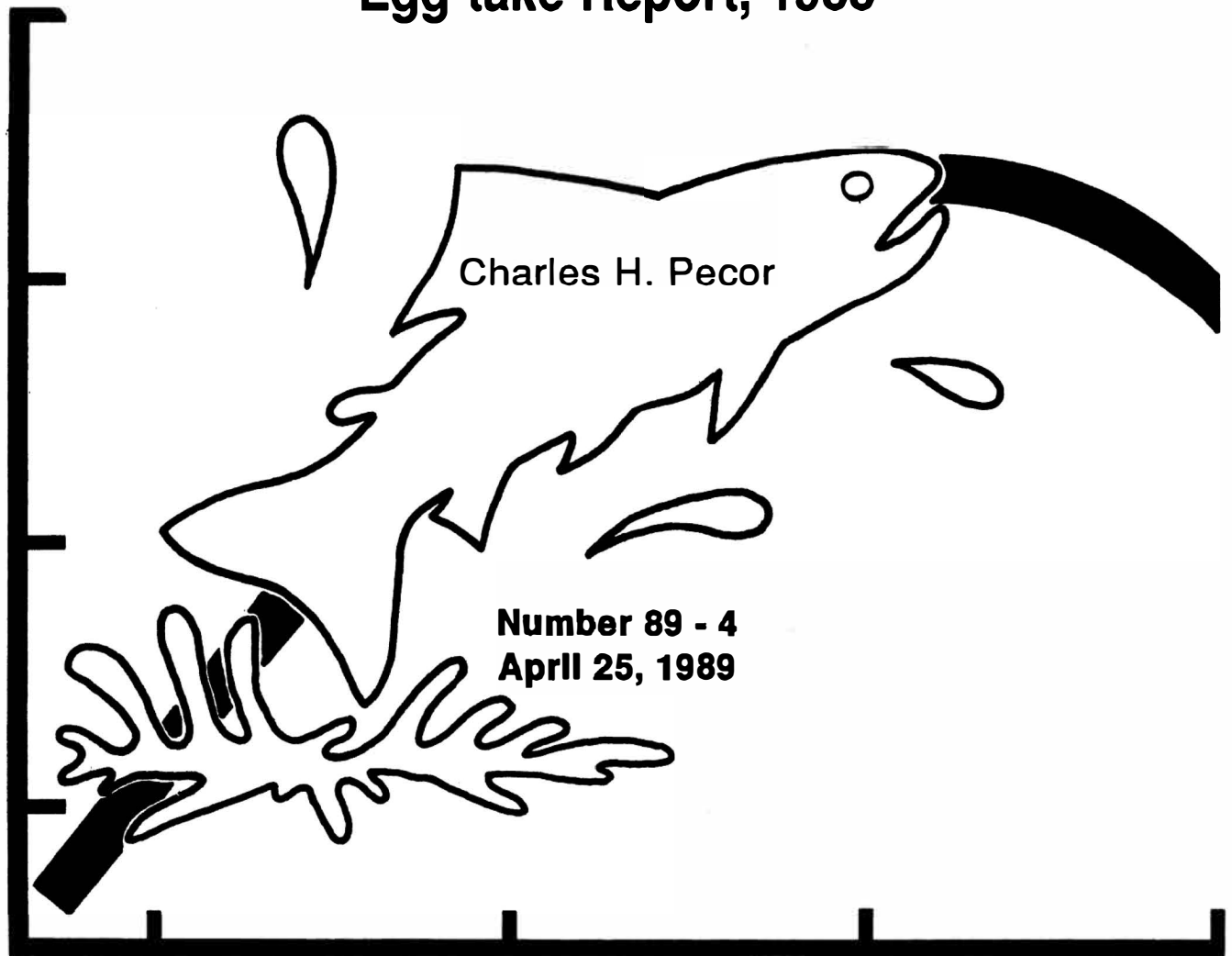


FISHERIES DIVISION

TECHNICAL REPORT

Platte River Harvest Weir and Coho Salmon Egg-take Report, 1988



Michigan Department of
Natural Resources

**MICHIGAN DEPARTMENT OF NATURAL RESOURCES
FISHERIES DIVISION**

**Fisheries Technical Report 89-4
April 25, 1989**

**PLATTE RIVER HARVEST WEIR AND COHO SALMON
EGG-TAKE REPORT, 1988**

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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 (Figure 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). This produced sufficient adults for egg-take operations plus a spectacular Lake Michigan sport fishery from Frankfort to Platte Bay in August and September. The annual plants for 1979-84 approximated 1 million smolts and these plants, with the exception of the 1984, produced annual returns to the weir of 123,000 to 168,000 adults, or 12.0% to 16.4%. The 1984 plants produced a 1985 return of only 80,354 coho adults, or 8.1%. Plants since 1984 have decreased to the 1987 low of 622,079 smolts and then increased to 923,544 in 1988. Adult returns have remained relatively low. The 1988 adult run was from a plant of 622,079 coho smolts made in the spring of 1987.

The Platte River has two salmon blocking weirs. The lower weir is located 1.6 miles upstream from the river mouth (Figure 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.

Normal in-state and out-of-state commitments require the collection of 12 to 14 million coho eggs annually. Depending on the size of the returning coho, the egg-take requires about 5,750-7,000 adult females (age 1.1).¹ 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, in 1988 the egg-take and weir operations were altered as a result of a court ruling in a suit filed by Platte Lake Improvement Association regarding phosphorus discharged from Platte River Hatchery. The court ruling initially prevented the passing of any salmon upstream from the lower weir but relief was sought and obtained from the court. The new ruling allowed the passage of up to 10,000 salmon between September 22 and October 21 for only in-state egg requirements. However, the ruling also closed the river to fishing during the period and ordered the weir gate closed from October 21 to December 2, 1988, to evaluate later runs of salmon in the river.

¹Age 1.1 for an anadromous fish means that one winter was spent in the river (or hatchery) prior to smolting and one winter was spent in Lake Michigan after smolting.

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.

The 1987 salmon run was typical when compared to the past few years with lower returns. The fish concentrated off Frankfort and Platte bays during the last 2 weeks in August and ran the river during the last 21 days in September as expected. The open-water fishery was relatively good considering the lower return rate which was recorded for this year. The river fishery was poor throughout the run. This poor fishery was due to the court ruling which, first, prevented the passing of any salmon above the weir and, second, closed the river to fishing after fish were allowed upstream. The river was reopened to fishing again on October 21 but the bulk of the salmon were gone by then. A good fishery did develop just above the lower weir after the river was reopened to fishing. A group of salmon (estimated 300-500 fish) stayed within an area 200 yards upstream of the weir and provided a good fishery well into December.

LOWER WEIR OPERATION, 1988

The lower weir operation in 1988 was drastically altered because of a court order resulting from a law suit filed by the Platte Lake Improvement Association concerning the phosphorus discharged from Platte River Hatchery and dead decaying salmon carcasses. The court order initially stated that no salmon would be passed above the lower weir and that coho eggs for Michigan's egg commitments would be taken at the lower weir. However, because coho eggs cannot be taken at the lower weir and another good source of coho is not available, the judge was asked to modify his order. He agreed to modify his order and allowed the passage of 10,000 salmon upstream between September 22 and October 21 for egg-take operations at the hatchery weir. As part of this order we had to operate the weir later in the year to evaluate the salmon run after the normal weir operation period.

The lower harvest weir was ready for operation on August 26 and the weir gate was closed on the evening of September 5. The weir remained closed until September 22 and all salmon reaching the weir were harvested.

Between September 22 and October 13, the weir gate was opened in an attempt to count up to 10,000 adult salmon for egg-take operations at the hatchery. In actuality only 5,649 salmonids: 4,860 coho, 460 chinook, 319 steelhead, and 10 brown trout) were passed upstream during this period. Because of the relatively small number of fish, each species was individually counted as they swam upstream through the open weir gate. This represents a

major change from the weir reports for 1983 through 1987 where the species composition of the harvested fish was used to calculate the numbers of fish for individual species passed upstream.

After October 13 the weir gate was again closed and harvest operations continued until December 2. The weir was operated over a month longer than normal to evaluate late runs of salmon. During the extra month of operation 260 adult coho and 163 adult chinook were harvested.

The weir was manned 24 hours per day from September 6 to November 2 by Tempotech employees. From November 3 to December 2 the weir was manned only intermittently by State-employed temporary workers. Fish were harvested during this latter period only twice a week, usually on Mondays and Fridays. All trout collected during harvesting were transferred upstream from the weir.

Harvesting began September 7 and continued intermittently until December 2. Salmon were actually harvested on 25 days during this period but on only 12 of the harvest days did salmon numbers exceed 200 fish. Only one full semitrailer load and 26 partial loads were sent to Tempotech Industries in Hart, Michigan.

Coho salmon

The harvest of coho salmon began on September 7 and ended on December 2, a period of 87 days. However, 91% of the coho were harvested between September 12 and September 21 (Figure 2). A total of only 21,258 adult coho weighing 131,836 pounds and 1,216 jack coho weighing 1,778 pounds were harvested (Table 3). Mean weights of the harvested coho adults and jacks were 6.20 and 1.40 pounds, respectively (Table 4). An additional 4,860 adult coho were passed upstream for egg-take operations at the upper weir (Table 2). A weekly summary of coho passed and harvested, combined by age and sex, is shown in Table 5.

The total run of 26,118 adult coho in the lower Platte River represented a return of only 4.2% of the 1987 smolt plant and was, for the fourth year in a row, about one-half the number expected to return (Table 6). The low coho return was not restricted to the Platte River. Very low returns were also reported for the Little Manistee River (Ralph Hay, personal communication) and other streams tributary to Lake Michigan. The cause of the low returns in the Platte River and other Lake Michigan tributaries is not known.

Most all of the harvested coho were age 1.1. The averaged lengths and weights for age-1.1 males and females, calculated from weekly biological samples, are shown in Table 4. Males averaged 25.9 inches and 6.3 pounds and females averaged 25.8 inches and 6.2 pounds.

During the harvest operation 1,216 age-1.0 coho were harvested. All were males (jacks). They had an average length of 15.1 inches and average weight of 1.4 pounds (Table 4). No age-1.2 coho were observed in the harvest.

No grading of coho for skin or flesh color was done.

