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State of California
The Resources Agency
Department of Fish and Game

AN ESTIMATE OF THE 1970-71 ANGLER PRESSURE AND
SPORT FISH HARVEST--SCOTT RIVER, SISKIYOU COUNTY, CALIFORNIA^{1/}

by

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SUMMARY

This study was conducted to obtain estimates of angler pressure and sport fish harvest. The data will be used to evaluate water projects proposed for the Klamath River System, including the Scott River, and to evaluate current fishery management of the study area.

The study area included the entire main stem of the Scott River from its mouth to the town of Callahan. The study period extended from May 2, 1970, through February 28, 1971, the length of the legal trout and salmon fishing season.

A total of 17,227 angler hours were estimated to have been spent harvesting an estimated 682 adult steelhead (Salmo gairdneri), 176 half-pounder steelhead, and 7,152 juvenile steelhead. Small numbers of juvenile and adult king salmon (Oncorhynchus tshawytscha) and juvenile silver salmon (O. kisutch) were also taken.

The Scott River juvenile steelhead population was shown to undergo two major periods of angling mortality: one, as parr, from June through October, and the second, as smolts, the following May when trout season opens.

The intensive harvest of juvenile steelhead from the study area could have a depressing effect on numbers of returning adults. Recommendations were made to 1) delay the opening of the trout fishing season on the Scott River from the present (approximately May 1) to about June 1, and 2) reduce the daily bag limit for trout and/or salmon, during the open season, to three fish, irrespective of size. (Editor's note: recommendation (1) was enacted by the California Fish and Game Commission in 1972.)

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INTRODUCTION

The Scott River, tributary to the Klamath River in northwestern California, is an important anadromous salmonid stream. Each year, this river and its tributaries provide spawning habitat for thousands of salmon and steelhead. It provides angling primarily for juvenile and adult steelhead.

Two federal agencies have proposed a series of dams and reservoirs for the Klamath River System which would seriously affect, if not eliminate, anadromous fish migrations above a point some 15 miles upstream from the mouth of that river. One federal agency has proposed a dam to be located on the Scott River at Callahan some 58 miles above its mouth. Knowledge of the sport fish harvest and angler pressure is vital if this department is to effectively and intelligently evaluate the effects of these proposed water developments. This information also provides a basis for evaluating current fishery management practices and for developing more effective ones.

The primary objectives of this study were to determine angler use in, and sport fish harvest from, the main stem of the Scott River.

ACKNOWLEDGEMENTS

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DESCRIPTION OF THE STUDY AREA

The Scott River originates in the Scott Mountains in southern Siskiyou County at an average crest elevation of about 7,000 ft above sea level. The East Fork and the South Fork join to form the main stem at Callahan. The Scott River then meanders some 37 miles through the broad, flat, agricultural Scott Valley until it enters the mountainous Scott River canyon through which it flows for about 21 miles before emptying into the Klamath River. The mouth of the Scott River is located about 142 miles above the mouth of the Klamath River.

The study area included only the main stem Scott River and was divided into two subareas, valley and canyon.

The valley subarea included the Scott River from Callahan downstream to the State Highway 3 bridge crossing near Fort Jones (Figure 1), a distance of about 25 river miles. For about 3 miles below Callahan, the valley subarea had some gravel and rubble riverbottom and some pools, providing habitat for trout and juvenile steelhead and juvenile salmon in all but the summer months. The remainder of this subarea had a sandy bottom and eroding banks devoid of vegetation. It offered very

