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FISHERIES DIVISION

TECHNICAL REPORT

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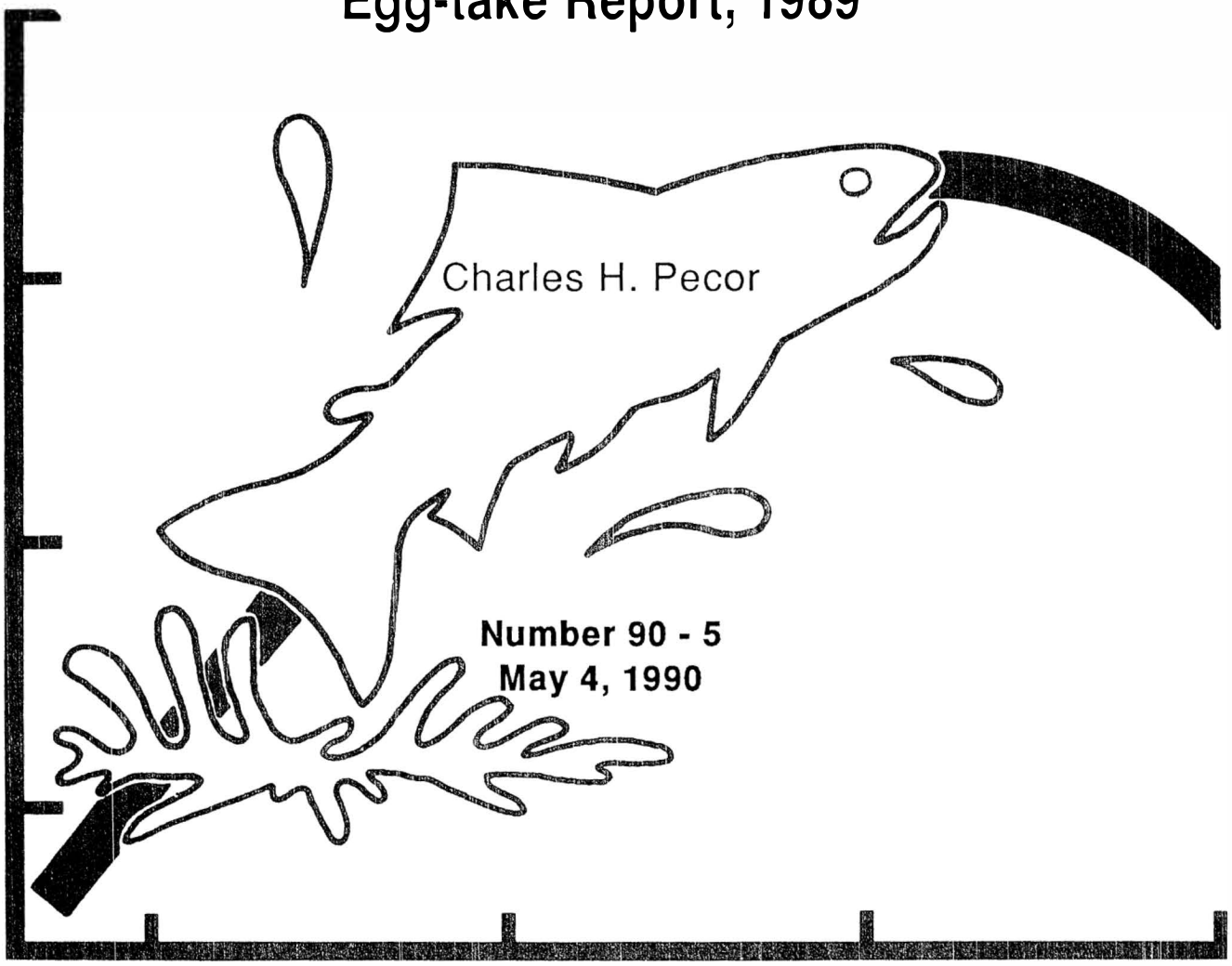

Michigan Department of Natural Resources

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FISHERIES DIVISION

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PLATTE RIVER HARVEST WEIR AND COHO SALMON EGG-TAKE REPORT, 1989

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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 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 and 1989 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 court order for the 1988 salmon run is described in the 1988 weir report (Pecor 1989). During 1989, the court

[1]Age 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.

allowed the passage of the first 20,000 adult salmon and then 1,000 a week up to October 15. The weir was operated until December 1, about 1 month longer than normal. The court also ordered that: 1) dead salmon be picked up from the lake and river weekly, 2) temporary blocking weirs be installed on Carter Creek, North Branch Platte River and Miner's Bay Creek, and 3) all tributaries to the lake and river between Platte Lake outlet and the hatchery be checked for salmon until November 20.

Salmon blocked by the lower weir (including surplus coho; a moderate run of chinook; and, in recent years, a few pink salmon) are collected and harvested. Coho jacks (age-1.0) were blocked for the first time by the addition of smaller-spaced (15/16 inch) 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 1989 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 excellent. The salmon stayed in Loon Lake and the lower Platte River between Indian Hill Road and Platte Lake for an extended period of time. One resort owner reported that his clients caught 431 coho from the river near his resort.

Lower Weir Operation, 1989

The weir grates were installed on August 29. On September 5, additional smaller spaced weir grates were placed on top of the existing grates to prevent coho jacks from escaping upstream without being counted. Beginning on August 30, the weir gate was closed at night and the accumulated fish were processed the next morning. The weir gate was left open during the day. National Park Service personnel assisted in this operation by closing the weir gate at night. The weir was manned 24 hours per day from September 9 to November 10 by Fisheries Division personnel. Tempotech Industries, who have contracted with the State to harvest surplus salmon, operated the weir from November 10 to December 1, but only on those days when harvest occurred.

A total of 24,333 salmonids (salmon plus trout) were actually counted through the weir between September 2 and October 14. All fish swimming through the weir were counted by species. Separate counts were made for coho and chinook jacks but chinook jacks were difficult to identify and were probably counted as adult coho in most cases (Table 2). The coho and chinook runs peaked on September 23 and October 15, respectively (Figures 2 and 3).

Harvesting began September 4 and continued intermittently until December 1. Salmon were actually harvested on 26 days during this period but on only 11 of the harvest days did salmon numbers exceed 200 fish. Only 4 full semitrailer loads and 25 partial loads were sent to Tempotech Industries in Hart, Michigan. All trout collected during harvesting were transferred upstream from the weir.

Coho salmon

The harvest of coho salmon began on September 11 and ended on December 1, a period of 82 days. However, 92% of the coho were harvested between September 23 and September 26 (Figure 2). A total of 28,543 adult coho weighing 183,866 pounds and 589 jack coho weighing 977 pounds were harvested (Table 3). Mean weights of the harvested coho adults and jacks were 6.3 and 1.6 pounds, respectively (Table 4). An additional 21,250 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 49,793 adult coho in the lower Platte River represented a return of only 5.4% of the 1988 smolt plant and was, for the fifth 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. Low returns were also reported for the Little Manistee River (Ralph Hay, Michigan Department of Natural Resources, personal communication) and other streams tributary to Lake Michigan. Although returns to the weir were relatively low, the spring fishery in southern Lake Michigan for coho was spectacular.

Most 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 26.9 inches and 6.7 pounds and females averaged 25.7 inches and 6.1 pounds.

During harvest operation 589 age-1.0 coho were harvested. All but one fish were males (jacks). They had an average length of 15.8 inches and average weight of 1.6 pounds (Table 4). Two age-1.2 coho were observed in the harvest but no data were collected.

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

During the 13 weekly biological surveys, a total of 2,109 adult coho were sampled for biological data. Most (1,113 fish) of the fish in the biological samples were adipose-clipped fish containing coded-wire microtags in their snouts and were part of a diet study conducted at Platte River Hatchery. The adipose-clipped fish were selected for the biological samples to assist with the recovery of heads containing the microtags. Eleven fresh and nine healed lamprey wounds were observed on the coho in the biological samples and 3 fish had fin clips other than adipose. The fin clips were adipose (Ad, 14.75% of the fish harvested), right pectoral (RP, 1 fish), adipose-right pectoral (AdRP, 1 fish) and adipose-right ventral (AdRV, 1 fish). Ad-RP clip was assigned to Illinois plants. However, the RP and Ad-RV clips were not assigned to coho in any of the Great Lakes (Great Lakes Fish Commission, personal communication).

In summary, a total of 49,793 adult coho salmon reached the lower Platte River weir during the fall of 1989--21,734 (43.6%) males and 28,059 (56.4%) females (Table 5). The total adult run was 5.4% of the 1988 plant of 923,544 age-1.0 smolts (Table 6).

Chinook salmon

The chinook salmon run in the lower Platte River spanned the period from September 11 to December 1, although 67% of the run was harvested between October 2 and October 15 (Figure 3). A total of 1,708 chinook, including 1,387 adults (age 0.2 to 0.5) and 321 jacks (age 0.0 and 0.1), weighing 20,586 pounds were harvested (Table 7). The average weights of adults and jacks were 14.0 and 4.4 pounds, respectively. The average adult was the same weight in 1989 as in 1988. An additional 191 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.

Biological data were collected from 551 adult chinook randomly sampled during the harvest operation. In addition, biological data were collected from 243 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 Ludington, Manistee, Frankfort, and Grand Traverse Bay, for the months August through October 1989. 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 1989 chinook harvest was 0.2% age 0.0, 17.4% age 0.1, 7.6% age 0.2, 46.2% age 0.3, 28.1% age 0.4, and 0.4% age

0.5 (Table 8). Average lengths and weights for each age group are presented in Table 10.