During the 13 weekly biological surveys, a total of 1,308 adult coho were randomly sampled for biological data. Two fresh and three healed lamprey wounds were observed on the coho in the biological samples and 16 fish had fin clips. The fin clips were adipose (Ad, 11 fish), left pectoral (LP, 2 fish), right pectoral (RP, 1 fish), left ventral (LV, 1 fish), and Ad-LP (1 fish). The RP and Ad-LP clips were assigned to Illinois plants. However, the Ad, LP, and LV clips were not assigned to coho in any of the Great Lakes (Margrett Dechoda, Great Lakes Fish Commission, personal communication).

Two hundred thirty-five or 19.5% of the jack coho salmon harvested at the lower weir were marked with an Ad clip. These fish were planted in the Platte River in the spring of 1988 and are part of a diet study. All Ad-clipped fish contained coded-wire microtags in their snouts. The snouts of all Ad-clipped fish were collected and microtag recoveries and readings are currently being done at the Charlevoix Great Lakes Research Station. Ad-clipped jacks are discussed further in the upper weir section. No other clips were observed on jack coho.

In summary, a total of 26,118 adult coho salmon reached the lower Platte River weir during the fall of 1988—11,401 (43.7%) males and 14,717 (56.3%) females (Table 5). The total adult run was 4.2% of the 1987 plant of 622,079 age-1.0 smolts (Table 6), about one-half the expected rate of return.

Chinook salmon

The chinook salmon run in the lower Platte River spanned the period from September 9 to December 2, although 67% of the run was harvested between October 3 and October 24 (Figure 3). A total of 4,186 chinook, including 3,263 adults (age 0.2 to 0.4) and 923 jacks (age 0.0 and 0.1), weighing 49,845 pounds were harvested (Table 7). The average weights of adults and jacks were 14.0 and 4.6 pounds, respectively. The average adult was 0.5 pound heavier than in 1987 (13.5 pounds). An additional 460 chinook were passed upstream at the lower weir (Table 2). A weekly summary of chinook passed and harvested combined by age and sex is shown in Table 8.

Chinook eggs were collected at the lower weir for the first time to help fill Michigan's requirements for 17 million eggs. The smaller-than-normal run of chinook at the Little Manistee weir made it necessary to collect eggs at the Boardman weir in Traverse City and at the lower Platte River weir. Chinook eggs were collected at the lower Platte on October 13, 18, and 24. A total of 1.19 million eggs were collected from 275 females, which gives an average fecundity of 4,320 eggs per female. Eye-ups for these eggs averaged 81.4%. The chinook eggs from the Little Manistee and Boardman weirs had average eye-ups of 70.4% and 63.9%, respectively.

Biological data were collected from 887 adult chinook randomly sampled during the harvest operation. In addition, biological data were collected on 425 jack chinook sorted out of

the harvest. Chinook salmon length frequencies were converted to age frequencies by means of a length-age frequency table (Table 9) constructed by District 6 personnel at the Harrietta warehouse. They used scale samples and length measurements obtained during creel census at Pentwater, Ludington, Manistee, Onekama, Frankfort, Leland, Grand Traverse Bay, Manistee Lake, Big Manistee River, Betsie River, and Platte River for the months August through November 1988. In applying this table to those length groups in which two or more age groups are represented, the lighter fish were arbitrarily assigned to the younger age group and the heavier fish were assigned to the older age group. The resulting estimates of age composition of the 1988 chinook harvest was 0.1% age 0.0, 19.7% age 0.1, 10.6% age 0.2, 53.0% age 0.3, 15.9% age 0.4, and 0.6% age 0.5 (Table 8). Average lengths and weights for each age group are presented in Table 10.

Twenty-one chinook with lamprey wounds, 5 fresh and 16 healed, were recorded in the biological samples. Lamprey wounding was present on 1.6% of the chinook examined and compared to 0.8% for 1987. Two fin-clipped jack chinook were observed in the biological samples, one had a LV clip and the other had an Ad clip. The LV-clipped fish was planted by Illinois in 1987. The Ad-clipped fish should have contained a coded-wire microtag but examination failed to find the tag.

The total run of 4,646 chinook at the lower weir in 1988 was below the 1979-87 average of 5,060 chinook. The average weight of adult chinooks in 1988 was heavier than reported for years 1985 through 1987 (Table 11). Adult males and females comprised 52.5% and 47.5% 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

Two pink salmon were harvested. The presence of pink salmon in the salmon run was not expected because they normally only run during odd-numbered years. This was the first time pink salmon have run the Platte River in an even-numbered year since the pink salmon first showed up in 1981. Both were ripe females and they had an average length and weight of 19.0 inches and 2.1 pounds, respectively. No other pink salmon were seen around the weir or passed upstream.

Steelhead trout

The peak of the steelhead run occurred between September 19 and October 10 (Table 12). During the harvest operation 655 steelhead were handled. This was lower than the 1,079 handled in 1987 (Table 13). An additional 319 steelhead were passed upstream through the

open weir gate and the total steelhead run in the lower Platte River was 974 fish. A weekly summary of the number and weight of steelhead returning to the lower Platte weir by age and sex is presented in Table 14.

Biological information, including scale samples, was collected from 383 steelhead. All scale samples (including steelhead and brown trout) were aged by District 6 personnel at Harrietta warehouse. A total of nine age groups were recorded in 1988 (Table 14) as compared to eight in 1987 and seven in 1986. The average lengths and weights for each age group are shown in Table 15. Fish in age-group 2.0 were the most numerous (21.4%) and fish in age-group 3.0 were the least numerous (0.1%). Most (56%) of the steelhead smolted after two summers in the river and 43.9% smolted after one summer in the river. Only one fish was found that smolted after three summers in the river. In 1985, 1986, and 1987, 21%, 7.2%, and 66%, respectively, smolted after one summer in the river.

The size of the returning steelhead was more dependent upon the years spent in Lake Michigan than on age-at-smolting or years in the river (Table 16), as was true in the other years. Steelhead which had spent three summers (age .2) in Lake Michigan was the most numerous age group (39.6%) to return in 1988, although steelhead which spent one, two, and four summers in Lake Michigan were well represented (Table 16).

Overall steelhead in 1988 had a mean length of 23.2 inches and a mean weight of 5.4 pounds, and consisted of 62.7% males and 37.3% females. No lamprey scars were observed on any steelhead. Two steelhead had fin clips, an adipose (Ad) and an adipose-both ventrals-left pectoral and Ad-BV-LP. The Ad-clipped fish was probably a summer steelhead planted in one of four rivers (Manistee, White, Boardman, or Betsie) in 1986. The Ad-BV-LP clip was not an assigned clip.

Brown trout and lake trout

Brown trout and lake trout are only minor components of the salmonid run in the Platte River (Tables 12 and 13). A total of 14 brown trout and 2 lake trout were counted and transferred upstream in 1988. Ten additional brown trout were passed upstream when the coho salmon were passed. This gives total runs in 1988 of 24 brown trout and 2 lake trout.

Biological information was obtained from 12 brown trout. Three age groups were identified: age-1.1 (14 fish), age-2.1 (8 fish), age-1.2 (2 fish). Lengths ranged from 18.9 to 28.9 inches (average 22.7) and weights ranged from 2.9 to 11.7 pounds (average 5.8). The sex ratio was 25% male to 75% female.

Only two lake trout were passed upstream, one on October 26 and the second on November 11. Both lake trout were fin clipped with clips that have been recorded at the Platte River in the past. The clips were left ventral-adipose (LV-Ad, 1 fish) and both ventral (BV, 1 fish). The BV and LV-Ad clips were assigned to lake trout planted offshore in 1980, 1979, and

1978, respectively, at 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). No other biological data were collected from lake trout.

UPPER WEIR OPERATION, 1988

The operation at the upper Platte River weir is primarily for egg-taking and does not have capability of harvesting, a large number of salmon efficiently. The facility consists of a weir, fish passageway, fish ladder, maturation ponds, and egg-taking building. The weir blocks the upstream migration of salmonids and directs them up the fish ladder into the 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 30 and the facility was fully operational by August 31.

Coho salmon

The handling of the coho salmon at the upper weir was different this year because of the limited number of coho allowed to pass the lower weir. We were not allowed to pass any adult salmon upstream until September 22, so very few adult coho reached the upper weir until after this date. Only three of the six maturation ponds were used to hold adult salmon. The coho passed upstream were from the last quarter of the run and this is another major change from past years when the fish passed upstream were primarily from the first one-half of the run.

The fish in the maturation ponds were not checked weekly for egg condition (green or ripe) because we did not want to sacrifice any of the few fish we had for egg-take. Instead we selected a date to start taking eggs based on our experience with past runs. We took eggs on October 17, 21, 28, and November 3, although 85% of the eggs were collected on the first two dates. A total of 2,543,500 eggs were collected at the upper weir. An additional 885,000 eggs were collected from coho at the Little Manistee Weir on three dates (October 19, November 2 and 8) and transported to the Platte Hatchery for incubation. A total of 3,427,200 coho eggs were collected in 1988. New York State supplied an additional 190,000 eyed coho eggs from the Salmon River Fish Hatchery. All out-of-state coho egg commitments were cancelled for 1988.

The 1988 egg-take was carried out as a routine operation, with the exception of the small number of fish available and the egg-take at the Little Manistee weir. Egg quality was good and eggs were taken from almost every fish available.

The eye-up rate of coho salmon eggs incubated at the Platte River Hatchery reflected the good quality of the 1988 eggs. The average eye-up rate for the four egg-take days at Platte River was 79%, with a daily range from 76.2% to 85.2%. Coho eye-up rates during the previous

9 years ranged from 50.4% (1984) to 82.2% (1980) and averaged 69.2%. Eye-up rates for the coho eggs from the Little Manistee weir ranged between 64% and 80% and averaged 67.7%.

A total of 1,131 female coho salmon were stripped to collect the 2.54 million eggs (Table 17), an average of 2,248 eggs per female. The fecundity of individual fish was not checked because virtually every fish was used to collect production eggs. The average fecundities of the 25 individual fish sampled during 1983, 1984, 1985, 1986, and 1987 were 3,204, 2,290, 2,850, 2,042, and 2,916 eggs per female, respectively.

