the Tuolumne and San Joaquin Rivers, 2009.

2009 TUOLUMNE RIVER SEINING STUDY (TID/MID)

| DATE | LOCATION | RIVER MILE | CATCH | AREA | DENSITY (/1000ft^2) | FL MIN | FL MAX. | FL AVG. | NO MEAS. | SACFRY | NO KILLED | WATER TEMP. | ELEC. COND. | SMOLT FL | SECTION DENSITY UPPER | MIDDLE | LOWER | TURB. | D.O. (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13JAN | OLGB | 50.5 | 0 | 1,800 | 0.0 | | | | | | | 10.2 | 38 | | 0.0 | 0.0 | 0.0 | 1.4 | 10.5 |
| 13JAN | R5 | 48.0 | 0 | 1,950 | 0.0 | | | | | | | 9.7 | 40 | | | | | 1.2 | 12.0 |
| 13JAN | TRR | 42.3 | 0 | 1,800 | 0.0 | | | | | | | 10.1 | 50 | | | | | 1.3 | 11.7 |
| 13JAN | HICK | 31.6 | 0 | 1,800 | 0.0 | | | | | | | 9.4 | 67 | | | | | 3.8 | 12.7 |
| 13JAN | CHARLES | 24.9 | 0 | 1,800 | 0.0 | | | | | | | 9.9 | 118 | | | | | 2.0 | 12.2 |
| 13JAN | LEGION | 17.2 | 0 | 2,250 | 0.0 | | | | | | | 10.5 | 155 | | | | | 2.1 | 13.0 |
| 13JAN | SERVICE | 8.7 | 0 | 1,800 | 0.0 | | | | | | | 10.0 | 202 | | | | | 1.5 | 12.4 |
| 13JAN | SHILOH | 3.4 | 0 | 1,800 | 0.0 | | | | | | | 10.9 | 221 | | | | | 1.3 | 12.7 |
| 13JAN | LAIRD | 90.2 | 0 | 1,500 | 0.0 | | | | | | | 10.8 | 1518 | | | | | 10.7 | 12.5 |
| 13JAN | GARDNER | 79.5 | 0 | 1,800 | 0.0 | | | | | | | 10.3 | 1137 | | | | | 9.7 | 12.4 |
| TR TOT. | | | 0 | 15000 | 0.0 | | | | 0 | | | | | | | | | | |
| SJR TOT. | | | 0 | 3300 | 0.0 | | | | 0 | | | | | | | | | | |

2009 TUOLUMNE RIVER SEINING STUDY (TID/MID)

| DATE | LOCATION | RIVER MILE | CATCH | AREA | DENSITY (/1000ft^2) | FL MIN | FL MAX. | FL AVG. | NO. MEAS. | SACFRY | NO KILLED | WATER TEMP | ELEC COND. | SMOLT FL | SECTION DENSITY UPPER | MIDDLE | LOWER | TURB. | D.O. (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27JAN | OLGB | 50.5 | 0 | 1800 | 0.0 | | | | | | | 10.0 | 40 | | 7.0 | 0.0 | 0.0 | 2.0 | 9.7 |
| 27JAN | R5 | 48.0 | 27 | 1800 | 15.0 | 34 | 41 | 37.3 | 27 | 0 | 2 | 9.5 | 43 | | | | | 1.3 | 11.2 |
| 27JAN | TRR | 42.3 | 12 | 1950 | 6.2 | 34 | 38 | 36.3 | 12 | 0 | 0 | 10.3 | 60 | | | | | 3.1 | 11.2 |
| 27JAN | HICK | 31.6 | 0 | 1950 | 0.0 | | | | | | | 10.0 | 78 | | | | | 3.8 | 11.8 |
| 27JAN | CHARLES | 24.9 | 0 | 2100 | 0.0 | | | | | | | 11.6 | 116 | | | | | 3.7 | 11.4 |
| 27JAN | LEGION | 17.2 | 0 | 2100 | 0.0 | | | | | | | 11.6 | 146 | | | | | 3.2 | 10.7 |
| 27JAN | SERVICE | 8.7 | 0 | 1950 | 0.0 | | | | | | | 10.5 | 137 | | | | | 2.6 | 12.0 |
| 27JAN | SHILOH | 3.4 | 0 | 1950 | 0.0 | | | | | | | 11.1 | 202 | | | | | 3.1 | 12.2 |
| 27JAN | LAIRD | 90.2 | 0 | 600 | 0.0 | | | | | | | 10.9 | 1081 | | | | | 42.0 | 11.6 |
| 27JAN | GARDNER | 79.5 | 0 | 2200 | 0.0 | | | | | | | 10.7 | 905 | | | | | 23.9 | 11.9 |
| TR TOT. | | | 39 | 15600 | 2.5 | 34 | 41 | 37.0 | 39 | 0 | 0 | | | | | | | | |
| SJR TOT. | | | 0 | 2800 | 0.0 | | | | 0 | 0 | 0 | | | | | | | | |

2009 TUOLUMNE RIVER SEINING STUDY (TID/MID)

| DATE | LOCATION | RIVER MILE | CATCH | AREA | DENSITY (/1000ft^2) | FL MIN. | FL MAX. | FL AVG | NO. MEAS | SACFRY | NO KILLED | WATER TEMP | ELEC. COND | SMOLT FL | SECTION DENSITY UPPER | MIDDLE | LOWER | TURB. | D.O (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 09FEB | OLGB | 50.5 | 7 | 2200 | 3.2 | 35 | 40 | 37.3 | 7 | 0 | 0 | 10.4 | 40 | | 24.7 | 0.7 | 0.0 | 1.2 | 9.4 |
| 09FEB | R5 | 48.0 | 59 | 2200 | 26.8 | 35 | 47 | 39.5 | 59 | 0 | 8 | 10.5 | 44 | | | | | 1.3 | 11.3 |
| 09FEB | TRR | 42.3 | 92 | 2000 | 46.0 | 35 | 60 | 40.1 | 53 | 0 | 0 | 11.4 | 57 | | | | | 1.8 | 11.5 |
| 09FEB | HICK | 31.6 | 4 | 1800 | 2.2 | 41 | 45 | 42.5 | 4 | 0 | 0 | 11.5 | 74 | | | | | 1.9 | 11.8 |
| 09FEB | CHARLES | 24.9 | 0 | 1800 | 0.0 | | | | | | | 12.9 | 116 | | | | | 2.7 | 11.6 |
| 09FEB | LEGION | 17.2 | 0 | 2400 | 0.0 | | | | | | | 13.0 | 151 | | | | | 5.0 | 11.5 |
| 09FEB | SERVICE | 8.7 | 0 | 2200 | 0.0 | | | | | | | 12.7 | 193 | | | | | 2.0 | 11.9 |
| 09FEB | SHILOH | 3.4 | 0 | 2000 | 0.0 | | | | | | | 12.8 | 208 | | | | | 3.8 | 12.2 |
| 09FEB | LAIRD | 90.2 | 0 | 900 | 0.0 | | | | | | | 13.2 | 1487 | | | | | 32.4 | 11.5 |
| 09FEB | GARDNER | 79.5 | 0 | 2200 | 0.0 | | | | | | | 12.8 | 1186 | | | | | 22.1 | 11.8 |
| TR TOT. | | | 162 | 16600 | 9.8 | 35 | 60 | 39.7 | 123 | 0 | 8 | | | | | | | | |
| SJR TOT | | | 0 | 3100 | 0.0 | | | | | | | | | | | | | | |