Eleven chinook with lamprey wounds, three fresh and eight healed, were recorded in the biological samples. Lamprey wounding was present on 1.3% of the chinook examined, compared to 1.6% for 1988. Seven fin-clipped jack chinook were observed in the biological samples, four had a both ventral (BV) clip, one an Ad clip, one a right ventral (RV) clip, and one a left ventral (LV) clip. The BV-clipped fish were planted in Lake Huron at Nunn's Creek, the RV-clipped fish was planted by Indiana in Lake Michigan, and the Ad-clipped fish contained a microtag indicating it was a sterilized fish planted by Wisconsin in Lake Michigan. All were planted in 1988. The LV-clipped fish was a wild smolt captured and released. in the Pere Marquette River during a smolt study conducted in 1988.

The total run of 1,899 chinook at the lower weir in 1989 was the lowest return for the 10-year period 1979-89 (Table 11). The average return for this period was 5,018 chinook. The average weight of adult chinooks in 1989 was the same as 1988 (Table 11). Adult males and females comprised 62.6% and 37.4% of the run, respectively. All chinook were either strays from other plants, escapees from the Platte River Hatchery, or the resuit of natural reproduction since chinook are not planted in the Platte River.

Pink salmon

The pink salmon run in the Platte did not develop as expected. Since pink salmon normally run during odd-number years and the runs have increased from 2 in 1981 to 137 in 1987, a relatively large run was expected. However, only three pink salmon were harvested and one passed upstream during 1989. The three pink salmon harvested included two males and one female, and had an average length and weight of 19.8 inches and 2.4 pounds, respectively.

Steelhead trout

The peak of the steelhead run occurred between October 23 and November 3 (Table 12). During the harvest operation 847 steelhead were handled. This was higher than the 655 handled in 1988 but still lower than most years between 1982 and 1987 (Table 13). An additional 126 steelhead were passed upstream through the open weir gate and the total steelhead run in the lower Platte River was 973 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, were collected from 431 steelhead. All scale samples (including steelhead and brown trout) were aged by District 6 personnel at Harrietta warehouse. A total of 11 age groups were recorded in 1989 (Table 14) as compared to nine in 1988 and eight in 1987. Fish in age-group 1.2 were the most numerous (26.3%) and fish in age-group 2.4 and 2.5 were the least numerous (0.1%). Most (58.8%) of the steelhead smolted after one summer in the river and 41.1% smolted after two summers in the river. In 1988, 56% smolted after one summer in the river. The average lengths and weights for each age group are shown in Table 15.

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 one, two, or three summers (age _.0, _.1, and _.2) in Lake Michigan were almost all equally represented in the sample (30.8%, 31.3%, and 30.4%, respectively). Fish which had spent three, four, and five summers in Lake Michigan were represented at lower numbers (Table 16).

Overall, steelhead in 1989 had a mean length of 22.9 inches and a mean weight of 5.5 pounds, and consisted of 51.7% males and 48.3% females. Steelhead scales showing one or more spawning checks accounted for 13.7% of the sample.

No lamprey scars were observed on any steelhead. One steelhead had an adipose (Ad) fin clip. The Ad-clipped fish was planted in one of four Michigan rivers (Manistee, White, Boardman, or Betsie) in 1986.

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 29 brown trout and 3 lake trout were counted and transferred upstream in 1989. Four additional brown trout were passed upstream when the coho salmon were passed. This gives total runs in 1989 of 33 brown trout and 3 lake trout.

Biological information was obtained from 29 brown trout. Six age groups were identified: age-1.0 (2 fish), age-2.0 (2 fish), age-1.1 (16 fish), age-2.1 (9 fish), age 1.2 (3 fish), age-2.2 (1 fish). Lengths ranged from 10.0 to 26.9 inches (average 21.0) and weights ranged from 0.6 to 8.5 pounds (average 4.8). The sex ratio was 27.6% male to 72.4% female.

Only three lake trout were passed upstream, one each on November 3, 6, and 9. The first two lake trout passed upstream were marked with a both ventral (BV) clip and scale analysis indicated these fish were age-7. Both age and fin clip correspond to a fall fingerling plant made at South Fox Island Shoal, Lake Michigan, in 1982. These fish had an average length and weight of 29.2 inches and 8.2 pounds, respectively. The last lake trout passed upstream was not marked and was age-5. This fish was 27 inches long and weighed 5.5 pounds. All three lake trout were males.

Upper Weir Operation, 1989

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 September 1 and the facility was fully operational by September 2.

Coho salmon

The first coho salmon (2 adults and 10 jacks) reached the maturation ponds on September 8. The first large group of coho reached the upper weir on October 2 and a second large group of fish arrived on October 15. The fish stayed in the river system for an extended period of time. All six ponds were near capacity by October 16.

Egg-taking operations started on October 16. A total of 11,309,191 eggs were collected and fertilized during eight working days between October 16 and October 26. Of these eggs, 7,038,900 (62.2%) were for in-state rearing and 4,270,291 (37.8%) were for out-of-state commitments (i.e., Indiana, 0.65 million; Illinois, 1.1 million; and Pennsylvania, 2.5 million).

The 1989 egg-take was modified to allow inspections for bacterial kidney disease (BKD) in potential spawners. The eggs from any coho exhibiting gross symptoms of BKD were discarded and all materials coming in contact with the infected fish were disinfected in an iodine solution. Approximately 8.4% of the females used in the egg-take had visible BKD symptoms. In almost all cases the spleen was the primary organ which showed symptoms. This procedure identified only fish with visible BKD symptoms and not fish with lesser infections of BKD. Males were not inspected. Egg quality was good throughout the egg-take operations. Water temperatures at the lower weir were above 16°C (61°F) during the major run into the lower river but below 14°C (57°F) at the hatchery during the maturation period.

The eye-up rate of coho salmon eggs incubated at the Platte River Hatchery reflected the good quality of the 1989 eggs. The average eye-up rate for the four egg-take days at Platte River was 75.9%, with a daily range from 72.6% to 80.7%. Coho eye-up rates during the previous 9 years ranged from 50.4% (1984) to 82.2% (1980) and averaged 69.9%.

A total of 4,487 female coho salmon were stripped to collect the 11.3 million eggs (Table 17), an average of 2,520 eggs per female. The fecundity of individual fish was not checked. 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 15,480 coho, including 3,149 (20.3%) jacks and 12,331 (79.7%) adults (Table 17). The number of adults harvested at the upper weir was only 58% of the estimated total number of adults passed at the lower weir. In other words, 8,919 (42%) adult coho salmon that were passed at the lower weir did not reach the upper weir. Between 1983 and 1987, 67% to 76.5% of the coho passed reached the upper weir. During 1988 and 1989, only 50% and 58%, respectively, reached the upper weir. Both of these years correspond to years that a portion of the coho for Platte River were planted at the lower weir.

The adult run at the upper weir consisted of 43.7% male and 56.3% female, based on the actual numbers of fish harvested. Males averaged 25.7 inches in length and 5.5 pounds in weight, and females averaged 25.5 inches in length and 5.8 pounds in weight. Overall, the adult coho averaged 25.6 inches and 5.7 pounds. Coho at the upper weir were smaller in both length and weight than coho harvested at the lower weir. Eighty-five percent of the adult coho handled at the upper weir were used in the egg-take operations. In all (adults and jacks), 68,362 pounds of coho salmon were harvested at the upper weir (Table 18).

Adipose-clipped coho accounted for 15.3% of the adult coho harvested at the upper weir. Again these fish were part of a diet study and were planted in the Platte River. All Ad-clipped coho were weighed, measured, sexed, and snouts collected for microtag recovery. Results of this study will be reported under a separate cover.

A total of 3,149 jack coho (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 3,738. This represents 0.5% of the total coho smolt plant in 1989 and 7.0% of the total run of 53,531 coho (adults and jacks) in the Platte River during 1989.

The weighted mean length and weight of jacks for 1989 were 15.6 inches and 1.5 pounds. In 1986, 1987, and 1988 the jacks averaged 15.4, 15.8, and 15.3 inches in length and 1.5, 1.6, and 1.3 pounds in weight, respectively.

Chinook salmon

Only 67 chinook were harvested at the upper weir (Table 19). The run was composed of 28.4% adult males, 61.2% jack males, and 10.4% adult females. The average weight of all chinook (adults and jacks combined) was 8.4 pounds. The total harvest of 67 fish was 35.1% of the number of chinook passed at the lower weir.

Summary

The 1989 run of coho salmon in the Platte River consisted of 49,793 adults (43.6% male and 56.4% female). Mean sizes at the lower weir were 26.9 inches and 6.7 pounds for adult males and 25.7 inches and 6.1 pounds for adult females. Mean sizes at the upper weir were 25.7 inches and 5.6 pounds for adult males, 25.5 inches and 5.8 pounds for adult females, and 15.6 inches and 1.5 pounds for jacks.

A grand total of 44,612 coho adults and jacks weighing 253,205 pounds were harvested. A total of 29,132 adults and jacks weighing 184,843 pounds were harvested at the lower weir and 15,480 adults and jacks weighing 68,362 pounds were harvested at the upper

weir. The upper weir harvest included 4,487 stripped females weighing 19,723 pounds, from which 11.3 million eggs were taken. Egg quality was good as reflected in an average eye-up of 75.9% for eggs collected at the Platte River Hatchery.

The 1989 run of 1,899 chinook (69.2% males and 30.8% females) was the lowest return during the period 1979 to 1989. Ultimately, 1,775 of these chinook (93.5%, 21,151 pounds) were harvested--1,708 at the lower weir and 67 at the upper weir. The age composition of the chinook run was 0.2%, age-0.0 jacks; 17.4%, age-0.1 jacks; 7.6%, age-0.2 adults; 46.2%, age-0.3 adults; 28.1%, age-0.4 adults; and 0.4%, age-0.5 adults. The mean weights of age groups 0.0 through 0.5 were 0.7, 4.4, 8.3, 12.9, 17.1, and 25.3 pounds, respectively.

