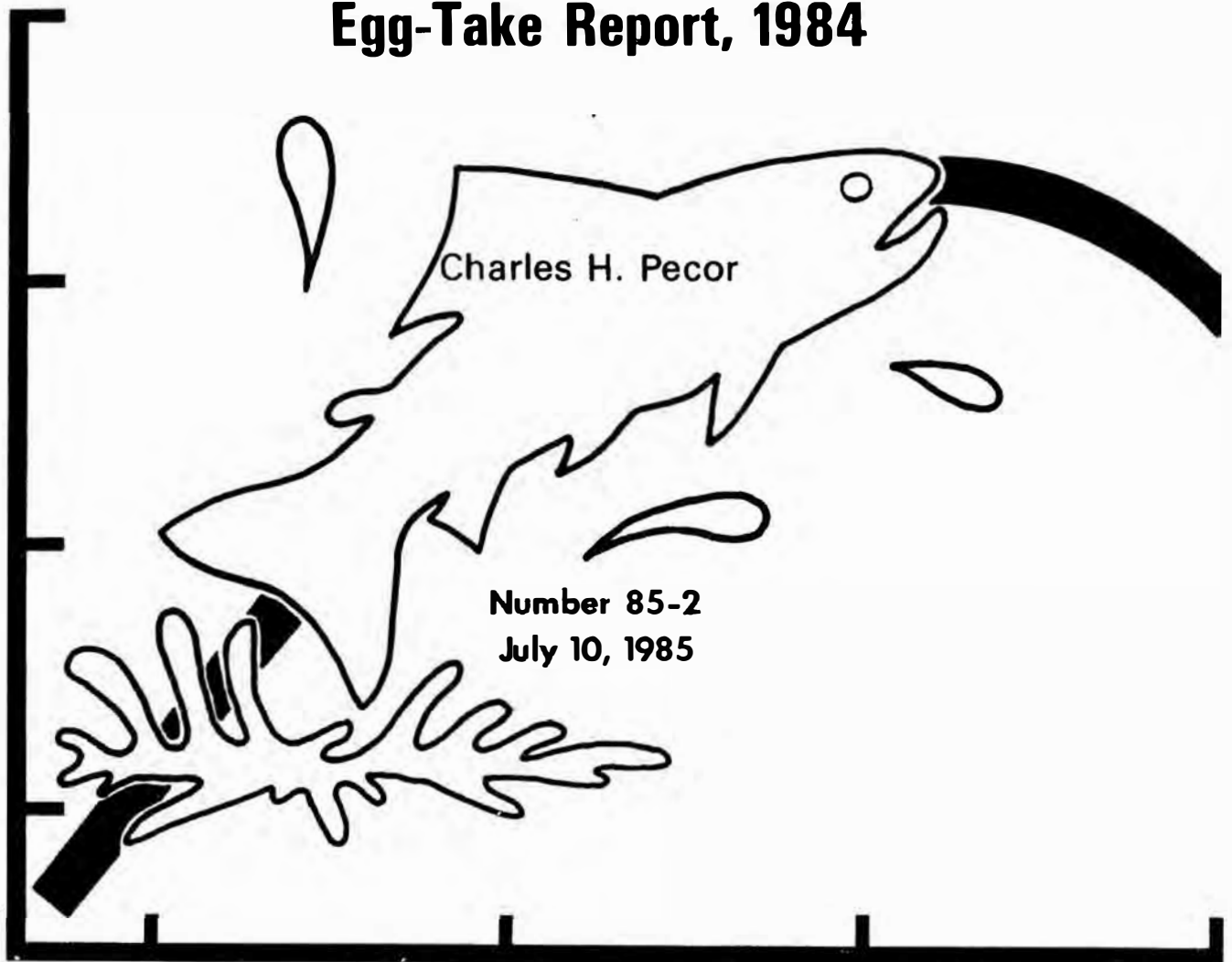


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FISHERIES DIVISION

TECHNICAL REPORT

Platte River Harvest Weir and Coho Salmon Egg-Take Report, 1984



Michigan Department of
Natural Resources

**MICHIGAN DEPARTMENT OF NATURAL RESOURCES
FISHERIES DIVISION**

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**PLATTE RIVER HARVEST WEIR AND COHO SALMON
EGG-TAKE REPORT, 1984**

Charles H. Pecor

Introduction

Since 1966 the Platte River, Benzie County, has been the primary source of brood fish for Michigan's coho salmon stocking program. Eggs are collected each fall at the Platte River State Fish Hatchery, located 4.0 miles east of Honor (Fig. 1). The young coho are raised to the smolt stage (about 5.5 inches long) in 1.5 years and stocked at selected sites throughout Michigan.

Prior to 1979, between 265,000 and 1,092,000 (average 607,000) coho smolts were stocked in the Platte River (Table 1)¹. This produced sufficient adults for egg-take operations plus a spectacular Lake Michigan sport fishery from Frankfort to Platte Bay in August and September. Since 1979 the annual plant has approximated 1,000,000 smolts. Annual returns to the weirs from the larger plants have ranged from 123,000 to 168,000 adults, or 12.7% to 16.4%.

The Platte River has two salmon blocking weirs. The lower weir is located 1.6 miles upstream from the river mouth (Fig. 1). Since 1980 it has been the primary site for harvesting surplus salmon. Steelhead runs are monitored there also. The upper weir, located at the Platte River Hatchery, has facilities for holding adults and collecting eggs.

Current in-state and out-of-state commitments require the collection of about 16 million coho eggs annually. Depending on the size of the returning coho, the egg-take requires about 6,500–7,500 adult females (age 1.1).² To assure that enough females are available for egg take, the Fisheries Division has directed that the first 30,000 salmon reaching the lower weir be passed upstream (allowed to swim through the open weir). An additional 3,000 salmon are passed each week to maintain a sport fishery in the river. However, the above numbers may be modified by the biologist-in-charge as conditions dictate.

Other salmon blocked by the lower weir (including surplus coho adults, a moderate run of chinook and, in recent years, a few pink salmon) are collected and harvested. Coho jacks (age 1.0) are small enough to swim upstream through the weir grates. Trout that are collected during harvest operations are counted and released upstream. This includes a moderate run of steelhead plus small runs of brown trout and lake trout. All salmon collected at the upper weir are harvested, including the coho used for egg-take.

¹This is a revision from the 400,000 to 600,000 figures cited in last year's report (Pecor and Beyerle 1984).