The egg-take and harvest operation at the upper weir accounted for 5,836 coho, including 3,410 (58.4%) jacks and 2,426 (41.6%) adults (Table 17). The number of adults harvested at the upper weir was only 50% of the estimated total number of adults passed at the lower weir. This escapement to the upper weir is compared to a normal return of 75-80% in past years. The low return this year may be due to a couple of unusual factors. First, the fish passed were from the end of the run rather than the first part of the run as in normal years. Second, the small total number of fish passed and the small groups passed may have influenced their return to the hatchery. And, third, in an attempt to pass fish when they would not move through the open boat gate, coho were harvested through the pond and physically placed back in the river above the weir. These fish did not move upstream aggressively and may, in fact, not have moved upstream at all. A canoe trip from M-22 bridge to the lower weir on October 31 found only four salmon between M-22 bridge and 400 yards upstream from the weir. However, between the lower weir and 300 yards upstream, a group of 300 to 500 salmon were present. These fish provided an intense fishery after the river was reopened to fishing. Salmon were still present in this area on December 2 when weir operations were ended.

The adult run at the upper weir consisted of 42% male and 58% female, based on the actual numbers of fish harvested. Males averaged 26.9 inches in length and 6.3 pounds in weight, and females averaged 25.3 inches in length and 5.9 pounds in weight. Overall, the adult coho averaged 26.0 inches and 6.1 pounds, almost identical in both length and weight to the coho harvested at the lower weir. All adult coho handled at the upper weir were used in the egg-take operations. In all (adults and jacks), 17,394 pounds of coho salmon were harvested at the upper weir (Table 18).

One Ad-clipped adult coho was recovered at the upper weir. The Ad clip was not assigned to any Great Lakes plants but the head was saved to check for a coded microtag. One adult coho had a healed lamprey wound.

A total of 3,410 jack coho salmon (100% males, age 1.0) were harvested at the upper weir (Table 17). The total jack run in the Platte River, including jacks harvested at the lower weir, was 4,626. This represents 0.5% of the total coho smolt plant in 1988 and 15.0% of the total run of 30,744 coho adults and jacks in the Platte River during 1988. It is also the largest jack run by more than double since 1983 when 6,553 jacks were harvested.

The weighted mean length and weight of jacks for 1988 were 15.3 inches and 1.3 pounds. In 1985, 1986, and 1987 the jacks averaged 15.2, 15.4, and 15.8 inches in length and 1.2, 1.5, and 1.6 pounds in weight, respectively. The Ad fin clip was found on 502 jacks or 14.7% of the harvested jacks. This mark was used to identify fish that contained coded-wire microtags and were planted in the Platte River during the spring of 1988. Approximately 16.8% of the fish planted were marked and microtagged. In 1988, for the total jack harvest, 15.9% were marked with the Ad clip, very close to the original marking rate.

Chinook salmon

Most (75.3%) of the chinook at the upper weir were harvested the week of October 17 (Table 19). The run was composed of 47% adult males, 39% jack males, and 14% adult females. The average weight of all chinook (adults and jacks combined) was 9.4 pounds. The total harvest of 263 fish was 57.2% of the number of chinook passed at the lower weir.

SUMMARY

The 1988 run of coho salmon in the Platte River consisted of 26,118 adults (43.7% male and 56.3% female). This is a return of 4.2% on the smolts planted in 1987 and is a very low percent return. Mean sizes at the lower weir were 25.9 inches and 6.3 pounds for adult males and 25.2 inches and 6.2 pounds for adult females. Mean sizes at the upper weir were 26.9 inches and 6.3 pounds for adult males, 25.3 inches and 5.8 pounds for adult females, and 15.3 inches and 1.3 pounds for jacks.

A grand total of 28,313 coho adults and jacks weighing 151,008 pounds were harvested. A total of 22,474 adults and jacks weighing 133,614 pounds were harvested at the lower weir and 5,836 adults and jacks weighing 17,394 pounds were harvested at the upper weir. The upper weir harvest included 1,131 stripped females weighing 5,086 pounds, from which 2.5 million eggs were taken. An additional 880,000 coho eggs were collected at the Little Manistee weir and 190,000 eyed eggs were received from the Salmon River Hatchery in New York. Egg quality was good as reflected in an average eye-up of 79% for eggs collected at the Platte River weir and 68% for eggs collected at the Little Manistee weir.

The 1988 run of 4,646 chinook (61.9% males and 38.1% females) was lower than the average return for the past 9 years. Ultimately, 4,449 of these chinook (95.7%, 52,308 pounds) were harvested—4,186 at the lower weir and 263 at the upper weir. The age composition of the chinook run was 0.1%, age-0.0 jacks; 19.7%, age-0.1 jacks; 10.6%, age-0.2 adults; 53.0%, age-0.3 adults; 15.9%, age-0.4 adults; and 0.6%, age-0.5 adults. The mean weights of age groups 0.0 through 0.5 were 0.7, 4.6, 9.0, 13.8, 17.7, and 22.7 pounds, respectively. For the first

time, 1.19 million chinook eggs were collected at the lower weir to supplement the statewide chinook egg-take. These eggs had an eye-up that averaged 81.4%.

The 1988 fall steelhead run of 974 fish (63% males and 37% females) was only one-third as large as the 1987 run (2,963 fish). Eight different age groups were identified but fish which had spent three summers in Lake Michigan (age-groups 1.2 and 2.2) were the most numerous (39.6%). Overall the steelhead averaged 23.2 inches long and weighed 5.6 pounds.

Other salmonids passed upstream included 24 brown trout and 2 lake trout.

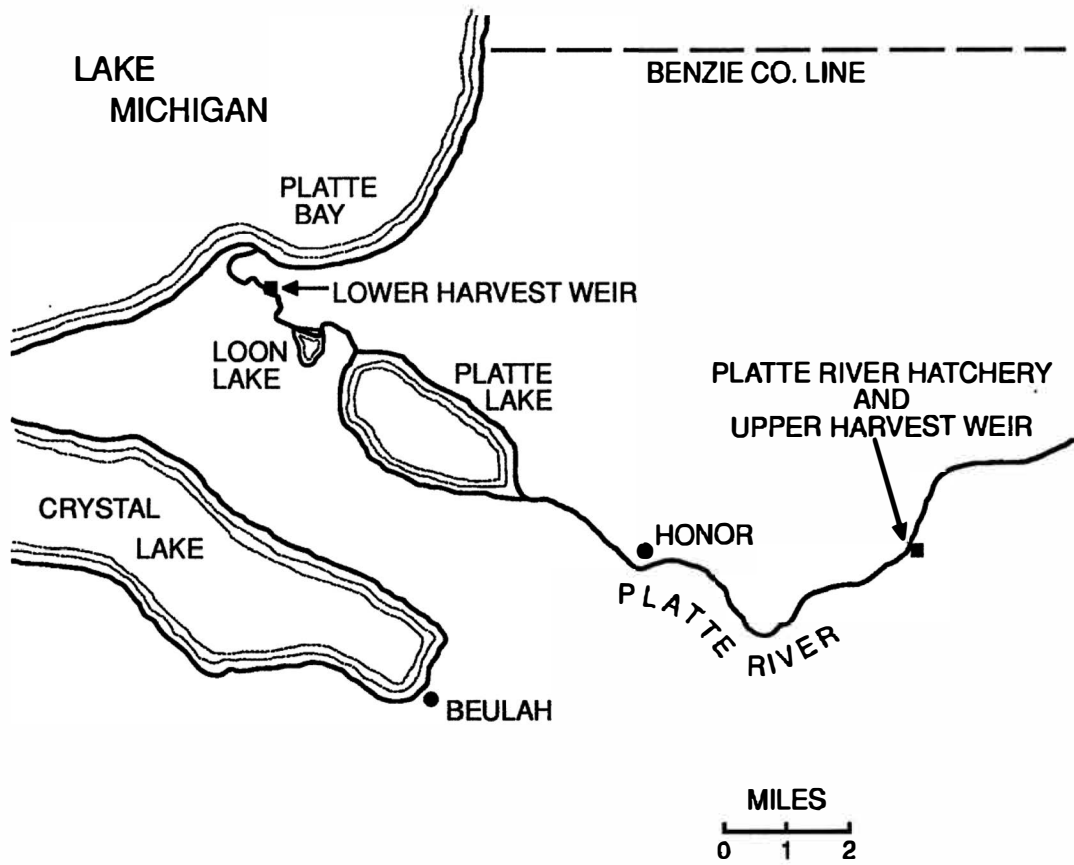


Figure 1. Location of the Platte River Hatchery and the upper and lower harvest weirs.