The 1989 fall steelhead run of 973 fish (51.7% males and 48.3% females) was almost identical to the 1988 run (974 fish) but much lower than runs prior to 1988. Eleven different age groups were identified but fish which had spent two or three summers in Lake Michigan (age groups 1.1, 2.1, 1.2, and 2.2) accounted for 61.7% of the run. Overall the steelhead averaged 22.9 inches long and weighted 5.5 pounds.

Other salmonids passed upstream or harvested included 33 brown trout, 3 lake trout, and 4 pink salmon.

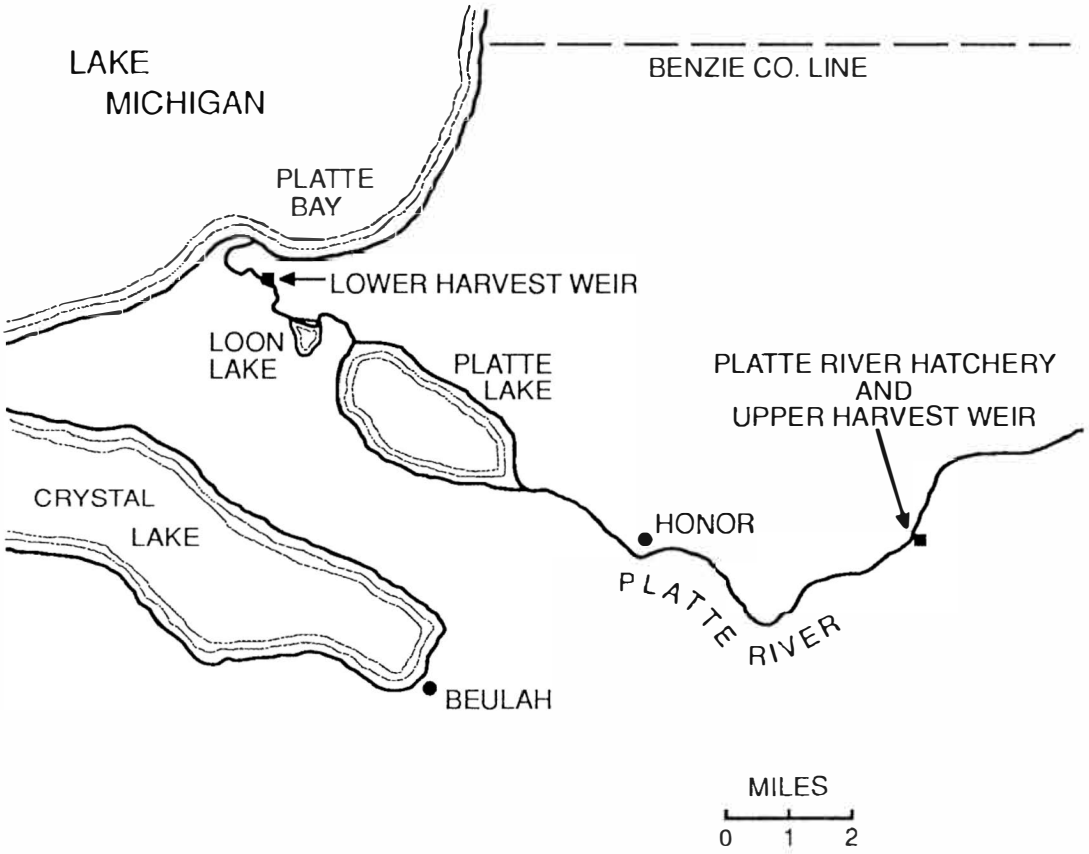

Figure 1.—Location of the Platte River Hatchery and the upper and lower harvest weirs.

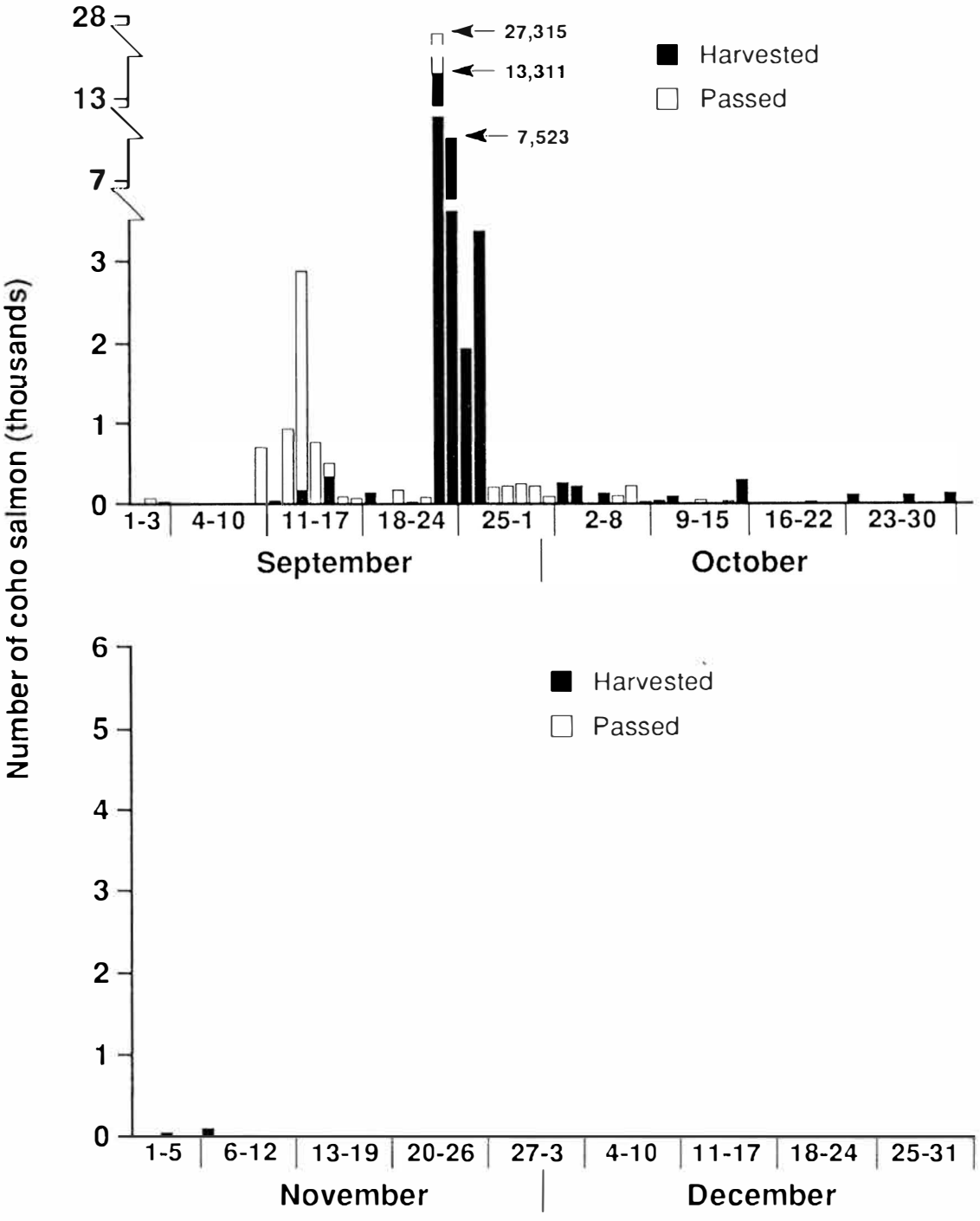

Figure 2.—Periodicity of coho salmon passed upstream or harvested at the lower Platte River weir, fall 1989.