2009 TUOLUMNE RIVER SEINING STUDY (TID/MID)

| DATE | LOCATION | RIVER MILE | CATCH | AREA | DENSITY (/1000ft^2) | FL MIN. | FL MAX | FL AVG | NO. MEAS | SACFRY | NO. KILLED | WATER TEMP. | ELEC. COND | SMOLT FL | SECTION DENSITY UPPER | MIDDLE | LOWER | TURB | D.O (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24FEB | OLGB | 50.5 | 8 | 1800 | 4.4 | 36 | 50 | 40.1 | 8 | 0 | 0 | 11.0 | 42 | | 14.8 | 0.2 | 0.0 | 1.2 | 9.5 |
| 24FEB | R5 | 48.0 | 30 | 1800 | 16.7 | 36 | 48 | 42.3 | 30 | 0 | 0 | 11.4 | 45 | | | | | 2.7 | 11.2 |
| 24FEB | TRR | 42.3 | 47 | 2150 | 21.9 | 35 | 55 | 44.7 | 47 | 0 | 1 | 12.5 | 57 | | | | | 1.6 | 11.1 |
| 24FEB | HICK | 31.6 | 1 | 1650 | 0.6 | 46 | 46 | 46.0 | 1 | 0 | 0 | 13.3 | 76 | | | | | 2.9 | 11.3 |
| 24FEB | CHARLES | 24.9 | 0 | 1950 | 0.0 | | | | | | | 13.5 | 118 | | | | | 3.1 | 11.4 |
| 24FEB | LEGION | 17.2 | 0 | 2400 | 0.0 | | | | | | | 14.7 | 151 | | | | | 5.3 | 10.9 |
| 24FEB | SERVICE | 8.7 | 0 | 2200 | 0.0 | | | | | | | 14.7 | 190 | | | | | 6.8 | 10.8 |
| 24FEB | SHILOH | 3.4 | 0 | 1800 | 0.0 | | | | | | | 15.4 | 191 | | | | | 10.2 | 10.3 |
| 24FEB | LAIRD | 90.2 | 0 | 900 | 0.0 | | | | | | | 14.8 | 1148 | | | | | 38.0 | 9.7 |
| 24FEB | GARDNER | 79.5 | 0 | 1800 | 0.0 | | | | | | | 14.6 | 939 | | | | | 33.5 | 9.9 |
| TR TOT. | | | 86 | 15750 | 5.5 | 35 | 55 | 43.5 | 86 | 0 | 1 | | | | | | | | |
| SJR TOT | | | 0 | 2700 | 0.0 | | | | | | | | | | | | | | |

2009 TUOLUMNE RIVER SEINING STUDY (TID/MID)

| DATE | LOCATION | RIVER MILE | CATCH | AREA | DENSITY (/1000ft^2) | FL MIN. | FL MAX. | FL AVG. | NO. MEAS. | SACFRY | NO. KILLED | WATER TEMP. | ELEC COND | SMOLT FL | SECTION DENSITY UPPER | MIDDLE | LOWER | TURB | D.O. (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10MAR | OLGB | 50.5 | 0 | 2100 | 0.0 | | | | | | | 9.9 | 40 | | 13.0 | 4.4 | 0.0 | 1.6 | 10.9 |
| 10MAR | R5 | 48.0 | 31 | 1700 | 18.2 | 36 | 53 | 40.7 | 31 | 0 | 0 | 9.5 | 45 | | | | | 1.5 | 12.1 |
| 10MAR | TRR | 42.3 | 47 | 2200 | 21.4 | 34 | 56 | 41.0 | 47 | 0 | 0 | 11.4 | 61 | | | | | 2.1 | 10.8 |
| 10MAR | HICK | 31.6 | 24 | 1500 | 16.0 | 37 | 51 | 42.2 | 24 | 0 | 0 | 11.8 | 59 | | | | | 6.0 | 11.7 |
| 10MAR | CHARLES | 24.9 | 1 | 1800 | 0.6 | 37 | 37 | 37.0 | 1 | 0 | 0 | 13.7 | 125 | | | | | 6.4 | 11.4 |
| 10MAR | LEGION | 17.2 | 0 | 2400 | 0.0 | | | | | | | 14.1 | 160 | | | | | 11.5 | 11.5 |
| 10MAR | SERVICE | 8.7 | 0 | 2400 | 0.0 | | | | | | | 13.2 | 198 | | | | | 15.5 | 11.3 |
| 10MAR | SHILOH | 3.4 | 0 | 1800 | 0.0 | | | | | | | 14.1 | 205 | | | | | 19.0 | 11.3 |
| 10MAR | LAIRD | 90.2 | 0 | 900 | 0.0 | | | | | | | 14.1 | 1152 | | | | | 41.6 | 11.2 |
| 10MAR | GARDNER | 79.5 | 0 | 1200 | 0.0 | | | | | | | 13.9 | 928 | | | | | 38.1 | 10.7 |
| TR TOT. | | | 103 | 15900 | 6.5 | 34 | 56 | 41.1 | 103 | 0 | 0 | | | | | | | | |
| SJR TOT | | | 0 | 2100 | 0.0 | | | | | | | | | | | | | | |

Table 3 (Continued)

2009 TUOLUMNE RIVER SEINING STUDY (TID/MID)

| DATE | LOCATION | RIVER MILE | CATCH | AREA | DENSITY (/1000ft^2) | FL MIN. | FL MAX. | FL AVG. | NO. MEAS. | SACFRY | NO. KILLED | WATER TEMP | ELEC. COND. | SMOLT FL | SECTION DENSITY UPPER | MIDDLE | LOWER | TURB. | D.O (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24MAR | OLGB | 50.5 | 0 | 1800 | 0.0 | | | | | | | 9.5 | 39 | | 0.9 | 2.0 | 0.0 | 1.7 | 9.4 |
| 24MAR | R5 | 48.0 | 5 | 1800 | 2.8 | 38 | 48 | 43.4 | 5 | 0 | 0 | 9.6 | 41 | | | | | 1.7 | 11.1 |
| 24MAR | TRR | 42.3 | 0 | 2100 | 0.0 | | | | | | | 12.1 | 53 | | | | | 1.9 | 11.0 |
| 24MAR | HICK | 31.6 | 11 | 1500 | 7.3 | 52 | 77 | 59.1 | 11 | 0 | 0 | 13.3 | 73 | 73,77 | | | | 2.8 | 11.0 |
| 24MAR | CHARLES | 24.9 | 0 | 1800 | 0.0 | | | | | | | 15.8 | 119 | | | | | 2.4 | 11.4 |
| 24MAR | LEGION | 17.2 | 0 | 2200 | 0.0 | | | | | | | 16.6 | 157 | | | | | 2.7 | 11.2 |
| 24MAR | SERVICE | 8.7 | 0 | 2400 | 0.0 | | | | | | | 15.7 | 206 | | | | | 4.1 | 11.6 |
| 24MAR | SHILOH | 3.4 | 0 | 1800 | 0.0 | | | | | | | 16.9 | 225 | | | | | 3.5 | 11.2 |
| 24MAR | LAIRD | 90.2 | 0 | 900 | 0.0 | | | | | | | 15.4 | 1507 | | | | | 34.1 | 13.3 |
| 24MAR | GARDNER | 79.5 | 0 | 1800 | 0.0 | | | | | | | 15.5 | 1255 | | | | | 20.1 | 13.6 |
| TR TOT. | | | 16 | 15400 | 1.0 | 38 | 77 | 54.2 | 16 | 0 | 0 | | | | | | | | |
| SJR TOT | | | 0 | 2700 | 0.0 | | | | | | | | | | | | | | |