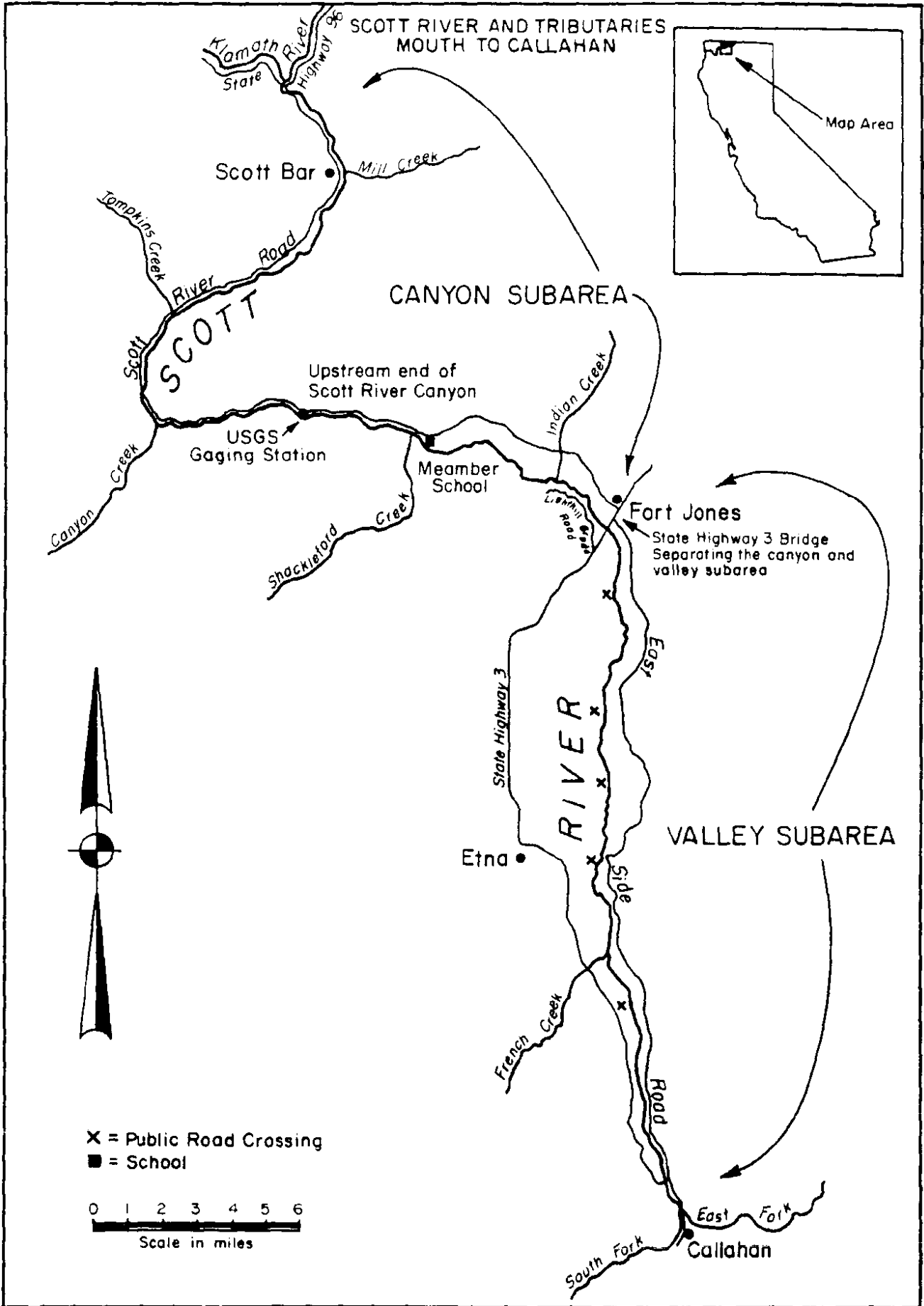


Figure 1. Map of study area.

little good habitat for salmonids. During the summer months, riverflows in the valley subarea were reduced to a trickle to satisfy irrigation demands. Some stretches dried up completely during the study. In the valley the river flowed entirely over private land and public access for fishing was almost nonexistent.

The canyon subarea began at State Highway 3 bridge crossing and continued downstream approximately 33 river miles to the mouth of the Scott River. The upper 12 miles of the canyon subarea, from the State Highway 3 bridge to the head of the Scott River Canyon, was physically similar to the valley subarea but had slightly more bottom gravel and pools and slightly increased river flows. Below this, the Scott River flowed through the Scott River Canyon for about 21 miles to the Klamath River. Through the canyon, the river was contained between mountainous slopes covered with pines, Douglas fir and incense cedar down to the river's edge. The river was of a gently cascading nature, flowing over a bottom composed primarily of boulders, rubble, cobble, and gravel with some sand.

Although the upper 12 miles of the canyon subarea was physically similar to the valley subarea, it was included as part of the canyon subarea because this 33 mile reach of river from the State Highway 3 bridge crossing near Fort Jones to the mouth of the Scott River was open to winter trout (including steelhead) fishing from May 2, 1970 through February 28, 1971. The valley subarea was open to trout (including steelhead) fishing only from May 2, 1970 through November 15, 1970.

The canyon subarea flowed over public land for about half its total length. Public fishing access to both public and private lands bordering the canyon subarea was excellent. The difference in degree of public angling accessibility between the two subareas was principally due to the presence of an allweather county road closely paralleling the Scott River through most of the canyon subarea while no public roads closely paralleled, and only a few crossed the Scott River in the valley subarea (Figure 1).

The elevation of the river is about 3,100 ft above sea level at Callahan and about 2,705 ft at the State Highway 3 bridge crossing, a mean gradient of 16 ft/mile through the valley subarea. The elevation at the mouth of the Scott River is about 1,530 ft, a mean gradient through the canyon subarea of 36 ft/mile.

During the study period, daily discharge was measured at the USGS gage near Fort Jones and ranged from 22 cfs in July, 1970, to 14,800 cfs in January, 1971. Water temperature at the mouth ranged from 77 F in July to 34 F in January, while at Meamber School it ranged from 71 F in August to 33 F in January. Air temperature ranged from 102 F in June to 5 F in January, and precipitation as rain and snow totaled 25 inches. Air temperature and precipitation data were obtained from the U. S. Forest Service district office in Fort Jones.

ANGLING REGULATIONS IN THE STUDY AREA

During the general trout season (May 2 through November 15) the study area was open to trout (including steelhead) and salmon angling, except it was closed to salmon fishing only from September 1 through November 15. The daily bag limit for salmon (except during the closed salmon season) and trout in combination was (i) 10 fish, but no more than 10 lb and one fish, or (ii) 3 fish irrespective of size or weight. In addition to the general trout season, the canyon subarea was open to all angling from November 16, 1970, through February 28, 1971. During this extended winter season only three trout or salmon in combination could be possessed, irrespective of weight.

Other pertinent angling regulations were (i) no person could use any hook with more than one point or more than one hook point attached directly or indirectly to one line from September 1 through November 15, and (ii) no minimum size limits were in effect for any species of fish.

DESCRIPTION OF ANGLING METHODS

Angling in the Scott River was from shore or by wading into the river shallows. In the canyon subarea almost all angling was below Meamber School, as the upper 8 miles between Meamber School and the State Highway 3 bridge crossing was not closely paralleled by a public road.

SURVEY METHODS

The public roads closely paralleling the lower 25 miles of the canyon subarea enabled angler counts and interviews to be conducted by car. The census clerk would drive along these roads looking for anglers or their vehicles, as the vehicle would almost always be parked on the edge of the road. When an angler or his vehicle was located the angler was counted and interviewed, concurrently. In the valley subarea and the upper 8 miles of the canyon subarea, a department airplane was used to count anglers. No public road closely paralleled this part of the river and only a few crossed it, making angler counts and interviews by car impossible.