²An age of 1.1 for an anadromous fish means that one winter was spent in the river prior to smolting and one winter was spent in Lake Michigan after smolting.

Lower Weir Operation, 1984

The 1984 salmon run in the lower Platte River was typical. The salmon produced an excellent open-water fishery in the Frankfort-Platte Bay area for over 3 weeks. They ran the river when expected and also in the numbers expected. Salmon that were passed upstream at the lower weir stayed in the river system for a sufficient period of time to allow a good sport fishery before moving up to the hatchery. Consequently, few anglers complained that there were "no" fish in the river or connecting lakes.

The lower harvest weir was in place and ready for operation on September 10. The weir was manned 24 hours per day from September 10 to October 23. Very few salmon appeared at the weir until September 14 when a minor run entered the river. On September 25 and 26, the major run entered the river and moved up to the weir. Harvesting began on September 15 and ended October 23. During the 18 days salmon were actually loaded, 23 semi-trailer loads of salmon were trucked to Tempotech Industries in Hart, Michigan.

From September 11 to October 20, a total of 38,577 salmonids (salmon plus trout) were allowed to pass through the open weir (Table 2). The species composition of these fish is assumed to be the same as that of fish actually handled during each week of harvesting. Additional trout were sorted out during harvesting and transferred upstream from the weir.

Coho salmon

Harvest of coho salmon began September 15 and ended October 23, a period of 38 days. A total of 105,530 adult coho weighing 584,392 pounds were harvested (Table 3). About one-half of the harvest occurred during the 4 days from September 25 to 28 (Fig. 2). Mean weight of the harvested coho was 5.5 pounds. An estimated 36,572 additional coho were passed upstream for egg-take operations at the upper weir (Table 2).

The age composition of the harvested coho was almost exclusively age 1.1. It was estimated that 50 to 75 male coho "jacks" (age 1.0) were harvested but none were included in the weekly biological samples. In addition, about five age 1.2 coho were harvested; one was 36.8 inches long and weighed 16.6 pounds.

The average lengths and weights for age 1.1 males and females calculated from weekly biological samples are shown in Table 4. There was no trend to these averages in 1984 as there was in 1983. During 1983, both lengths and weights increased during the run. Both sexes averaged close to 5.5 pounds but males were 0.7 inches longer than females - 25.1 inches versus 24.4 inches. This is the result of the pronounced kype which develops on mature males.

Skin color was the sole means of grading the coho salmon into bright and dark categories. Three or four random totes (approximately 135 fish per tote) were graded weekly, in addition to the biological samples, to determine the grade composition of the run. During the first, second, and third weeks of harvesting, the coho averaged 62%, 57%, and 52% bright

fish, respectively. During the next 2 weeks the coho averaged 18% bright, and in the last 2 weeks only 7% bright. Overall, 40% of the coho harvested were categorized as bright fish.

During six weekly biological surveys, a total of 862 coho were randomly sampled. Two fish had healed lamprey wounds and 15 fish had fin clips. The fin clips were adipose (AD, 12 fish), left pectoral (LP, 2 fish), and right pectoral (RP, 1 fish). All three clips were assigned to the Ohio Department of Natural Resources for coho plants in Lake Erie.

In summary, a total of 142,102 adult coho salmon reached the lower Platte River weir during the fall of 1984, 78,183 (55%) males and 63,919 (45%) females (Table 4). The total adult run was 14.9% of the 1983 plant of 953,049 age 1.0 smolts (Table 5).

Chinook salmon

The harvest of chinook salmon coincided with that of coho salmon. However, chinook were in the harvest on only 14 of the 18 days salmon were actually loaded. As usual, the peak chinook harvests occurred between October 1 and 17 after the peak coho harvest (Table 6). A total of 4,358 chinook weighing 64,328 pounds were harvested (Table 6). Average weight was 14.8 pounds. It was estimated that an additional 1,566 chinook were passed upstream at the lower weir (Table 2).

Biological samples of 418 chinook were taken, including 317 scale samples. All scale samples (chinook, steelhead, and brown trout) were read by the District 6 fisheries crew at the Harrietta warehouse. Analysis of the chinook scale samples showed that 5% were age 0.1, 14.8% were age 0.2, and 80.1% were age 0.3 (Table 7). Based on these numbers, the total chinook run (both harvested and passed) in the Platte River consisted of 299 age-0.1, 878 age-0.2, and 4,747 age-0.3 fish. The age composition of the Platte River chinook run was substantially different than that for the Little Manistee River run in 1983, in that there were fewer age-0.1 and -0.2 and more age-0.3 fish. In 1983 the Little Manistee River chinook were 22.5% age-0.1, 44.8% age-0.2, and 32.7% age-0.3 fish (Hay 1984). This could imply that there will be few chinook running the Platte River the next 2 years, or that the self-sustaining population in the Platte River behaves differently than the stocked population in the Little Manistee River. The average lengths and weights for Platte River chinook, stratified by sex and age, are presented in Table 7.

Only one chinook with a healed lamprey scar was recorded during the biological samples and no fin clips were observed.

The total of 5,924 chinook reaching the lower weir in 1984 was the second largest run since full-scale operations of the weir began in 1980 (Table 8). Males and females comprised 53% and 47% of the run, respectively. All chinook were either strays from other plants, escapees from the Platte River Hatchery, or the result of natural reproduction since chinook are not planted in the Platte River.

Pink salmon

Pink salmon were not expected this year and did not show up in the harvest or around the weir. Pink salmon normally run only during odd number years.

Steelhead trout

The major portion of the steelhead run occurred after the peak of the coho salmon harvest, from October 7 to the end of harvest operations on October 23 (Table 9). This pattern has been consistent since 1980, although the dates have varied from year to year.

Many steelhead run the river after the weirs are removed; therefore, the weir counts are only a rough index of the magnitude of the steelhead run. A total of 1,292 steelhead were actually counted and transferred (Table 9). This was the second largest tally of steelhead in the Platte River since full-scale operations began in 1980 but it was the first year to show a decline from the previous year. The number of steelhead counted and transferred in 1983, 1982, 1981, and 1980 were 1,545, 1,276, 682, and 124, respectively. In addition, an estimated 401 steelhead passed through the weir with the coho salmon, making a total run of 1,693 steelhead in 1984 (Table 9).

Biological information was collected for 274 steelhead. A total of 10 age groups were recorded (Table 10). The most common age groups, listed in order of decreasing frequency, were 2.1, 1.1, 1.0, 2.0, 2.2, and 1.2. Together, these six age groups accounted for 97.6% of the sample. Many (42%) of the steelhead had spent two summers in the lake (Table 11).

