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# STATUS OF PRIVATE SALMON HATCHERIES IN OREGON, 1973-74

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# Status of Private Salmon Hatcheries in Oregon

## INTRODUCTION

The Fish Commission of Oregon issued six permits for private chum salmon hatcheries since the state legislature in its 1971 session authorized such development. Design of private chum hatcheries in Oregon is primarily based on studies conducted by Oregon State University (OSU) at its Swanson Aquaculture Research Station located on Whiskey Creek, tributary to Netarts Bay in Tillamook County. This facility currently serves as the only source within Oregon of chum eggs for private hatcheries. To date, private operators have released relatively small numbers of chum fry due to the limited supply of spawn for their use. However, a good return of adult chum to Whiskey Creek in the fall of 1974 allowed the state to provide private operators with over 2.0 million eggs that year.

In 1973 the Oregon legislature amended the private chum hatchery laws to include coho and chinook salmon. The legislature limited this authorization to four permits for coho or chinook during the 1973-75 biennium. All four permits have been issued.

This report details progress at private salmon hatcheries in Oregon during 1973-74. We included information on chum salmon at OSU's Whiskey Creek station due to the importance of this facility in providing eggs to private hatcheries.

## STATUS OF CHUM HATCHERIES

### Netarts Bay

OSU Swanson Aquaculture Research Station: In 1973 an estimated 1,500 adult chum salmon returned to Whiskey Creek. This was a good return to that location. However, natural chum runs in other nearby streams were also good and it was not possible to determine if the fish culture operation significantly contributed to the Whiskey Creek return. During the spring of 1974, OSU released 761,000 chum fry (1973 brood) into Whiskey Creek.

OSU personnel estimated that over 3,000 adult chum returned to Whiskey Creek in the fall of 1974. While good natural adult runs again appeared in nearby streams, OSU personnel were convinced that their operation significantly contributed to the Whiskey Creek run. Over 3.0 million eggs were taken in the fish culture operation. OSU retained 1.0 million eggs for their operation and the state sold a similar number to each of the first two permit holders on the egg priority list. The third permit holder on the list received a small number of eggs. Over 100 pairs of chum were released above the rack on Whiskey Creek for natural spawning.

#### Sand Lake

Keta Corporation: A permit was issued to Keta Corporation in December 1971 for a facility located on Sand Creek (including Jewell Creek), tributary to Sand Lake, a small estuary in Tillamook County. Keta's permit allowed them to collect eggs from a portion of the native chum in Sand Creek. Keta's operation through the 1972 season was described in a prior chum hatchery status report (Cummings, 1973).

In 1973 Keta Corporation took 85,000 eggs from 34 native female chum and released another 33 upstream for natural spawning in Jewell Creek. They spawned 46 male chum and released 48 above the rack. Few fish other than chum were collected. Keta's trap in Sand Creek, above the mouth of Jewell Creek, washed out early in the 1973 season and was not rebuilt. Keta purchased 247,500 chum salmon eggs from the Fish Commission in 1973. These eggs were surplus to experimental and propagation requirements at OSU's Whiskey Creek Station. About 315,000 chum fry left Keta's incubators on their own volition from March 1 to about April 15, 1974.

FCO personnel periodically seined in Sand Lake during the spring of 1974 to determine how long juvenile chum from Keta's hatchery remained in the bay.

We found that native and hatchery chum appeared to pass through the bay to the ocean at varying rates. There seemed to be a continuous movement of small schools or individuals. No real size differences among chum fry were evident and all chum had moved out of the estuary by May 15. In comparison, we found chum fry in Tillamook Bay until mid-June 1974; however, in 1973, adults in Tillamook Bay tributaries spawned later than those at Sand Lake.

With the good return of adult chum to Whiskey Creek in 1974, Keta Corporation, first on the egg priority list, purchased 1,017,500 eggs from the state. This was the 1st year that Keta obtained its full annual quota of eggs from Whiskey Creek. Additionally, Keta collected about 380 adult chum in its traps on Jewell and Sand creeks, the largest return to these installations since Keta began operation. It is possible that the 51,000 chum fry (1971 brood) released by Keta in the spring of 1972 contributed to this return. Keta took a total of 287,500 eggs from these fish after the agreed upon number of adults were placed upstream. Keta Corporation, therefore, has a total of 1,305,000 1974-brood chum eggs from its own operation and its allocation of Whiskey Creek eggs.