Angler use in the valley subarea and the upper 8 miles of the canyon subarea was thought to be significantly less, per unit area, than in the lower 25 miles of the canyon subarea, and sampling effort was expended accordingly. No anglers were interviewed in the valley subarea or the upper 8 miles of the canyon subarea, although observations from the airplane during use counts indicated small numbers were present in May, only. The estimates of juvenile and adult steelhead harvested from the valley subarea were made by applying the catch per hour data from canyon subarea anglers to the angler pressure estimates (from airplane counts) for the valley subarea. It is not known whether the use of canyon subarea catch per hour data to estimate angler harvest

from the valley subarea resulted in an overestimate or an underestimate, but angler use in the valley subarea formed only a small portion of the total use and any error in total harvest estimate from this source must be minor.

The study was designed to sample those hours during the day when angling occurred. Generally, this period extended from near sunrise to approximately sunset. Although legal fishing hours for trout and salmon extend from one hour before sunrise to one hour after sunset, angling was assumed to be insignificant outside the hours sampled, because of poor light and/or cold temperatures.

Samples were drawn from the following time strata: (a) month, (b) weekday, and time periods during a sample day. Additionally, the opening weekend of the general trout season, May 2 and 3, 1970, was sampled as a separate stratum. The following holidays were classed as weekend days, although none were sampled:

May 30 - Memorial Day
July 4 - Independence Day
September 7 - Labor Day
November 26 - Thanksgiving Day
December 25 - Christmas Day
January 1 - New Year's Day

Sample days were not randomly selected because of conflicts with other work. In the canyon subarea sampling occurred on 36% of the 303 days between May 2, 1970, and February 28, 1971 (Table 1). Valley subarea samples were taken on 9 of the 198 days from May 2 through November 15, 1970 (Table 2). Sampling effort varied from month to month and was eliminated during the summer months because of other field investigations and reduced angler pressure.

Each sample day was divided into a morning and an afternoon time period, each of which was sampled independently. These time periods varied in length throughout the study to correspond to the length of day in a particular month (Table 3).

Two samples were taken each time period during a sample day in the canyon subarea. Angler counts by airplane in the valley subarea were made once in each time period on a sample day.

An angler was defined as any person actively engaged in angling or a related activity such as baiting a hook, or walking along the river bank carrying fishing gear. Angling time (hours) in the sample were similarly defined.

Juvenile steelhead were classed as those steelhead-rainbow trout less than 10.0 inches fork length, half-pounder steelhead as those ranging in fork length from 10.0 to 13.9 inches, while those 14.0 inches and greater in fork length were termed adult steelhead.

Table 1

Days Sampled 1970-71
Scott River - Canyon Subarea*

Period	Weekend days		Weekdays		Total	
	Sampled	In stratum	Sampled	In stratum	Sampled	In stratum
May 2 & 3	2	2	--	--	2	2
Balance of May	5	8	9	20	14	28
June	4	8	8	22	12	30
July	2	8	4	23	6	31
August	3	10	4	21	7	31
September	3	9	6	21	9	30
October	3	9	5	22	8	31
November	4	10	6	20	10	30
December	2	9	10	22	12	31
January	5	11	10	20	15	31
February	5	8	9	20	14	28
Totals	38	92	71	211	109	303

* Angler interviews and angler counts were conducted concurrently.

Table 2

Days Sampled 1970
Scott River - Valley Subarea*

Period	Weekend days		Weekdays		Total	
	Sampled	In stratum	Sampled	In stratum	Sampled	In stratum
May 2 & 3	1	2	--	--	1	2
Balance of May	1	8	1	20	2	28
June	0	8	0	22	0	30
July	0	8	0	23	0	31
August	0	10	0	21	0	31
September	0	9	0	21	0	30
October	2	9	2	22	4	31
November	1	5	1	10	2	15
Totals	5	59	4	139	9	198

* No angler interviews were conducted in the valley subarea.

Table 3

Time Periods in Sample Days for Each Month of Study
Scott River, 1970-71

Pacific Standard Time

	<u>Time Period 1</u>	<u>Time Period 2</u>
May	0600-1200	1200-1900
June	0500-1200	1200-2000
July	0500-1200	1200-2000
August	0500-1200	1200-2000
September	0500-1200	1200-1900
October	0600-1200	1200-1800
November	0700-1200	1200-1730
December	0700-1200	1200-1730
January	0700-1200	1200-1700
February	0700-1230	1230-1800

RESULTS

Angler Pressure

Total angler effort for the ten month study period was estimated to be 17,227 hr (Table 4). Completed trip data indicated an average angler day equalled 1.3 hr for anglers catching primarily juvenile steelhead and 3.0 hr for anglers catching principally adult steelhead. Angler pressure during May, June, July, and August was directed almost entirely at the capture of juvenile steelhead, judging from the catch. Anglers caught both juvenile and adult steelhead during September and October, while catching adult steelhead almost exclusively during November, December, January, and February.

Angling effort was distributed fairly evenly throughout the study period (Figure 2). The largest concentration of angler use occurred in May when anglers fished an estimated 3,165 hr or about 18% of the total.

Anglers catching primarily juvenile steelhead contributed about 8,841 hr or 51% of the total use, while the remaining 49% was expended by anglers catching mostly adult steelhead.

Five percent of the total estimated angler use occurred in the valley subarea, almost all of it in May (Table 4). In the canyon subarea, angler use occurred almost exclusively below Meamber School.

The angler interviews sampled approximately 14% (2,457) of the total estimated angler hours (17,227).

ANGLER HARVEST

Juvenile Steelhead

Anglers creeled an estimated 7,152 juvenile steelhead weighing 848 lb. Ninety-two percent of these juvenile steelhead were harvested from the canyon subarea (Table 5).