The amount of time the steelhead spent in the river prior to smolting was fairly evenly split between one and two summers (Table 10). Steelhead in age groups 1._ and age groups 2._ accounted for 45 and 54% of the run, respectively. Age groups 3._ and 4._ combined, accounted for only 1% of the run.

The size of the returning steelhead was more dependent upon years spent in Lake Michigan than on age at smolting or years in the river (Fig. 3). Fish which had spent equal amounts of time in Lake Michigan were of about equal size, irregardless of the amount of time spent in the river. For example, all steelhead which had spent one winter in Lake Michigan (age _.1) were about 24 inches long and weighed about 6 pounds even though they had spent 1, 2, or 3 winters in the river before smolting (Table 11).

Overall, the steelhead in the 1984 run had a mean length of 22.8 inches and a mean weight of 5.49 pounds and consisted of 48.9% males and 51.1% females. No lamprey scars or fin clips were observed on any steelhead.

Brown trout and lake trout

Brown trout and lake trout are only minor components of the salmonid run in the Platte River (Table 9). A total of 74 brown trout were counted and transferred upstream in 1984, as

compared to 58 in 1983, 38 in 1982, 78 in 1981, and 7 in 1980. A total of 69 lake trout were counted and transferred upstream in 1984 as compared to 7 in 1983 and 38 in 1982. Lake trout were not observed in the runs during 1980 and 1981. During 1984, it was estimated that an additional 22 brown trout and 14 lake trout were passed upstream with coho salmon. This gives total runs during 1984 of 96 brown trout and 83 lake trout. For both species, the peak runs occurred during the week beginning October 7, after the peak harvest of coho was over.

Biological information was obtained from 16 brown trout which died after being passed upstream. Five age groups were identified - 1.0, 1.1, 2.1, 3.0, and 3.1 - but most were in age groups 1.1 (6 fish) and 2.1 (7 fish). Lengths ranged from 19.3 to 24.5 inches (average, 22.6) and weights from 3.42 to 7.61 pounds (average, 6.04). The sex ratio was 81% male to 19% female.

All but one of the handled lake trout were fin clipped. Observed fin clips were both ventrals (BV), left ventral-adipose (LV-AD), and right pectoral-adipose (RP-AD). All three clips (1980, BV; 1979, LV-AD; 1976, RP-AD) were assigned to yearling lake trout planted offshore on either Good Harbor Bay Reef (located about 18.6 miles north of the Platte River) or South Fox Island Shoal (located about 43.5 miles north of the Platte River). Fifty-five percent of the lake trout had the BV clip, 42% had the LV-AD clip, and 3% had the RP-AD clip. The lake trout with the BV clip were the smallest fish, but a length and weight sample was not taken. Two lake trout with the LV-AD clip had a mean length of 27.8 inches and a mean weight of 7.94 pounds, and one lake trout with the RP-AD clip was 31.5 inches long and weighed 11.5 pounds.

Upper Weir Operation, 1984

The operation at the upper Platte River weir is primarily for egg-taking and does not have the capability of harvesting large numbers of salmon efficiently. The facility consists of a weir, fish passage way, fish ladder, maturation ponds, and egg-take building. The weir blocks the upstream migration of salmonids and directs them up the fish ladder into the maturation ponds. Two to three thousand fish can be held in each of the six maturation ponds. The salmon are held in these ponds for up to 3 weeks while the eggs mature or "ripen", then the eggs are stripped and fertilized.

The weir stop-logs were in place by August 31 and the fish holding-egg taking facility was fully operational by September 4.

Coho salmon

The first coho salmon (one adult and 7-9 jacks) reached the maturation ponds the day after the weir logs were installed (as usual). Larger numbers of coho started showing up at the weir by September 15. No main run of coho occurred, instead, the salmon held back in the

river system and slowly migrated into the maturation ponds. All six maturation ponds were full by October 12 and additional fish were held in the river below the weir.

The fish in the maturation ponds were checked weekly for egg condition (green and ripe) starting October 9 and ending November 14. Egg-taking operations started when the proportion of ripe females was 50% or above. The percentage of ripe females on October 9, 16, 22, 30, and November 14 were 47.4, 74.3, 58.2, 93.1, and 97.9%, respectively. A total of 15,256,700 eggs were collected and fertilized on 14 working days between October 15 and November 2. Of these eggs 7,076,100 (46.4%) were for in-state rearing and 8,180,500 (53.6%) were for out-of-state commitments (i.e., Indiana, 0.5 million; Wisconsin, 1.2 million; Illinois, 2.3 million; Pennsylvania, 2.8 million; and Ohio, 1.3 million).

The 1984 egg-take was carried out as a routine operation, however, we had some problems with egg quality. During the first week of egg-take we experienced a relatively high percentage of poor quality and/or overripe "buckshot" eggs. We then switched to fresh-run fish, and although the percentage of overripe eggs decreased the percentage of green eggs increased. We switched back to the earlier run fish to finish the egg-take but again experienced a high percent age of overripe eggs. The poor egg quality may have been due in part to high water temperatures in the Platte River. Water temperatures at the lower weir were above 16 C (61 F) and as high as 19 C (66 F) until September 29, the period when most of the salmon were passed upstream. There were also periods of high water temperatures (15 C) at the upper weir while the fish were in the maturation ponds. Washington State biologists feel that if salmon are exposed to water temperatures above 14.5 C (58 F) during this period, their egg quality will be reduced (Appleby, personal communication).

The eye-up rate of coho salmon eggs incubated at the Platte River Hatchery also reflected the poor quality of the 1984 eggs. The average percentage eye-up for the 7 egg-take days was 50.4%, with a daily range from 46.8% to 57.7%. The eye-up of the coho eggs taken for Ohio on the last day of egg-take was only 35%. Coho eye-up percentages in recent years were 63.0% in 1979, 82.2% in 1980, 71.4% in 1981, 55.9% in 1982, and 77.1% in 1983.

A total of 7,711 female coho salmon were stripped (Table 12) to collect 15.26 million eggs; an average of 1,979 eggs per female. A check of the fecundity of 25 individual females at the end of the run showed an average of 2,290 eggs per female with a range of 1,075 to 3,703. The difference between 1,979 and 2,290 represents the eggs that were retained by stripped females. Fecundity was higher in 1983 (3,204 eggs per female) but egg size was the same (based on the number of eggs per 12 inches).