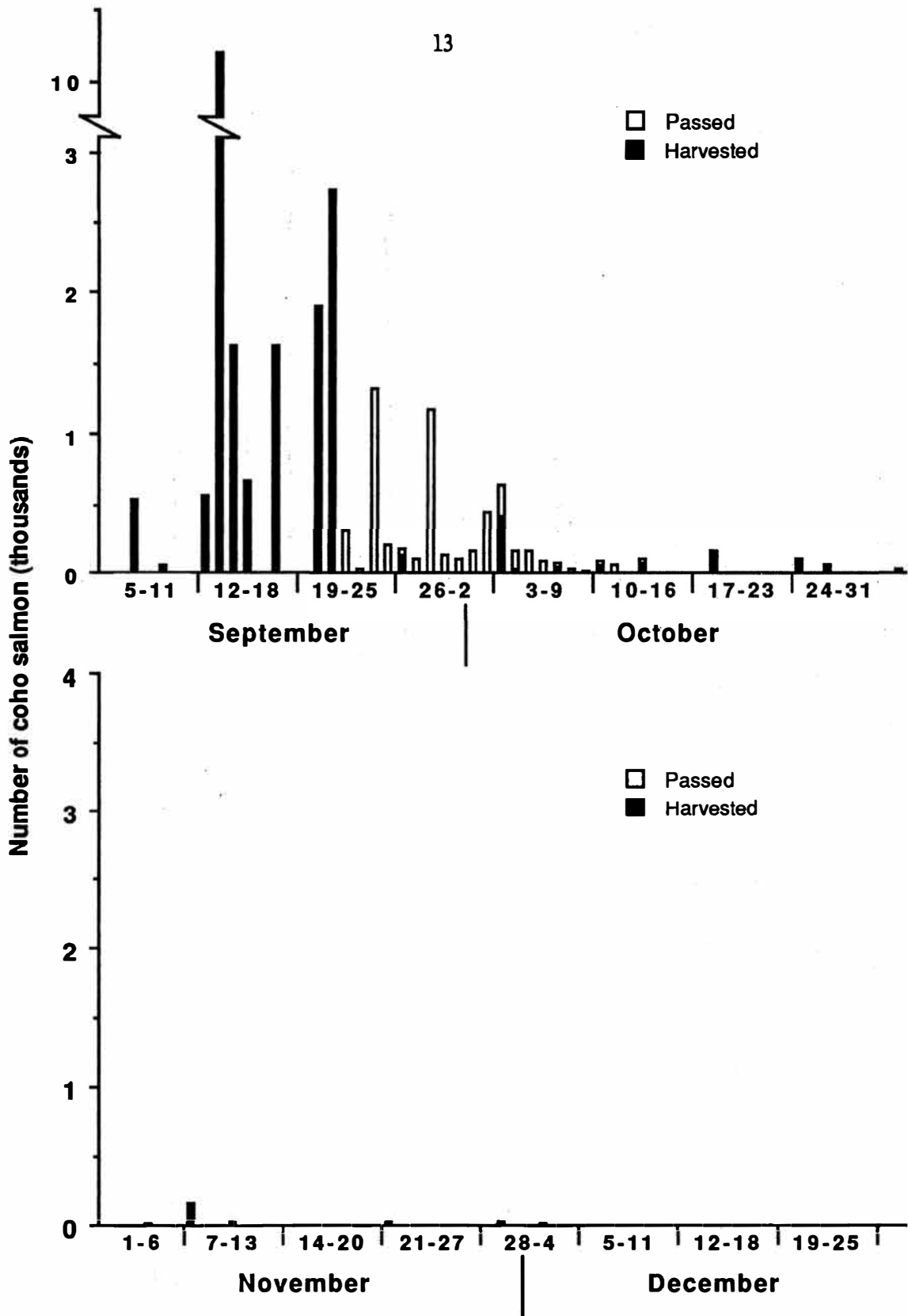


Figure 2. Periodicity of coho salmon passed upstream or harvested at the lower Platte River weir, fall 1988.

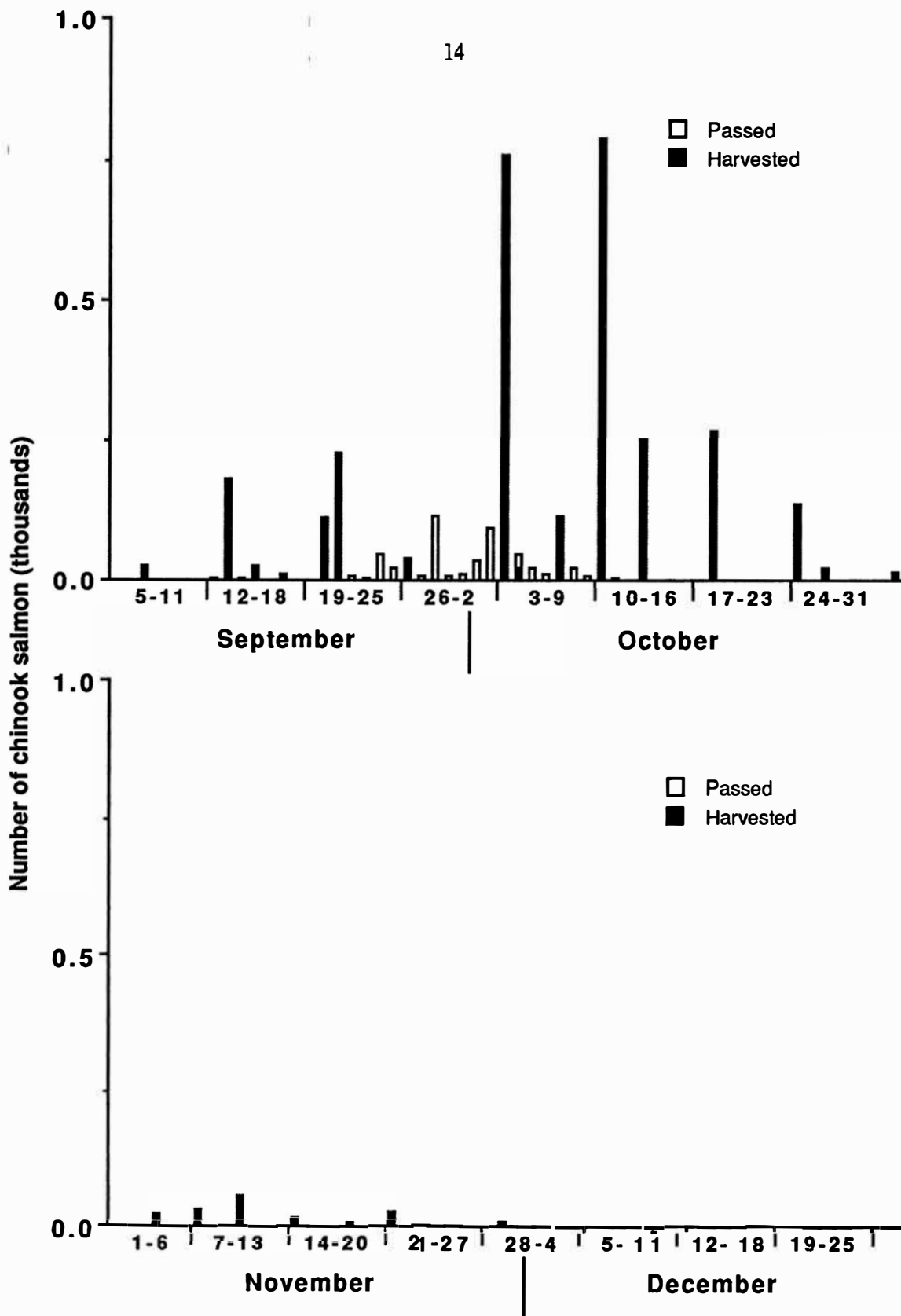


Figure 3. Periodicity of chinook salmon passed upstream or harvested at the lower Platte River weir, fall 1988.

Table 2. Total number of coho and chinook salmon passed upstream at the lower Platte River weir, fall 1988.

Date	Coho salmon	Chinook salmon
9/22	305	6
9/23	31	3
9/24	1,330	48
9/25	198	23
Weekly total	1,864	80
9/26	51	4
9/27	100	9
9/28	1,181	121
9/29	132	8
9/30	108	13
10/01	163	39
10/02	440	97
Weekly total	2,175	291
10/03	235	0
10/04	142	25
10/05	163	24
10/06	92	10
10/07	31	0
10/08	31	22
10/09	10	6
Weekly total	704	87
10/10	32	0
10/11	56	2
10/13	29	0
Weekly total	117	2
Annual total	4,860	460

Table 1. Number of anadromous salmonids planted in the Platte River, 1966-88.

Year	Coho (yearling)	Chinook (spring fingerling)	Steelhead (yearlings)	Atlantic salmon (yearlings)
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	1,000,000	—	—	—
1983	953,499	—	—	—
1984	989,192	—	—	—
1985	817,483	—	—	—
1986	751,183	—	—	—
1987	622,079	—	—	—
1988	923,544	—	—	—
Total	16,892,072	94,130	394,910	7,308

Table 3. Summary of adult coho salmon harvested at the lower Platte River weir, fall 1988.

Date	Coho harvested			Cumulative total	Total weight (pounds)
	Jacks age 1.0	Adult age 1.1	Mortalities		
9/07	204	540	0	744	3,339
9/09	10	51	0	805	303
Weekly total	214	591	0		3,642
9/12	43	566	1	1,415	3,311
9/13	574	10,220	0	12,209	65,247
9/14	133	1,610	13	13,965	10,425
9/15	73	675	1	14,714	4,367
9/17	43	1,610	19	16,386	10,327
Weekly total	866	14,681	34		93,677
9/20	67	1,890	10	18,353	11,570
9/21	44	2,730	1	21,128	16,743
Weekly total	111	4,620	11		28,313
9/26	1	118	7	21,254	693
Weekly total	1	118	7		693
10/03	4	393	12	21,663	2,589
10/04	2	23	0	21,688	134
10/17	0	47	1	21,736	299
Weekly total	6	463	13		3,022
10/10	0	51	2	21,789	322
10/13	3	56	11	21,859	408
Weekly total	3	107	13		730
10/18	6	154	7	22,026	985
Weekly total	6	154	7		985
10/24	1	94	4	22,125	609
10/26	2	56	0	22,183	350
Weekly total	3	150	4		959
10/31	0	22	3	22,208	150
11/04	0	7	1	22,216	43
Weekly total	0	29	4		193

Table 3. Continued:

Date	Coho harvested			Cumulative total	Total weight (pounds)
	Jacks age 1.0	Adult age 1.1	Mortalities		
11/07	5	152	1	22,374	839
11/10	0	23	4	22,401	147
Weekly total	5	175	5		986
11/14	0	4	0	22,405	26
11/18	1	7	0	22,413	46
Weekly total	1	11	0		72
11/22	0	26	0	22,439	146
Weekly total	0	26	0		146
11/29	0	25	0	22,464	139
12/02	0	10	0	22,474	57
Weekly total	0	35	0		196
Annual total	1,216	21,160	98	22,474	133,614

Table 4. Mean total length (inches) and weight (pounds), by age and sex, of coho salmon harvested at the lower Platte River weir, fall 1988. Two standard errors in parentheses.