2009 TUOLUMNE RIVER SEINING STUDY (TID/MID)

| DATE | LOCATION | RIVER MILE | CATCH | AREA | DENSITY (/1000ft^2) | FL MIN. | FL MAX. | FL AVG. | NO. MEAS. | SACFRY | NO. KILLED | WATER TEMP | ELEC COND. | SMOLT FL | SECTION DENSITY UPPER | MIDDLE | LOWER | TURB | D.O (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07APR | OLGB | 50.5 | 0 | 1800 | 0.0 | | | | | | | 9.9 | 37 | | 1.4 | 1.0 | 0.0 | 1.5 | 10.3 |
| 07APR | R5 | 48.0 | 1 | 1500 | 0.7 | 46 | 46 | 46.0 | 1 | 0 | 0 | 10.5 | 40 | | | | | 1.6 | 11.9 |
| 07APR | TRR | 42.3 | 7 | 2400 | 2.9 | 36 | 40 | 37.6 | 7 | 0 | 0 | 13.6 | 60 | | | | | 2.7 | 11.1 |
| 07APR | HICK | 31.6 | 4 | 1900 | 2.1 | 65 | 80 | 70.8 | 4 | 0 | 0 | 16.1 | 70 | 65-80(5) | | | | 2.6 | 10.1 |
| 07APR | CHARLES | 24.9 | 2 | 1800 | 1.1 | 64 | 65 | 64.5 | 2 | 0 | 0 | 17.7 | 118 | | | | | 3.0 | 11.8 |
| 07APR | LEGION | 17.2 | 0 | 2400 | 0.0 | | | | | | | 18.8 | 147 | | | | | 2.8 | 11.0 |
| 07APR | SERVICE | 8.7 | 0 | 1800 | 0.0 | | | | | | | 17.5 | 193 | | | | | 4.8 | 10.7 |
| 07APR | SHILOH | 3.4 | 0 | 1800 | 0.0 | | | | | | | 17.8 | 203 | | | | | 4.8 | 10.7 |
| 07APR | LAIRD | 90.2 | 0 | 900 | 0.0 | | | | | | | 18.0 | 1656 | | | | | 24.4 | 13.2 |
| 07APR | GARDNER | 79.5 | 0 | 1800 | 0.0 | | | | | | | 17.9 | 1142 | | | | | 15.1 | 12.7 |
| TR TOT. | | | 14 | 15400 | 0.9 | 36 | 80 | 51.5 | 14 | 0 | 0 | | | | | | | | |
| SJR TOT | | | 0 | 2700 | 0.0 | | | | | | | | | | | | | | |

2009 TUOLUMNE RIVER SEINING STUDY (TID/MID)

| DATE | LOCATION | RIVER MILE | CATCH | AREA | DENSITY (/1000ft^2) | FL MIN. | FL MAX. | FL AVG | NO. MEAS. | SACFRY | NO. KILLED | WATER TEMP | ELEC. COND. | SMOLT FL | SECTION DENSITY UPPER | MIDDLE | LOWER | TURB | D.O. (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21APR | OLGB | 50.5 | 0 | 1650 | 0.0 | | | | | | | 10.5 | 37 | | 1.6 | 1.3 | 0.0 | 1.5 | 13.7 |
| 21APR | R5 | 48.0 | 8 | 1600 | 5.0 | 38 | 43 | 39.5 | 8 | 0 | 0 | 10.6 | 38 | | | | | 1.6 | 13.2 |
| 21APR | TRR | 42.3 | 0 | 1800 | 0.0 | | | | | | | 11.2 | 43 | | | | | 2.1 | 12.4 |
| 21APR | HICK | 31.6 | 6 | 1200 | 5.0 | 63 | 79 | 71.3 | 6 | 0 | 0 | 14.4 | 47 | 65-79(5) | | | | 2.8 | 11.3 |
| 21APR | CHARLES | 24.9 | 0 | 1200 | 0.0 | | | | | | | 16.7 | 54 | | | | | 2.7 | 11.4 |
| 21APR | LEGION | 17.2 | 0 | 2400 | 0.0 | | | | | | | 17.6 | 58 | | | | | 4.2 | 11.4 |
| 21APR | SERVICE | 8.7 | 0 | 2200 | 0.0 | | | | | | | 19.0 | 69 | | | | | 5.9 | 11.0 |
| 21APR | SHILOH | 3.4 | 0 | 1800 | 0.0 | | | | | | | 20.7 | 69 | | | | | 7.9 | 10.8 |
| 21APR | LAIRD | 90.2 | 0 | 900 | 0.0 | | | | | | | 24.3 | 1536 | | | | | 31.6 | N.A. |
| 21APR | GARDNER | 79.5 | 0 | 1800 | 0.0 | | | | | | | 22.3 | 581 | | | | | 20.5 | N.A. |
| TR TOT. | | | 14 | 13850 | 1.0 | 38 | 79 | 53.1 | 14 | 0 | 0 | | | | | | | | |
| SJR TOT | | | 0 | 2700 | 0.0 | | | | | | | | | | | | | | |