The egg-take and harvest operations at the upper weir account for 26,162 coho, including 1,663 (6.4%) jacks, and 24,499 (93.6%) adults (Table 12). The number of adults harvested at the upper weir was 67.0% of the estimated total of adults passed at the lower weir. In other words, 12,075 (33%) adult coho salmon did not swim from the lower to the upper

weir. I suspect that a very high loss can be attributed to fishing mortality. During 1983, 8,732 (24.5%) did not swim to the upper weir.

The adult run at the upper weir consisted of 49.1% males and 50.9% females. Males averaged 25.0 inches in length and 4.93 pounds in weight, and females averaged 24.3 inches and 5.03 pounds. Overall, the adult coho averaged 24.6 inches and 4.98 pounds. They were slightly shorter (0.2 inches) but much lighter (0.48 pounds) than adult coho harvested at the lower weir. Almost 98% of the adult coho handled at the upper weir were used in the egg-taking operation and only about 460 fish were harvested as surplus. In all, 116,157 pounds of coho salmon were harvested at the upper weir.

A total of 1,663 jack coho salmon (100% males) were harvested at the upper weir. Assuming that the number of jack coho harvested at the upper weir was also 67% of the total jacks passed at the lower weir, the total 1984 jack run was estimated to be 2,482 fish. This represents 0.2% of the total coho smolt plant in 1984 and 1.7% of the total estimated run of 144,584 coho in the Platte River during 1984.

Mean length and weight of jacks calculated from periodic biological samples were 15.8 inches (standard error ± 0.13 inches) and 1.50 pounds (standard error ± 0.037 pounds), respectively. The weighted mean weight of jacks calculated from harvest data was 1.41 pounds (Table 13). In 1983, the jacks averaged 16.4 inches in length and 1.61 pounds in weight.

Two jacks out of 104 (6.3% of the jack run) taken for biological samples had fin clips. One had an adipose (AD) clip and the other had a left pectoral (LP) clip. The AD jack could have come from 1984 plantings (1982 brood year) in Michigan waters of Lake Superior, or it could have escaped from the Platte River Hatchery during rearing. The LP jack could have come from Illinois waters of Lake Michigan or from Ohio waters of Lake Erie.

Chinook salmon

Most (60%) of the chinook at the upper weir were harvested on two dates, October 31 and November 2 (Table 13). The average weight of chinook (adults and jacks combined) was 11.68 pounds. The total harvest of 215 fish was only 13.7% of the estimated number of chinook passed at the lower weir. Again fishing mortality is suspected as the major cause of this loss.

Summary

The 1984 run of coho salmon in the Platte River consisted of 142,102 adults (55% male and 45% female). This is a return of 14.9% of the smolts planted in 1983. Mean lengths and weights at the lower weir were 25.1 inches and 5.49 pounds for adult males and 24.4 inches and 5.51 pounds for adult females. Mean lengths and weights at the upper weir were 25.0 inches

and 4.93 pounds for adult males, 24.4 inches and 5.03 pounds for adult females, and 15.8 inches and 1.41 pounds for jack coho salmon.

A grand total of 131,692 coho adults and jacks weighing 700,551 pounds were harvested. A total of 105,530 adults weighing 584,393 pounds were harvested at the lower weir and 26,162 adults and jacks weighing 116,158 pounds were harvested at the upper weir. The upper weir harvest included 7,711 stripped females weighing 31,336 pounds from which the 1984 consignment of 15,256,700 eggs were taken. The quality of the 1984 eggs was poor as reflected in an average eye-up of only 50.4% for the eggs incubated at the Platte River Hatchery.

The 1984 run of 5,924 chinook (53% males and 47% females) was the second largest recorded at the lower Platte River weir. Ultimately, 4,573 of these chinook (77.2%, 66,843 pounds) were harvested - 4,358 at the lower weir and 215 at the upper weir.

The age composition of the chinook run was 5% age-0.1 jacks, 14.8% age-0.2 adults, and 80.1% age-0.3 adults. The mean lengths and weights for age groups 0.1, 0.2, and 0.3 were 22.3 inches and 4.4 pounds, 32.1 inches and 11.35 pounds, and 34.2 inches and 16.23 pounds, respectively.

The 1984 fall steelhead run of 1,693 fish (48.9% male and 51.1% female) was the second largest run recorded at the lower weir in recent years. Ten different age groups were identified but fish which had spent two summers in Lake Michigan (age groups 1.1 and 2.1) were the most numerous (41.3%). Overall, the steelhead averaged 22.8 inches long and weighed 5.49 pounds.

Other salmonids passed upstream at the lower weir included 96 brown trout and 83 lake trout. All lake trout except one were fin clipped and had originated from plants made at Good Harbor Bay Reef or South Fox Island Shoal.