Week beginning	Measurement	Age 1.0		Age 1.1	
		Male	Female	Male	Female
9/05	Length	14.6 (0.234)	—	24.9 (0.540)	24.6 (0.384)
	Weight	1.3 (0.067)	—	5.6 (0.392)	5.7 (0.278)
9/12	Length	15.1 (0.135)	—	25.9 (0.486)	25.3 (0.336)
	Weight	1.5 (0.043)	—	6.4 (0.378)	6.3 (0.258)
9/19	Length	15.2 (0.408)	—	26.0 (0.561)	24.9 (0.318)
	Weight	1.5 (0.153)	—	6.3 (0.398)	6.0 (0.250)
9/26	Length	15.2 —	—	25.9 (0.594)	25.3 (0.315)
	Weight	1.3 —	—	6.2 (0.437)	6.2 (0.235)
10/03	Length	15.5 (1.110)	—	26.9 (0.486)	25.4 (0.361)
	Weight	1.7 (0.405)	—	6.8 (0.393)	6.3 (0.280)
10/10	Length	15.1 (0.278)	—	26.4 (0.494)	25.0 (0.265)
	Weight	1.3 —	—	6.5 (0.375)	6.1 (0.214)
10/17	Length	15.0 (0.549)	—	26.5 (0.508)	25.2 (0.315)
	Weight	1.1 (0.136)	—	6.4 (0.401)	5.9 (0.255)
10/24	Length	15.8 (0.769)	—	26.6 (0.508)	25.6 (0.463)
	Weight	1.3 (0.255)	—	6.3 (0.425)	6.1 (0.336)
10/31	Length	— —	—	26.9 (0.685)	24.8 (1.142)
	Weight	— —	—	6.2 (0.585)	5.5 (0.859)
11/07	Length	15.4 (1.236)	—	25.9 (0.481)	24.8 (0.406)
	Weight	1.2 (0.299)	—	5.5 (0.342)	5.4 (0.272)
11/14	Length	17.2	—	27.2	25.9

Table 4. Continued:

Week beginning	Measurement	Age 1.0		Age 1.1	
		Male	Female	Male	Female
11/21 ¹	Weight	—	—	(0.774)	(1.269)
		1.3	—	6.5	6.4
	Length	—	—	(0.837)	(0.925)
		—	—	26.2	24.5
Weight	—	—	(0.667)	(0.649)	
	—	—	5.7	5.4	
Weighted seasonal mean	Length	—	—	(0.480)	(0.406)
		15.1	—	25.9	25.2
Sexes combined	Length	(0.100)	—	(0.320)	(0.200)
		1.4	—	6.3	6.2
Sexes combined	Weight	(0.032)	—	(0.247)	(0.154)
		15.1	—	25.5	25.5
Sexes combined	Length	(0.100)	—	(0.183)	(0.183)
		1.4	—	6.2	6.2
Sexes combined	Weight	(0.032)	—	(0.138)	(0.138)
		1.4	—	6.2	6.2

¹Computer program would handle only 12 weeks, so the data for the 13th week was added to the 12th week for computation.

Table 5. Summary of the number and weight, by age and sex, of jack and adult coho salmon returning to the lower Platte River weir (harvested plus passed) 1988.

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 1.0						
9/05	214	272	—	—	214	272
9/12	866	1,280	—	—	866	1,280
9/19	111	169	—	—	111	169
9/26	1	1	—	—	1	1
10/03	6	10	—	—	6	10
10/10	3	4	—	—	3	4
10/17	6	7	—	—	6	7
10/24	3	4	—	—	3	4
11/07	5	6	—	—	5	6
11/14	1	1	—	—	1	1
Total (Percent)	1,216 (4.5)	1,754 (1.1)	—	—	1,216 (4.5)	1,754 (1.1)
Age 1.1						
9/05	264	1,473	327	1,868	591	3,341
9/12	6,976	44,432	7,739	48,878	14,715	93,310
9/19	2,282	14,383	4,213	25,168	6,495	39,551
9/26	938	5,842	1,362	8,381	2,300	14,223
10/03	558	3,818	622	3,909	1,180	7,727
10/10	91	593	146	896	237	1,489
10/17	70	446	91	541	161	987
10/24	84	526	70	429	154	955
10/31	17	105	16	88	33	193
11/07	75	414	105	569	180	983
11/14	7	45	4	26	11	71
11/21	15	85	11	61	26	146
11/28	24	138	11	58	35	196
Total (Percent)	11,401 (41.7)	72,300 (43.8)	14,717 (53.8)	90,872 (55.1)	26,118 (100.0)	163,172 (100.0)

Table 6. Summary of adult coho salmon (age 1.1) runs at the lower Platte River weir, 1979-88.

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	4.4
1980	76,480 ¹	46,633	123,113	973,032	12.7	26.9	7.6
1981	38,874	129,175	168,049	1,028,038	16.3	27.0	6.8
1982	38,951	90,412	129,363	944,205	13.7	25.8	6.2
1983	35,600	120,758	156,358	1,000,010	15.6	26.6	6.9
1984	36,572	105,530	142,102	953,449	14.9	24.8	5.5
1985	30,736	49,659	80,354	989,192	8.1	25.7	6.1
1986	36,124	16,646	52,770	817,483	6.5	24.4	5.3
1987	30,437	24,707	55,144	751,183	7.3	26.1	6.1
1988	4,860	21,258	26,118	622,079	4.2	25.5	6.2

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

Table 7. Summary of all chinook salmon harvested at the lower Platte River weir, fall 1988.

Date	Chinook harvested			Cumulative total	Total weight (pounds)
	Jacks ages 0.0-0.1	Adults ages 0.2-0.5	Mortalities		
9/07	8	27	0	35	382
9/09	0	1	0	36	7
Weekly total	8	28	0		389
9/12	12	4	0	52	70
9/13	46	185	0	283	2,765
9/14	2	5	0	290	87
9/15	6	26	0	322	386
9/17	2	11	1	336	191
Weekly total	68	231	1		3,499
9/20	24	116	0	476	1,801
9/21	43	236	0	755	3,633
Weekly total	67	352	0		5,434
9/26	13	36	1	805	530
Weekly total	13	36	1		530
10/03	245	780	1	1,831	12,435
10/04	18	24	0	1,873	426
10/07	57	120	1	2,051	2,015
Weekly total	320	924	2		14,876
10/10	181	810	1	3,043	12,238
10/13	122	260	1	3,426	4,085
Weekly total	303	1,070	2		16,323
10/18	78	270	5	3,779	3,930
Weekly total	78	270	5		3,930
10/24	24	141	0	3,944	1,933
10/26	10	21	0	3,975	336
Weekly total	34	162	0		2,269
10/31	6	15	0	3,996	220
11/04	7	22	1	4,026	310
Weekly total	13	37	1		530

Table 7. Continued:

Date	Chinook harvested			Cumulative total	Total weight (pounds)
	Jacks ages 0.0-0.1	Adults ages 0.2-0.5	Mortalities		
11/07	4	29	0	4,059	431
11/10	12	57	0	4,128	829
Weekly total	16	86	0		1,260
11/14	3	15	0	4,146	215
11/18	0	7	0	4,153	94
Weekly total	3	22	0		309
11/22	0	25	0	4,178	383
Weekly total	0	25	0		383
11/29	0	7	0	4,185	97
12/02	0	1	0	4,186	16
Weekly total	0	8	0		113
Annual total	923	3,251	12	4,186	49,845

Table 8. Summary of the number and weight, by age and sex, of chinook salmon returning to the lower Platte River weir (harvested plus passed) fall 1988.

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 0.0						
9/05	—	—	—	—	—	—
9/12	—	—	—	—	—	—
9/19	—	—	—	—	—	—
9/26	—	—	—	—	—	—
10/03	—	—	—	—	—	—
10/10	5	3	—	—	5	3
10/17	—	—	—	—	—	—
10/24	—	—	—	—	—	—
10/31	—	—	—	—	—	—
11/07	—	—	—	—	—	—
11/14	—	—	—	—	—	—
Total	5	3	—	—	5	3
(Percent)	(0.1)	(0.0)	—	—	(0.1)	(0.0)
Age 0.1						
9/05	8	38	—	—	8	38
9/12	66	289	2	6	68	295
9/19	67	320	—	—	67	320
9/26	13	56	—	—	13	56
10/03	320	1,511	—	—	320	1,511
10/10	298	1,400	—	—	298	1,400
10/17	78	355	—	—	78	355
10/24	34	145	—	—	34	145
10/31	13	56	—	—	13	56
11/07	16	71	—	—	16	71
11/14	3	12	—	—	3	12
Total	916	4,253	2	6	918	4,259
(Percent)	(19.7)	(7.5)	(0.0)	(0.0)	(19.7)	(7.5)
Age 0.2						
9/05	5	44	—	—	5	44
9/12	23	224	18	147	41	371
9/19	22	201	19	188	41	389
9/26	46	375	9	83	55	458
10/03	83	698	48	502	131	1,200
10/10	63	520	54	532	117	1,052
10/17	25	213	25	239	50	452
10/24	20	168	7	71	27	239
10/31	8	67	1	9	9	76
11/07	9	80	3	18	12	98
11/14	3	24	—	—	3	24
11/21	2	18	—	—	2	18
Total	309	2,632	184	1,789	493	4,421
(Percent)	(6.6)	(4.7)	(4.0)	(3.2)	(10.6)	(7.8)

Table 8. Continued:

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 0.3						
9/05	10	148	9	121	19	269
9/12	62	793	82	1,141	144	1,934
9/19	179	2,579	145	2,081	324	4,660
9/26	128	1,602	109	1,516	237	3,118
10/03	289	3,964	338	4,748	627	8,712
10/10	352	4,686	388	5,524	740	10,210
10/17	72	966	88	1,217	160	2,183
10/24	52	701	55	780	107	1,481
10/31	20	264	4	50	24	314
11/07	33	444	18	248	51	692
11/14	13	175	2	25	15	200
11/21	9	130	9	117	18	247
Total	1,219	16,452	1,247	17,568	2,466	34,020
(Percent)	(26.2)	(29.2)	(26.8)	(31.1)	(53.0)	(60.3)
Age 0.4						
9/05	2	39	2	34	4	73
9/12	26	469	21	366	47	835
9/19	34	579	34	585	68	1,164
9/26	9	167	27	442	36	609
10/03	145	2,609	103	1,836	248	4,445
10/10	99	1,691	99	1,740	198	3,431
10/17	50	903	17	334	67	1,237
10/24	17	321	10	184	27	505
10/31	4	70	1	17	5	87
11/07	9	176	15	273	24	449
11/14	1	17	2	33	3	50
11/21	8	140	4	69	12	209
Total	404	7,181	335	5,913	739	13,094
(Percent)	(8.7)	(12.7)	(7.2)	(10.5)	(15.9)	(23.2)
Age 0.5						
9/05	—	—	—	—	—	—
9/12	—	—	—	—	—	—
9/19	—	—	—	—	—	—
9/26	—	—	—	—	—	—
10/03	7	154	—	—	7	154
10/10	18	409	—	—	18	409
10/17	—	—	—	—	—	—
10/24	—	—	1	26	1	26
10/31	—	—	—	—	—	—
11/07	—	—	—	—	—	—
11/14	1	24	—	—	1	24
11/21	1	23	—	—	1	23
Total	27	610	1	26	28	636
(Percent)	(0.6)	(1.1)	(0.0)	(0.0)	(0.6)	(1.1)