The 530 juvenile steelhead measured during the period May through November averaged 6.6 inches in fork length, ranged from 3.9 to 9.9 inches and averaged 1.7 oz. in weight (Figure 3).

During those periods when juvenile steelhead were caught, catch per angler hour ranged from 0.01 to 0.99 fish/hr (Table 6).

Half-Pounder Steelhead

Anglers harvested an estimated 176 steelhead-rainbow trout meeting this study's criterion for half-pounders, 10.0 to 13.9 inches in fork length. Sixty-one of these were taken in May while the remaining 115 were harvested from August through November (Table 5).

Table 4

Angler Use in Hours by Month and by Subarea
Scott River, 1970-71

Subarea	May 2&3	Balance of May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Total
Canyon	645	1,640	1,095	1,000	1,425	2,063	2,222	2,122	2,152	1,136	820	16,320
Valley	376	504	0	0	0	0	27	0	0	0	0	907
Totals	1,021	2,144	1,095	1,000	1,425	2,063	2,249	2,122	2,152	1,136	820	17,227

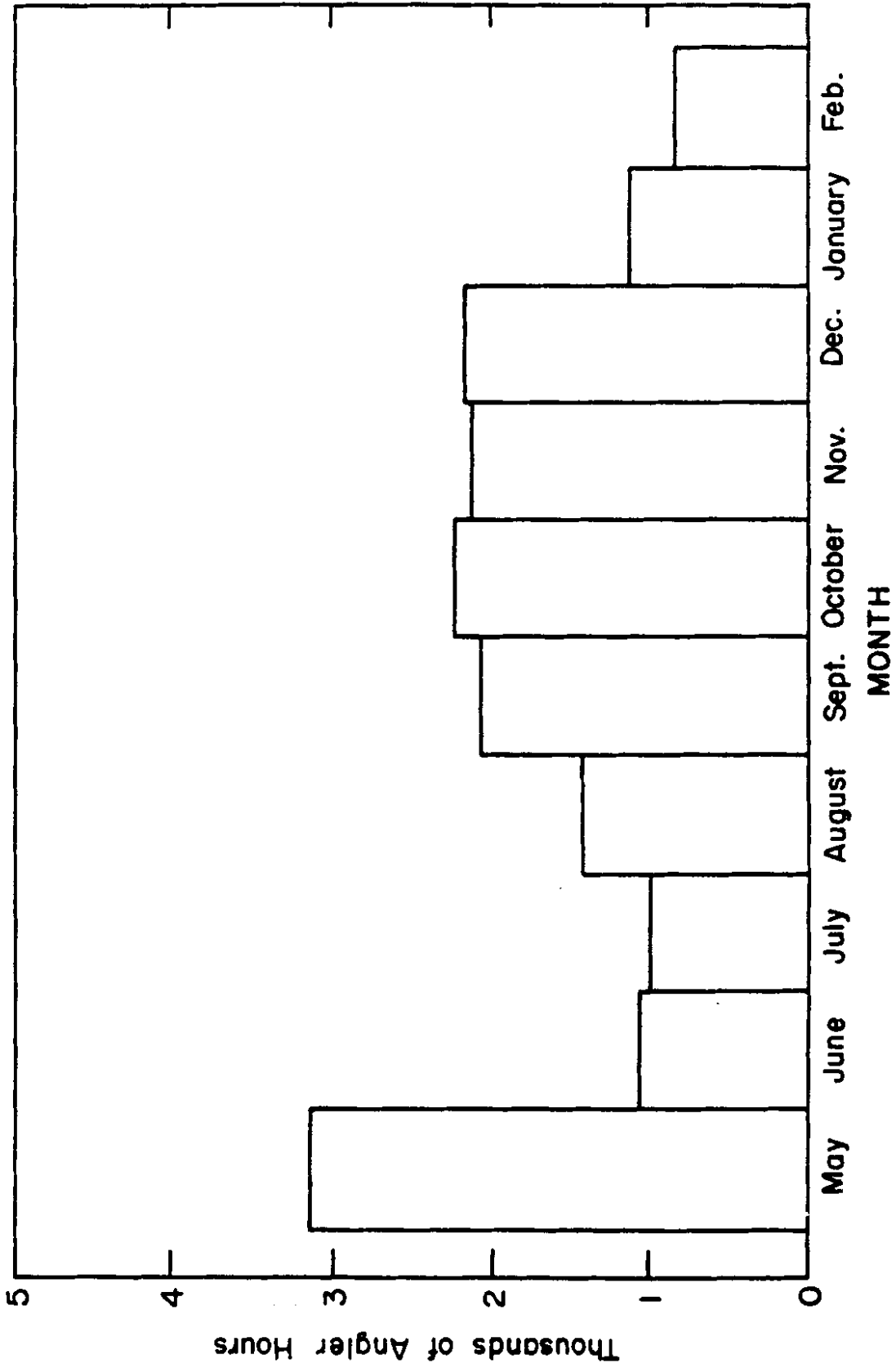


Figure 2. Angler use, Scott River, 1970-71.