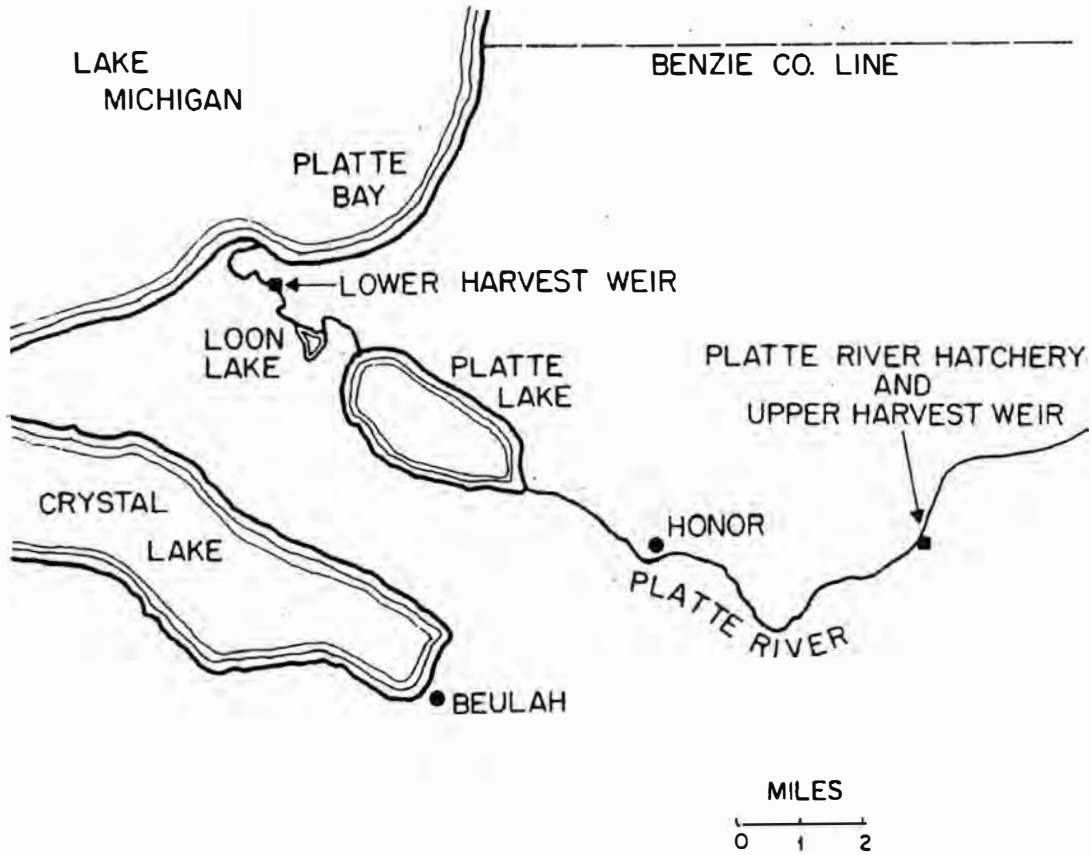


Figure 1. Location of the Platte River Hatchery and the upper and lower harvest weirs.

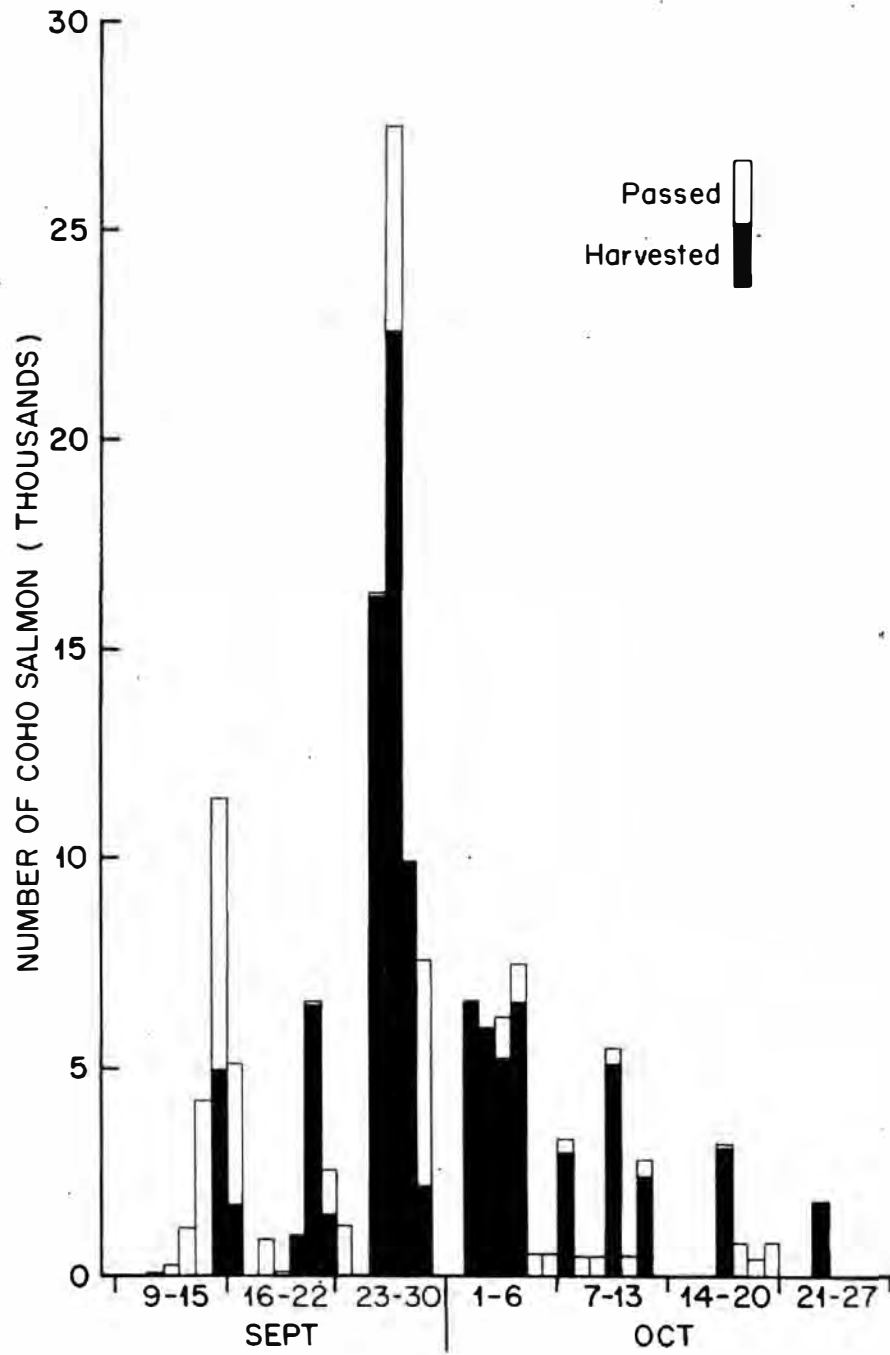


Figure 2. Periodicity of coho salmon harvested and passed upstream at the lower Platte River weir, fall 1984.

