

Pacific Coast Federation  
of Fishermen's Associations Inc.  
Trinidad Fishermen's  
Salmon Enhancement  
P.O. Box 291  
Trinidad, Ca. 95570

August 30, 1991

Preliminary Draft  
FINAL REPORT

In early November of 1991 the Trinidad Fishermen's Salmon Enhancement (TFSE) organization was contacted by California Dept. of Fish and Game (CDF&G) and California Dept. of Transportation (CALTRANS) personnel following their decision to continue emergency measures to salvage adult salmon and Steelhead returning to spawn in the Prairie Creek drainage of Humboldt County. This was determined necessary due to extensive sedimentation problems associated with construction of a new section of U.S. Highway 101 bypassing the state and federal parklands in October of 1989, and the lack of flushing of the sediment the previous winter.

As in '89/'90, TFSE was to trap and spawn adult salmon, incubate the resulting eggs, then rear to a suitable release size the fry after hatching. This was all accomplished at remote facilities in Prairie Creek State Park. A contract was negotiated with the California Dept. of Transportation (CALTRANS) to perform the work recommended by CDF&G. CALTRANS Fisheries Biologist Mark Moore was designated as the contract supervisor and was to oversee all work undertaken.

On November 20 the trap and weir were set in place as Prairie Cr. flows increased from rainfall during the previous night. Adult salmon were trapped almost immediately and trapping was continuous through January 18 except for periods of stream flows too low for fish movement and two short periods (less than 24 hrs.), when high flows rendered the trap inoperable, (see trapping records).

All adult salmon in good condition were transferred to the remote facilities where they were held separately until fully mature and then spawned. All spawning was done with the procedures and personnel normally used by TFSE with good results on other restoration projects. Eggs were placed into specially constructed hatchbox type incubators and monitored daily.

The results of the trapping and spawning were negatively affected by the combination of extremely dry and cold conditions in the normal time of peak activity in December

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and early January. Very few fish were actively migrating during this time, additionally, their normal rate of sexual maturation also appeared to be altered. Because of these conditions TFSE experienced a reduced fertility of egg lots and even a complete loss of two female Chinook. Additionally two female coho were released due to failure of any maturation while being held at the facility. (see Spawning Results)

A means of evaluating the results of the releases was to be developed as part of the original program. TFSE made arrangements for equipment to tag all fish with Coded Wire Tags before release. Due to the lower than normal temperatures the rate of growth was at least one month behind normal. Following the loss of nearly 5,900 Chinook due to a bear and the probability of very low flow conditions by the time the Chinook would be of a tagable size a decision was reached to release the Chinook untagged, (see Release Info.). The Coho however were held and TFSE successfully tagged 100% of them in early July.

In addition to using Coded Wire Tags for evaluation of the rearing program, a known number of fish being released was an obvious opportunity to assess the survival of fish that spawned in Prairie Cr. and its major tributaries. In order to utilize this opportunity, TFSE installed downstream migrant traps of several different designs in Prairie Cr. These traps were located below the section of creek surveyed for spawners by RNP biological staff. The traps installed were operated from mid April through mid August in an attempt to compare the numbers of wild spawning Chinook smolts to the smolts released from the rearing program. (see Downstream Migrant Trap Info.). Additional information gathered on Coho 1+ and trout 1+ smolts will be available for comparison in future years. The tagging and trapping program will provide useful information on smolt numbers vs. spawning population size in future years. It may also be useful in determining the long term impacts on these stocks and on the suitability of this release strategy for increasing wild salmonid stocks.

Submitted by

Mitch Farro  
Project Director

1990-91  
TRAP RESULTS - CHINOOK SALMON

| DATE<br>TRAPPED | SEX | HELD OR<br>RELEASED | FORK<br>LENGTH | DATE<br>SPAWNED |
|-----------------|-----|---------------------|----------------|-----------------|
| -----           | --- | -----               | -----          | -----           |
| 12-10           | G   | H                   | 43cm           | 12-20           |
| 12-10           | G   | H                   | 47cm           |                 |
| 12-10           | G   | H                   | 52cm           |                 |
| 12-10           | G   | R                   | NA             |                 |
| 12-10           | G   | H                   | 43cm           |                 |
| 12-11           | G   | R                   | NA             |                 |
| 12-12           | G   | H                   | 45cm           | 12-20           |
| 12-13           | M   | H                   | 65cm           | 12-20           |
| 12-15           | G   | R                   | NA             |                 |
| 12-19           | F   | H                   | 73cm           | green           |
| 12-19           | G   | R                   | NA             |                 |
| 12-20           | G   | R                   | NA             |                 |
| 12-20           | F   | H                   | 85cm           | 12-20           |
| 1-7             | M   | H                   | 58cm           | 1-24            |
| 1-7             | G   | R                   | NA             |                 |
| 1-10            | G   | H                   | 49cm           |                 |
| 1-12            | M   | H                   | 62cm           | 1-17, 2x1-19    |
| 1-12            | M   | H                   | 69cm           | 2x1-16          |
| 1-12            | M   | H                   | 59cm           |                 |
| 1-13            | F   | H                   | 80cm           | 2x1-19          |
| 1-13            | M   | H                   | 77cm           | 1-19, 1-24      |
| 1-13            | M   | H                   | 84cm           |                 |
| 1-13            | M   | H                   | 88cm           | 2x1-19          |
| 1-13            | F   | H                   | 78cm           | 2x1-19          |
| 1-13            | M   | H                   | 84cm           | 1-19            |
| 1-13            | G   | H                   | 49cm           |                 |
| 1-14            | M   | H                   | 87cm           | 1-24, 1-25      |
| 1-13            | M   | H                   | 59cm           | 1-25            |
| 1-14            | F   | H                   | 88cm           | 1-16            |
| 1-14            | F   | H                   | 78cm           | 1-16            |
| 1-14            | F   | H                   | 87cm           | 1-19            |
| 1-14            | F   | H                   | 90cm           | 1-19            |
| 1-14            | F   | H                   | 95cm           | 1-24            |
| 1-14            | F   | H                   | 73cm           | 1-16            |
| 1-14            | F   | H                   | 88cm           | green           |
| 1-14            | M   | H                   | 79cm           | 2x1-16          |
| 1-14            | M   | H                   | 97cm           | 2x1-16          |
| 1-14            | M   | H                   | 86cm           | 1-19, 1-24      |
| 1-14            | F   | H                   | 85cm           | 1-25            |
| 1-14            | M   | H                   | 60cm           | 1-19            |
| 1-15            | M   | H                   | 90cm           | 2x1-16          |
| 1-15            | F   | H                   | 82cm           | 1-16            |
| 1-15            | M   | R                   | NA             |                 |
| 1-15            | G   | R                   | NA             |                 |
| 1-15            | M   | R                   | NA             |                 |
| 1-15            | M   | R                   | NA             |                 |
| 1-15            | M   | R                   | NA             |                 |
| 1-15            | G   | R                   | NA             |                 |