2009 TUOLUMNE RIVER SEINING STUDY (TID/MID)

| DATE | LOCATION | RIVER MILE | CATCH | AREA | DENSITY (/1000ft^2) | FL MIN | FL MAX | FL AVG | NO MEAS | SACFRY | NO KILLED | WATER TEMP | ELEC COND. | SMOLT FL | SECTION DENSITY UPPER | MIDDLE | LOWER | TURB. | D.O. (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 05MAY | OLGB | 50.5 | 3 | 1800 | 1.7 | 35 | 40 | 38.3 | 3 | 0 | 0 | 10.9 | 37 | | 2.0 | 1.0 | 0.0 | 1.3 | 13.4 |
| 05MAY | R5 | 48.0 | 1 | 1800 | 0.6 | 37 | 37 | 37.0 | 1 | 0 | 0 | 11.2 | 40 | | | | | 1.3 | 13.1 |
| 05MAY | TRR | 42.3 | 8 | 2400 | 3.3 | 41 | 90 | 63.0 | 8 | 0 | 0 | 12.0 | 44 | 71-90(4) | | | | 3.0 | 11.4 |
| 05MAY | HICK | 31.6 | 4 | 1300 | 3.1 | 35 | 46 | 40.8 | 4 | 0 | 0 | 14.6 | 47 | | | | | 6.0 | 10.1 |
| 05MAY | CHARLES | 24.9 | 0 | 1200 | 0.0 | | | | | | | 16.1 | 64 | | | | | 15.4 | 10.4 |
| 05MAY | LEGION | 17.2 | 0 | 1700 | 0.0 | | | | | | | 17.2 | 72 | | | | | 51.1 | 9.8 |
| 05MAY | SERVICE | 8.7 | 0 | 1800 | 0.0 | | | | | | | 18.8 | 95 | | | | | 102.0 | 9.6 |
| 05MAY | SHILOH | 3.4 | 0 | 1400 | 0.0 | | | | | | | 19.2 | 95 | | | | | 158.0 | 9.2 |
| 05MAY | LAIRD | 90.2 | 0 | 700 | 0.0 | | | | | | | 22.6 | 1098 | | | | | 48.9 | 13.0 |
| 05MAY | GARDNER | 79.5 | 0 | 1950 | 0.0 | | | | | | | 21.2 | 562 | | | | | 117.0 | 10.4 |
| TR TOT. | | | 16 | 13400 | 1.2 | 35 | 90 | 51.2 | 16 | 0 | 0 | | | | | | | | |
| SJR TOT | | | 0 | 2650 | 0.0 | | | | | | | | | | | | | | |

2009 TUOLUMNE RIVER SEINING STUDY (TID/MID)

| DATE | LOCATION | RIVER MILE | CATCH | AREA | DENSITY (/1000ft^2) | FL MIN. | FL MAX. | FL AVG | NO MEAS | SACFRY | NO KILLED | WATER TEMP | ELEC. COND | SMOLT FL | SECTION DENSITY UPPER | MIDDLE | LOWER | TURB | D.O (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19MAY | OLGB | 50.5 | 25 | 2000 | 12.5 | 35 | 57 | 49.4 | 25 | 0 | 0 | 10.7 | 35 | | 7.9 | 0.0 | 0.0 | 1.2 | 12.0 |
| 19MAY | R5 | 48.0 | 28 | 2400 | 11.7 | 39 | 81 | 52.6 | 28 | 0 | 0 | 11.3 | 37 | 76,81 | | | | 0.8 | 12.8 |
| 19MAY | TRR | 42.3 | 1 | 2400 | 0.4 | 93 | 93 | 93.0 | 1 | 0 | 0 | 11.9 | 40 | 93 | | | | 1.4 | 11.9 |
| 19MAY | HICK | 31.6 | 0 | 750 | 0.0 | | | | | | | 14.3 | 43 | | | | | 2.2 | 11.4 |
| 19MAY | CHARLES | 24.9 | 0 | 1500 | 0.0 | | | | | | | 16.2 | 53 | | | | | 3.0 | 10.5 |
| 19MAY | LEGION | 17.2 | 0 | 1800 | 0.0 | | | | | | | 17.8 | 52 | | | | | 4.1 | 11.1 |
| 19MAY | SERVICE | 8.7 | 0 | 2000 | 0.0 | | | | | | | 19.2 | 62 | | | | | 4.2 | 8.6 |
| 19MAY | SHILOH | 3.4 | 0 | 2000 | 0.0 | | | | | | | 20.1 | 64 | | | | | 5.7 | 10.2 |
| 19MAY | LAIRD | 90.2 | 0 | 1800 | 0.0 | | | | | | | 26.5 | 1424 | | | | | 20.0 | N.A. |
| 19MAY | GARDNER | 79.5 | 0 | 1800 | 0.0 | | | | | | | 22.2 | 397 | | | | | 13.8 | 11.8 |
| TR TOT. | | | 54 | 14850 | 3.6 | 35 | 93 | 51.9 | 54 | 0 | 0 | | | | | | | | |
| SJR TOT | | | 0 | 3600 | 0.0 | | | | | | | | | | | | | | |

2009 TUOLUMNE RIVER SEINING STUDY (TID/MID)

| DATE | LOCATION | RIVER MILE | CATCH | AREA | DENSITY (/1000ft^2) | FL MIN. | FL MAX. | FL AVG | NO MEAS | SACFRY | NO. KILLED | WATER TEMP | ELEC. COND | SMOLT FL | SECTION DENSITY UPPER | MIDDLE | LOWER | TURB | D.O. (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 02JUN | OLGB | 50.5 | 2 | 1800 | 1.1 | 33 | 35 | 34.0 | 2 | 0 | 0 | 10.7 | 36 | | 44.6 | 0.2 | 0.0 | 1.3 | 11.1 |
| 02JUN | R5 | 48.0 | 266 | 1950 | 136.4 | 41 | 97 | 57.2 | 54 | 0 | 6 | 11.4 | 37 | 13(65-97) | | | | 1.3 | 11.9 |
| 02JUN | TRR | 42.3 | 6 | 2400 | 2.5 | 42 | 70 | 59.8 | 6 | 0 | 0 | 14.7 | 43 | 66,70 | | | | 1.5 | 10.9 |
| 02JUN | HICK | 31.6 | 1 | 1400 | 0.7 | 49 | 49 | 49.0 | 1 | 0 | 0 | 17.6 | 49 | | | | | 1.9 | 9.9 |
| 02JUN | CHARLES | 24.9 | 0 | 1200 | 0.0 | | | | | | | 20.4 | 72 | | | | | 3.0 | 10.9 |
| 02JUN | LEGION | 17.2 | 0 | 2000 | 0.0 | | | | | | | 21.1 | 89 | | | | | 3.9 | 9.9 |
| 02JUN | SERVICE | 8.7 | 0 | 1800 | 0.0 | | | | | | | 22.1 | 123 | | | | | 5.4 | 9.4 |
| 02JUN | SHILOH | 3.4 | 0 | 1800 | 0.0 | | | | | | | 22.9 | 131 | | | | | 6.9 | 9.0 |
| 02JUN | LAIRD | 90.2 | 0 | 1800 | 0.0 | | | | | | | 24.3 | 1395 | | | | | 35.6 | 14.2 |
| 02JUN | GARDNER | 79.5 | 0 | 1800 | 0.0 | | | | | | | 23.4 | 599 | | | | | 16.4 | 9.7 |
| TR TOT. | | | 275 | 14350 | 19.2 | 33 | 97 | 56.6 | 63 | 0 | 6 | | | | | | | | |
| SJR TOT. | | | 0 | 3600 | 0.0 | | | | | | | | | | | | | | |