Table 9. Length-age distribution (in percent of inch group) for chinook salmon scale sampled during creel census at Pentwater, Ludington, Manistee, Frankfort, Leland, Grand Traverse Bay, Manistee Lake, Big Manistee River, Betsie River, and Platte River during the period August to November 1988.¹

Length (inches)	Age					
	0.0	0.1	0.2	0.3	0.4	0.5
<13	100	—	—	—	—	—
14	—	—	—	—	—	—
15	—	—	—	—	—	—
16	—	—	—	—	—	—
17	—	—	—	—	—	—
18	—	100	—	—	—	—
19	—	100	—	—	—	—
20	—	100	—	—	—	—
21	—	100	—	—	—	—
22	—	100	—	—	—	—
23	—	100	—	—	—	—
24	—	29	71	—	—	—
25	—	20	80	—	—	—
26	—	—	100	—	—	—
27	—	—	100	—	—	—
28	—	—	100	—	—	—
29	—	—	80	20	—	—
30	—	—	62	38	—	—
31	—	—	54	46	—	—
32	—	—	23	77	—	—
33	—	—	—	96	4	—
34	—	—	—	83	17	—
35	—	—	—	68	32	—
36	—	—	—	75	25	—
37	—	—	—	53	47	—
38	—	—	—	46	54	—
39	—	—	—	67	33	—
40+	—	—	—	—	75	25

¹Table developed by District 6 personnel at the Harrietta warehouse.

Table 10. Mean total length (inches) and weight (pounds), by age and sex, of chinook salmon harvested at the lower Platte River weir, fall 1988. Two standard errors in parentheses.

Week beginning	Measure-ment	Age 0.0		Age 0.1		Age 0.2	
		Male	Female	Male	Female	Male	Female
9/05	Length	—	—	22.6 (1.100)	—	30.0 (1.914)	—
	Weight	—	—	4.8 (0.643)	—	8.8 (0.725)	—
9/12	Length	—	—	22.2 (0.386)	20.1 (2.087)	29.8 (0.688)	28.9 (2.034)
	Weight	—	—	4.4 (0.260)	3.2 (0.661)	9.7 (1.292)	8.2 (1.561)
9/19	Length	—	—	22.9 (0.230)	—	31.0 (1.380)	31.0 (1.244)
	Weight	—	—	4.8 (0.155)	—	9.1 (0.803)	9.9 (1.247)
9/26	Length	—	—	22.5 (0.680)	—	29.6 (2.867)	32.3 —
	Weight	—	—	4.3 (0.322)	—	8.2 (1.764)	9.3 —
10/03	Length	—	—	23.1 (0.245)	—	29.3 (1.084)	30.3 (1.314)
	Weight	—	—	4.7 (0.156)	—	8.4 (0.651)	10.5 (0.966)
10/10	Length	11.2	—	23.1 (0.300)	—	29.2 (2.128)	29.9 (1.691)
	Weight	0.7	—	4.7 (0.190)	—	8.3 (1.239)	9.8 (1.114)
10/17	Length	—	—	22.9 (0.300)	—	30.0 (0.596)	31.6 (0.878)
	Weight	—	—	4.5 (0.207)	—	8.5 (0.346)	9.6 (0.975)
10/24	Length	—	—	22.6 (0.741)	—	30.1 (0.955)	30.9 (1.193)
	Weight	—	—	4.3 (0.441)	—	8.4 (0.921)	10.2 (0.432)
10/31	Length	—	—	23.1 (0.686)	—	30.2 (0.656)	29.3 —
	Weight	—	—	4.3 (0.525)	—	8.4 (0.456)	9.3 —
11/07	Length	—	—	23.3 (1.057)	—	30.6 (2.628)	25.0 —
	Weight	—	—	4.4 (0.509)	—	8.9 (1.944)	6.0 —
11/14	Length	—	—	22.3 (0.982)	—	29.3 (3.302)	—
	Weight	—	—	4.1 (0.294)	—	7.9 (2.365)	—
11/21	Length	—	—	—	—	30.7 (1.969)	—
	Weight	—	—	—	—	8.9 (1.102)	—
Weighted seasonal mean	Length	11.2	—	22.9 (0.116)	20.1	29.7 (0.646)	30.3 (0.652)
	Weight	0.7	—	4.6 (0.073)	3.2	8.5 (0.395)	9.7 (0.467)
Sexes combined	Length	11.2	—	22.9 (0.115)	—	29.9 (0.469)	—
	Weight	0.7	—	4.6 (0.073)	—	9.0 (0.330)	—

Table 10. Continued:

Week beginning	Measure- ment	Age 0.3		Age 0.4		Age 0.5	
		Male	Female	Male	Female	Male	Female
9/05	Length	35.5 (1.603)	33.9 (0.710)	42.3 (1.181)	35.7 (3.819)	—	—
	Weight	14.8 (1.789)	13.4 (1.255)	19.4 —	16.8 (1.764)	—	—
9/12	Length	33.7 (0.840)	33.9 (0.614)	36.9 (1.233)	35.1 (0.976)	—	—
	Weight	12.8 (0.815)	13.9 (0.506)	18.1 (1.448)	17.4 (1.489)	—	—
9/19	Length	35.4 (0.630)	34.7 (0.504)	36.9 (1.257)	35.5 (0.686)	—	—
	Weight	14.4 (0.661)	14.4 (0.516)	17.0 (1.525)	17.2 (0.727)	—	—
9/26	Length	34.7 (0.922)	34.1 (0.924)	38.2 —	35.5 (2.160)	—	—
	Weight	12.5 (1.102)	13.9 (0.804)	18.5 —	16.4 (1.060)	—	—
10/03	Length	34.9 (0.668)	34.2 (0.371)	37.3 (0.732)	36.3 (0.724)	41.1 —	—
	Weight	13.7 (0.684)	14.0 (0.465)	18.0 (0.816)	17.8 (0.923)	22.0 —	—
10/10	Length	34.1 (0.828)	34.4 (0.565)	36.7 (1.066)	36.1 (0.605)	41.4 (1.693)	—
	Weight	13.3 (0.715)	14.2 (0.599)	17.1 (1.108)	17.6 (0.681)	22.7 (0.441)	—
10/17	Length	34.4 (0.769)	34.9 (0.549)	37.2 (0.855)	36.8 (1.168)	—	—
	Weight	13.4 (0.756)	13.8 (0.635)	18.1 (1.051)	19.6 (0.747)	—	—
10/24	Length	34.8 (0.647)	34.9 (0.524)	37.9 (0.856)	37.2 (0.655)	—	40.4 —
	Weight	13.5 (0.680)	14.2 (0.469)	18.9 (0.974)	18.4 (0.805)	—	25.8 —
10/31	Length	34.9 (0.858)	33.0 (1.571)	37.5 (2.239)	35.8 —	—	—
	Weight	13.2 (0.628)	12.5 (1.100)	17.6 (1.950)	17.0 —	—	—
11/07	Length	34.7 (1.179)	33.8 (0.498)	39.0 (2.035)	36.3 (1.116)	—	—
	Weight	13.5 (1.238)	13.8 (1.256)	19.5 (1.281)	18.2 (1.392)	—	—
11/14	Length	34.7 (1.259)	32.5 (2.323)	36.8 —	34.6 (0.314)	40.6 —	—
	Weight	13.5 (1.186)	12.3 (0.441)	16.5 —	16.5 —	24.3 —	—
11/21	Length	35.6 (1.176)	33.5 (0.825)	37.1 (1.512)	35.5 (0.800)	40.2 —	—
	Weight	14.5 (1.398)	13.0 (0.938)	17.5 (1.632)	17.1 (1.008)	22.9 —	—
Weighted seasonal mean	Length	34.6 (0.300)	34.3 (0.216)	37.2 (0.385)	36.0 (0.329)	41.2 (1.596)	40.4 —
	Weight	13.5 (0.287)	14.1 (0.232)	17.8 (0.421)	17.6 (0.354)	22.6 (0.415)	25.8 —
Sexes combined	Length	34.5 (0.184)		36.7 (0.266)		41.2 (1.596)	
	Weight	13.8 (0.187)		17.7 (0.277)		22.7 (0.415)	

Table 11. Summary of chinook salmon runs at the lower Platte River weir, 1979-88.