Alfred Hampson: A chum salmon hatchery permit was issued to Mr. Hampson in November 1973. He is also a partner in the Keta Corporation and his permit authorized him to combine his egg allocation with Keta on Sand Creek. No eggs were available for purchase under this permit in 1973. In 1974 Hampson purchased 7,500 eggs from the state's Whiskey Creek facility. These are being incubated in the Keta Corporation hatchery.

#### Tillamook Bay

Cecil Harris and David Kelly: A chum salmon hatchery permit was issued to Cecil Harris and David Kelly in September 1972. Their facility is located on Dick Creek, a west side tributary to Tillamook Bay in Tillamook County. In 1972, 1973, and again in 1974, OSU placed 10,000 eggs in this facility to test



the water supply. In 1973 eggs were placed in incubation trays at about half the rate used at Whiskey Creek (20,000 eggs/tray), and only 400 eggs died (Cecil Harris, pers. comm.). No eggs have been available for purchase under this permit.

#### Yaquina Bay

Oregon Aqua-Foods: A permit for a chum salmon hatchery was issued to Ore-Aqua in November 1972. This chum operation is located on Wright Creek, a tributary of Yaquina Bay, Lincoln County.

In 1973 the company agreed to hatch approximately 250,000 eyed chum eggs acquired by FCO from the U. S. Fish and Wildlife Service Quilcene National Fish Hatchery in Washington. FCO obtained these eggs to test the use of a chum stock from outside of the state in Oregon streams. Eggs were placed in streamside incubators at a rate of 2,212 eggs per square foot, which is comparable to the density used by OSU at Whiskey Creek. Egg and early alevin mortality amounted to about 1.7%. However, some 200,000 alevins suffocated due to a water supply malfunction, leaving about 40,000 which were liberated into Wright Creek at approximately 980 fish/lb on March 25, 1974. In January 1975 we obtained about 500,000 chum eggs from Quilcene Hatchery and transferred them to Ore-Aqua to continue the test. The agreements between Ore-Aqua and FCO, under which these eggs were transferred, requires the company to supply the state with a portion of the eggs from returning adults. FCO will distribute these eggs to other private hatcheries.

No chum eggs have been available for purchase from Whiskey Creek by Ore-Aqua.

#### Siuslaw River

Siuslaw Fisheries: A chum hatchery permit was issued to Siuslaw Fisheries in March 1972. Their facility is located on a tributary of Sweet Creek, Siuslaw River, Lane County. OSU placed 10,000 eggs in this facility in 1972

and again in 1973 to test the water supply. Additionally, Siuslaw Fisheries agreed to incubate 250,000 chum eggs obtained by the Fish Commission in 1973 from Quilcene National Fish Hatchery. FCO desired to test transport methods and survival of these eggs through hatching. We developed an agreement with Siuslaw Fisheries similar to the one consummated with Ore-Aqua regarding the testing of this stock.

Incubation mortality and loss during early development amounted to 2,850 (1.1%). About 141,000 chum were liberated as unfed fry and another 116,000 were placed in a pond and fed. Mortality to the ponded fish, presumably from poor nutrition and cold water disease, was over 36,000; thus about 80,000 chum fingerlings at 215 fish/lb were released into Sweet Creek on May 31, 1974. The fingerlings appeared to move down the bay shortly after release. Siuslaw Fisheries, second on the egg priority list, purchased 1.0 million chum eggs from the state in 1974. These eggs, surplus to OSU's Whiskey Creek operation, were the first purchased by this hatchery.