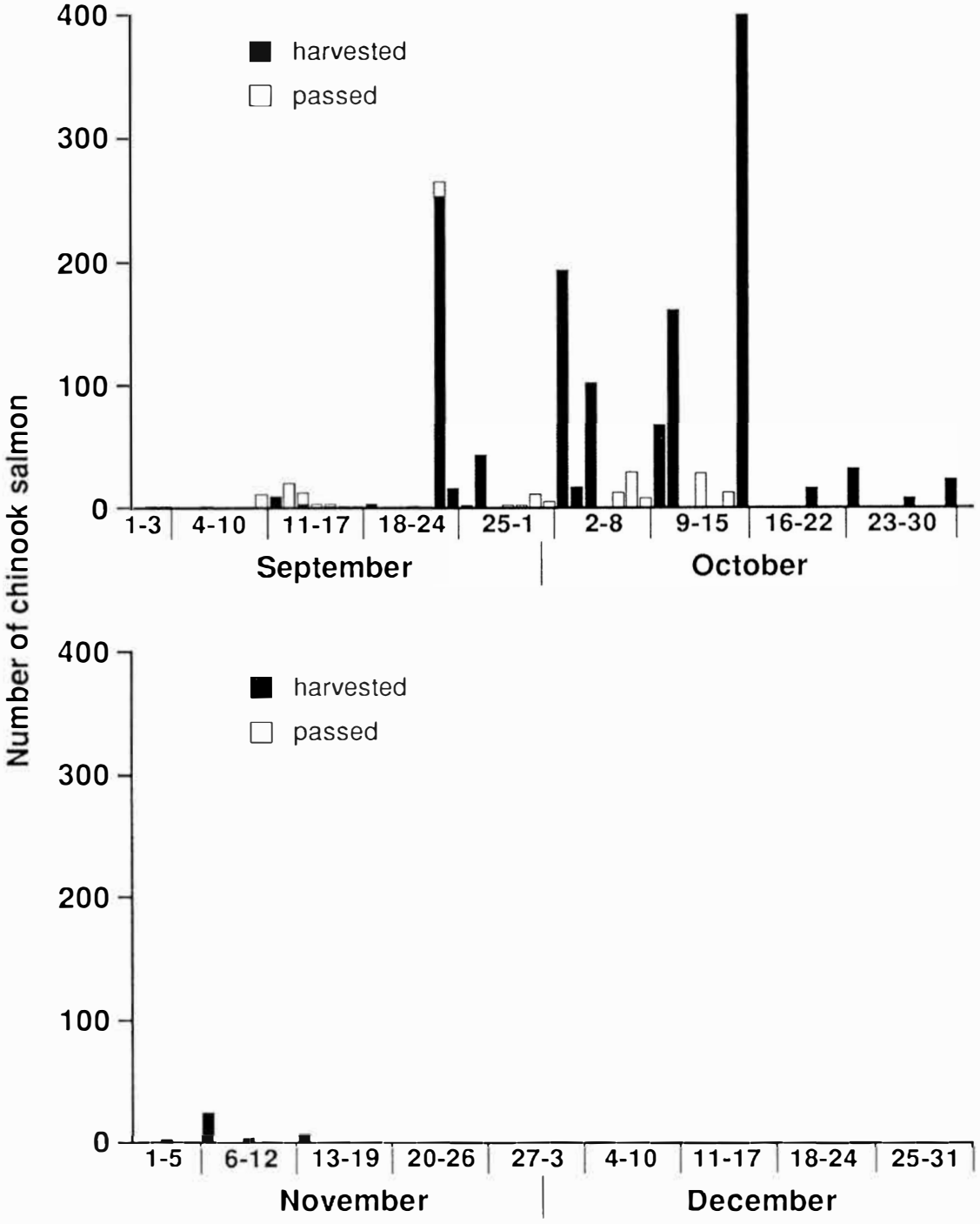

Figure 3.—Periodicity of chinook salmon passed upstream or harvested at the lower Platte River weir, fall 1989.

Table 1.—Number of anadromous salmonids planted in the Platte River, 1966-89.

Year	Coho (yearlings)	Chinook (spring fingerlings)	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	---	---	---
1989	806,190	---	---	---
Total	17,698,252	94,130	394,910	7,308

Table 2.—Total number of adult coho, jack coho, and chinook salmon passed upstream at the lower Platte River weir, fall 1989.

Date	Coho adults	Coho jacks	Chinook
9/02	71	92	1
9/03	25	14	1
Weekly total	96	106	2
9/04	9	3	0
9/06	3	0	2
9/10	703	524	14
Weekly total	715	527	16
9/12	934	497	17
9/13	2,707	514	9
9/14	769	89	3
9/15	166	19	3
9/16	93	5	1
9/17	69	7	1
Weekly total	4,738	1,131	34
9/18	7	0	0
9/20	171	103	0
9/21	26	6	1
9/22	82	52	0
9/23	14,004	746	12
Weekly total	14,290	907	13
9/27	203	14	0
9/28	221	19	3
9/29	250	22	12
9/30	222	12	3
10/01	88	3	5
Weekly total	984	70	23
10/06	97	13	17
10/07	216	1	34
10/08	29	3	8
Weekly total	342	17	59
10/12	52	7	28
10/14	33	0	16
Weekly total	85	7	44
Annual total	21,250	2,765	191

Table 3.—Summary of adult and jack coho salmon harvested at the lower Platte River weir, fall 1989.

Date	Coho harvested: Jacks age 1.0	Coho harvested: Adult age 1.1	Mortalities	Cumulative total	total weight (pounds)	JackAdult total weight (pounds)
9/11	57	43	1	101	80	198
9/13	37	171	0	309	59	992
9/15	44	337	3	693	70	1,972
Weekly total	138	551	4		209	3,162
9/18	35	131	0	859	63	851
9/23	82	13,311	0	14,252	148	86,521
9/24	135	7,523	21	21,931	243	49,036
Weekly total	252	20,965	21		454	136,408
9/25	47	1,938	0	23,916	75	12,597
9/26	111	3,375	2	27,404	178	21,951
Weekly total	158	5,313	2		253	34,548
10/02	4	261	12	27,681	7	1,529
10/03	6	221	5	27,913	11	1,266
10/05	2	132	6	28,053	4	773
Weekly total	12	614	23		22	3,568
10/09	3	40	2	28,098	4	248
10/10	2	91	1	28,192	3	543
10/15	1	298	9	28,500	1	1,811
Weekly total	6	429	12		8	2,602
10/20	0	28	2	28,530	0	171
Weekly total	0	28	2		0	171
10/23	0	110	3	28,643	0	678
10/24	2	115	6	28,766	2	726
Weekly total	2	225	9		2	1,404
10/30	7	134	1	28,908	9	796
11/03	7	53	1	28,969	9	319
Weekly total	14	187	2		18	1,115
11/06	3	96	2	29,070	5	549
11/09	2	18	3	29,093	3	118
Weekly total	5	114	5		8	667

Table 3.—Continued:

Date	Coho harvested: Jacks age 1.0	Coho harvested: Adult age 1.1	Mortalities	Cumulative total	total weight (pounds)	JackAdult total weight (pounds)
11/13	0	13	5	29,111	0	103
Weekly total	0	13	5		0	103
11/21	2	2	0	29,115	3	11
Weekly total	2	2	0		3	11
11/27	0	1	0	29,116	0	6
12/01	0	16	0	29,132	0	101
Weekly total	0	17	0		0	107
Annual total	589	28,458	85	29,132	977	183,866

Table 4.—Mean total length (inches) and weight (pounds), by age and sex, of coho salmon harvested at the lower Platte River weir, fall 1989. Two standard errors in parentheses.

Week beginning	Measure-ment	Age 1.0		Age 1.1	
		Male	Female	Male	Female
9/04	Length	15.2	---	23.1	23.9
		(0.257)	---	(1.196)	(1.002)
	Weight	1.4	---	4.2	4.8
		(0.087)	---	(0.637)	(0.582)
9/11	Length	15.6	---	25.9	25.1
		(0.303)	---	(0.485)	(0.341)
	Weight	1.6	---	6.0	5.7
		(0.099)	---	(0.346)	(0.240)
9/18	Length	16.2	---	27.1	25.8
		(0.169)	---	(0.257)	(0.206)
	Weight	1.8	---	6.8	6.2
		(0.060)	---	(0.198)	(0.161)
9/25	Length	16.1	17.7	27.2	26.0
		(0.275)	---	(0.360)	(0.221)
	Weight	1.6	2.2	6.8	6.2
		(0.100)	---	(0.277)	(0.178)
10/02	Length	16.9	---	26.2	25.0
		(0.583)	---	(0.590)	(0.459)
	Weight	1.8	---	6.0	5.4
		(0.191)	---	(0.413)	(0.301)
10/09	Length	15.2	---	26.4	25.5
		(1.313)	---	(0.512)	(0.311)
	Weight	1.4	---	6.0	5.8
		(0.450)	---	(0.376)	(0.255)
10/16	Length	---	---	26.4	25.5
		---	---	(1.342)	(0.606)
	Weight	---	---	5.7	5.6
		---	---	(1.025)	(0.424)
10/23	Length	15.6	---	26.8	25.8
		(0.669)	---	(0.475)	(0.354)
	Weight	1.1	---	6.2	5.8
		(0.441)	---	(0.355)	(0.247)
10/30	Length	15.6	---	26.9	25.6
		(0.609)	---	(0.595)	(0.357)
	Weight	1.3	---	6.2	5.7
		(0.222)	---	(0.434)	(0.278)
11/06	Length	16.2	---	26.2	25.4
		(0.648)	---	(0.766)	(0.493)
	Weight	1.5	---	5.7	5.6
		(0.225)	---	(0.545)	(0.323)
11/13	Length	16.3	---	27.8	25.0
		(0.394)	---	(0.765)	(1.356)
	Weight	1.4	---	6.7	5.2
		(0.220)	---	(0.756)	(0.792)
11/27	Length	---	---	26.9	26.0
		---	---	(0.670)	(0.355)
	Weight	---	---	6.2	6.8
		---	---	(0.641)	(1.323)
Weighted seasonal mean	Length	15.8	17.7	26.9	25.7
		(0.135)	---	(0.199)	(0.149)
	Weight	1.6	2.2	6.7	6.1
		(0.045)	---	(0.153)	(0.116)
Sexes combined	Length	15.8		26.2	
		(0.135)		(0.127)	
	Weight	1.6		6.3	
		(0.045)		(0.096)	

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), fall 1989.

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 1.0						
9/04	633	869	---	---	633	869
9/11	1,269	2,003	---	---	1,269	2,003
9/18	1,159	2,044	---	---	1,159	2,044
9/25	223	366	5	11	228	377
10/02	29	53	---	---	29	53
10/09	13	18	---	---	13	18
10/23	2	2	---	---	2	2
10/30	14	18	---	---	14	18
11/06	5	8	---	---	5	8
11/13	2	3	---	---	2	3
Total	3,349	5,384	5	11	3,354	5,395
(Percent)	(6.3)	(1.7)	(<0.1)	(<0.1)	(6.3)	(1.7)
Age 1.1						
9/04	321	1,345	490	2,355	811	3,700
9/11	1,899	11,408	3,394	19,355	5,293	30,763
9/18	16,093	110,141	19,183	118,004	35,276	228,145
9/25	2,566	17,379	3,733	23,289	6,299	40,668
10/02	404	2,417	575	3,112	979	5,529
10/09	202	1,212	324	1,874	526	3,086
10/16	13	75	17	96	30	171
10/23	102	634	132	770	234	1,404
10/30	67	418	122	697	189	1,115
11/06	45	254	74	413	119	667
11/13	7	47	13	67	20	114
11/27	15	93	2	14	17	107
Total	21,734	145,423	28,059	170,046	49,793	315,469
(Percent)	(40.9)	(45.3)	(52.8)	(53.0)	(93.7)	(98.3)

Table 6.—Summary of adult (age 1.1) coho salmon runs at the lower Platte River weir, 1979-89.