Year	Estimated number passed	Number harvested	Total run	Adult (ages 0.2-0.5)	
				Mean length (inches)	Mean weight (pounds)
1979	4,159	543	4,702	—	—
1980	2,736 ¹	1,699	4,435	32.8	14.5
1981	1,391	2,172	3,563	34.7	15.6
1982	1,393	1,606	2,999	34.4	14.0
1983	1,275	4,839	6,114	33.6	14.7
1984	1,566	4,358	5,924	34.8	14.8
1985	1,772	3,093	4,865	34.8	13.9
1986	2,469	2,678	5,147	33.6	12.9
1987	2,451	5,336	7,787	34.1	13.5
1988	460	4,186	4,646	34.4	14.0
1988	460	4,186	4,646	34.4	14.0

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

Table 12. Number of trout released upstream at the lower Platte River weir, fall 1988.¹

Date	Steelhead		Brown trout		Lake trout	
	Handled	Passed	Handled	Passed	Handled	Passed
9/06	9	—	4	—	—	—
9/09	1	—	0	—	—	—
Weekly total	10	0	4	0	0	0
9/12	5	—	1	—	—	—
9/13	15	—	—	—	—	—
9/14	11	—	—	—	—	—
9/15	16	—	—	—	—	—
9/17	19	—	1	—	—	—
Weekly total	66	0	2	0	0	0
9/20	95	—	1	—	—	—
9/21	44	—	1	—	—	—
9/22	—	37	—	1	—	—
9/23	—	1	—	—	—	—
9/24	—	21	—	—	—	—
9/25	—	12	—	—	—	—
Weekly total	139	71	2	1	0	0
9/26	—	32	—	1	—	—
9/27	—	8	—	—	—	—
9/28	—	27	—	2	—	—
9/29	—	6	—	—	—	—
9/30	—	22	—	—	—	—
10/01	—	26	—	1	—	—
10/02	—	22	—	—	—	—
Weekly total	0	143	0	4	0	—
10/03	27	19	—	1	—	—
10/04	6	25	—	—	—	—
10/05	—	20	—	—	—	—
10/06	—	25	—	—	—	—
10/07	10	1	—	—	—	—
10/08	—	7	—	—	—	—
10/09	—	3	—	—	—	—
Weekly total	43	100	0	1	0	0
10/10	19	2	—	—	—	—
10/11	—	2	—	1	—	—
10/12	24	1	—	3	—	—
Weekly total	43	5	0	4	0	0

Table 12. Continued:

Date	Steelhead		Brown trout		Lake trout	
	Handled	Passed	Handled	Passed	Handled	Passed
10/18	65	—	5	—	—	—
Weekly total	65	0	5	0	0	0
10/24	70	—	—	—	—	—
10/26	35	—	—	—	1	—
Weekly total	105	0	0	0	1	0
10/31	8	—	—	—	—	—
11/04	3	—	—	—	—	—
Weekly total	11	0	0	0	0	0
11/07	148	—	1	—	—	—
11/10	3	—	—	—	1	—
Weekly total	151	0	1	0	1	0
11/14	4	—	—	—	—	—
Weekly total	4	0	0	0	0	0
11/21	10	—	—	—	—	—
Weekly total	10	0	0	0	0	0
11/29	8	—	—	—	—	—
Weekly total	8	0	0	0	0	0
Annual total	655	319	14	10	2	0
Combined total	974		24		2	

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

Table 13. Annual fall runs of steelhead, brown trout, and lake trout handled during the harvest of coho salmon at the lower Platte River weir, 1980-88.

Year	Steelhead	Brown trout	Lake trout
1980	124	7	0
1981	682	78	0
1982	1,276	38	38
1983	1,545	58	7
1984	1,292	74	69
1985	1,189	79	20
1986	364	31	14
1987	1,079	23	4
1988	655	14	2

Table 14. Summary of the number and weight, by age and sex, of steelhead returning to the lower Platte River weir, fall 1988.

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 1.0						
9/05	3	3	—	—	3	3
9/12	10	12	—	—	10	12
9/19	28	38	—	—	28	38
10/03	47	74	—	—	47	74
10/10	2	4	—	—	2	4
10/17	1	2	1	2	2	4
10/24	—	—	—	—	—	—
10/31	—	—	1	2	1	2
11/07	4	7	—	—	4	7
11/14	—	—	—	—	—	—
11/21	—	—	1	3	1	3
11/28	—	—	—	—	—	—
Total	95	140	3	7	98	147
(Percent)	(9.8)	(2.6)	(0.3)	(0.1)	(10.1)	(2.8)
Age 2.0						
9/05	3	3	—	—	3	3
9/12	10	17	1	2	11	19
9/19	75	131	18	47	93	178
10/03	53	107	7	19	60	126
10/10	7	15	2	5	9	20
10/17	6	13	4	12	10	25
10/24	8	18	2	6	10	24
10/31	1	3	1	3	2	6
11/07	9	20	—	—	9	20
11/14	—	—	—	—	—	—
11/21	—	—	—	—	—	—
11/28	1	2	—	—	1	2
Total	173	329	35	94	208	423
(Percent)	(17.8)	(6.2)	(3.6)	(1.8)	(21.4)	(8.0)
Age 3.0						
9/05	—	—	—	—	—	—
9/12	—	—	—	—	—	—
9/19	—	—	—	—	—	—
10/03	—	—	—	—	—	—
10/10	—	—	—	—	—	—
10/17	—	—	—	—	—	—
10/24	—	—	—	—	—	—
10/31	—	—	—	—	—	—
11/07	—	—	—	—	—	—
11/14	—	—	—	—	—	—
11/21	—	—	—	—	—	—
11/28	1	3	—	—	1	3
Total	1	3	—	—	1	3
(Percent)	(0.1)	(0.1)	—	—	(0.1)	(0.1)

Table 14. Continued:

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 1.1						
9/05	1	3	—	—	1	3
9/12	2	10	4	24	6	34
9/19	14	74	11	72	25	146
10/03	20	94	13	64	33	158
10/10	1	5	2	9	3	14
10/17	3	15	9	41	12	56
10/24	2	10	10	52	12	62
10/31	—	—	—	—	—	—
11/07	17	65	4	19	21	84
11/14	—	—	—	—	—	—
11/21	—	—	—	—	—	—
11/28	1	6	—	—	1	6
Total	61	282	53	281	114	563
(Percent)	(6.3)	(5.3)	(5.4)	(5.3)	(11.7)	(10.6)
Age 2.1						
9/05	—	—	—	—	—	—
9/12	2	14	2	14	4	28
9/19	7	44	4	31	11	75
10/03	7	35	27	144	34	179
10/10	2	13	2	11	4	24
10/17	1	4	9	48	10	52
10/24	6	41	2	14	8	55
10/31	1	5	1	6	2	11
11/07	13	62	22	123	35	185
11/14	—	—	1	5	1	5
11/21	—	—	—	—	—	—
11/28	1	6	—	—	1	6
Total	40	224	70	396	110	620
(Percent)	(4.1)	(4.2)	(7.2)	(7.5)	(11.3)	(11.7)
Age 1.2						
9/05	1	10	—	—	1	10
9/12	8	70	4	30	12	100
9/19	7	60	7	54	14	114
10/03	33	265	33	253	66	518
10/10	10	83	6	48	16	131
10/17	3	21	3	24	6	45
10/24	16	133	19	151	35	284
10/31	—	—	—	—	—	—
11/07	26	202	13	114	39	316
11/14	—	—	—	—	—	—
11/21	2	19	1	7	3	26
11/28	—	—	—	—	—	—
Total	106	863	86	681	192	1,544
(Percent)	(10.9)	(16.2)	(8.8)	(12.8)	(19.7)	(29.1)

Table 14. Continued:

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 2.2						
9/05	—	—	1	7	1	7
9/12	12	99	4	35	16	134
9/19	18	170	7	54	25	224
10/03	33	215	13	116	46	331
10/10	2	18	6	46	8	64
10/17	4	32	12	107	16	139
10/24	16	123	16	124	32	247
10/31	1	9	4	29	5	38
11/07	17	133	17	113	34	246
11/14	—	—	3	22	3	22
11/21	5	38	1	7	6	45
11/28	2	16	—	—	2	16
Total	110	853	84	660	194	1,513
(Percent)	(11.3)	(16.1)	(8.6)	(12.4)	(19.9)	(28.5)
Age 1.3						
9/05	—	—	—	—	—	—
9/12	—	—	2	21	2	21
9/19	4	36	4	34	8	70
10/03	—	—	—	—	—	—
10/10	3	34	2	12	5	46
10/17	—	—	—	—	—	—
10/24	2	22	—	—	2	22
10/31	—	—	—	—	—	—
11/07	—	—	4	34	4	34
11/14	—	—	—	—	—	—
11/21	—	—	—	—	—	—
11/28	—	—	—	—	—	—
Total	9	92	12	101	21	193
(Percent)	(0.9)	(1.7)	(1.2)	(1.9)	(2.2)	(3.6)
Age 2.3						
9/05	—	—	—	—	—	—
9/12	3	32	1	9	4	41
9/19	—	—	7	54	7	54
10/03	—	—	—	—	—	—
10/10	—	—	—	—	—	—
10/17	6	63	1	9	7	72
10/24	8	85	—	—	8	85
10/31	—	—	1	8	1	8
11/07	—	—	4	32	4	32
11/14	—	—	—	—	—	—
11/21	—	—	—	—	—	—
11/28	1	8	1	8	2	16
Total	18	188	15	120	33	308
(Percent)	(1.8)	(3.5)	(1.5)	(2.3)	(3.4)	(5.8)

Table 15. Mean total length (inches) and weight (pounds), by age and sex, of steelhead passed at the lower Platte River weir, fall 1988. Two standard errors in parentheses.

Week beginning	Measurement	Age 1.0		Age 2.0		Age 3.0	
		Male	Female	Male	Female	Male	Female
9/05	Length	13.5 (0.118)	—	15.0 (1.575)	—	—	—
	Weight	1.0 (0.220)	—	1.1	—	—	—
9/12	Length	14.0 (0.701)	—	16.2 (0.676)	17.9	—	—
	Weight	1.2 (0.199)	—	1.7 (0.216)	2.4	—	—
9/19	Length	14.5 (0.891)	—	15.7 (0.448)	17.7 (0.686)	—	—
	Weight	1.4 (0.269)	—	1.7 (0.175)	2.6 (0.257)	—	—
10/03	Length	15.4 (0.644)	—	16.7 (0.714)	18.3	—	—
	Weight	1.6 (0.202)	—	2.0 (0.317)	2.6	—	—
10/10	Length	15.7 (0.945)	—	16.3 (1.441)	17.5 (0.355)	—	—
	Weight	1.8 (0.441)	—	2.1 (0.466)	2.4 (0.441)	—	—
10/17	Length	14.6	16.4	16.5 (1.442)	18.8 (1.613)	—	—
	Weight	1.5	2.2	2.1 (0.220)	2.9 (0.530)	—	—
10/24	Length	—	—	16.5 (1.134)	19.4	—	—
	Weight	—	—	2.2 (0.597)	2.9	—	—
10/31	Length	—	17.9	19.0	18.5	—	—
	Weight	—	2.2	2.9	2.6	—	—
11/07	Length	15.6	—	18.0 (0.355)	—	—	—
	Weight	1.8	—	2.2 (0.441)	—	—	—
11/14	Length	—	—	—	—	—	—
	Weight	—	—	—	—	—	—
11/21	Length	—	17.5	17.8	—	18.8	—
	Weight	—	2.9	2.4	—	3.1	—
Weighted seasonal mean	Length	14.9 (0.389)	17.3	16.3 (0.269)	18.1 (0.457)	18.8	—
	Weight	1.5 (0.121)	2.4	1.9 (0.115)	2.7 (0.170)	3.1	—
Sexes combined	Length	15.0 (0.380)	—	16.6 (0.279)	—	18.8	—
	Weight	1.5 (0.118)	—	2.0 (0.117)	—	3.1	—