Table 5

Estimated Angler Harvest of Steelhead
Scott River, 1970-71

	Juveniles		Half-Pounders		Adults		Total	
	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
<u>Canyon Subarea</u>								
May 2 & 3	450	77	42	20	50	121	542	218
Balance of May	913	108	0	0	0	0	913	108
June	390	25	0	0	0	0	390	25
July	805	77	0	0	0	0	805	77
August	1,006	77	19	10	0	0	1,025	87
September	2,037	221	24	12	23	29	2,084	262
October	967	172	59	47	21	57	1,047	276
November	20	11	13	6	81	321	114	338
December	0	0	0	0	322	1,489	322	1,489
January	0	0	0	0	64	286	64	286
February	0	0	0	0	97	409	97	409
Totals	6,588	768	157	95	658	2,712	7,403	3,575
<u>Valley Subarea*</u>								
May 2 & 3	243	36	19	9	24	60	286	105
Balance of May	294	39	0	0	0	0	294	39
June	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	27	5	0	0	0	0	27	5
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
Totals	564	80	19	9	24	60	607	149
<u>Subareas Combined</u>								
May 2 & 3	693	113	61	29	74	181	828	323
Balance of May	1,207	147	0	0	0	0	1,207	147
June	390	25	0	0	0	0	390	25
July	805	77	0	0	0	0	805	77
August	1,006	77	19	10	0	0	1,025	87
September	2,037	221	24	12	23	29	2,084	262
October	994	177	59	47	21	57	1,074	281
November	20	11	13	6	81	321	114	338
December	0	0	0	0	322	1,489	322	1,489
January	0	0	0	0	64	286	64	286
February	0	0	0	0	97	409	97	409
GRAND TOTALS	7,152	848	176	104	682	2,772	8,010	3,724

* Catches based on canyon subarea catch per angler hour.

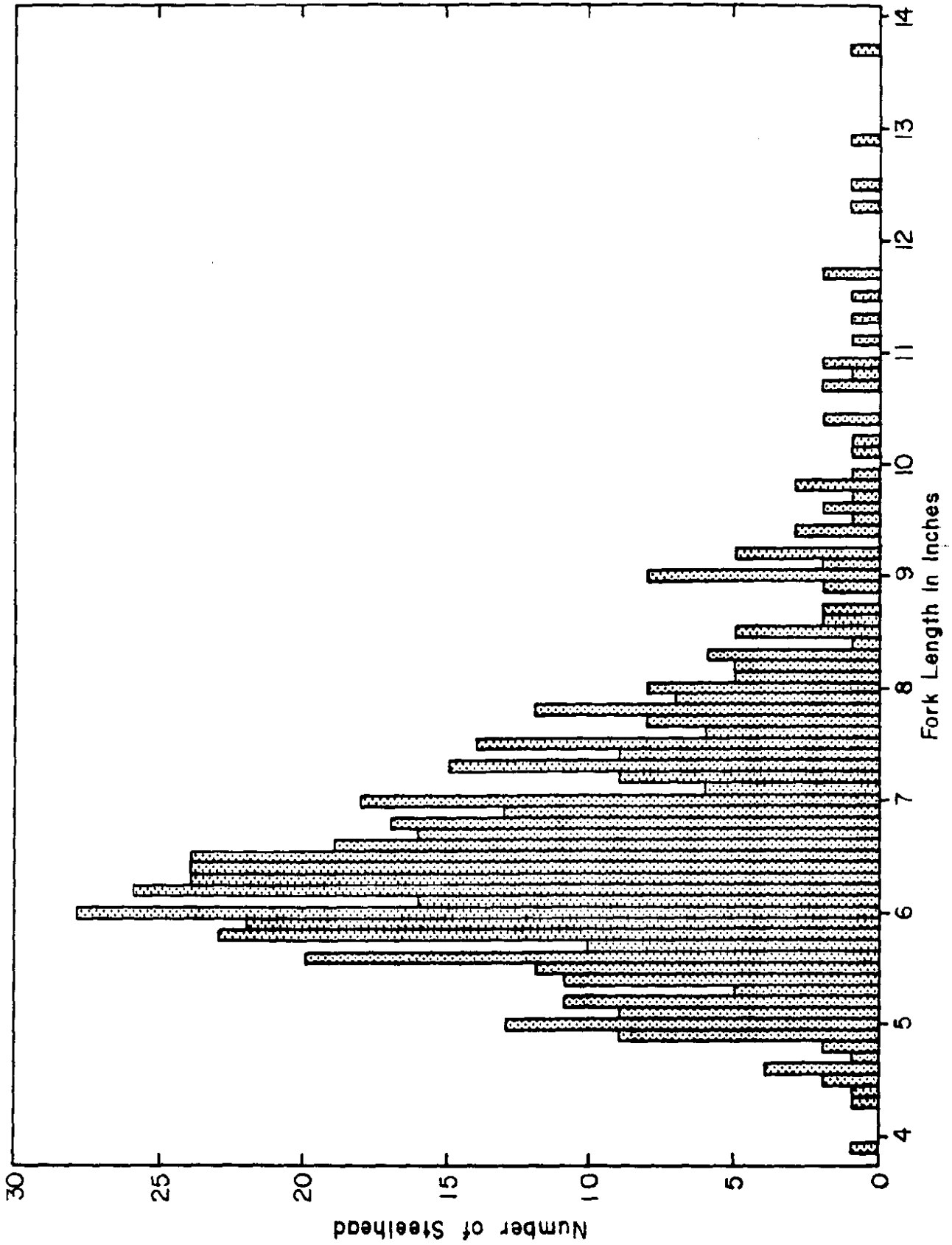


Figure 3. Length frequency distribution, juvenile and half-pounder steelhead trout, May through November, 1970.