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	516,202	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	1,000,000	15.6	26.6	6.9
1984	36,572	105,530	142,102	953,499	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
1989	21,250	28,543	49,793	923,544	5.4	26.2	6.3

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

Table 7.—Summary of chinook salmon harvested at the lower Platte River weir, fall 1989.

Date	Chinook harvested: Jacks ages 0.0-1.0	Chinook harvested: Adults ages 0.2-0.5	Mortalities	Cumulative total	Total weight (pounds)
9/11	3	9	0	12	149
9/13	2	3	0	17	64
9/15	0	1	0	18	19
Weekly total	5	13	0		232
9/18	0	3	0	21	35
9/23	36	253	0	310	3,862
9/24	5	14	0	329	226
Weekly total	41	270	0		4,123
9/25	2	2	0	333	28
9/26	23	44	0	400	647
Weekly total	25	46	0		675
10/02	39	193	0	632	2,814
10/03	11	17	0	660	282
10/05	21	102	0	783	1,355
Weekly total	71	312	0		4,451
10/09	20	68	0	871	1,037
10/10	38	161	0	1,070	2,403
10/15	74	400	1	1,545	5,923
Weekly total	132	629	1		9,363
10/20	16	16	0	1,577	294
Weekly total	16	16	0		294
10/23	16	32	0	1,625	509
10/27	2	8	0	1,635	101
Weekly total	18	40	0		610
10/30	4	19	0	1,658	253
11/03	5	3	0	1,666	56
Weekly total	9	22	0		309
11/06	2	25	0	1,693	353
11/09	1	4	0	1,698	64
Weekly total	3	29	0		417
11/13	1	7	1	1,707	97
Weekly total	1	7	1		97
11/27	0	1	0	1,708	15
Weekly total	0	1	0		15
Annual total	321	1,385	2	1,708	20,586

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 1989.

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 0.0						
9/04	---	---	---	---	---	---
9/11	---	---	---	---	---	---
9/18	---	---	---	---	---	---
9/25	---	---	---	---	---	---
10/02	1	0	---	---	1	0
10/09	1	1	---	---	1	1
10/16	---	---	---	---	---	---
10/23	---	---	---	---	---	---
10/30	---	---	---	---	---	---
11/06	1	1	---	---	1	1
11/13	1	1	---	---	1	1
11/27	---	---	---	---	---	---
Total	4	3	---	---	4	3
(Percent)	(0.2)	(<0.1)	(---)	---	(0.2)	(<0.1)
Age 0.1						
9/04	3	14	---	---	3	14
9/11	3	14	---	---	3	14
9/18	41	180	---	---	41	180
9/25	28	117	---	---	28	117
10/02	80	344	---	---	80	344
10/09	130	597	---	---	130	597
10/16	16	78	---	---	16	78
10/23	18	70	---	---	18	70
10/30	9	32	---	---	9	32
11/06	2	8	---	---	2	8
11/13	1	4	---	---	1	4
11/27	---	---	---	---	---	---
Total	331	1,458	---	---	331	1,458
(Percent)	(17.4)	(6.2)	---	---	(17.4)	(6.2)
Age 0.2						
9/04	2	16	---	---	2	16
9/11	4	33	---	---	4	33
9/18	9	71	3	29	12	100
9/25	10	84	1	9	11	93
10/02	30	236	5	43	35	279
10/09	40	325	20	185	60	510
10/16	2	17	1	9	3	26
10/23	7	56	---	---	7	56
10/30	4	36	2	17	6	53
11/06	3	22	---	---	3	22
11/13	1	7	---	---	1	7
11/27	---	---	---	---	---	---
Total	112	903	32	292	144	1,195
(Percent)	(5.9)	(3.9)	(1.7)	(1.2)	(7.6)	(5.1)

Table 8.—Continued:

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 0.3						
9/04	5	62	2	24	7	86
9/11	11	136	15	249	26	385
9/18	91	1,115	57	765	148	1,880
9/25	28	337	10	123	38	460
10/02	128	1,577	100	1,410	228	2,987
10/09	228	2,723	134	1,908	362	4,631
10/16	7	92	3	37	10	129
10/23	19	243	4	44	23	287
10/30	4	52	9	125	13	177
11/06	10	133	9	127	19	260
11/13	2	23	1	15	3	38
11/27	1	15	---	---	1	15
Total	534	6,508	344	4,827	878	11,335
(Percent)	(28.1)	(27.9)	(18.1)	(20.7)	(46.2)	(48.6)
Age 0.4						
9/04	3	53	3	65	6	118
9/11	8	141	11	231	19	372
9/18	80	1,356	40	707	120	2,063
9/25	10	150	7	118	17	268
10/02	52	886	46	841	98	1,727
10/09	154	2,506	94	1,627	248	4,133
10/16	2	29	1	18	3	47
10/23	9	165	1	19	10	184
10/30	1	17	2	32	3	49
11/06	3	55	4	70	7	125
11/13	3	50	---	---	3	50
11/27	---	---	---	---	---	---
Total	325	5,408	209	3,728	534	9,136
(Percent)	(17.1)	(23.2)	(11.0)	(16.0)	(28.1)	(39.2)
Age 0.5						
9/04	---	---	---	---	---	---
9/11	---	---	---	---	---	---
9/18	3	77	---	---	3	77
9/25	---	---	---	---	---	---
10/02	---	---	---	---	---	---
10/09	5	126	---	---	5	126
10/16	---	---	---	---	---	---
10/23	---	---	---	---	---	---
10/30	---	---	---	---	---	---
11/06	---	---	---	---	---	---
11/13	---	---	---	---	---	---
11/27	---	---	---	---	---	---
Total	8	203	---	---	8	203
(Percent)	(0.4)	(0.9)	---	---	(0.4)	(0.9)

Table 9.—Length-age distribution (in percent by inch group) for chinook salmon scale sampled during creel census at Ludington, Manistee, Frankfort, and Grand Traverse Bay, during the period August to October 1989.[1]

Length (inches)	Age					
	0.0	0.1	0.2	0.3	0.4	0.5
<16	100	---	---	---	---	---
17	---	100	---	---	---	---
18	---	100	---	---	---	---
19	---	100	---	---	---	---
20	---	100	---	---	---	---
21	---	100	---	---	---	---
22	---	100	---	---	---	---
23	---	100	---	---	---	---
24	---	57	43	---	---	---
25	---	---	100	---	---	---
26	---	---	100	---	---	---
27	---	---	100	---	---	---
28	---	---	100	---	---	---
29	---	---	78	22	---	---
30	---	---	17	83	---	---
31	---	---	15	85	---	---
32	---	---	5	81	14	---
33	---	---	---	67	33	---
34	---	---	---	53	47	---
35	---	---	---	50	50	---
36	---	---	---	44	56	---
37	---	---	---	33	67	---
38	---	---	---	33	67	---
39	---	---	---	33	67	---
40+	---	---	---	---	75	25

[1]Table 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 1989. Two standard errors in parentheses.

Week beginning	Measure-ment	Age 0.0		Age 0.1		Age 0.2	
		Male	Female	Male	Female	Male	Female
9/04	Length	---	---	22.9	---	28.6	---
		---	---	(0.658)	---	---	---
	Weight	---	---	4.7	---	8.2	---
		---	---	(0.294)	---	---	---
9/11	Length	---	---	22.7	---	28.6	---
		---	---	(0.984)	---	---	---
	Weight	---	---	4.7	---	8.2	---
		---	---	(0.661)	---	---	---
9/18	Length	---	---	22.2	---	30.2	31.3
		---	---	(0.421)	---	(0.309)	---
	Weight	---	---	4.4	---	7.9	9.7
		---	---	(0.257)	---	(1.347)	---
9/25	Length	---	---	22.0	---	29.6	29.1
		---	---	(0.799)	---	(0.822)	---
	Weight	---	---	4.2	---	8.4	9.3
		---	---	(0.441)	---	(0.703)	---
10/02	Length	9.9	---	22.5	---	28.6	30.7
		---	---	(0.376)	---	(1.588)	(0.787)
	Weight	0.4	---	4.3	---	7.9	8.6
		---	---	(0.230)	---	(0.929)	(0.882)
10/09	Length	9.8	---	22.9	---	28.6	30.4
		---	---	(0.356)	---	(0.698)	(1.740)
	Weight	0.4	---	4.6	---	8.1	9.3
		---	---	(0.247)	---	(0.835)	(2.091)
10/16	Length	---	---	23.7	---	29.8	29.5
		---	---	(0.682)	---	(2.874)	---
	Weight	---	---	4.9	---	8.6	9.5
		---	---	(0.530)	---	(1.323)	---
10/23	Length	---	---	22.2	---	29.3	---
		---	---	(0.721)	---	(1.433)	---
	Weight	---	---	3.9	---	7.9	---
		---	---	(0.422)	---	(0.953)	---
10/30	Length	---	---	22.0	---	30.0	27.5
		---	---	(1.725)	---	(1.870)	(2.283)
	Weight	---	---	3.5	---	8.9	8.4
		---	---	(0.647)	---	(0.753)	(4.850)
11/06	Length	12.0	---	22.5	---	28.2	---
		---	---	(3.543)	---	(1.156)	---
	Weight	0.7	---	3.9	---	7.3	---
		---	---	(1.984)	---	(0.641)	---
11/13	Length	15.4	---	21.8	---	26.5	---
		---	---	---	---	---	---
	Weight	1.3	---	3.5	---	6.6	---
		---	---	---	---	---	---
11/27	Length	---	---	---	---	---	---
		---	---	---	---	---	---
	Weight	---	---	---	---	---	
Weighted seasonal mean	Length	11.4	---	22.6	---	28.9	30.3
		---	---	(0.114)	---	(0.435)	(1.159)
	Weight	0.7	---	4.4	---	8.1	9.1
		---	---	(0.077)	---	(0.369)	(1.391)
Sexes combined	Length	11.4		22.6		29.2	
		---		(0.114)		(0.444)	
	Weight	0.7		4.4		8.3	
		---		(0.077)		(0.397)	