|      |   |         |      |      |
|------|---|---------|------|------|
| 1-15 | M | R       | NA   |      |
| 1-15 | F | *       | NA   |      |
| 1-16 | M | R       | NA   |      |
| 1-16 | G | R       | NA   |      |
| 1-17 | M | R       | NA   |      |
| 1-17 | M | R       | NA   |      |
| 1-17 | F | *       | NA   |      |
| 1-17 | F | *       | NA   |      |
| 1-17 | M | R       | NA   |      |
| 1-17 | F | ESCAPED | NA   |      |
| 1-17 | F | R       | NA   |      |
| 1-18 | M | R       | NA   |      |
| 1-18 | M | R       | NA   |      |
| 1-18 | M | R       | NA   |      |
| 1-18 | M | R       | NA   |      |
| 1-18 | M | R       | NA   |      |
| 1-18 | G | *       | NA   |      |
| 1-18 | F | H       | 85cm | 1-17 |

TOTAL CHINOOK TRAPPED 90-91

|             |             |                      |
|-------------|-------------|----------------------|
| 17 GRILSE   | 30 MALES    | 19 FEMALES           |
| 7 HELD      | 16 HELD     | 12 SPAWNED           |
| 10 RELEASED | 14 RELEASED | 4 TO COUNTY HATCHERY |
|             |             | 2 SPAWNED GREEN *    |
|             |             | 1 ESCAPED            |

# TRAP RESULTS - COHO SALMON

| DATE<br>TRAPPED | SEX | HELD OR<br>RELEASED | FORK<br>LENGTH | DATE<br>SPAWNED    |
|-----------------|-----|---------------------|----------------|--------------------|
| -----           | --- | -----               | -----          | -----              |
| 11-25           | G   | R                   | NA             |                    |
| 11-26           | G   | R                   | NA             |                    |
| 11-26           | F   | H                   | 70cm           | 12-18              |
| 12-10           | G   | H                   | 56cm           | 3X12-13            |
| 12-10           | M   | H                   | 63cm           | 2X12-13            |
| 12-10           | M   | H                   | 65cm           | 2X12-13            |
| 12-10           | F   | H                   | 67cm           | 2X12-13            |
| 12-10           | F   | H                   | 71cm           | 3X12-13            |
| 12-10           | F   | H                   | 63cm           | 3X12-13            |
| 12-10           | M   | H                   | 56cm           | 1-7                |
| 12-10           | F   | R                   | NA             |                    |
| 12-10           | M   | R                   | NA             |                    |
| 12-10           | M   | H                   | 57cm           | 12-18, 1-12        |
| 12-10           | F   | R                   | NA             |                    |
| 12-10           | M   | R                   | NA             |                    |
| 12-11           | F   | R                   | 60cm           |                    |
| 12-11           | M   | H                   | 59cm           | 12-18              |
| 12-11           | F   | R                   | NA             |                    |
| 12-11           | G   | R                   | NA             |                    |
| 12-11           | M   | H                   | 57cm           | 2X12-13, 12-18     |
| 12-14           | G   | H                   | 54cm           | 1-7                |
| 12-18           | F   | R                   | NA             |                    |
| 12-18           | F   | R                   | NA             |                    |
| 12-18           | M   | R                   | NA             |                    |
| 12-19           | F   | R                   | 65cm           |                    |
| 12-19           | J   | R                   | NA             |                    |
| 12-19           | F   | R                   | NA             |                    |
| 12-19           | M   | R                   | NA             |                    |
| 12-19           | G   | H                   | 54cm           | 2X1-18, 1-19, 1-24 |
| 1-7             | F   | H                   | 65cm           | 1-7                |
| 1-7             | G   | H                   | 53cm           | 1-7, 1-19          |
| 1-7             | G   | ESCAPED             | NA             |                    |
| 1-7             | G   | H                   | NA             |                    |
| 1-7             | F   | H                   | 67cm           | 1-19               |
| 1-7             | M   | H                   | 56cm           | 1-19               |
| 1-8             | M   | H                   | 64cm           | 1-10               |
| 1-9             | F   | H                   | 66cm           | 1-10               |
| 1-9             | M   | H                   | 62cm           | 1-10, 1-12         |
| 1-9             | M   | H                   | 71cm           | 1-10, 2x1-11, 1-12 |
| 1-10            | M   | H                   | 65cm           | 3x1-11             |
| 1-11            | F   | H                   | 66cm           | 3x1-11             |
| 1-11            | M   | H                   | 69cm           | 3x1-11             |
| 1-11            | M   | H                   | 55cm           | 2x1-11             |
| 1-11            | F   | R                   | 44cm           |                    |
| 1-11            | F   | H                   | 67cm           | 1-11               |
| 1-11            | F   | H                   | 75cm           | 1-11               |
| 1-11            | M   | H                   | 59cm           | 2x1-11             |
| 1-11            | F   | H                   | 66cm           | 1-12               |
| 1-11            | M   | H                   | 61cm           | 2x1-12             |

|      |   |      |      |                      |
|------|---|------|------|----------------------|
| 1-11 | F | H    | 65cm | 1-12                 |
| 1-12 | F | H    | 69cm | 1-12                 |
| 1-12 | F | H    | 65cm | 1-19                 |
| 1-12 | M | H    | 69cm | 2x1-18, 2x1-19, 1-24 |
| 1-12 | M | H    | 67cm | 2-2, 2-3             |
| 1-12 | F | H    | 70cm | 1-24                 |
| 1-12 | F | H    | 62cm | 2-3                  |
| 1-13 | F | H    | 67cm | 1-18                 |
| 1-13 | F | kelt | NA   |                      |
| 1-14 | F | H    | 72cm | 2-2                  |
| 1-14 | F | H    | 64cm | 1-18                 |
| 1-14 | M | H    | 76cm | 1-18                 |
| 1-15 | M | R    | NA   |                      |
| 1-15 | M | R    | NA   |                      |
| 1-15 | G | R    | NA   |                      |
| 1-15 | M | R    | NA   |                      |
| 1-15 | M | R    | NA   |                      |
| 1-15 | M | R    | NA   |                      |
| 1-15 | F | R    | NA   |                      |
| 1-16 | M | R    | NA   |                      |
| 1-16 | F | R    | NA   |                      |
| 1-16 | F | R    | NA   |                      |
| 1-17 | M | R    | NA   |                      |
| 1-17 | F | R    | NA   |                      |
| 1-17 | G | R    | NA   |                      |
| 1-17 | G | R    | NA   |                      |
| 1-17 | G | R    | NA   |                      |
| 1-18 | G | R    | NA   |                      |
| 1-18 | G | R    | NA   |                      |
| 1-18 | F | R    | NA   |                      |