# Table 4. 2009 OTHER SPECIES SAMPLED DURING SEINING STUDIES ON JUVENILE SALMON

2009 OTHER SPECIES SAMPLED DURING SEINING STUDIES ON JUVENILE SALMON

OTHER SPECIES SAMPLED (ACTUAL COUNTS OR ESTIMATED ABUNDANCE)

| DATE | SITE | LOCATION | MILE | LP | TFS | RT | CP | GF | GSH | SBF | HH | HCH | PM | ST | PRS | FHM | SKR | WCF | GAM | ISS | SB | WCR | GSF | BG | LMB | SMB | BLP | TP | RSCP | RSF | CCF | CENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13JAN | 1 | OLGB | 50.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13JAN | 2 | R5 | 48.0 | | | | | | | | | | 3 | | | | 1 | | | | | | | | | | | | | | | |
| 13JAN | 3 | TRR | 42.3 | | | | | | | | 12 | | | | | | | | 1 | | | | | | | | | | | | | |
| 13JAN | 4 | HICK | 31.6 | | | | | | | | | | 2 | | | | | | | | | | | | | | | | | | | |
| 13JAN | 5 | CHARLES | 24.9 | | | | | | | | | | | | | | | | 2 | | | | | 2 | | | | | | | | |
| 13JAN | 6 | LEGION | 17.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13JAN | 7 | SERVICE | 8.7 | | | | | | | | | | | | | | | | 6 | | | | | 1 | 1 | | | | | | | |
| 13JAN | 8 | SHILOH | 3.4 | | | | | | | | | | | | | | | | 10 | | | | | | | | | | | | | |
| 13JAN | 9 | LAIRD | 90.2 | | | | | | | | | | | | 60 | | | | | | | | | | | | | | | | | |
| 13JAN | 10 | GARDNER | 77.8 | | | | | | | | | | | | 300 | | | | | 30 | | | | | | | | | | | | |

| DATE | SITE | LOCATION | MILE | LP | TFS | RT | CP | GF | GSH | SBF | HH | HCH | PM | ST | PRS | FHM | SKR | WCF | GAM | ISS | SB | WCR | GSF | BG | LMB | SMB | BLP | TP | RSCP | RSF | CCF | CENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27JAN | 1 | OLGB | 50.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27JAN | 2 | R5 | 48.0 | | | | | | | | | | 15 | | | | 2 | | | | | | | | | | | | | | | |
| 27JAN | 3 | TRR | 42.3 | | | | | | | | 15 | | | | | | | | 1 | | | | | | | | | | | | | |
| 27JAN | 4 | HICK | 31.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27JAN | 5 | CHARLES | 24.9 | | | | | | | | | | | | | | | | 4 | | | | | 4 | 1 | | | | | | | |
| 27JAN | 6 | LEGION | 17.2 | | | | | | | | | | | | | | | | 20 | | | | | | | | | | | | | |
| 27JAN | 7 | SERVICE | 8.7 | | | | | | | | | | | | | | | | 5 | | | | 1 | 1 | 1 | | | | | | | |
| 27JAN | 8 | SHILOH | 3.4 | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | | |
| 27JAN | 9 | LAIRD | 90.2 | | | | | | | | | | | | 500 | | | | | 6 | | | | | | | | | | | | |
| 27JAN | 10 | GARDNER | 77.8 | | | | | | | | | | | | 100 | | | | | 10 | | | | 2 | | | | | | | | |

| DATE | SITE | LOCATION | MILE | LP | TFS | RT | CP | GF | GSH | SBF | HH | HCH | PM | ST | PRS | FHM | SKR | WCF | GAM | ISS | SB | WCR | GSF | BG | LMB | SMB | BLP | TP | RSCP | RSF | CCF | CENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 09FEB | 1 | OLGB | 50.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 09FEB | 2 | R5 | 48.0 | | | | | | | | | | 6 | | | | | | | | | | | | | | | | | | | |
| 09FEB | 3 | TRR | 42.3 | | | | | | | | 20 | | | | | | | | 5 | | | | | | | | | | | | | |
| 09FEB | 4 | HICK | 31.6 | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | | |
| 09FEB | 5 | CHARLES | 24.9 | | | | | | | | | | | | | | | | 3 | | | | 1 | 1 | | | | | | | | |
| 09FEB | 6 | LEGION | 17.2 | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | | |
| 09FEB | 7 | SERVICE | 8.7 | | | | | | | | | | | | | | | | 3 | | | | | 1 | 1 | | | | | | 1 | |
| 09FEB | 8 | SHILOH | 3.4 | | | | | | | | | | | | | | | | 2 | | | | | | 3 | | | | | 2 | | |
| 09FEB | 9 | LAIRD | 90.2 | | | | | | | | | | | | 200 | | | | | 6 | | | | | | | | | | | | |
| 09FEB | 10 | GARDNER | 77.8 | | | | | | | | | | | | 50 | | | | | 2 | | | | 5 | 1 | | | | | | | |

| DATE | SITE | LOCATION | MILE | LP | TFS | RT | CP | GF | GSH | SBF | HH | HCH | PM | ST | PRS | FHM | SKR | WCF | GAM | ISS | SB | WCR | GSF | BG | LMB | SMB | BLP | TP | RSCP | RSF | CCF | CENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24FEB | 1 | OLGB | 50.5 | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| 24FEB | 2 | R5 | 48.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24FEB | 3 | TRR | 42.3 | | | | | | | | 3 | | 1 | | | | | | 1 | | | | | | | | | | | | | |
| 24FEB | 4 | HICK | 31.6 | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 24FEB | 5 | CHARLES | 24.9 | | | | | | | | | | | | | | | | 5 | | | | 1 | | 3 | | | | | | | |
| 24FEB | 6 | LEGION | 17.2 | | | | | | | | | | | | | | | | 6 | | | | | | | | | | | | | |
| 24FEB | 7 | SERVICE | 8.7 | | | | | | | | | | | | | | | | 5 | | | | | | 2 | | | | | | | |
| 24FEB | 8 | SHILOH | 3.4 | | | | | | | | | | | | | | | | 6 | | | | | | | | | | | | | |
| 24FEB | 9 | LAIRD | 90.2 | | | | | | | | | | | | 100 | | | | | 6 | | | | | 1 | | | | | | | |
| 24FEB | 10 | GARDNER | 77.8 | | | | | | | | | | | | 50 | | | | | 10 | | | | 12 | 3 | | | | | | | |

| DATE | SITE | LOCATION | MILE | LP | TFS | RT | CP | GF | GSH | SBF | HH | HCH | PM | ST | PRS | FHM | SKR | WCF | GAM | ISS | SB | WCR | GSF | BG | LMB | SMB | BLP | TP | RSCP | RSF | CCF | CENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10MAR | 1 | OLGB | 50.5 | | | 1 | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| 10MAR | 2 | R5 | 48.0 | | | 1 | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 10MAR | 3 | TRR | 42.3 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| 10MAR | 4 | HICK | 31.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10MAR | 5 | CHARLES | 24.9 | | | | | | | | | | | | | | | | 5 | | | | 1 | | 1 | | | | | | | |
| 10MAR | 6 | LEGION | 17.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10MAR | 7 | SERVICE | 8.7 | | | | | | | | | | | | | | | | | | | | | 6 | | | | | | 1 | | |
| 10MAR | 8 | SHILOH | 3.4 | | | | | | | | | | | | 6 | | | | | | | | | | 2 | | | | | | | |
| 10MAR | 9 | LAIRD | 90.2 | | | | | | | | | | | | 200 | | | | | | | | | | | | | | | | | |
| 10MAR | 10 | GARDNER | 77.8 | | | | | | | | | | | | 50 | | | | | 30 | | | | 2 | | | | | | | | |