Table 10.—Continued:

Week beginning	Measure-ment	Age 0.3		Age 0.4		Age 0.5	
		Male	Female	Male	Female	Male	Female
9/04	Length	34.1	32.4	37.2	38.3	---	---
		(1.226)	---	(0.551)	(1.417)	---	---
	Weight	12.3	12.1	17.6	21.8	---	---
		(1.548)	---	(0.882)	(3.806)	---	---
9/11	Length	34.1	35.9	37.2	37.9	---	---
		(1.226)	(2.373)	(0.551)	(1.154)	---	---
	Weight	12.3	16.6	17.6	21.0	---	---
		(1.548)	(3.277)	(0.882)	(2.406)	---	---
9/18	Length	32.8	32.9	35.9	35.0	40.9	---
		(0.903)	(0.856)	(0.740)	(0.687)	---	---
	Weight	12.3	13.4	17.0	17.7	25.6	---
		(0.877)	(0.918)	(0.901)	(1.255)	---	---
9/25	Length	33.0	32.0	34.3	35.1	---	---
		(0.851)	(1.007)	(1.241)	(0.346)	---	---
	Weight	12.0	12.3	15.0	16.8	---	---
		(0.816)	(1.090)	(1.317)	(1.252)	---	---
10/02	Length	33.5	34.1	36.1	35.7	---	---
		(0.624)	(0.536)	(0.901)	(0.592)	---	---
	Weight	12.3	14.1	17.0	18.3	---	---
		(0.607)	(0.624)	(1.241)	(0.767)	---	---
10/09	Length	32.9	33.8	35.6	35.1	42.6	---
		(0.548)	(0.686)	(0.659)	(0.626)	---	---
	Weight	11.9	14.2	16.3	17.3	---	---
		(0.504)	(0.905)	(0.718)	(0.937)	---	---
10/16	Length	34.0	32.8	34.1	34.6	---	---
		(2.089)	(2.718)	(1.181)	---	---	---
	Weight	13.2	12.4	14.7	17.9	---	---
		(1.919)	(4.044)	(1.984)	---	---	---
10/23	Length	34.0	30.5	37.4	36.8	---	---
		(1.110)	(0.929)	(1.376)	---	---	---
	Weight	12.8	11.1	18.4	19.0	---	---
		(1.129)	(0.942)	(1.676)	---	---	---
10/30	Length	34.2	33.6	36.5	32.8	---	---
		(1.904)	(0.836)	---	(0.315)	---	---
	Weight	13.0	13.9	16.8	15.9	---	---
		(1.600)	(1.096)	---	(2.646)	---	---
11/06	Length	34.3	33.5	39.1	35.3	---	---
		(1.683)	(1.393)	(1.874)	(1.653)	---	---
	Weight	13.3	14.1	18.4	17.6	---	---
		(1.590)	(1.482)	(1.733)	(2.272)	---	---
11/13	Length	31.8	33.6	36.7	---	---	---
		(0.044)	---	(2.796)	---	---	---
	Weight	11.5	14.6	16.5	---	---	---
		(0.441)	---	(3.500)	---	---	---
11/27	Length	35.3	---	---	---	---	---
		---	---	---	---	---	---
	Weight	15.0	---	---	---	---	---
		---	---	---	---	---	---
Weighted seasonal mean	Length	33.2	33.7	35.9	35.4	42.0	---
		(0.273)	(0.308)	(0.337)	(0.300)	---	---
	Weight	12.2	14.0	16.6	17.8	25.3	---
		(0.268)	(0.390)	(0.389)	(0.463)	---	---
Sexes combined	Length	33.4		35.7		42.0	
		(0.208)		(0.237)		---	
	Weight	12.9		17.1		25.3	
		(0.249)		(0.306)		---	

Table 11.—Summary of chinook salmon runs at the lower Platte River weir, 1979-89.

Year	Estimated number passed	Number harvested	Total run	Adult (ages 0.2-0.5) Mean length (inches)	Adult (ages 0.2-0.5) 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
1989	191	1,708	1,899	33.8	14.0

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

Table 12.—Number of trout released upstream at the lower Platte River weir, fall 1989.[1]

Date	Steelhead		Brown trout		Lake trout	
	Handled	Passed	Handled	Passed	Handled	Passed
9/02	---	3	---	---	---	---
Weekly total	0	3	0	0	0	0
9/10	---	16	---	---	---	---
Weekly total	0	16	0	0	0	0
9/11	8	---	3	---	---	---
9/12	---	6	---	---	---	---
9/13	---	13	---	1	---	---
9/14	---	4	---	---	---	---
9/15	1	3	---	---	---	---
9/16	---	4	---	---	---	---
9/17	---	1	---	---	---	---
Weekly total	9	31	3	1	0	0
9/20	---	24	---	1	---	---
9/22	---	8	---	---	---	---
9/23	13	14	---	---	---	---
9/24	20	---	3	1	---	---
Weekly total	33	46	3	2	0	0
9/25	9	---	1	---	---	---
9/26	25	---	3	---	---	---
9/27	---	3	---	---	---	---
9/28	---	3	---	---	---	---
9/29	---	3	---	---	---	---
9/30	---	5	---	---	---	---
10/01	---	4	---	1	---	---
Weekly total	34	18	4	1	0	0
10/02	20	---	1	---	---	---
10/03	25	---	5	---	---	---
10/05	29	---	---	---	---	---
10/06	12	---	---	---	---	---
10/07	13	---	---	---	---	---
10/08	5	---	---	---	---	---
Weekly total	104	0	6	0	0	0

Table 12.—Continued:

Date	Steelhead		Brown trout		Lake trout	
	Handled	Passed	Handled	Passed	Handled	Passed
10/09	2	---	---	---	---	---
10/10	20	---	---	---	---	---
10/12	---	7	---	---	---	---
10/14	52	---	---	---	---	---
Weekly total	74	7	0	0	0	0
10/20	20	0	1	---	---	---
Weekly total	20	0	1	0	0	0
10/23	77	1	2	---	---	---
10/27	142	---	2	---	---	---
Weekly total	219	1	4	0	0	0
10/30	152	2	2	---	---	---
11/03	116	2	4	---	1	---
Weekly total	268	4	6	0	1	0
11/06	36	---	2	---	1	---
11/09	35	---	---	---	1	---
Weekly total	71	0	2	0	2	0
11/13	9	---	---	---	---	---
Weekly total	9	0	0	0	0	0
11/21	3	---	---	---	---	---
Weekly total	3	0	0	0	0	0
12/01	3	---	---	---	---	---
Weekly total	3	0	0	0	0	0
Annual total	847	126	29	4	3	0
Combined total		973		33		3

[1]Released 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, 1980-89.

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
1989	847	29	3

Table 14.—Summary of the number and weight, by age and sex, of steelhead returning to the lower Platte River weir, fall 1989.

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 1.0						
9/11	26	30	---	---	26	30
9/18	9	11	---	---	9	11
9/25	12	20	---	---	12	20
10/02	17	30	---	---	17	30
10/09	10	19	1	2	11	21
10/16	---	---	---	---	---	---
10/23	21	32	---	---	21	32
10/30	16	31	11	22	27	53
11/06	5	10	6	12	11	22
11/13	1	2	1	2	2	4
11/27	---	---	1	3	1	3
Total	117	185	20	41	137	226
(Percent)	(12.0)	(3.5)	(2.1)	(0.8)	(14.1)	(4.2)
Age 2.0						
9/11	20	37	---	---	20	37
9/18	9	19	4	10	13	29
9/25	1	2	6	17	7	19
10/02	6	12	4	11	10	23
10/09	2	6	10	29	12	35
10/16	---	---	1	3	1	3
10/23	17	34	12	34	29	68
10/30	21	60	32	75	53	135
11/06	13	31	5	12	18	43
11/13	---	---	---	---	---	---
11/27	---	---	---	---	---	---
Total	89	201	74	191	163	392
(Percent)	(9.1)	(3.8)	(7.6)	(3.6)	(16.7)	(7.4)
Age 1.1						
9/11	---	---	---	---	---	---
9/18	---	---	5	26	5	26
9/25	1	5	3	16	4	21
10/02	6	33	9	45	15	78
10/09	5	25	6	33	11	58
10/16	2	14	2	13	4	27
10/23	21	119	17	95	38	214
10/30	26	140	11	55	37	195
11/06	6	31	6	34	12	65
11/13	2	10	1	6	3	16
11/27	1	6	---	---	1	6
Total	70	383	60	323	130	706
(Percent)	(7.2)	(7.2)	(6.2)	(6.1)	(13.4)	(13.3)

Table 14.—Continued:

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 2.1						
9/11	---	---	---	---	---	---
9/18	---	---	5	25	5	25
9/25	4	22	13	75	17	97
10/02	7	32	12	74	19	106
10/09	2	11	8	50	10	61
10/16	---	---	1	7	1	7
10/23	25	129	21	115	46	244
10/30	32	187	32	174	64	361
11/06	3	14	5	29	8	43
11/13	1	4	2	14	3	18
11/27	1	7	---	---	1	7
Total	75	406	99	563	174	969
(Percent)	(7.7)	(7.6)	(10.2)	(10.6)	(17.9)	(18.2)
Age 1.2						
9/11	---	---	13	79	13	79
9/18	11	100	16	119	27	219
9/25	3	20	3	22	6	42
10/02	14	122	16	117	30	239
10/09	13	106	11	90	24	196
10/16	7	64	1	8	8	72
10/23	21	190	41	290	62	480
10/30	16	121	53	424	69	545
11/06	8	65	6	53	14	118
11/13	2	16	1	8	3	24
11/27	---	---	---	---	---	---
Total	95	804	161	1,210	256	2,014
(Percent)	(9.8)	(15.1)	(16.5)	(22.7)	(26.3)	(37.8)
Age 2.2						
9/11	---	---	---	---	---	---
9/18	2	14	7	54	9	68
9/25	---	---	---	---	---	---
10/02	3	31	1	9	4	40
10/09	3	25	1	8	4	33
10/16	1	9	2	15	3	24
10/23	8	68	8	62	16	130
10/30	---	---	---	---	---	---
11/06	4	34	---	---	4	34
11/13	---	---	---	---	---	---
11/27	---	---	---	---	---	---
Total	21	181	19	148	40	329
(Percent)	(2.2)	(3.4)	(1.9)	(2.8)	(4.1)	(6.2)

Table 14.—Continued:

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 1.3						
9/11	---	---	---	---	---	---
9/18	5	53	2	21	7	74
9/25	3	26	---	---	3	26
10/02	4	43	1	10	5	53
10/09	3	34	3	29	6	63
10/16	1	13	---	---	1	13
10/23	---	---	8	83	8	83
10/30	---	---	11	81	11	81
11/06	3	32	---	---	3	32
11/13	---	---	1	11	1	11
11/27	---	---	---	---	---	---
Total	19	201	26	235	45	436
(Percent)	(1.9)	(3.8)	(2.7)	(4.4)	(4.6)	(8.2)
Age 2.3						
9/11	---	---	---	---	---	---
9/18	---	---	2	13	2	13
9/25	---	---	3	30	3	30
10/02	1	10	1	8	2	18
10/09	---	---	1	9	1	9
10/16	1	11	1	8	2	19
10/23	---	---	---	---	---	---
10/30	11	91	---	---	11	91
11/06	---	---	1	11	1	11
11/13	---	---	---	---	---	---
11/27	---	---	---	---	---	---
Total	13	112	9	79	22	191
(Percent)	(1.3)	(2.1)	(0.9)	(1.5)	(2.2)	(3.6)
Age 1.4						
9/11	---	---	---	---	---	---
9/18	2	25	---	---	2	25
9/25	---	---	---	---	---	---
10/02	---	---	1	11	1	11
10/09	1	11	---	---	1	11
10/16	---	---	---	---	---	---
10/23	---	---	---	---	---	---
10/30	---	---	---	---	---	---
11/06	---	---	---	---	---	---
11/13	---	---	---	---	---	---
11/27	---	---	---	---	---	---
Total	3	36	1	11	4	47
(Percent)	(0.3)	(0.7)	(0.1)	(0.2)	(0.4)	(0.9)

Table 14.—Continued:

Week beginning	Male		Female		Total	
	Number	Pounds	Number	Pounds	Number	Pounds
Age 2.4						
9/11	---	---	---	---	---	---
9/18	---	---	---	---	---	---
9/25	---	---	---	---	---	---
10/02	---	---	---	---	---	---
10/09	1	10	---	---	1	10
10/16	---	---	---	---	---	---
10/23	---	---	---	---	---	---
10/30	---	---	---	---	---	---
11/06	---	---	---	---	---	---
11/13	---	---	---	---	---	---
11/27	---	---	---	---	---	---
Total	1	10	---	---	1	10
(Percent)	(0.1)	(0.2)	---	---	(0.1)	(0.2)
Age 2.5						
9/11	---	---	---	---	---	---
9/18	---	---	---	---	---	---
9/25	---	---	---	---	---	---
10/02	---	---	1	7	1	7
10/09	---	---	---	---	---	---
10/16	---	---	---	---	---	---
10/23	---	---	---	---	---	---
10/30	---	---	---	---	---	---
11/06	---	---	---	---	---	---
11/13	---	---	---	---	---	---
11/27	---	---	---	---	---	---
Total	---	---	1	7	1	7
(Percent)	---	---	(0.1)	(0.1)	(0.1)	(0.1)

Table 15.—Mean total length (inches) and weight (pounds), by age and sex, of steelhead passed at the lower Platte River weir, fall 1989. Two standard errors in parentheses.

Week beginning	Measurement	Age 1.0		Age 2.0		Age 1.1	
		Male	Female	Male	Female	Male	Female
9/11	Length	13.7	---	16.2	---	---	---
		(0.548)	---	(2.659)	---	---	---
	Weight	1.2	---	1.8	---	---	---
		(0.211)	---	(0.778)	---	---	---
9/18	Length	14.1	---	17.0	17.1	---	22.9
		(0.288)	---	(1.354)	(1.142)	---	(0.954)
	Weight	1.2	---	2.2	2.4	---	5.1
		(0.108)	---	(0.510)	(0.882)	---	(0.641)
9/25	Length	15.4	---	16.9	17.9	22.3	23.3
		(0.845)	---	---	(0.899)	---	(2.677)
	Weight	1.7	---	1.5	2.8	4.6	5.4
		(0.264)	---	---	(0.382)	---	(1.102)
10/02	Length	15.4	---	16.0	18.0	23.7	22.9
		(0.420)	---	(1.510)	(0.568)	(1.351)	(1.628)
	Weight	1.8	---	2.0	2.8	5.6	5.0
		(0.192)	---	(0.750)	(0.389)	(0.907)	(0.826)
10/09	Length	15.6	16.7	18.1	17.9	23.0	23.6
		(1.111)	---	(3.386)	(0.600)	(1.186)	
	Weight	1.9	2.4	2.8	2.9	5.0	5.5
		(0.180)	---	(1.543)	(0.360)	(1.057)	(0.674)
10/16	Length	---	---	---	18.3	24.9	24.9
		---	---	---	---	(0.591)	(0.630)
	Weight	---	---	---	3.1	7.1	6.5
		---	---	---	---	---	(0.220)
10/23	Length	15.4	---	16.8	18.1	24.1	23.4
		(1.076)	---	(1.093)	(0.751)	(1.322)	(1.646)
	Weight	1.5	---	2.0	2.8	5.6	5.6
		(0.483)	---	(0.476)	(0.389)	(0.942)	(0.889)
10/30	Length	16.4	16.8	18.6	18.1	23.1	22.0
		(1.389)	(0.040)	(0.428)	(0.439)	(2.673)	(6.929)
	Weight	1.9	2.0	2.9	2.4	5.4	5.0
		(0.294)	(0.441)	(0.312)	(0.186)	(1.756)	(3.748)
11/06	Length	16.6	16.9	17.3	17.8	22.8	23.5
		(0.248)	(1.046)	(0.713)	(0.457)	(2.242)	(1.089)
	Weight	2.0	2.0	2.4	2.4	5.2	5.6
		(0.110)	(0.369)	(0.409)	(0.312)	(1.058)	(0.888)
11/13	Length	16.1	16.5	---	---	23.1	22.8
		---	---	---	---	(3.937)	---
	Weight	2.0	2.0	---	---	5.0	5.5
		---	---	---	---	(3.307)	---
11/27	Length	---	18.8	---	---	24.2	---
		---	---	---	---	---	---
	Weight	---	2.9	---	---	6.2	---
		---	---	---	---	---	---
Weighted seasonal mean	Length	15.1	16.9	17.1	18.0	23.4	23.1
		(0.276)	(0.153)	(0.606)	(0.215)	(0.992)	(1.254)
	Weight	1.6	2.1	2.3	2.6	5.5	5.4
		(0.098)	(0.263)	(0.201)	(0.102)	(0.658)	(0.678)
Sexes combined	Length	15.4		17.5		23.3	
		(0.232)		(0.353)		(0.682)	
	Weight	1.7		2.4		5.4	
		(0.087)		(0.136)		(0.415)	

Table 15.—Continued:

Week beginning	Measure-ment	Age 2.1		Age 1.2		Age 2.2	
		Male	Female	Male	Female	Male	Female
9/11	Length	---	---	---	24.9	---	---
		---	---	---	(0.748)	---	---
	Weight	---	---	---	6.1	---	---
		---	---	---	(0.661)	---	---
9/18	Length	---	23.4	28.3	26.5	27.2	27.1
		---	(0.413)	(1.746)	(1.106)	---	(1.644)
	Weight	---	5.1	9.1	7.4	6.8	7.7
		---	(0.674)	(1.482)	(0.811)	---	(1.573)
9/25	Length	24.8	24.1	25.7	26.9	---	---
		(1.778)	(0.923)	(2.874)	(0.196)	---	---
	Weight	5.5	5.8	6.5	7.5	---	---
		(0.441)	(0.758)	(1.102)	(0.441)	---	---
10/02	Length	22.3	24.5	28.7	26.7	30.2	28.1
		(2.029)	(0.926)	(0.963)	(1.000)	(0.866)	---
	Weight	4.6	6.2	8.7	7.3	10.3	8.6
		(1.536)	(0.722)	(0.797)	(0.813)	(2.425)	---
10/09	Length	24.0	24.7	27.6	27.3	27.5	27.0
		(0.157)	(1.001)	(0.672)	(0.912)	(2.029)	---
	Weight	5.4	6.2	8.1	8.2	8.4	7.9
		(0.661)	(0.848)	(0.551)	(0.766)	(2.219)	---
10/16	Length	---	24.9	27.7	27.4	29.3	26.9
		---	---	(0.922)	---	---	(2.953)
	Weight	---	6.8	9.2	8.2	9.5	7.4
		---	---	(1.592)	---	---	(0.661)
10/23	Length	22.7	23.5	28.4	25.9	27.6	26.8
		(2.717)	(3.102)	(1.305)	(0.922)	(1.850)	(1.378)
	Weight	5.1	5.5	9.0	7.1	8.5	7.7
		(1.517)	(1.472)	(0.825)	(0.790)	(0.661)	(2.205)
10/30	Length	24.5	23.7	26.8	27.3	---	---
		(1.811)	(2.005)	(2.800)	(0.869)	---	---
	Weight	5.8	5.4	7.6	8.0	---	---
		(1.023)	(1.003)	(1.695)	(0.826)	---	---
11/06	Length	21.5	24.4	27.4	28.0	28.3	---
		(7.638)	(2.054)	(1.658)	(0.816)	(2.559)	---
	Weight	4.6	5.9	8.1	8.9	8.6	---
		(4.409)	(1.040)	(1.325)	(0.568)	(1.782)	---
11/13	Length	21.5	25.7	27.5	27.9	---	---
		---	(0.472)	(2.126)	---	---	---
	Weight	4.0	6.8	7.8	7.7	---	---
		---	(0.441)	(1.102)	---	---	---
11/27	Length	25.2	---	---	---	---	---
		---	---	---	---	---	---
	Weight	7.1	---	---	---	---	---
		---	---	---	---	---	---
Weighted seasonal mean	Length	23.6	24.0	27.8	26.6	28.1	27.0
		(1.103)	(0.835)	(0.527)	(0.351)	(0.771)	(0.715)
	Weight	5.4	5.7	8.4	7.5	8.6	7.7
		(0.621)	(0.413)	(0.337)	(0.317)	(0.398)	(0.994)
Sexes combined	Length	23.8		27.1		27.6	
		(0.642)		(0.308)		(0.442)	
	Weight	5.6		7.9		8.2	
		(0.340)		(0.251)		(0.426)	

Table 15.—Continued:

Week beginning	Measure-ment	Age 1.3		Age 2.3		Age 1.4	
		Male	Female	Male	Female	Male	Female
9/11	Length	---	---	---	---	---	---
		---	---	---	---	---	---
	Weight	---	---	---	---	---	---
		---	---	---	---	---	---
9/18	Length	30.2	29.6	---	26.1	32.7	---
		(2.900)	---	---	---	---	---
	Weight	10.6	10.6	---	6.6	12.3	---
		(3.001)	---	---	---	---	---
9/25	Length	28.8	---	---	30.4	---	---
		(0.945)	---	---	(1.024)	---	---
	Weight	8.8	---	---	10.0	---	---
		(0.882)	---	---	(1.543)	---	---
10/02	Length	30.3	29.3	31.2	28.2	---	31.2
		(2.368)	---	---	---	---	---
	Weight	10.8	9.9	9.9	8.4	---	11.0
		(1.836)	---	---	---	---	---
10/09	Length	31.5	29.3	---	29.1	30.9	---
		(3.117)	(0.694)	---	---	---	---
	Weight	11.2	9.8	---	8.8	11.5	---
		(1.656)	(0.294)	---	---	---	---
10/16	Length	32.5	---	31.1	---	---	---
		---	---	---	---	---	---
	Weight	13.4	---	11.5	8.4	---	---
		---	---	---	---	---	---
10/23	Length	---	30.3	---	---	---	---
		---	(0.394)	---	---	---	---
	Weight	---	10.4	---	---	---	---
		---	(0.441)	---	---	---	---
10/30	Length	---	26.8	27.7	---	---	---
		---	(1.968)	(3.976)	---	---	---
	Weight	---	7.4	8.3	---	---	---
		---	(2.425)	(2.425)	---	---	---
11/06	Length	31.1	---	---	29.2	---	---
		(2.835)	---	---	---	---	---
	Weight	10.7	---	---	10.8	---	---
		(2.425)	---	---	---	---	---
11/13	Length	---	30.6	---	---	---	---
		---	---	---	---	---	---
	Weight	---	11.2	---	---	---	---
		---	---	---	---	---	---
11/27	Length	---	---	---	---	---	---
		---	---	---	---	---	---
	Weight	---	---	---	---	---	---
		---	---	---	---	---	---
Weighted seasonal mean	Length	30.5	28.6	28.3	28.8	32.1	31.2
		(0.641)	(0.899)	(3.597)	(0.591)	---	---
	Weight	10.6	9.1	8.6	8.9	12.1	11.0
		(0.617)	(1.106)	(2.194)	(0.891)	---	---
Sexes combined	Length	29.4		28.5		31.9	
		(0.532)		(2.200)		---	
	Weight	9.7		8.7		11.8	
		(0.622)		(1.349)		---	

Table 15.—Continued:

Week beginning	Measure-ment	Age 2.4		Age 2.5	
		Male	Female	Male	Female
9/11	Length	---	---	---	---
		---	---	---	---
	Weight	---	---	---	---
		---	---	---	---
9/18	Length	---	---	---	---
		---	---	---	---
	Weight	---	---	---	---
		---	---	---	---
9/25	Length	---	---	---	---
		---	---	---	---
	Weight	---	---	---	---
		---	---	---	---
10/02	Length	---	---	27.0	---
		---	---	---	---
	Weight	---	---	6.6	---
		---	---	---	---
10/09	Length	31.1	---	---	---
		---	---	---	---
	Weight	10.1	---	---	---
		---	---	---	---
10/16	Length	---	---	---	---
		---	---	---	---
	Weight	---	---	---	---
		---	---	---	---
10/23	Length	---	---	---	---
		---	---	---	---
	Weight	---	---	---	---
		---	---	---	---
10/30	Length	---	---	---	---
		---	---	---	---
	Weight	---	---	---	---
		---	---	---	---
11/06	Length	---	---	---	---
		---	---	---	---
	Weight	---	---	---	---
		---	---	---	---
11/13	Length	---	---	---	---
		---	---	---	---
	Weight	---	---	---	---
		---	---	---	---
11/27	Length	---	---	---	---
		---	---	---	---
	Weight	---	---	---	---
		---	---	---	---
Weighted seasonal mean	Length	31.1	---	---	27.0
		---	---	---	---
	Weight	---	---	---	---
		---	---	---	
Sexes combined	Length	31.1		27.0	
		---		---	
	Weight	10.1		6.6	
		---		---	

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 1989.

Age	Summers in lake	Percent of sample	Mean length (inches)	Mean weight (pounds)
_.0	1	30.8	16.5	2.1
_.1	2	31.3	23.5	5.5
_.2	3	30.4	27.2	7.9
_.3	4	6.8	29.1	9.4
_.4	5	0.5	31.9	11.5
_.5	6	0.1	27.0	6.6
All			22.9	5.5

Table 17.—Number of coho salmon harvested at the upper Platte River weir, fall 1989.

Date	Jacks	Males	Females		Mortalities
			Round	Stripped	
10/16	1,123	974	287	769	305*
10/17	551	885	188	785	52
10/18	383	884	198	944	44
10/19	301	568	244	673	0
Weekly total	2,358	3,311	917	3,171	401
10/24	146	319	43	427	29
10/25	86	368	53	474	12
10/26	447	920	829	415	14
Weekly total	679	1,607	925	1,316	55
11/03	110	143	230	0	52
Weekly total	110	143	230	0	52
12/20	2	31	12	0	160**
Weekly total	2	31	12	0	160
Annual total	3,149	5,092	2,084	4,487	668

* Includes all mortality prior to October 16, 1989
**Includes all mortality after November 6, 1989.

Table 18.—Weight (pounds) of coho salmon harvested at the upper Platte River weir, fall 1989.

Date	Jacks	Males	Females		Mortalities
			Round	Stripped	
10/16	1,685	4,967	1,607	3,230	1,592
10/17	826	4,868	1,090	3,415	221
10/18	575	4,950	1,188	4,248	225
10/19	451	3,238	1,415	2,928	0
Weekly total	3,537	18,023	5,300	13,821	2,038
10/24	219	1,850	249	1,857	164
10/25	129	2,024	334	2,240	68
10/26	671	5,244	4,808	1,805	77
Weekly total	1,019	9,118	5,391	5,902	309
11/03	121	901	1,357	0	297
Weekly total	121	901	1,357	0	297
12/20	2	195	71	0	960
Weekly total	2	195	71	0	960
Annual weight	4,679	28,237	12,119	19,723	3,604
Mean weight	1.5	5.5	5.8	4.4	5.4

Table 19.—Number and weight (pounds) of chinook salmon harvested in the upper Platte River weir, fall 1989.

Date	Jacks	Male adults	Female adults	Mortality	Total
Oct 16-22					
Number	19	8	3	12	42
Weight	74	106	43	150	373
Oct 23-29					
Number	10	5	2	2	19
Weight	46	61	31	9	147
Oct 30-Nov 5					
Number	1	1	0	2	4
Weight	3	12	0	15	30
Dec 20					
Number	0	0	0	2	2
Weight	0	0	0	15	15
Annual total number	30	14	5	18	67
Annual total weight	123	179	74	189	565
Mean weight	4.1	12.8	14.8	10.5	8.4

Literature Cited

Pecor, C. H. 1989. Platte River harvest weir and coho salmon egg-take report, 1988. Michigan Department of Natural Resources, Fisheries Technical Report 89-4, Ann Arbor.

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