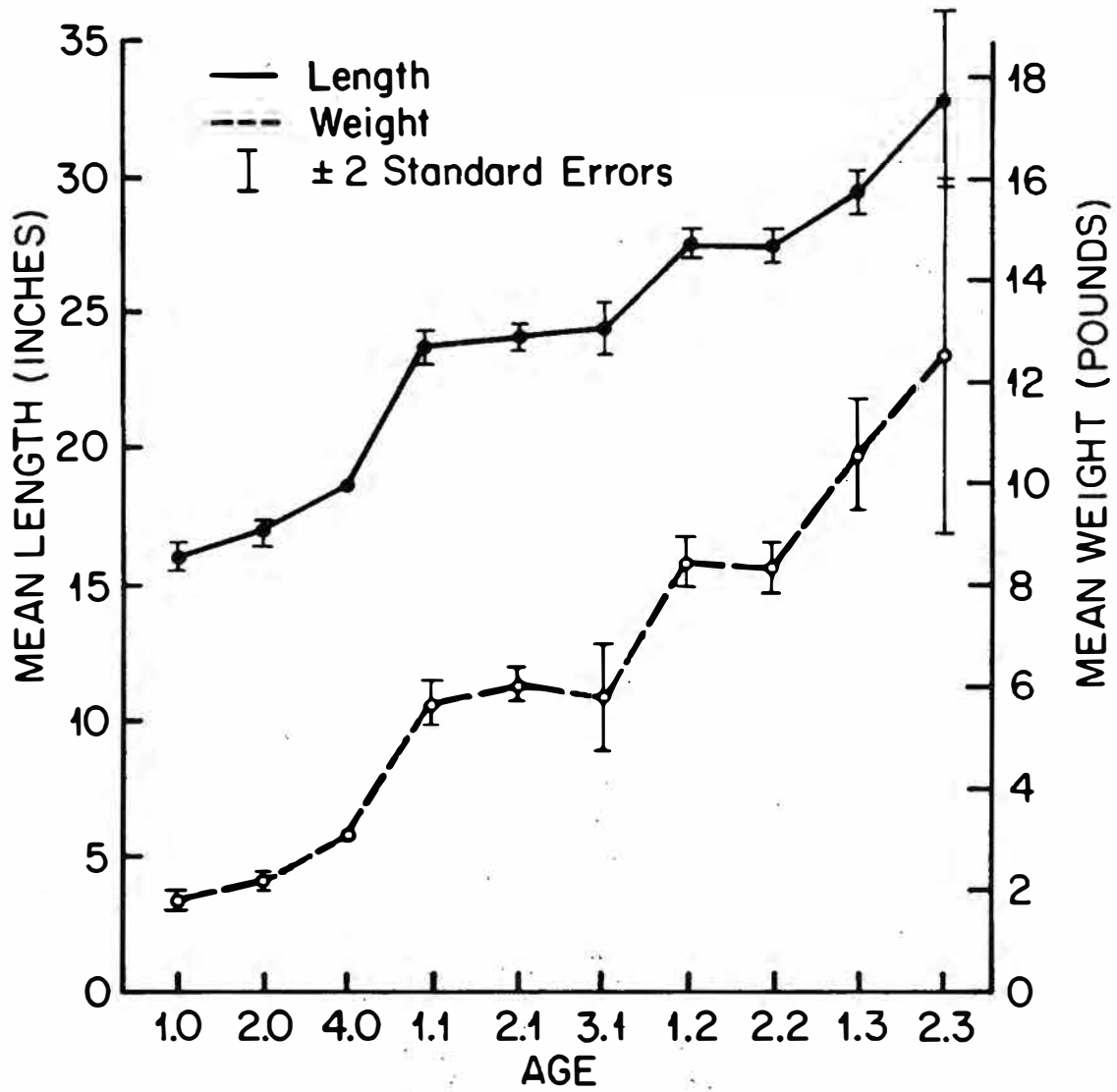


Figure 3. Mean total length and round weight of steelhead, by age, at the lower Platte River weir, fall 1984.

Table 1. Number of anadromous salmonids planted in the Platte River, 1966-84.

Year	Coho	Chinook	Steelhead	Atlantic salmon
1966	265,000	—	—	—
1967	503,000	—	—	—
1968	309,000	—	—	—
1969	1,092,069	—	—	—
1970	777,640	—	—	—
1971	390,381	53,500	—	—
1972	406,330	40,630	—	—
1973	918,135	—	206,924	—
1974	804,131	—	100,386	7,308
1975	800,202	—	87,600	—
1976	500,903	—	—	—
1977	606,814	—	—	—
1978	516,202	—	—	—
1979	973,032	—	—	—
1980	1,028,038	—	—	—
1981	944,205	—	—	—
1982	1,000,010	—	—	—
1983	953,499	—	—	—
1984	989,192	—	—	—
Total	13,777,783	94,130	394,910	7,308

Table 2. Total number of salmonids (salmon plus trout) and estimated number of coho and chinook salmon passed upstream at the lower Platte River weir, fall 1984.

Date	Salmonids passed	Coho		Chinook	
		Percent in harvest ¹	Estimated number passed	Percent in harvest ¹	Estimated number passed
9/11	9				
9/12	207				
9/13	1,125				
9/14	4,216				
9/15	6,616				
Weekly total	12,173	98.59	12,001	1.01	122
9/16	3,682				
9/18	904				
9/19	96				
9/21	137				
9/22	1,187				
Weekly total	6,006	91.10	5,472	8.41	505
9/23	1,178				
9/25	100				
9/26	5,000				
9/27	5,500				
Weekly total	11,778	98.80	11,636	0.97	114
10/03	1,000				
10/04	1,000				
10/05	500				
10/06	500				
Weekly total	3,000	96.00	2,880	3.17	95

Table 2. Continued:

Date	Salmonids passed	Coho		Chinook	
		Percent in harvest ¹	Estimated number passed	Percent in harvest ¹	Estimated number passed
10/07	500				
10/08	500				
10/09	500				
10/10	500				
10/11	500				
10/12	500				
Weekly total	3,000	85.49	2,565	10.76	323
10/17	120				
10/18	1,000				
10/19	500				
10/20	1,000				
Weekly total	2,620	77.03	2,018	15.55	407
Annual total	38,577	94.80	36,572	4.06	1,566

¹Percentage of the harvested or handled salmonids which were either coho or chinook.

Table 3. Summary of adult coho salmon harvested at the lower Platte River weir, fall 1984.

Date	Coho harvested			Total weight (pounds)
	Live	Mortalities	Cumulative total	
9/15	4,900	0	4,900	27,930
Weekly total	4,900	0		27,930
9/16	1,680	0	6,580	9,577
9/20	910	15	7,505	5,269
9/21	6,440	0	13,945	34,132
9/22	1,470	0	15,415	7,791
Weekly total	10,500	15		56,769
9/25	16,240	0	31,655	87,697
9/26	22,540	0	54,195	121,716
9/27	9,940	0	64,135	53,675
9/28	2,105	35	66,275	12,284
Weekly total	50,825	35		275,372
10/01	6,598	0	72,873	37,872
10/02	5,870	50	78,793	34,297
10/03	5,220	0	84,013	30,276
10/04	6,525	0	90,538	37,844
Weekly total	24,213	50		140,289
10/07	2,755	120	93,413	16,387
10/10	4,704	298	98,415	28,512
10/12	2,320	0	100,735	12,760
Weekly total	9,779	418		57,659
10/17	3,000	21	103,756	16,616
Weekly total	3,000	21		16,616
10/23	1,740	34	105,530	9,757
Weekly total	1,740	34		9,757
Annual total	104,957	573	105,530	584,392

Table 4. Estimated number of adult male and female coho salmon returning to the lower Platte River weir and their mean length and weight (\pm standard error of mean) based on weekly biological samples, fall 1984.