Ceratodus Fisheries: A chum permit was issued to John Marshall, Lester Nelson, and Timothy Morello (Ceratodus Fisheries) for a site on Divide Creek, Siuslaw River, November 20, 1973. To date, no eggs have been hatched at this location. However, in January 1975 we transferred to Marshall, under an agreement similar to those developed with Ore-Aqua and Siuslaw Fisheries, about 500,000 chum eggs obtained from Quilcene Hatchery to further test this egg source in Oregon.

#### Miscellaneous Applications

Eight other applications have been held in abeyance by FCO commissioners pending assurance of chum eggs being available to the applicants either from Whiskey Creek (OSU) or other approved sources. Evaluations have been completed on some of these applications.

## STATUS OF CHINOOK AND COHO HATCHERIES

Yaquina Bay

Oregon Aqua-Foods: On March 19, 1974 we issued permits to Ore-Aqua to produce chinook and coho. They also hold a chum salmon permit and a hatchery license from the Oregon Wildlife Commission to raise pan-sized trout and salmon. The company operates salt water rearing pens adjacent to Yaquina Bay and the previously described fresh-water facility on Wright Creek.

In July 1973 FCO and Ore-Aqua entered into an agreement whereby the Commission provided the company with about 91,000 1972-brood fall chinook at 80/lb from Trask River Hatchery. Ore-Aqua reared the fish to 11-13/lb by November 1973 and provided FCO with about 30,000 of these smolts as compensation for the fish retained by the company. At our request, Oregon-Aqua-Foods released the fish provided FCO as follows:

Feagles Creek (Yaquina system)	16,000
Wright Creek (Yaquina system)	10,000
Horse Creek (Alsea system)	<u>4,000</u> <sup>1/</sup>
Total	30,000

Of the fish remaining 23,580 died due to hatchery water supply and tank truck malfunctions and 37,356, the company's share of the surviving fish, were released from the South Beach rearing ponds into Yaquina Bay.

Ore-Aqua purchased 1973-brood fall chinook (Trask River stock) and coho (Siletz River stock) from FCO. In June 1974, they released into Wright Creek 27,723 fall chinook at 63/lb and 87,782 coho at 44/lb. We did not require the company to mark the fall chinook since there are none in Wright Creek and the species acts as a mark. The coho were marked with a 1/2 dorsal fin clip.

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<sup>1/</sup> One tank load bound for Feagles Creek was released into Horse Creek due to failure of the oxygen system on the tank truck.

Columbia River

Anadromous, Inc.: In October 1974 FCO issued permits to Anadromous, Inc., to rear and release chinook and coho salmon at the Reichhold Chemical Company site on the Columbia River near St. Helens. To date Anadromous has not begun to construct facilities for their operation.

Other

We have one other application for a chinook permit on the coast and several inquiries regarding development of private chinook and coho hatcheries. However, the 1973 legislature limited us to issuing the above four permits for chinook or coho hatcheries during the 1973-75 biennium.

## SUMMARY

Private hatchery operations continued in 1973 and 1974 on more of an experimental than production basis. For 1973-brood chums, OSU increased their production at Whiskey Creek to a release of 761,000 fry and the state sold 247,500 eggs to private operators. Adult returns to Whiskey Creek in 1973 were encouraging but did not provide clear evidence that chum hatcheries are successful. The larger return of chum in 1974 provided more conclusive evidence that the hatchery significantly contributed to adult runs. The good return of adult chum to Whiskey Creek in 1974 resulted in the sale of 1.0 million eggs each to Keta Corporation and Siuslaw Fisheries.

Chum eggs were imported by the Fish Commission from Washington for experimentation and release at three cooperating private chum hatcheries south of Cascade Head. In 1973, most of the fish provided to one hatchery died due to interruption of their water supply. Some fry were fed at the other hatchery. Results were variable, but the experiments provided useful information and experience.

The Fish Commission issued the four permits allowed by the legislature for rearing and release of chinook and coho during the 1973-75 biennium. Only Oregon Aqua-Foods, Inc., reared and released fish; relatively small numbers were involved.

#### LITERATURE CITED

Cummings, T. Edwin. 1973. Status of private chum salmon in Oregon. Fish Commission of Oregon. Coastal Rivers Invest. Infor. Rept. 73-1. Mimeo 5 p.