TOTAL COHO TRAPPED 90-91

16 GRILSE  
5 HELD  
11 RELEASED

29 MALES  
18 HELD  
11 RELEASED

34 FEMALES  
19 SPAWNED  
15 RELEASED

**Spawning Results  
Prairie Creek 1990/1991**

**Chinook**

Total Egg Take = 43,953

Fertility = high 97.4%, low 2.0%, Ave = 84.2%

**Coho**

Total Egg Take = 42,364

Fertility = high 92.2%, low 1.0%, Ave. = 66.0%

**TFSE Fish Releases  
Prairie Creek 1991**

**Chinook**

June 14 19,135 released in Prairie Cr. @ Corkscrew Cr  
@ 372 per lb. <sup>52</sup>

June 21 13,091 released in Prairie Cr. @ below Bypass  
@ 212 per lb.

An additional 5,842 lost due to bear problem

All Chinook releases were un-tagged.  
The total Chinook release of 32,226 represents 73.3% of the  
total egg take.

**Coho**

July 7 2,142 released in Brown's Cr. <sup>99</sup>  
@ 136 per lb.

July 8 7,320 released in upper Prairie Cr. and <sup>165</sup>  
tributaries ; Big Tree Cr., Little Cr.,  
and un-named tribs.  
@ 136 per lb.

July 8 1,972 released in Boyes Cr. <sup>171</sup>  
@ 136 per lb.

July 9 1,416 released in Brown's Cr. & s.Fk. Brown's  
@ 136 per lb.

July 10 6,250 released in Prairie Cr. above US 101  
@ 88 per lb.

July 10 850 released in Ten Tapo Cr. <sup>17</sup>  
@ 170 per lb.

July 10 850 released in Bud Pond Grove Cr. <sup>17</sup>  
@ 170 per lb.

July 11 3,580 released in Mae Cr. <sup>169</sup>  
@ 170 per lb.

All Coho released by TFSE were Coded Wire Tagged with tag  
#06-01-05-01-01. The number of tagged Coho released was  
24,380. The tag shed rate was determined to be 9.6%. An  
additional 500 un-tagged Coho escaped from the rearing site  
into an un-named tributary to Prairie Cr. during tagging due  
to a plumbing mishap. The total of the releases and the  
escapees combined is 24,880. This represents 58.7% of the  
number of eggs taken.

## CWT Release Report

Coded-wire tag code 06-01-05-01-01 has been assigned to your project/facility. This form must be completed and returned to IFD, 1701 Nimbus Road, Suite B, Rancho Cordova, CA 95670, Attention: ~~Rich Dixon~~, after the tag group has been released.

Rich Dixon

1. Assigned to Mitch Farro of Prairie Cr. Mitigation  
Person Project/Facility
2. Species Coho \*Race Coastal  
\*Egg Lot No. \_\_\_\_\_ Brood Year '90/'91
3. Release Location Prairie Cr. & tributaries \*
4. Dates Group Released: First 7 / 7 / 91  
MM DD YY  
Last 7 / 11 / 91  
MM DD YY
5. Rearing Type ☒ Hatchery ☐ Wild ☐ Mixed
6. Purpose of Release Group: mitigation - Caltrans
7. Total Number Tagged: 24,380
8. Number of Shed Tags: 2,333
9. Mortality Prior to Release: none
10. Number Correctly Tagged: 22,047
11. Unmarked Release Number: none
12. Method for determining unmarked number released:  
☐ Book Estimates  
☒ Actual Count  
☐ Weight Sample Method
13. Quality Control Days: 1 to 3
14. Number/lb. at Release: 6,250 @ 88/lb, 12,850 @ 136/lb, 5,280 @ 170/lb
- \*15. Average Length in MM FL: 68 (54 to 92)
16. Expected Survival: Normal  
☐ Destroyed  
☐ Problem at Release
17. Rearing Location: Remote Facilities in Prairie Cr. State Park
18. Stock of Release Group: Prairie Cr. trapped adults
- \*19. Comments: bucket plants to upper Prairie Cr. & following tribs: Mae Cr Ten Tapo Cr., Boye's Cr., Brown's Cr., Big Tree Cr., & un-named tribs

\* Optional information: all other fields must be completed

**Downstream Migrant Trapping Information  
Prairie Creek 1991**

**Background**

In mid April TFSE installed a trap of a new pipe design in Prairie Cr. in order to help assess Chinook egg to smolt survival for the '90/'91 brood year. Four weeks later another standard fyke type trap was installed. Both traps were located just below the section of stream surveyed by RNP staff for spawning activity during the winter spawning period. These traps were attended daily between mid April and July 15. After July 15 the traps were run with decreasing frequency down to no less than twice weekly through mid August when migration ceased.

All fish were classified as to species and measured by fork length in mm. In addition, periodic weights were taken using a portable scale with an accuracy of  $\pm .1g$ . Any mortalities were noted as well as any visually observable irregularities in health condition.

In order to provide a means to extrapolate from observed numbers to an estimate of total numbers of smolts, several attempts were made at calibrating the efficiency of the traps. Both mark / recapture and a complete weir with a pipe trap were used to assess trap efficiency. The complete weir was in operation from May 31 through July 14 and was used to back calculate the other traps efficiency. *The mark / recapture information is not available for this draft.*

It was originally expected that a size difference would exist between wild Chinook and those released by TFSE. This was to be used to differentiate between these two groups of fish. *However the overlap in size of these groups appears to cause too much confusion and will not be used unless an adequate methodology is developed.*