Table 6

Steelhead Catch per Angler Hour
Scott River, 1970-71*

Period	Juveniles		Half-pounders		Adults		Total Steelhead	
	No/hr	Lb/hr	No/hr	Lb/hr	No/hr	Lb/hr	No/hr	Lb/hr
May 2 & 3	0.68	0.11	0.06	0.03	0.07	0.18	0.81	0.32
Balance of May	0.56	0.07	0.00	0.00	0.00	0.00	0.56	0.07
June	0.36	0.02	0.00	0.00	0.00	0.00	0.36	0.02
July	0.81	0.08	0.00	0.00	0.00	0.00	0.81	0.08
August	0.71	0.05	0.01	0.01	0.00	0.00	0.72	0.06
September	0.99	0.11	0.01	0.01	0.01	0.01	1.01	0.13
October	0.44	0.08	0.03	0.02	0.01	0.03	0.48	0.12
November	0.01	0.01	0.01	0.01	0.04	0.15	0.05	0.16
December	0.00	0.00	0.00	0.00	0.15	0.69	0.15	0.69
January	0.00	0.00	0.00	0.00	0.06	0.25	0.06	0.25
February	0.00	0.00	0.00	0.00	0.12	0.50	0.12	0.50
May 2 - Feb. 28	0.42	0.05	0.01	0.01	0.04	0.16	0.46	0.22

* Samples were taken in the canyon subarea only.

The 18 half-pounders measured during this study averaged 11.3 inches in fork length and ranged from 10.1 to 13.7 inches (Figure 3).

During those periods when half-pounders were caught, the catch per angler hour ranged from 0.01 to 0.06 fish/hr (Table 6).

Adult Steelhead

Adult steelhead observed during this study were taken in May and during the period September through February. Of the estimated total harvest of 682 adults weighing 2,772 lb, 96% were taken from the canyon subarea (Table 5). Excluding May, the first adult steelhead observed during this study was caught on September 29, 1970, and the last on February 28, 1971.

The 109 adult steelhead weighed during this study averaged 4.3 lb and ranged from 1.0 to 11.0 lb. Fork length ranged from 14.1 to 29.5 inches.

Of the 116 adult steelhead sexed during this study, 67 or 58% were females. Spent female adults were observed in the catch only in February. Spent males could not be differentiated from unspent males. Of 16 female adults observed in February, three were empty of eggs. Spent adults were probably taken in May also, but of the seven adults observed during May none were identified as spent.

During those periods when adult steelhead were caught, catch per angler hour ranged from 0.01 to 0.15 fish/hr and from 0.01 to 0.69 lb/hr (Table 6).

King salmon

King salmon begin entering the Scott River in August and were seen spawning in Mill Creek (Figure 1) as late as December 11, 1970. The Scott River was designated a salmon spawning area from September 1 through November 15 and the river was closed to salmon fishing only during that time. During this study, a few king salmon harvested by anglers were observed. An estimated eight adult king salmon were taken illegally during the closed season. An additional six were estimated to have been legally harvested in November (after November 15). These 14 adult salmon weighed an estimated 120 lb. In May and June an estimated 37 juvenile king salmon weighing 1.6 lb were caught. The four juvenile king salmon measured during May and June averaged 4.1 inches fork length, ranging from 3.6 to 5.0 inches.

Silver Salmon

No adult silver salmon were observed in the catch during this study. However, an estimated 111 juveniles weighing 7 lb were taken in May, September, and October. Nine juvenile silver salmon were measured during this period. They averaged 5.8 inches fork length, and ranged from 4.8 to 6.7 inches.

Nonsalmonid Fish

No fish, other than salmonids, were observed in anglers' catches.

ANGLER ORIGIN

During this study, 1,805 anglers were interviewed. Of this total, 1,101, or 61.0%, were residents of Siskiyou County (Table 7). During the summer vacation when school is out, and in the fall when the weather is generally comfortable and adult steelhead are beginning to enter the Scott River, anglers were primarily nonresident in origin. During the opening month of the general trout season (May) prior to summer vacation, and during the winter steelhead season, anglers were predominantly Siskiyou County residents.

DISCUSSION AND CONCLUSION

"Intensive fisheries for both the adult and immature steelhead create too great a drain on the species" (Shapovalov and Taft, 1954, pp 263-264). The harvest of an estimated 7,152 juvenile steelhead from the main stem Scott River during one season can be defined as intensive, particularly when 6,588, or 92%, were taken from the lower 25 miles of the river. Similarly, the sport harvest of an estimated 682 adult steelhead, which may comprise 15-30% of the main stem Scott River adult steelhead population during this study, may also be termed intensive (Lanse, 1970; Lanse, 1972a; and Lanse, 1972b).

Juvenile Steelhead

It is generally known that physiological changes associated with body length rather than chronological age determines the initiation of seaward migration (smolting) by juvenile steelhead (Conte, 1965; Narver, 1969; Fessler and Wagner, 1969). In Oregon, the parr-smolt transformation occurred in steelhead 160 mm (6.3 inches) and larger (Fessler and Wagner, 1969). Smolting steelhead averaged 190 mm (7.5 inches) in the Babine River, British Columbia (Narver, 1969). In the Scott River it is believed steelhead smolting occurs in the spring, primarily in May, but is dependent somewhat on water conditions.

As the larger juvenile steelhead left the Scott River and began their seaward migration during May, 1970, only the smaller juveniles remained, apparently they were not yet large enough to smolt. This was evidenced by the decrease in mean length of harvested juveniles in June, 1970 (Figure 4), and the fact only 14% of the juvenile steelhead kept in June, 1970, were 6.3 inches fork length or greater (Figure 5).

The mean length of captured juvenile steelhead and the percent of the juvenile catch 6.3 inches or greater increased from June through October, 1970, as these fish grew. These juvenile steelhead probably increased in size very little through the winter and early spring months and probably smolted in late spring, primarily May, 1971.