Week beginning	Number of coho			Mean	
	Harvested	Passed	Total	Length (inches)	Weight (pounds)
<u>Age 1.1 male</u>					
9/09	1,725	4,468	6,193	25.1 \pm 0.26	5.69 \pm 0.18
9/16	5,443	2,832	8,275	24.9 \pm 0.14	5.22 \pm 0.09
9/23	36,205	8,280	44,485	25.3 \pm 0.14	5.40 \pm 0.09
9/30	10,319	1,225	11,544	25.3 \pm 0.18	5.93 \pm 0.14
10/07	3,920	986	4,906	24.3 \pm 0.17	5.42 \pm 0.12
10/14	1,233	823	2,056	—	—
10/21	724	0	724	25.7 \pm 0.21	5.58 \pm 0.18
Total weighted mean ¹	59,569	18,614	78,183	25.1	5.49
<u>Age 1.1 female</u>					
9/09	3,175	7,583	10,708	24.6 \pm 0.14	5.64 \pm 0.12
9/16	5,072	2,640	7,712	24.4 \pm 0.18	5.36 \pm 0.14
9/23	14,655	3,356	18,011	24.5 \pm 0.11	5.40 \pm 0.09
9/30	13,944	1,655	15,599	24.3 \pm 0.13	5.62 \pm 0.09
10/07	6,277	1,579	7,856	24.1 \pm 0.10	5.49 \pm 0.08
10/14	1,788	1,195	2,983	—	—
10/21	1,050	0	1,050	24.6 \pm 0.12	5.51 \pm 0.10
Annual weighted mean ¹	45,961	17,958	63,919	24.4	5.51
Sexes combined	105,530	36,572	142,102	24.8	5.49

¹For computing weighted means, means for week of October 7 were extrapolated to week of October 14.

Table 5. Summary of adult coho (age 1.1) runs at the lower Platte River weir, 1979-84.

Year	Estimated number passed	Number harvested	Total run	Plant in previous year	Percent return	Mean length (inches)	Mean weight (pounds)
1979	36,404	0	36,404	516,200	7.1	23.1	4.36
1980	76,480 ¹	46,633	123,113	973,032	12.7	26.9	7.61
1981	38,874	129,175	168,049	1,028,038	16.3	27.0	6.83
1982	38,951	90,412	129,363	944,205	13.7	25.8	6.15
1983	35,600	120,758	156,358	1,000,010	15.6	26.6	6.86
1984	36,572	105,530	142,102	953,449	14.9	24.8	5.49

¹Fish not counted; estimated from harvest at upper weir.

Table 6. Summary of all chinook harvested at the lower Platte River weir, fall 1984.

Date	Chinook harvested			Total weight (pounds)
	Live	Mortalities	Cumulative total	
9/15	50	0	50	796
Weekly total	50	0		796
9/16	612	1	663	9,747
9/20	45	0	708	699
9/22	313	0	1,021	4,727
Weekly total	970	1		15,173
9/26	455	0	1,476	7,143
9/28	44	0	1,520	690
Weekly total	499	0		7,833
10/01	91	0	1,611	1,429
10/02	50	0	1,661	721
10/04	659	0	2,320	9,490
Weekly total	800	0		11,640
10/07	630	9	2,959	8,521
10/10	429	12	3,400	6,572
10/12	204	0	3,604	2,939
Weekly total	1,263	21		18,032
10/17	570	40	4,214	8,783
Weekly total	570	40		8,783
10/23	133	11	4,358	2,072
Weekly total	133	11		2,072
Annual total	4,285	73	4,358	64,329

Table 7. Age composition and mean lengths and weights (\pm standard error of mean) of 317 chinook salmon scale sampled at the lower Platte River weir, fall 1984.

Age and sex	Number	Percent of total sample	Mean length (inches)	Mean weight (pounds)
<u>Age 0.1</u>				
Male	16	5.0	22.3 \pm 0.336	4.41 \pm 0.17
Female	0	0		
Both	16	5.0	22.3 \pm 0.336	4.41 \pm 0.17
<u>Age 0.2</u>				
Male	26	8.2	32.0 \pm 0.308	11.09 \pm 0.47
Female	21	6.6	32.2 \pm 0.272	11.68 \pm 0.48
Both	47	14.8	32.1 \pm 0.207	11.35 \pm 0.34
<u>Age 0.3</u>				
Male	126	39.8	36.8 \pm 0.218	16.51 \pm 0.33
Female	128	40.4	35.6 \pm 0.171	15.98 \pm 0.26
Both	254	80.2	36.2 \pm 0.143	16.23 \pm 0.21

Table 8. Summary of chinook runs at the lower Platte River weir, 1979-84.

Year	Estimated number passed	Number harvested	Total run	Mean length (inches)	Mean weight (pounds)
1979	4,159	543	4,702	0.0	0.00
1980	2,736 ¹	1,699	4,435	32.8	14.51
1981	1,391	2,172	3,563	34.7	15.56
1982	1,393	1,606	2,999	34.4	14.00
1983	1,275	4,839	6,114	33.6	14.73
1984	1,566	4,358	5,924	34.8	14.75

¹Fish not counted; estimated from harvest at upper weir.

Table 9. Number of trout released upstream at the lower Platte River weir, fall 1984.¹

Date	Steelhead		Brown trout		Lake trout	
	Handled	Passed	Handled	Passed	Handled	Passed
9/15	18		2		—	
Weekly total	18	44	2	5	0	0
9/17	5		1		1	
9/20	22		—		1	
9/21	26		—			
Weekly total	53	28	1	1	2	1
9/25	60		3		—	
9/26	41		1		—	
9/27	13		2		—	
Weekly total	114	26	6	1	0	0
10/01	61		9		1	
10/02	31		4		—	
10/03	30		5		6	
10/04	48		7		10	
Weekly total	170	20	25	3	17	2
10/07	102		6		20	
10/10	171		13		12	
10/12	111		11		1	
Weekly total	384	97	30	7	33	8
10/17	279		8		4	
Weekly total	279	186	8	5	4	3
10/23	274		2			13
Weekly total	274	0	2	0	13	0
Annual total	1,292	401	74	22	69	14
	1,693		96		83	

¹Released trout include those actually handled, counted, then transferred upstream, and those passed (estimated) which swam through the weir when it was open.