| DATE | SITE | LOCATION | MILE | LP | TFS | RT | CP | GF | GSH | SBF | HH | HCH | PM | ST | PRS | FHM | SKR | WCF | GAM | ISS | SB | WCR | GSF | BG | LMB | SMB | BLP | TP | RSCP | RSF | CCF | CENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24MAR | 1 | OLGB | 50.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24MAR | 2 | R5 | 48.0 | | | 1 | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 24MAR | 3 | TRR | 42.3 | | | | | | | | 1 | | 1 | | | | | | 2 | | | | | | | | | | | | | |
| 24MAR | 4 | HICK | 31.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24MAR | 5 | CHARLES | 24.9 | | | | | | | | | | | | | | | | 12 | | | | | | | | | | | | | |
| 24MAR | 6 | LEGION | 17.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24MAR | 7 | SERVICE | 8.7 | | | | | | | | | | | | | | | | 5 | | | | | | 1 | | | | | | 2 | |
| 24MAR | 8 | SHILOH | 3.4 | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | |
| 24MAR | 9 | LAIRD | 90.2 | | | | | | | | | | | | 300 | | | | | 1 | | | | | | | | | | | | |
| 24MAR | 10 | GARDNER | 77.8 | | | | | | | | | | | | 30 | | | | | 3 | | | | 4 | 1 | | | | | | | |

Table 4. 2009 Other Species sampled (continued)

| DATE | SITE | LOCATION | MILE | LP | TFS | RT | CP | GF | GSH | SBF | HH | HCH | PM | ST | PRS | FHM | SKR | WCF | GAM | ISS | SB | WCR | GSF | BG | LMB | SMB | BLP | TP | RSCP | RSF | CCF | CENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07APR | 1 | OLGB | 50.5 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 07APR | 2 | R5 | 48.0 | | | | | | | | | | 2 | | | | 1 | | | | | | | | | | | | | | | |
| 07APR | 3 | TRR | 42.3 | | | | | | | | 2 | | 2 | | | | | | | | | | | | | | | | | | | |
| 07APR | 4 | HICK | 31.6 | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | | |
| 07APR | 5 | CHARLES | 24.9 | | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | | |
| 07APR | 6 | LEGION | 17.2 | | | | | | | | | | | | | | | | 10 | | | | | 1 | 1 | | | | | | | |
| 07APR | 7 | SERVICE | 8.7 | | | | | | | | | | | | 1 | | | | 15 | | | | | | | | | | | | | |
| 07APR | 8 | SHILOH | 3.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 07APR | 9 | LAIRD | 90.2 | | | | | | | | | | | | 200 | | | | | 6 | | | | | 1 | | | | | | | |
| 07APR | 10 | GARDNER | 77.8 | | | | | | | | | | | | 50 | | | | | 20 | | | | 6 | | | | | | 1 | | |

| DATE | SITE | LOCATION | MILE | LP | TFS | RT | CP | GF | GSH | SBF | HH | HCH | PM | ST | PRS | FHM | SKR | WCF | GAM | ISS | SB | WCR | GSF | BG | LMB | SMB | BLP | TP | RSCP | RSF | CCF | CENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21APR | 1 | OLGB | 50.5 | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | |
| 21APR | 2 | R5 | 48.0 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21APR | 3 | TRR | 42.3 | | | | | | 1 | | 2 | | | | | | | | | | | | | | | | | | | | | |
| 21APR | 4 | HICK | 31.6 | | | | | | | | | | | | | | | | 5 | | | | | | | | | | | | | |
| 21APR | 5 | CHARLES | 24.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21APR | 6 | LEGION | 17.2 | | | | | | | | | | | | | | YOY | | | | | | | | | | | | | | | |
| 21APR | 7 | SERVICE | 8.7 | | | | | | | | | | | | | | | | | | | | | | 4 | | | | | | | |
| 21APR | 8 | SHILOH | 3.4 | | | | | | | | | | | | | | | | 5 | | | | | 1 | 2 | | | | | 1 | | |
| 21APR | 9 | LAIRD | 90.2 | | | | | | | | | | | | 100 | | | | | | | | | | 2 | | | | | | | |
| 21APR | 10 | GARDNER | 77.8 | | | | | | | | | | | | 50 | | | | | 10 | | | | 10 | 1 | | | | | | | |

| DATE | SITE | LOCATION | MILE | LP | TFS | RT | CP | GF | GSH | SBF | HH | HCH | PM | ST | PRS | FHM | SKR | WCF | GAM | ISS | SB | WCR | GSF | BG | LMB | SMB | BLP | TP | RSCP | RSF | CCF | CENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 05MAY | 1 | OLGB | 50.5 | | | 1 | | | | | | | | | | | YOY | | | | | | | | | | | | | | | |
| 05MAY | 2 | R5 | 48.0 | | | 1 | | | | | | | 3 | | | | | | | | | | | | | | | | 3 | | | |
| 05MAY | 3 | TRR | 42.3 | | | | | | | | | | | | | | YOY | | | | | | | | | | | | | | | |
| 05MAY | 4 | HICK | 31.6 | | | | | | | | | | | | | | YOY | | 3 | | | | | | | | | | | | | |
| 05MAY | 5 | CHARLES | 24.9 | | | | | | | | | | | | | | | | 3 | | | | | 1 | | | | | | 1 | | |
| 05MAY | 6 | LEGION | 17.2 | | | | | | | | | | | | | | YOY | | | | | | | 4 | 8 | 1 | | | | 3 | | |
| 05MAY | 7 | SERVICE | 8.7 | | | | | | | | | | | | 1 | | YOY | | | | | | | 15 | | | | | | | | |
| 05MAY | 8 | SHILOH | 3.4 | | | | | | | | | | | | 6 | | | | | | | | | 8 | 10 | | | | | 2 | | |
| 05MAY | 9 | LAIRD | 90.2 | | | | | | | | | | | | 200 | | | | | 1 | | | | | | | | | | | | |
| 05MAY | 10 | GARDNER | 77.8 | | | | | | | | | | | | 40 | | | | 1 | 20 | | | | 25 | | | | | | | | |