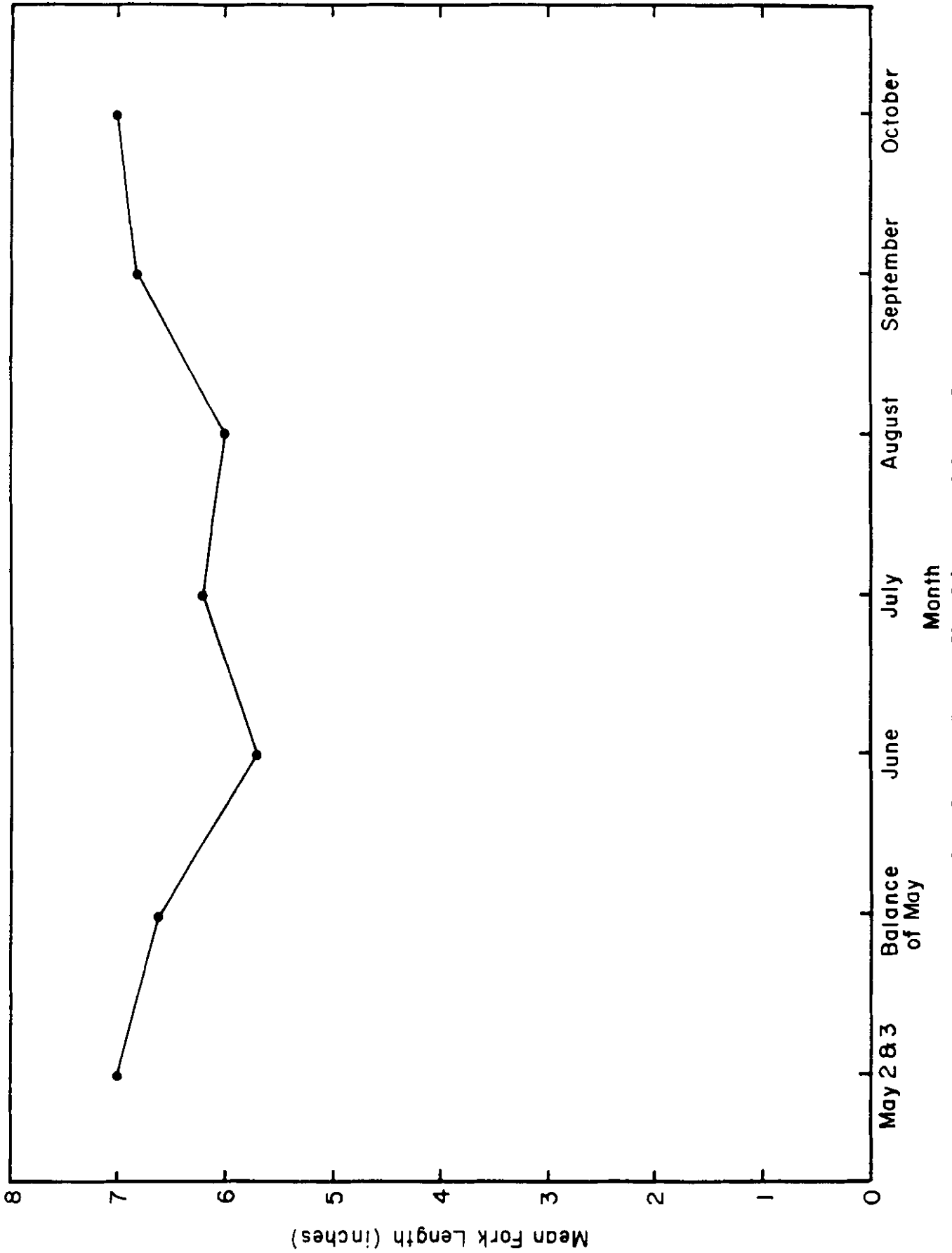


Figure 4. Mean lengths of juvenile steelhead harvested by anglers, Scott River, May through October, 1970.