Table 10. Age composition and mean lengths and weights (± 1 standard error of mean) of 276 steelhead trout at the lower Platte River weir, fall 1984.

Age and sex	Number	Percent	Mean length (inches)	Mean weight (pounds)
<u>Age 1.0</u>				
Male	27		16.0 \pm 0.23	1.81 \pm 0.08
Female	14		15.9 \pm 0.46	1.85 \pm 0.20
Both	41	14.9	16.0 \pm 0.21	1.83 \pm 0.08
<u>Age 2.0</u>				
Male	29		16.7 \pm 0.28	2.12 \pm 0.10
Female	12		17.4 \pm 0.56	2.38 \pm 0.21
Both	41	14.9	16.9 \pm 0.26	2.18 \pm 0.09
<u>Age 4.0</u>				
Male	1		18.7	3.09
Female	0		—	—
Both	1	0.4	18.7	3.09
<u>Age 1.1</u>				
Male	18		23.6 \pm 0.62	5.53 \pm 0.39
Female	28		23.9 \pm 0.36	5.86 \pm 0.25
Both	46	16.7	23.8 \pm 0.32	5.73 \pm 0.22
<u>Age 2.1</u>				
Male	22		24.2 \pm 0.55	6.06 \pm 0.33
Female	46		24.2 \pm 0.27	6.08 \pm 0.18
Both	68	24.6	24.1 \pm 0.25	6.06 \pm 0.16
<u>Age 3.1</u>				
Male	1		23.8	5.29
Female	1		25.0	6.39
Both	2	0.7	24.4 \pm 0.57	5.84 \pm 0.55
<u>Age 1.2</u>				
Male	14		28.3 \pm 0.30	8.62 \pm 0.35
Female	21		27.5 \pm 0.36	8.38 \pm 0.29
Both	35	12.7	27.8 \pm 0.25	8.49 \pm 0.22

Table 10. Continued:

Age and sex	Number	Percent	Mean length (inches)	Mean weight (pounds)
<u>Age 2.2</u>				
Male	20		27.3±0.50	7.98±0.41
Female	18		28.0±0.39	8.69±0.34
Both	38	13.8	27.6±0.32	8.31±0.27
<u>Age 1.3</u>				
Male	1		29.9	10.14
Female	1		29.1	11.24
Both	2	0.7	29.5±0.39	10.58±0.55
<u>Age 2.3</u>				
Male	2		33.0±1.67	12.57±1.76
Female	0		—	—
Both	2	0.7	33.0±1.67	12.57±1.76
<u>Total</u>				
Male	135	48.9	—	—
Female	141	51.1	—	—
Both	276	100.0	22.8±0.29	5.49±0.17

Table 11. Age composition and mean length and weight (± 2 standard errors), summarized by summers of growth in Lake Michigan, for steelhead trout sampled at the lower Platte River weir, fall 1984.

Age	Summers in lake	Percent of sample	Mean length (inches)	Mean weight (pounds)
_.0	1	30.1	16.5 \pm 0.4	2.03 \pm 0.13
_.1	2	42.0	24.0 \pm 0.4	5.93 \pm 0.24
_.2	3	26.4	27.7 \pm 0.4	8.40 \pm 0.35
_.3	4	1.4	31.3 \pm 2.4	11.57 \pm 1.90
All			22.8	5.49

Table 12. Number of coho salmon harvested at the upper Platte River weir, fall 1984.

Date	Jacks	Males	Females		Mortalities
			Round	Stripped	
10/16	365	1,339	1,246	1,150	450
10/17	86	775	305	500	—
10/18	124	1,125	295	600	70
10/19	95	840	472	479	—
10/20	43	900	440	560	—
Weekly total	713	4,979	2,758	3,289	520
10/22	40	810	525	500	—
10/23	122	700	125	450	260
10/24	191	1,020	120	650	—
10/25	112	400	31	275	—
10/26	199	840	23	590	—
Weekly total	664	3,770	824	2,465	260
10/31	249	1,890	112	1,332	250
11/02	27	630	170	625	150
Weekly total	276	2,520	282	1,957	400
11/14	10	161	296	0	18
Weekly total	10	161	296	0	18
Annual total	1,663	11,430	4,160	7,711	1,198

Table 13. Weight (pounds) of coho salmon harvested at the upper Platte River weir, fall 1984.

Date	Jacks	Males	Females		Mortalities
			Round	Stripped	
10/16	432	6,294	5,855	4,601	2,114
10/17	101	3,642	1,433	2,000	353
10/18	146	5,289	1,387	2,401	—
10/19	112	3,948	2,218	1,916	—
10/20	51	4,231	2,068	2,240	—
Weekly total	842	23,404	12,961	13,158	2,467
10/22	40	4,213	2,729	2,099	—
10/23	194	3,640	650	1,889	1,351
10/24	306	5,304	623	2,729	—
10/25	178	2,079	161	1,155	—
10/26	317	4,537	117	2,478	—
Weekly total	1,035	19,773	4,280	10,350	1,351
10/31	375	9,262	560	5,329	1,250
11/02	42	3,086	851	2,500	750
Weekly total	417	12,348	1,411	7,829	2,000
11/14	13	853	1,570	0	95
Weekly total	13	853	1,570	0	95
Annual total	2,307	56,378	20,222	31,337	5,913
Mean weight	1.41	4.94	4.87	4.06	4.94

Table 14. Number and weight (pounds) of chinook salmon (adults and jacks combined) harvested at the upper Platte River weir, fall 1984.

Date	Males		Females		Mortality		Total	
	Number	Weight	Number	Weight	Number	Weight	Number	Weight
10/16	5	67	4	47	0	0	9	114
10/18	2	25	0	0	0	0	2	25
10/19	6	54	1	15	0	0	7	69
10/20	4	21	1	13	0	0	5	34
Weekly total	17	167	6	75	0	0	23	242
10/22	6	63	0	0	0	0	6	63
10/23	5	33	0	0	0	0	5	33
10/25	1	11	0	0	0	0	1	11
Weekly total	12	107	0	0	0	0	12	107
10/31	30	300	8	102	36	410	74	812
11/02	56	658	17	240	0	0	73	898
Weekly total	86	958	25	342	36	410	147	1,710
11/14	13	179	19	263	1	14	33	456
Weekly total	13	179	19	263	1	14	33	456
Annual total	128	1,411	50	680	37	424	215	2,515
Mean weight		11.8		13.6		11.5		11.7

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