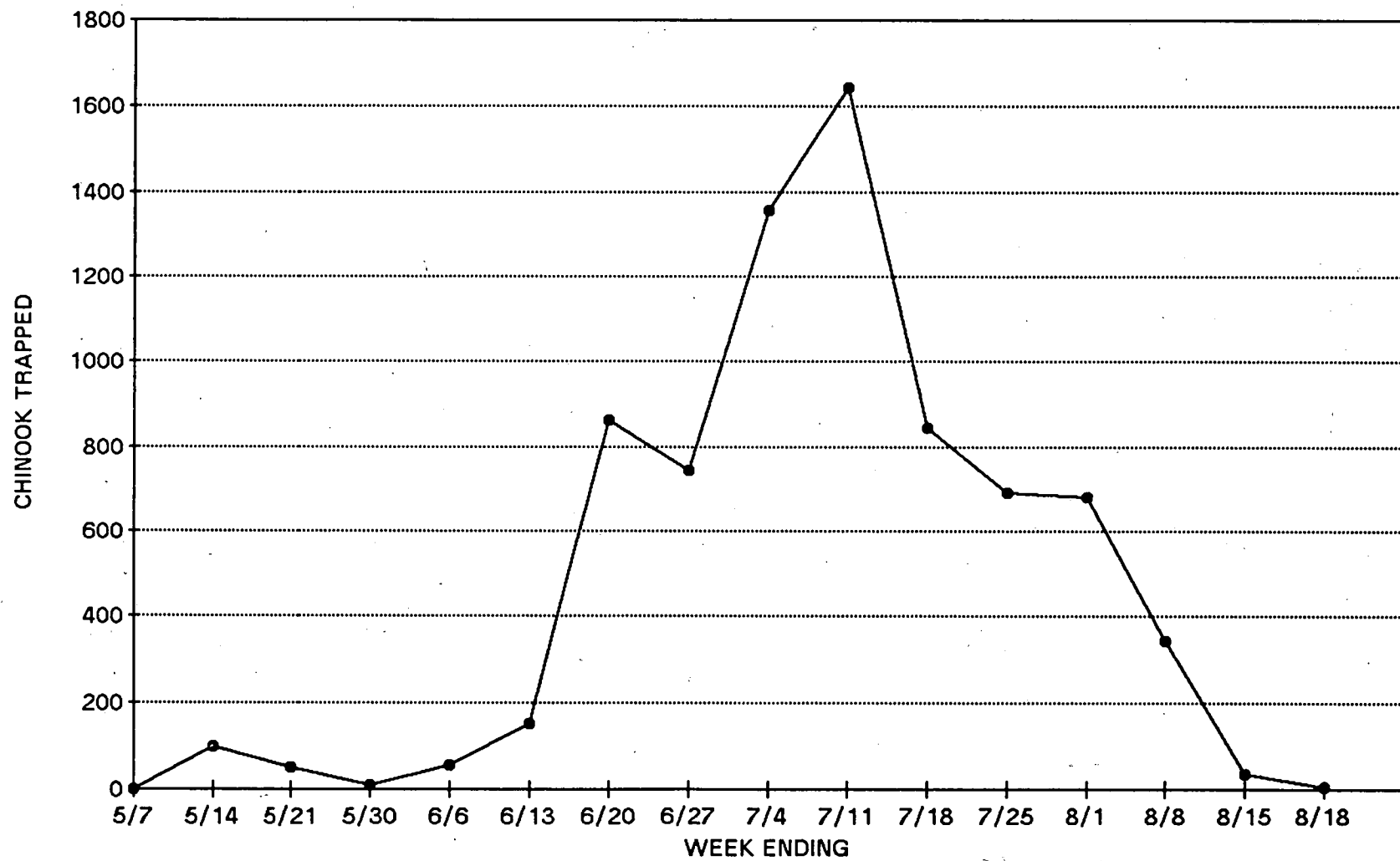
Because the two traps were also being evaluated for their individual efficiency by a HSU Graduate student, (Matt Kiese), they alternated in location within the same stream cross channel. Due to this changing of location within the cross channel, the traps were found to vary in individual efficiency. *For this reason trap numbers will be given for all traps combined. The estimate is for the total migrating population in Prairie Creek from above the traps. This number includes 19,135 Chinook released above the traps by TFSE.*

## Results

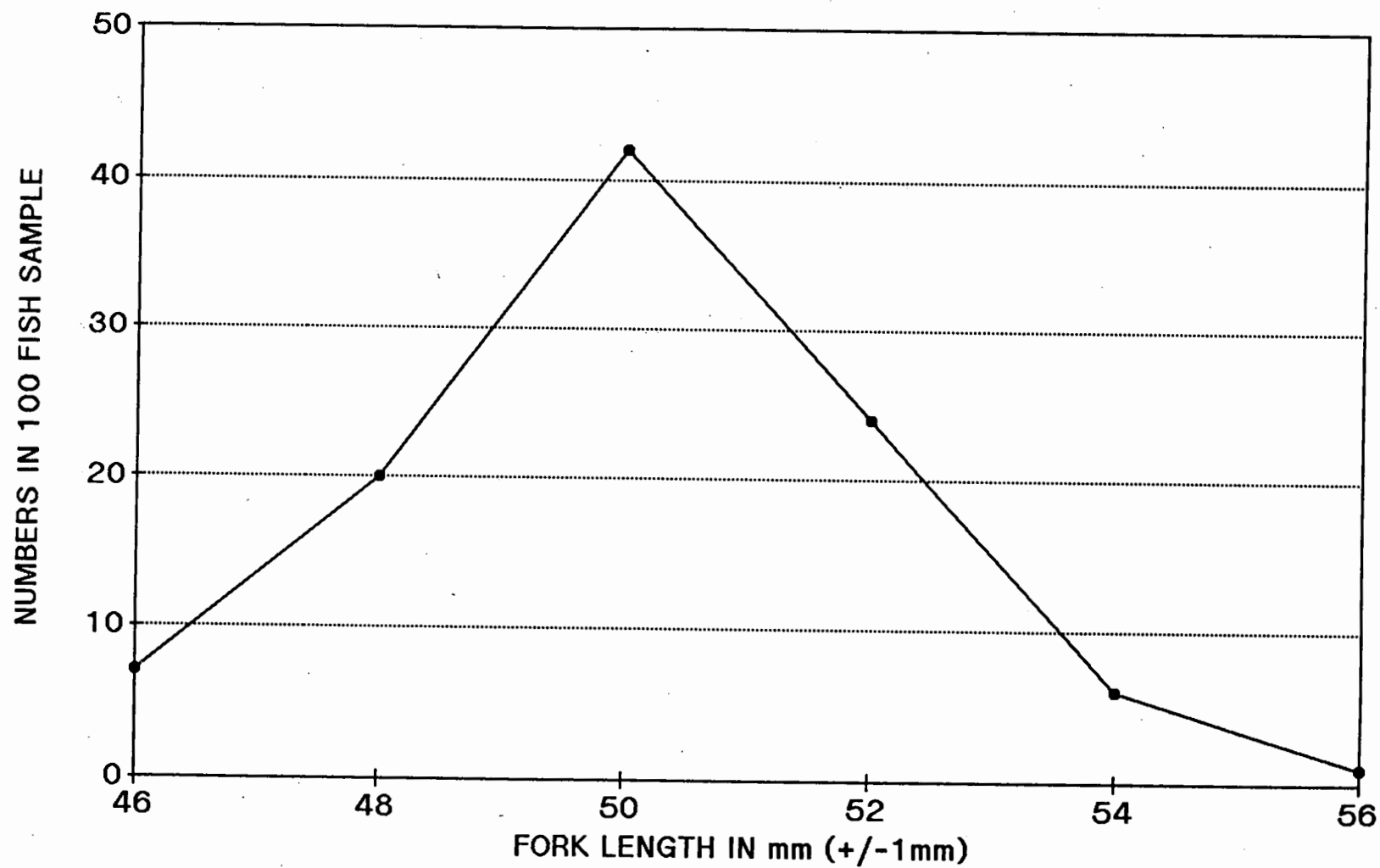
The total number of Chinook smolts, both wild and TFSE released, is estimated at 7,574. This number represents continuous trapping between mid April and mid August. The traps were operated continually during this period and may have had only minor errors in calculating population numbers, primarily due to relatively stable flow conditions. An explanation of the estimated population vs. the large release approximately three miles upstream is not readily available but would seem high for predation mortality.