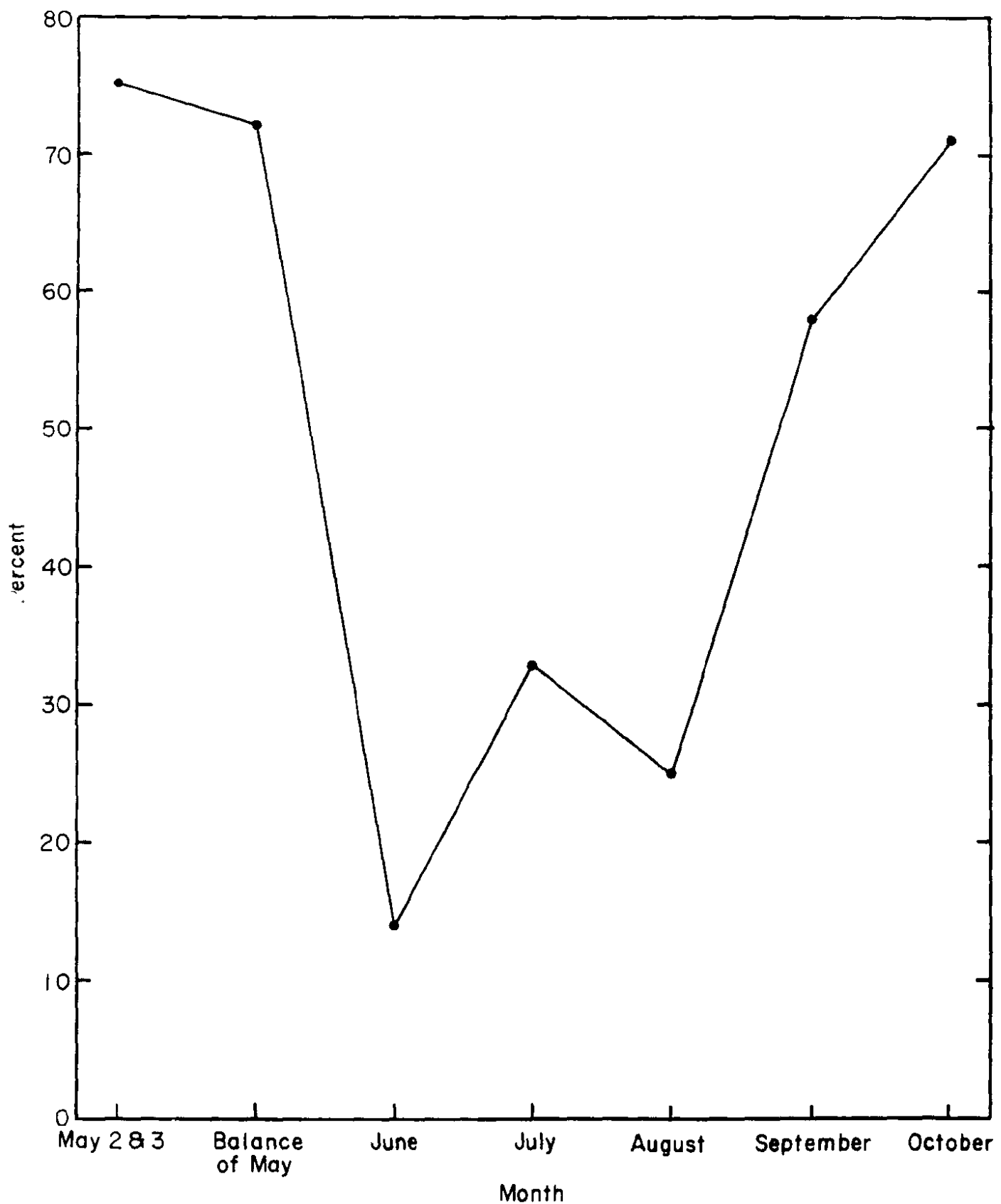


Figure 5. Percent of juvenile steelhead harvested by anglers, 6.3 inches or longer, Scott River, May through October, 1970.

Apparently most Scott River juvenile steelhead, in order to reach the ocean must survive two periods of intensive angling pressure. The non-smolting juveniles (parr) remaining in the Scott River after May, 1970, suffered considerable angling mortality through October, principally in September and October. Steelhead parr surviving the heavy 1970 angler pressure will be subjected to a second period of intensive angling mortality in May, 1971, when the general trout season will again open.

Because of the magnitude of the juvenile steelhead harvest, it appears likely the numbers of adult steelhead returning to the Scott River in subsequent years could be increased by substantially reducing the juvenile steelhead harvest.

The mean fork length of juvenile steelhead harvested during the study was 6.6 inches. Eighty-eight percent of the juvenile steelhead kept during this study were less than 8.0 inches fork length. The demand for this kind of fishing could be provided for by our catchable trout program.

Half-pounder Steelhead

Half-pounder steelhead enter the Klamath River in the summer and early fall and migrate upstream reaching Siskiyou County and contributing to the fishery there primarily during the period September through November. Of the half-pounders harvested by anglers from the Klamath River in Siskiyou County, less than 10% are taken above the mouth of the Scott River (Lanse, 1972b).

Of the 176 steelhead-rainbow trout meeting this study's criterion for half-pounders (10.0 to 13.9 inches fork length), 61 were taken in May, 1970, and 115 from August through November, 1970. Those half-pounder sized steelhead-rainbow trout taken in May, 1970, when migratory half-pounders are not known to be present in the Klamath River System were presumed to be primarily large juvenile steelhead that had not yet begun their seaward migration. Those taken from August through November, are presumed to have been true half-pounders, which had spent some time in the ocean.

Adult Steelhead

Withler (1966) and Lanse (1972a and b) indicate the sport fishery for adult steelhead selects for females. The sex ratio of adult steelhead entering the Scott River during this study could not be determined. However, we may estimate this ratio from data obtained at the Trinity River and Iron Gate Salmon and Steelhead hatcheries, from July 1, 1970, through February 28, 1971. At these two installations, respectively, 57 and 52% of the trapped adult steelhead were females. The adult steelhead taken by anglers in the Scott River consisted of 58% females, indicating no significant selection for female adult steelhead.

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Spent female adult steelhead were observed in the catch only in February. Spent males could not be differentiated from unspent males. Assuming the same proportion of male adults in the catch had spawned as female adults (3 of 16 observed) then approximately 18% of the February catch consisted of spent adult steelhead. However, since many anglers reported catching and releasing spent females in February, the percent of spent steelhead in the adult population of the Scott River during that month was probably higher than 18%.

RECOMMENDATIONS

To attempt to significantly reduce the harvest of juvenile steelhead from the Scott River, I recommend:

- 1) The opening of the general trout season on the Scott River be delayed until the Saturday prior to Memorial Day. This regulation would prevent the sport harvest of juvenile steelhead in May, which amounted to about 27% of the 1970-71 juvenile steelhead harvest from the Scott River.
- 2) The daily bag limit for trout (including steelhead) and salmon during the general trout season (Saturday prior to Memorial Day through November 15) should be reduced to three fish, irrespective of size on the Scott River. This regulation would reduce the intensive harvest of juvenile steelhead which takes place, as evidenced by this study's data, from June through October. This regulation should not affect those adult steelhead anglers seeking present bag limits (10 fish or 10 lb and one fish) as rarely can an angler legally creel in excess of three adult steelhead.

Editor's note: Since this manuscript was received, the California Fish and Game Commission, acting upon 1972 regulations in December, 1971, voted to delay the opening of the trout and salmon season in the entire Klamath River System, including the Scott River until the Saturday preceeding Memorial Day (May 27) 1972.