| DATE | SITE | LOCATION | MILE | LP | TFS | RT | CP | GF | GSH | SBF | HH | HCH | PM | ST | PRS | FHM | SKR | WCF | GAM | ISS | SB | WCR | GSF | BG | LMB | SMB | BLP | TP | RSCP | RSF | CCF | CENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19MAY | 1 | OLGB | 50.5 | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | |
| 19MAY | 2 | R5 | 48.0 | | | | | | | | | | 6 | | | | 6 | | 1 | | | | | | | | | | | | | |
| 19MAY | 3 | TRR | 42.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19MAY | 4 | HICK | 31.6 | | | | | | | | | | 1 | | | | | | 10 | | | | | | | | | | | | | |
| 19MAY | 5 | CHARLES | 24.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19MAY | 6 | LEGION | 17.2 | | | | | | | | | | | | | | | | 5 | | | | | | 2 | | | | | | | |
| 19MAY | 7 | SERVICE | 8.7 | | | | | | | | | | | | | | YOY | | 5 | | | | | 2 | 1 | | | | | | | |
| 19MAY | 8 | SHILOH | 3.4 | | | | | | | | | | | | | | | | 10 | | | | | 2 | 2 | | | | | | | |
| 19MAY | 9 | LAIRD | 90.2 | | | | | | | | | | | | 100 | | | | | | | | | 1 | | 2 | | | | | | |
| 19MAY | 10 | GARDNER | 77.8 | | | | | | | | | | | | 100 | | | | | 20 | | | | 21 | | | | | | | | |

| DATE | SITE | LOCATION | MILE | LP | TFS | RT | CP | GF | GSH | SBF | HH | HCH | PM | ST | PRS | FHM | SKR | WCF | GAM | ISS | SB | WCR | GSF | BG | LMB | SMB | BLP | TP | RSCP | RSF | CCF | CENT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 02JUN | 1 | OLGB | 50.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02JUN | 2 | R5 | 48.0 | | | | | | | | | | | | | | YOY | | | | | | | | | | | | | | | |
| 02JUN | 3 | TRR | 42.3 | | | | | | | | 2 | | 10 | | | | | | | | | | | | | | | | | | | |
| 02JUN | 4 | HICK | 31.6 | | | | | | | | | | 3 | | | | | | | | | | | | | | | | | | | |
| 02JUN | 5 | CHARLES | 24.9 | | | | | | | | | | 2 | | | | | | 3 | | | | | 1 | 2 | | | | | | | |
| 02JUN | 6 | LEGION | 17.2 | | | | | | | | | | | | | | | | 10 | | | | | 1 | 3 | | | | | 1 | | |
| 02JUN | 7 | SERVICE | 8.7 | | | | | | | | | | | | | | YOY | | 20 | | | | | 1 | 1 | | | | | | | |
| 02JUN | 8 | SHILOH | 3.4 | | | | | | | | | | | | | | | | 10 | | | | | 2 | 3 | | | | | 2 | | |
| 02JUN | 9 | LAIRD | 90.2 | | | | | | | | | | | | 200 | | 1 | | | | | | | 1 | 2 | | | | | | | |
| 02JUN | 10 | GARDNER | 77.8 | | | | | | | | | | 1 | | 60 | | | | 10 | 10 | | | | | | | | | | | | |

Table 4. KEY TO OTHER SPECIES SAMPLED AND DISTRIBUTION
(List includes all species caught during 1986-2009 seining studies)

| FAMILY | COMMON NAME | NATIVE SPECIES | ABBREV. | SAN JOAQUIN | TUOL. |
|---|---|---|---|---|---|
| Petromyzontidae | Pacific lamprey | N | LP | | |
| Clupeidae | threadfin shad | | TFS | | |
| Salmonidae | Chinook salmon | N | CS | | X |
| Salmonidae | rainbow trout | N | RT | | X |
| Cyprinidae | carp | | CP | | |
| Cyprinidae | goldfish | | GF | | |
| Cyprinidae | golden shiner | | GSH | | X |
| Cyprinidae | Sacramento blackfish | N | SBF | | |
| Cyprinidae | hitch | N | HCH | | |
| Cyprinidae | hardhead | N | HH | | X |
| Cyprinidae | Sacramento pikeminnow | N | PM | X | X |
| Cyprinidae | Sacramento splittail | N | ST | | |
| Cyprinidae | red shiner | | PRS | X | X |
| Cyprinidae | fathead minnow | | FHM | | |
| Catostomidae | Sacramento sucker | N | SKR | X | X |
| Ictaluridae | channel catfish | | CCF | | X |
| Ictaluridae | white catfish | | WCF | | |
| Ictaluridae | brown bullhead | | BBH | | |
| Poeciliidae | western mosquitofish | | GAM | X | X |
| Atherinidae | inland silverside | | ISS | X | |
| Percichthyidae | striped bass | | SB | | |
| Centrarchidae | white/black crappie | | WCR/BCR | | |
| Centrarchidae | warmouth | | WM | | |
| Centrarchidae | green sunfish | | GSF | | X |
| Centrarchidae | bluegill | | BG | X | X |
| Centrarchidae | redear sunfish | | RSF | X | X |
| Centrarchidae | largemouth bass | | LMB | X | X |
| Centrarchidae | smallmouth bass | | SMB | X | X |
| Percidae | bigscale logperch | | BLP | | |
| Embiotocidae | tule perch | N | TP | | |
| Cottidae | prickly sculpin | N | PSCP | | |
| Cottidae | riffle sculpin | N | RSCP | | X |
| TOTAL: | 32 | | | 9 | 15 |

2009 species presence designated with 'X'

Table 5. Tuolumne River Seining Summary

Tuolumne River Seining Study Summary (Tuolumne, San Joaquin and Stanislaus Rivers)