# ESTIMATE OF TOTAL MIGRATING POPULATION

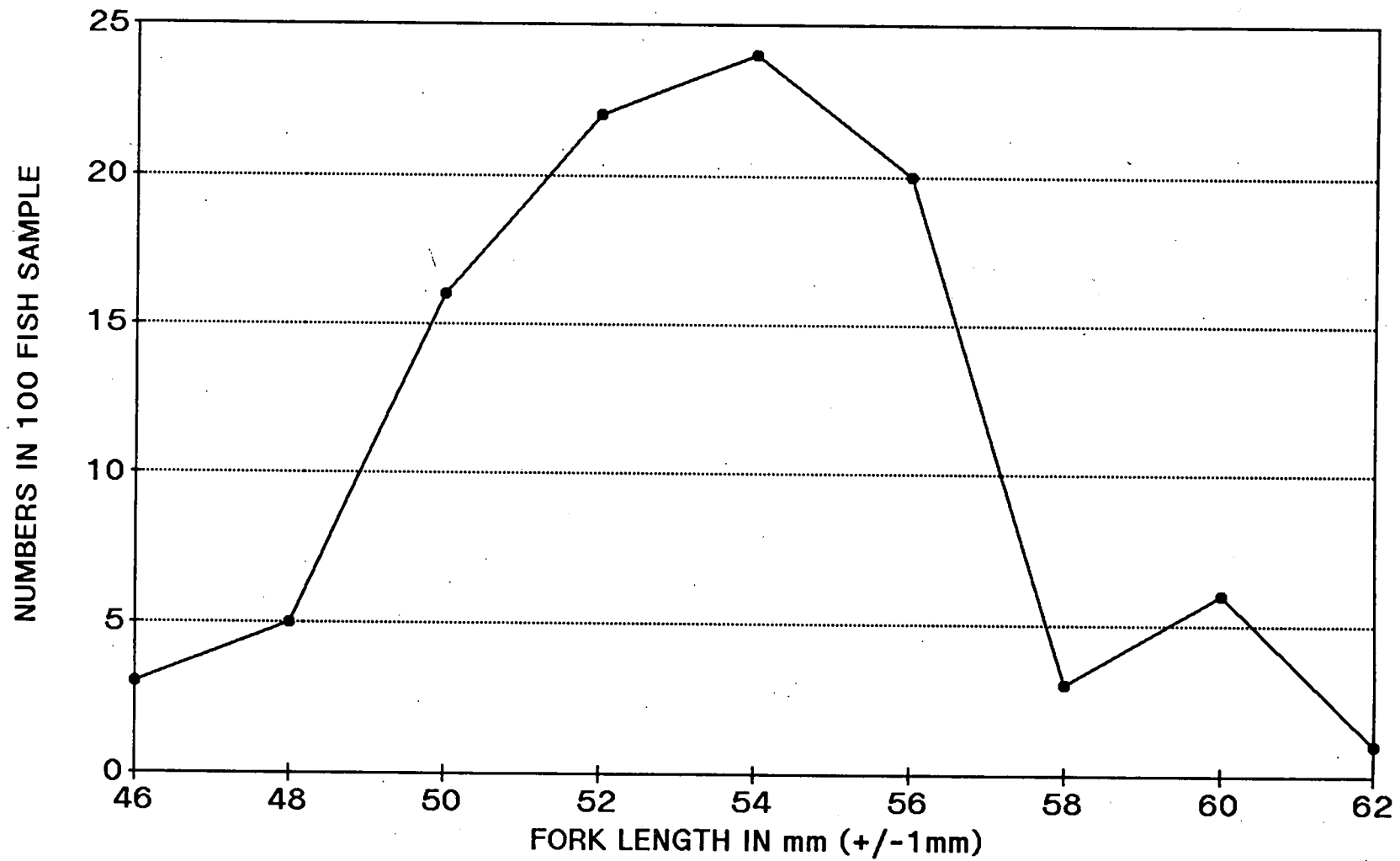
TRAPS AND COMPLETE WEIR COMBINED



**RELEASED CHINOOK LENGTH FREQUENCIES**  
PRAIRIE CREEK RELEASE DATE 6-14-91

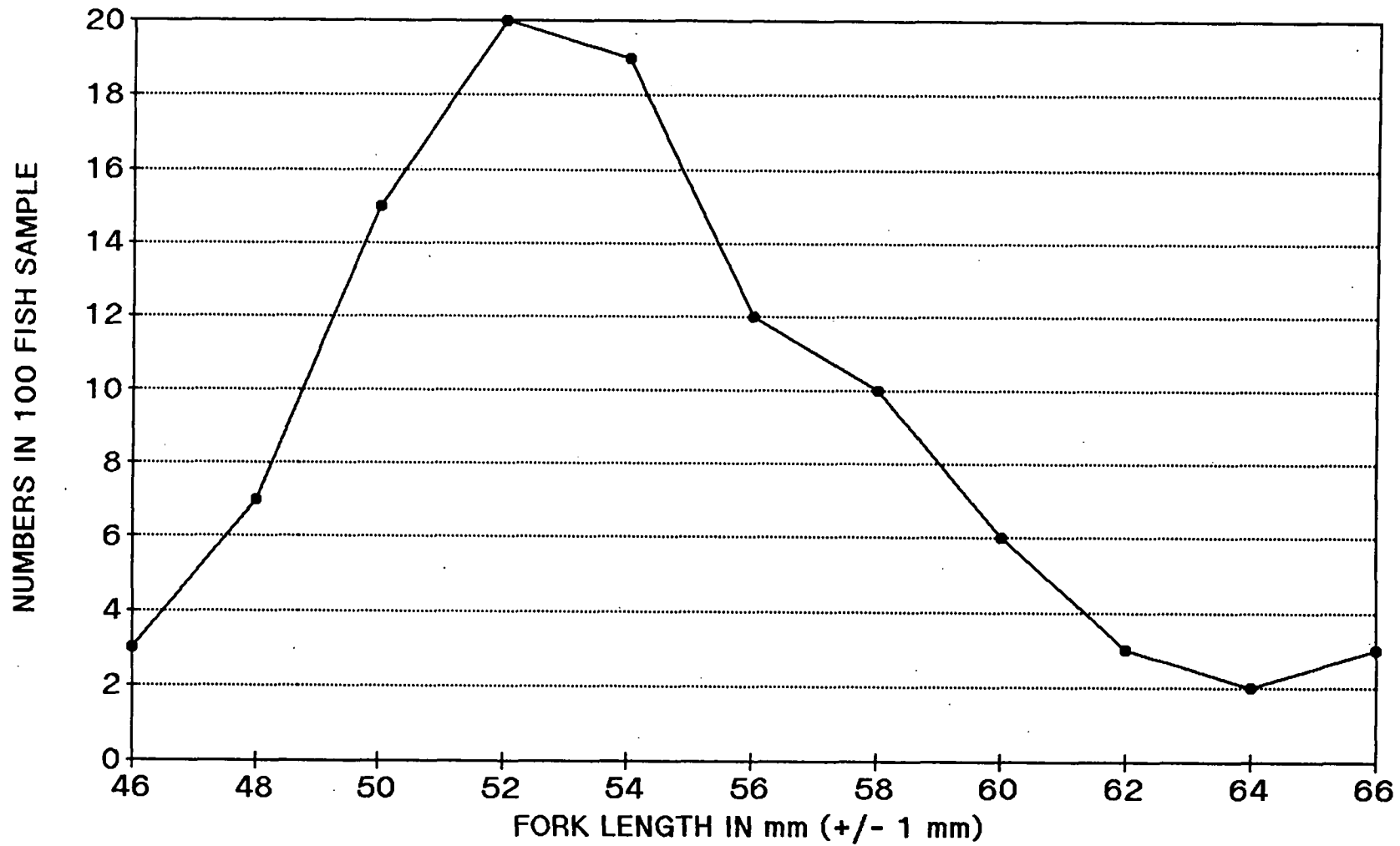