Table 15. Continued:

Week beginning	Measurement	Age 1.1		Age 2.1		Age 1.2	
		Male	Female	Male	Female	Male	Female
9/05	Length	19.7	—	—	—	29.8	—
	Weight	3.1	—	—	—	9.7	—
9/12	Length	23.6 (2.008)	24.5 (1.442)	25.7 (2.992)	26.2 (1.890)	28.3 (0.886)	27.1 (0.612)
	Weight	5.1 (0.882)	6.0 (0.863)	7.2 (2.425)	7.1 (1.323)	8.7 (0.777)	7.4 (0.220)
9/19	Length	23.3 (2.573)	25.0 (2.164)	25.4 (2.047)	27.1 —	29.4 (0.630)	26.4 (1.969)
	Weight	5.3 (1.809)	6.5 (1.944)	6.3 (1.543)	7.7 —	8.6 (0.441)	7.7 (1.323)
10/03	Length	23.3 (0.920)	22.7 (1.535)	23.7 —	23.3 (1.948)	27.9 (0.261)	27.0 (0.897)
	Weight	4.7 (0.818)	5.0 (0.661)	5.1 —	5.3 (0.942)	8.0 (1.163)	7.7 (1.162)
10/10	Length	22.7 —	21.8 (1.772)	25.0 (0.236)	23.8 (0.473)	27.9 (0.757)	28.0 (0.624)
	Weight	5.1 —	4.5 (0.661)	6.4 (0.882)	5.5 —	8.3 (0.550)	8.1 (1.121)
10/17	Length	22.7 (1.693)	22.6 (1.008)	22.6 —	23.3 (2.236)	27.0 (0.866)	27.4 (0.394)
	Weight	5.0 (0.661)	4.6 (0.607)	4.4 —	5.3 (1.278)	7.2 (1.984)	8.0 (1.102)
10/24	Length	23.1 —	23.4 (1.309)	25.4 (0.637)	25.4 —	28.4 (0.532)	27.7 (0.801)
	Weight	4.9 —	5.2 (0.759)	6.9 (1.306)	7.1 —	8.3 (0.697)	8.0 (0.678)
10/31	Length	—	—	23.8	25.2	—	—
	Weight	—	—	4.6	5.7	—	—
11/07	Length	21.2 (0.620)	23.5 —	22.7 (1.068)	24.4 (1.965)	28.2 (0.923)	27.6 (1.969)
	Weight	3.8 (0.331)	4.9 —	4.8 (0.588)	5.6 (1.356)	7.8 (0.975)	8.7 (1.695)
11/14	Length	—	—	—	23.8	—	—
	Weight	—	—	—	5.1	—	—
11/21	Length	24.6	—	24.1	—	29.5 (0.669)	26.2
	Weight	6.2	—	5.5	—	9.5	7.5
Weighted seasonal mean	Length	22.6 (0.646)	23.4 (0.599)	24.1 (0.580)	24.1 (1.012)	28.2 (0.226)	27.3 (0.455)
	Weight	4.6 (0.476)	5.3 (0.425)	5.6 (0.420)	5.7 (0.578)	8.1 (0.407)	7.9 (0.495)
Sexes combined	Length	23.0 (0.438)	—	24.1 (0.615)	—	27.8 (0.269)	—
	Weight	4.9 (0.301)	—	5.6 (0.358)	—	8.0 (0.305)	—

Table 15. Continued:

Week beginning	Measurement	Age 2.2		Age 1.3		Age 2.3	
		Male	Female	Male	Female	Male	Female
9/05	Length	—	26.8	—	—	—	—
	Weight	—	7.5	—	—	—	—
9/12	Length	28.2 (1.154)	28.8 (0.545)	—	30.4 (1.732)	30.7 (0.381)	29.3
	Weight	8.3 (1.022)	8.8 (1.008)	—	10.3 (0.661)	10.5 (1.534)	9.5
9/19	Length	29.7 (0.749)	26.7 (0.669)	29.5	29.5	—	28.6 (4.528)
	Weight	9.4 (0.614)	7.7 (1.323)	9.0	8.6	—	7.7 (2.646)
10/03	Length	25.3 (2.210)	28.8 (1.260)	—	—	—	—
	Weight	6.5 (1.618)	8.9 (1.543)	—	—	—	—
10/10	Length	28.5 (0.394)	27.6 (0.931)	31.6 (2.039)	24.7 (11.614)	—	—
	Weight	9.0 (1.323)	7.7 (0.935)	11.3 (2.793)	6.2 (6.614)	—	—
10/17	Length	28.3 (1.137)	28.3 (0.824)	—	—	31.4 (1.090)	29.9
	Weight	7.9	8.9 (0.661)	—	—	10.4 (0.377)	9.5
10/24	Length	27.6 (1.232)	27.3 (1.118)	30.2	—	31.3 (1.184)	—
	Weight	7.7 (1.014)	7.8 (0.999)	11.0	—	10.6 (0.918)	—
10/31	Length	28.7	27.8 (1.237)	—	—	—	29.6
	Weight	8.8	7.3 (0.633)	—	—	—	8.2
11/07	Length	27.9 (1.369)	26.8 (0.689)	—	29.1	—	29.9
	Weight	7.8 (0.927)	6.7 (0.832)	—	8.4	—	7.9
11/14	Length	—	25.9 (0.460)	—	—	—	—
	Weight	—	7.3 (1.548)	—	—	—	—
11/21	Length	27.1 (1.261)	27.4	—	—	28.7	27.6
	Weight	7.7 (0.745)	6.8	—	—	7.7	8.2
Weighted seasonal mean	Length	27.4 (0.665)	27.6 (0.285)	30.4	28.7	31.1 (0.452)	29.1 (3.826)
	Weight	7.8 (0.488)	7.9 (0.325)	10.2	8.4	10.4 (0.315)	8.1 (2.236)
Sexes combined	Length	27.5 (0.487)	—	29.4	—	30.2 (0.996)	—
	Weight	7.8 (0.362)	—	9.2 (0.204)	—	9.3 (0.592)	—

¹Computer program would handle only 12 weeks, so the data for the 13th week was added to the 12th for computation.

Table 16. Age composition, mean length (inches), and mean weight (pounds) summarized by summers growth in Lake Michigan, for steelhead trout sampled at the lower Platte River weir, fall 1988.

Age	Summers in lake	Percent of sample	Mean length (inches)	Mean weight (pounds)
_.0	1	31.5	16.1	1.8
_.1	2	23.0	23.5	5.2
_.2	3	39.6	27.8	7.9
_.3	4	5.6	29.9	9.3
All			23.2	5.4

Table 17. Number of coho salmon harvested at the upper Platte River weir, fall 1988.

Date	Jacks	Males	Females		Mortalities
			Round	Stripped	
9/08	91	0	2	0	0
Weekly total	91	0	2	0	0
9/13	541	8	18	0	0
9/16	437	13	22	0	0
Weekly total	978	21	40	0	0
9/19	417	0	0	0	0
9/21	36	0	0	0	0
9/22	480	6	9	0	0
Weekly total	933	6	9	0	0
9/27	404	14	2	0	6
Weekly total	404	14	2	0	6
10/17	690	579	46	534	42
10/21	202	232	44	430	12
Weekly total	892	811	90	964	54
10/28	77	85	14	154	4
Weekly total	77	85	14	154	4
11/03	12	3	1	13	0
Weekly total	12	3	1	13	0
11/14	23	22	30	0	10
Weekly total	23	22	30	0	10
11/21	0	0	0	0	71
Weekly total	0	0	0	0	71
Annual total	3,410	962	188	1,131	145

Table 18. Weight (pounds) of coho salmon harvested at the upper Platte River weir, fall 1988.

Date	Jacks	Males	Females		Mortalities
			Round	Stripped	
9/08	105	0	8	0	0
Weekly total	105	0	8	0	0
9/13	617	34	83	0	0
9/16	656	50	108	0	0
Weekly total	1,273	84	191	0	0
9/19	500	0	0	0	0
9/21	43	0	0	0	0
9/22	634	33	29	0	0
Weekly total	1,177	33	29	0	0
9/27	485	55	6	0	26
Weekly total	485	55	6	0	26
10/17	897	3,706	267	2,403	256
10/21	263	1,485	255	1,935	73
Weekly total	1,160	5,191	522	4,336	329
10/28	100	544	81	693	24
Weekly total	100	544	81	693	24
11/03	12	18	3	57	0
Weekly total	12	18	3	57	0
11/14	30	141	179	0	62
Weekly total	30	141	179	0	62
11/21	0	0	0	0	440
Weekly total	0	0	0	0	440
Annual weight	4,342	6,066	1,019	5,086	881
Mean weight	1.3	6.3	5.4	4.5	6.1

Table 19. Number and weight (pounds) of chinook salmon (jacks and adults combined) harvested at the upper Platte River weir, fall 1988.

Date	Males		Females		Mortality		Total	
	Number	Weight	Number	Weight	Number	Weight	Number	Weight
9/13	1	9	0	0	0	0	1	9
Weekly total	1	9	0	0	0	0	1	9
9/19	1	10	0	0	0	0	1	10
9/22	3	23	0	0	0	0	3	23
Weekly total	4	33	0	0	0	0	4	33
9/27	11	99	2	26	10	120	23	245
Weekly total	11	99	2	26	10	120	23	245
10/17	85	690	17	214	42	483	144	1,387
10/21	44	303	6	76	4	42	54	421
Weekly total	129	993	23	290	46	525	198	1,808
10/28	7	50	1	13	6	69	14	132
Weekly total	7	50	1	13	6	69	14	132
11/03	2	26	0	0	0	0	2	26
Weekly total	2	26	0	0	0	0	2	26
11/21	0	0	0	0	21	210	21	210
Weekly total	0	0	0	0	21	210	21	210
Annual total	154	1,210	26	329	83	924	263	2,463
Mean weight		7.9		12.7		11.1		9.4

Report approved by W. C. Latta

Word processing by G. M. Zurek