| | TUOLUMNE RIVER | | | | | SAN JOAQUIN | | | STANISLAUS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sampling Year | Sampling Periods | Salmon Captured | Sites Sampled | Average Density | Growth Rate Index (mm/day) | Salmon Captured | Sites Sampled | Average Density | Salmon Captured | Sites Sampled | Average Density | Start Date | End Date |
| 1986 | 18 | 5514 | 8 | 20.7 | 0.45 | 854 | 3 | 14.2 | --- | --- | | 22JAN | 27JUN |
| 1987 | 21 | 14825 | 11 | 22.4 | 0.45 | 734 | 6 | 1.9 | --- | --- | | 05JAN | 04JUN |
| 1988 | 14 | 6134 | 11 | 14.3 | 0.58 | 295 | 4 | 2.1 | 84 | 1 | 2.9 | 05JAN | 17MAY |
| 1989 | 13 | 10043 | 11 | 27.0 | 0.64 | 83 | 3 | 0.6 | 1206 | 1 | 45.4 | 05JAN | 12MAY |
| 1990 | 14 | 2286 | 11 | 6.0 | 0.57 | 48 | 3 | 0.5 | --- | --- | | 04JAN | 11MAY |
| 1991 | 8 | 120 | 11 | 0.5 | No estimate | 0 | 3 | 0 | 3 | 1 | 0.2 | 15JAN | 24MAY |
| 1992 | 5 | 144 | 7 | 1.2 | No estimate | 0 | 3 | 0 | 54 | 1 | 3.9 | 27JAN | 13MAY |
| 1993 | 7 | 124 | 8 | 0.8 | 0.68 | 0 | 3 | 0 | 6 | 1 | 0.3 | 26JAN | 12MAY |
| 1994 | 7 | 2068 | 5 | 21.6 | 0.65 | 2 | 2 | 0 | --- | --- | | 25JAN | 20MAY |
| 1995 | 8 | 512 | 5 | 6.1 | 0.79 | 43 | 2 | 1.1 | --- | --- | | 09FEB | 12JUL |
| 1996 | 8 | 785 | 6 | 7.6 | 0.66 | 7 | 2* | 0.2 | --- | --- | | 17JAN | 13JUN |
| 1997 | 10 | 379 | 7 | 2.7 | 0.48 | 11 | 2* | 0.4 | --- | --- | | 14JAN | 28MAY |
| 1998 | 10 | 1950 | 7 | 14.4 | 0.46 | 99 | 2 | 2.5 | --- | --- | | 14JAN | 21MAY |
| 1999 | 10 | 3443 | 8 | 24.6 | 0.54 | 560 | 2 | 13.6 | --- | --- | | 14JAN | 19MAY |
| 2000 | 10 | 3213 | 8 | 27.0 | 0.46 | 19 | 2 | 0.6 | --- | --- | | 11JAN | 17MAY |
| 2001 | 11 | 5567 | 8 | 41.3 | 0.67 | 83 | 2 | 2.6 | --- | --- | | 09JAN | 30MAY |
| 2002 | 10 | 3486 | 8 | 25.6 | 0.64 | 0 | 2 | 0 | --- | --- | | 15JAN | 21MAY |
| 2003 | 10 | 5983 | 8 | 39.3 | 0.68 | 1 | 2 | 0 | --- | --- | | 21JAN | 28MAY |
| 2004 | 11 | 3280 | 8 | 19.3 | 0.55 | 0 | 2 | 0 | --- | --- | | 20JAN | 25MAY |
| 2005 | 10 | 1341 | 8 | 8.9 | 0.53 | 8 | 2* | 0.2 | --- | --- | | 19JAN | 25MAY |
| 2006 | 11 | 1558 | 8 | 10.2 | 0.79 | 39 | 2 | 1.2 | --- | --- | | 20JAN | 15JUN |
| 2007 | 10 | 204 | 8 | 1.5 | 0.58 | 0 | 2 | 0 | --- | --- | | 17JAN | 23MAY |
| 2008 | 10 | 198 | 8 | 1.4 | 0.66 | 0 | 2 | 0 | --- | --- | | 22JAN | 27MAY |
| 2009 | 11 | 779 | 8 | 4.7 | 0.64 | 0 | 2 | 0 | --- | --- | | 13JAN | 02JUN |

--- Not Sampled

*All San Joaquin River locations were not always sampled

Table 6. Summary table of locations sampled, 1986-2009

1986 TO 2009 SEINING LOCATIONS

TUOLUMNE RIVER

| Site | Location | River Mile | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Old La Grange Bridge | 50.5 | X | X | X | X | X | X | X | X | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 2 | Riffle 4B | 48.4 | X | X | X | X | X | X | | | | X | X | X | X | | | | | | | | X | | | |
| 3 | Riffle 5 | 47.9 | | X | X | X | X | X | X | X | X | | | | | X | X | X | X | X | X | X | | X | X | X |
| 4 | Tuolumne River Resort | 42.4 | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 5 | Turlock Lake State Rec. Area | 42.0 | X | X | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Reed Gravel | 34.0 | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | |
| 7 | Hickman Bridge | 31.6 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 8 | Charles Road | 24.9 | | X | X | X | X | X | X | X | | | | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 9 | Legion Park | 17.2 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 10 | RDP / Service Rd. / Venn | 12.3 - 7.4 | | X | X | X | X | X | | | | | | | | X | X | X | X | X | X | X | X | X | X | X |
| 11 | McCleskey Ranch | 6.0 | X | X | X | X | X | X | X | X | X | | | | | | | | | | | | | | | |
| 12 | Shiloh Bridge | 3.4 | X | X | X | X | X | X | | X | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |

SAN JOAQUIN RIVER

| Site | Location | River Mile | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | Laird Park | 90.2 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 14 | Gardner Cove | 77.8 | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 15 | Maze Road | 76.6 | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| 16 | Sturgeon Bend | 74.3 | | X | X | | | | | | | | | | | | | | | | | | | | | |
| 17 | Durham Ferry Park | 71.3 | X | X | X | X | X | X | X | X | | | | | | | | | | | | | | | | |
| 18 | Old River | 53.7 | | X | | | | | | | | | | | | | | | | | | | | | | |

STANISLAUS RIVER

| Site | Location | River Mile | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | Caswell State Park | 8.5 | | | X | X | | X | X | X | | | | | | | | | | | | | | | | |

DRY CREEK

| Site | Location | River Mile | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | Beard Brook Park | 0.5 | | | | | | | X | X | | | | | | | | | | | | | | | | |

In 1987 additional sites on the Tuolumne, San Joaquin, Merced and Stanislaus Rivers were sampled occasionally (1987 annual report).

Table 7. Tuolumne River analysis of female spawners to fry density.

| TUOL.R. FALL-RUN | TOTAL FEMALE SPAWNERS | | JUVENILE SEINING PEAK FRY DENSITY | JUVENILE SEINING AVERAGE FRY DENSITY 15JAN-15MAR |
|---|---|---|---|---|
| 1985 | 22600 | 1986 | 158.8 | 59.5 |
| 1986 | 3800 | 1987 | 69.3 | 46.2 |
| 1987 | 4600 | 1988 | 70.2 | 33.9 |
| 1988 | 4100 | 1989 | 115.1 | 39.7 |
| 1989 | 680 | 1990 | 11.4 | 5.0 |
| 1990 | 28 | 1991 | 1.3 | 0.5 |
| 1991 | 28 | 1992 | 6.1 | 2.9 |
| 1992 | 55 | 1993 | 1.7 | 0.9 |
| 1993 | 237 | 1994 | 79.5 | 41.5 |
| 1994 | 249 | 1995 | 12.5 | 9.8 |
| 1995 | 522 | 1996 | 16.1 | 13.0 |
| 1996 | 1142 | 1997 | 2.8 | 2.1 |
| 1997 | 4224 | 1998 | 49.3 | 24.6 |
| 1998 | 4527 | 1999 | 78.0 | 39.3 |
| 1999 | 3535 | 2000 | 78.8 | 48.0 |
| 2000 | 11260 | 2001 | 126.3 | 85.6 |
| 2001 | 4970 | 2002 | 92.8 | 41.5 |
| 2002 | 3876 | 2003 | 164.3 | 68.8 |
| 2003 | 1768 | 2004 | 38.8 | 27.2 |
| 2004 | 1004 | 2005 | 20.5 | 14.6 |
| 2005 | 478 | 2006 | 28.7 | 12.7 |
| 2006 | 282 | 2007 | 3.7 | 2.2 |
| 2007 | 80 | 2008 | 2.4 | 1.7 |
| 2008 | 212 | 2009 | 9.7 | 4.8 |