**WILD CHINOOK LENGTH FREQUENCIES**  
**PRAIRIE CREEK BEFORE POND RELEASE 6-14**



# MIGRANT CHINOOK LENGTH FREQUENCIES

100 FISH RANDOM SAMPLE ON 6/21

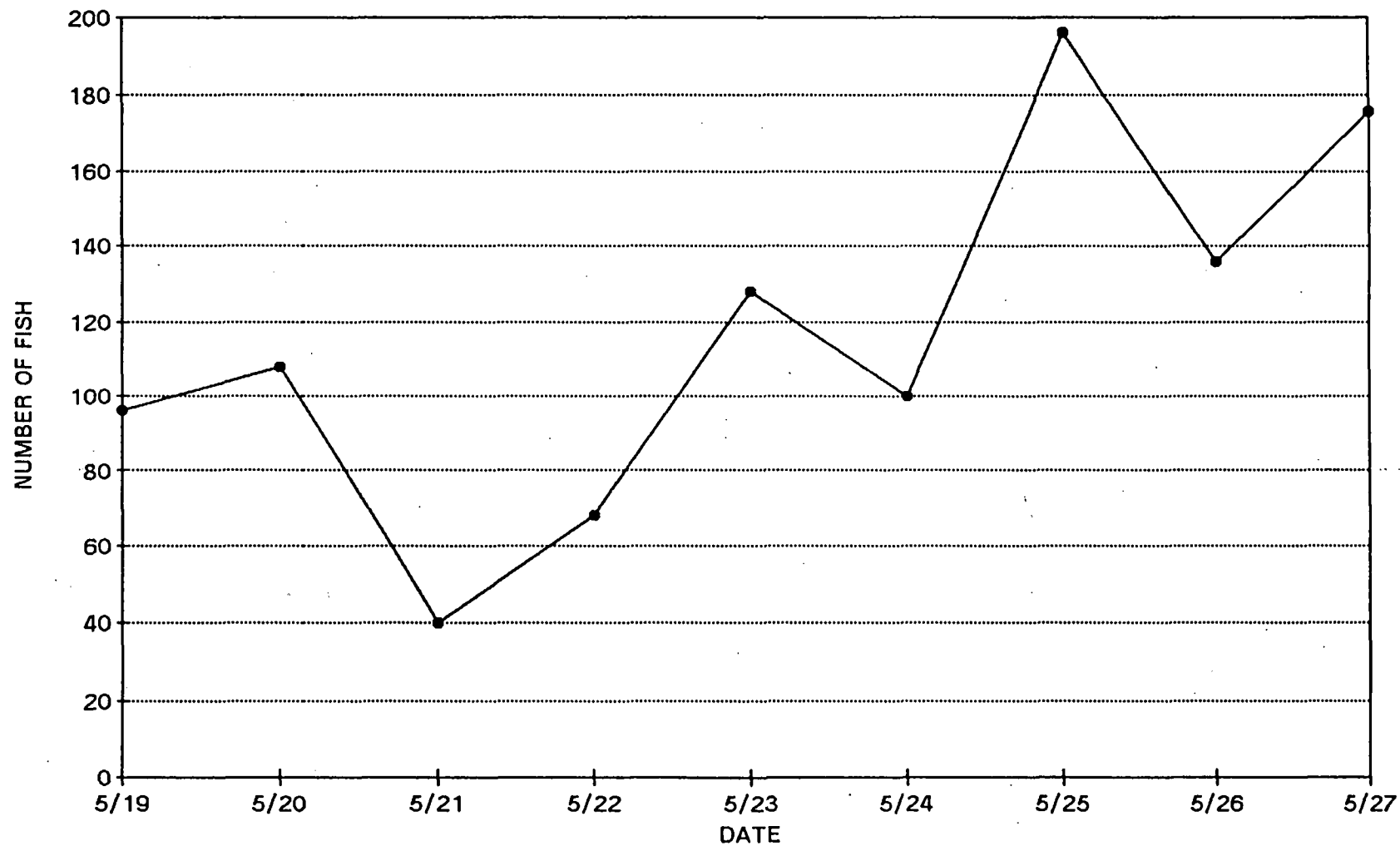


from a release of 13,380 on June 14th & 15th. A total of 1,374, or 33.8% were the product of wild spawning fish.

The observed numbers were expanded by the trap efficiency curve to 5,420 cwt smolts, and 2,835 wild produced smolts. These numbers should not be used as an estimate of total Chinook smolt production for the year due to the probability of significant migration prior to trap installation and during the early June high flows when the trap was inoperable. The opportunity to estimate the smolt production during periods when the trap was inoperable may exist by comparing Prairie Creek to a rotary trap in Little River which was able to operate in higher flows.

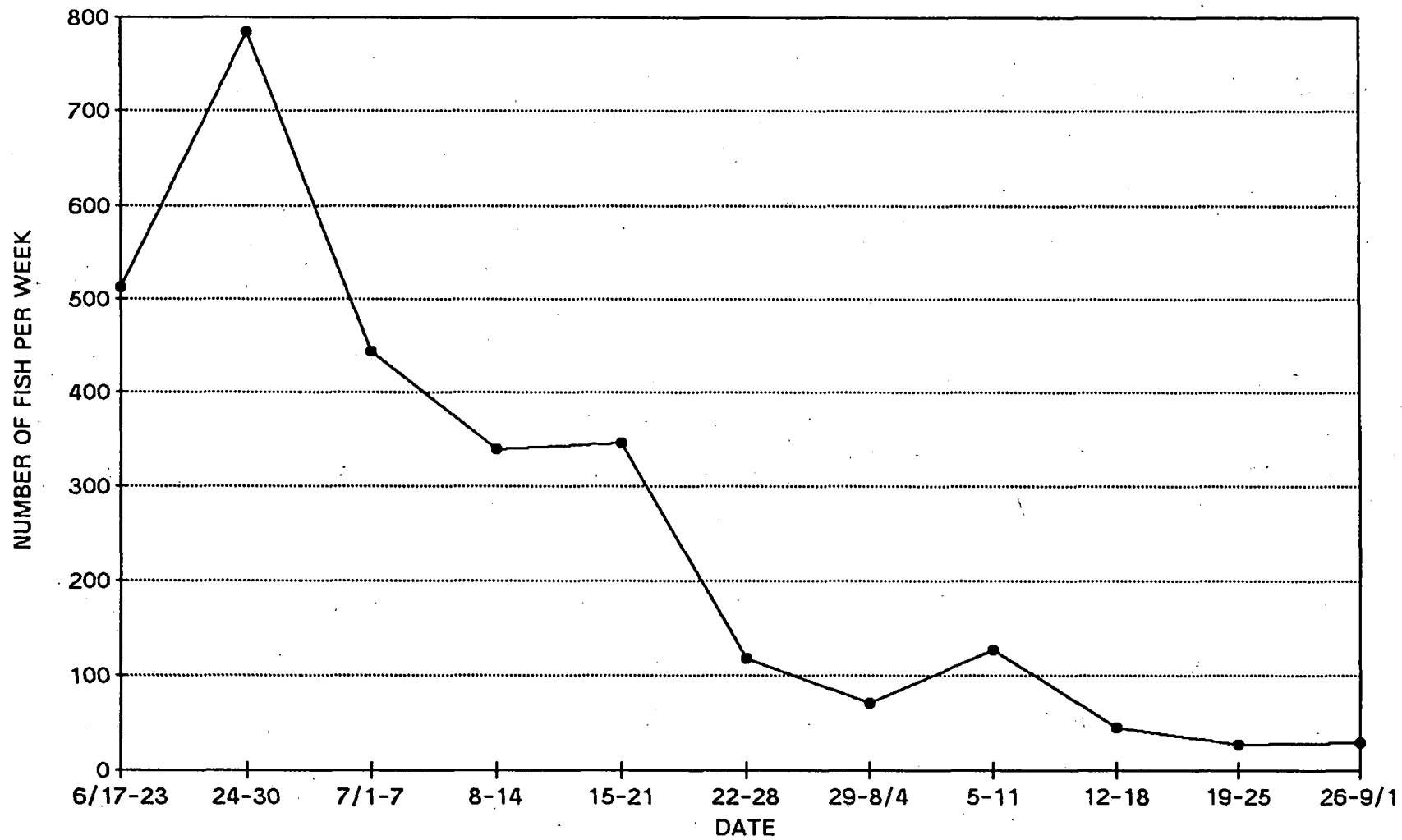
## EXPANDED NUMBER WILD CHINOOK MIGRANTS

DOWNSTREAM MIGRANT TRAP 1993



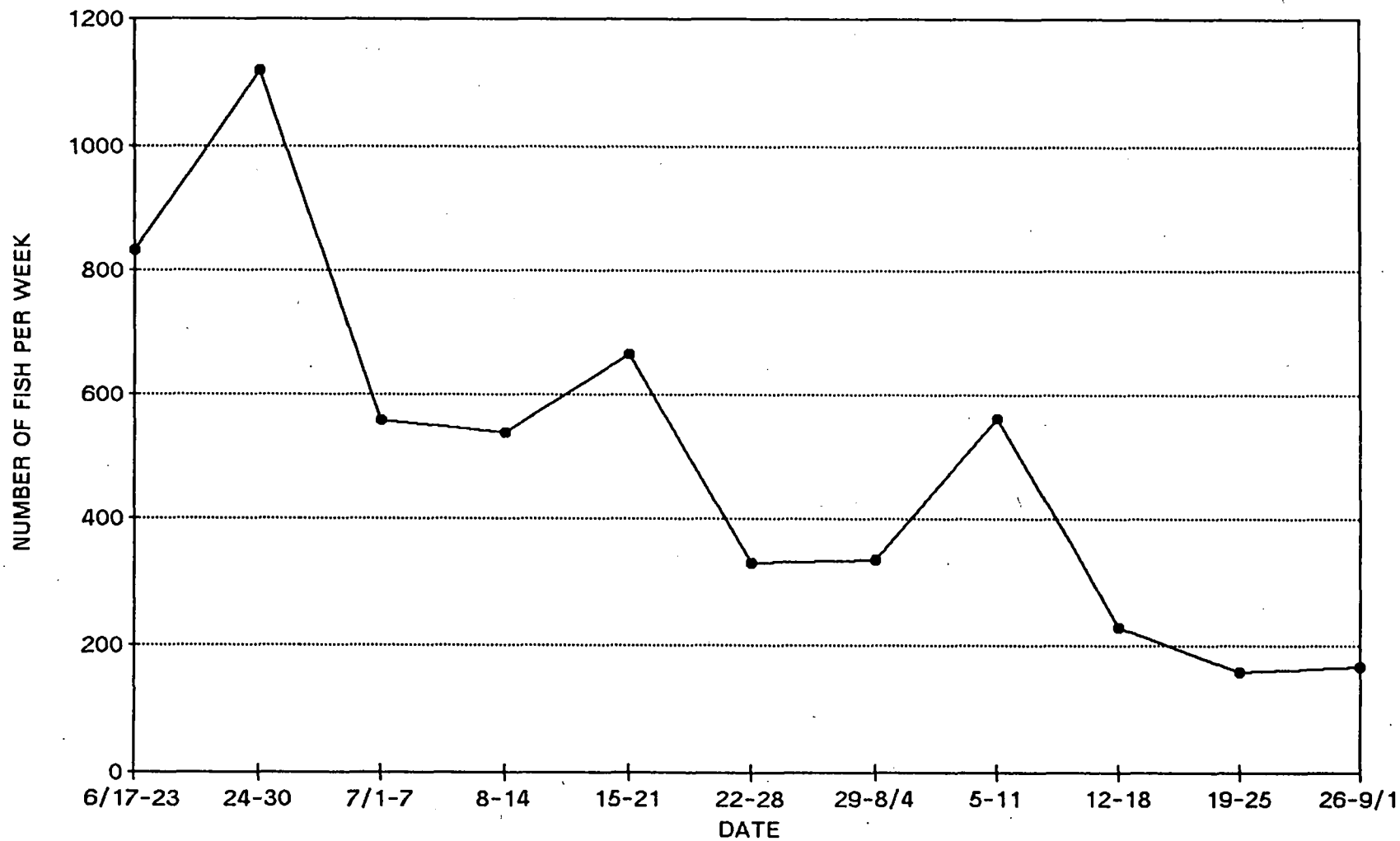
## EXPANDED NUMBER WILD CHINOOK MIGRANTS

DOWNSTREAM MIGRANT TRAP 1993



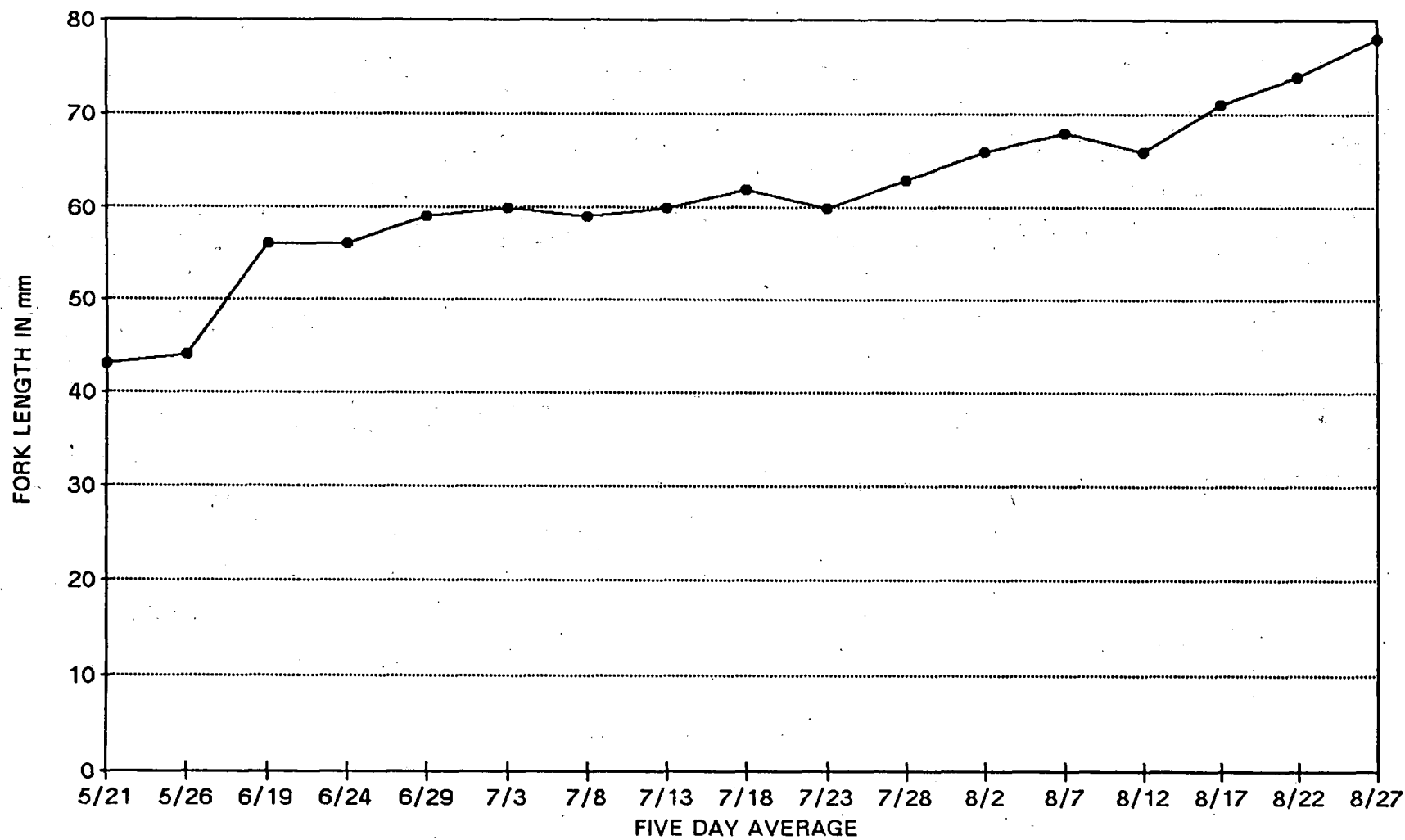
## EXPANDED AD CLIP CHINOOK MIGRANTS

DOWNSTREAM MIGRANT TRAP 1993



# FORK LENGTH OF WILD CHINOOK

DOWNSTREAM MIGRANT TRAP 1993



# FORK LENGTH OF AD CLIP CHINOOK

DOWNSTREAM MIGRANT TRAP 1993

