



CALIFORNIA RESOURCES AGENCY LIBRARY  
Resources Building, Room 117  
1416 9th Street  
Sacramento, California  
95814

# OREGON FISH COMMISSION BIENNIAL REPORT

July 1, 1960 to June 30, 1962



## **ON THE COVER**

An average of well over 9½ million pounds of Dungeness crabs are landed by Oregon's commercial fishermen every year. In the top photo an offshore crabber's catch is being unloaded at a coastal port.

Personal use or sport crabbers also reap a tasty harvest of shellfish from many of Oregon's bays and estuaries. In the bottom photo, left to right, Chuck Haas, Don Naggiar, and Gayland Haas display crabs and clams taken from popular Nehalem Bay on Oregon's northern coast.

# **BIENNIAL REPORT**

---

**JULY 1, 1960—JUNE 30, 1962**

TO THE  
**Governor and the Fifty-second  
Legislative Assembly**

## **FISH COMMISSION OF THE STATE OF OREGON**

**HERMAN P. MEIERJURGEN, Chairman, Beaverton**  
**EDW. G. HUFFSCHMIDT, Portland**  
**LEONARD N. HALL, Charleston**  
**ROBERT W. SCHONING, State Fisheries Director**

COMMISSIONERS:  
HERMAN P. MEIERJURGEN, CHAIRMAN, BEAVERTON  
EDW. G. HUFFSCHMIDT, PORTLAND  
LEONARD N. HALL, CHARLESTON



STATE OF OREGON  
FISH COMMISSION OF OREGON  
307 STATE OFFICE BLDG., 1400 S. W. 5TH AVENUE  
PORTLAND 1

LETTERS OF TRANSMITTAL

Portland, Oregon

To His Excellency, THE GOVERNOR,  
and the Members of the Fifty-  
Second Legislative Assembly

Gentlemen:

Herewith is transmitted the biennial report of the  
Fish Commission of the State of Oregon for the period from  
July 1, 1960 to June 30, 1962.

FISH COMMISSION OF THE STATE OF OREGON

*Herman P. Meierjurgan*  
Herman P. Meierjurgan, Chairman

*Edw. G. Huffscht*  
Edw. G. Huffscht

*Leonard N. Hall*  
Leonard N. Hall

Portland, Oregon

FISH COMMISSION OF THE STATE OF OREGON  
Portland, Oregon

Gentlemen:

In accordance with the provisions of statute, I herewith  
submit for your consideration the report of the operation of the  
department together with financial statement for the biennial  
period July 1, 1960 to June 30, 1962.

Respectfully submitted,

*Robert W. Schoning*

ROBERT W. SCHONING  
STATE FISHERIES DIRECTOR

## *Table of Contents*

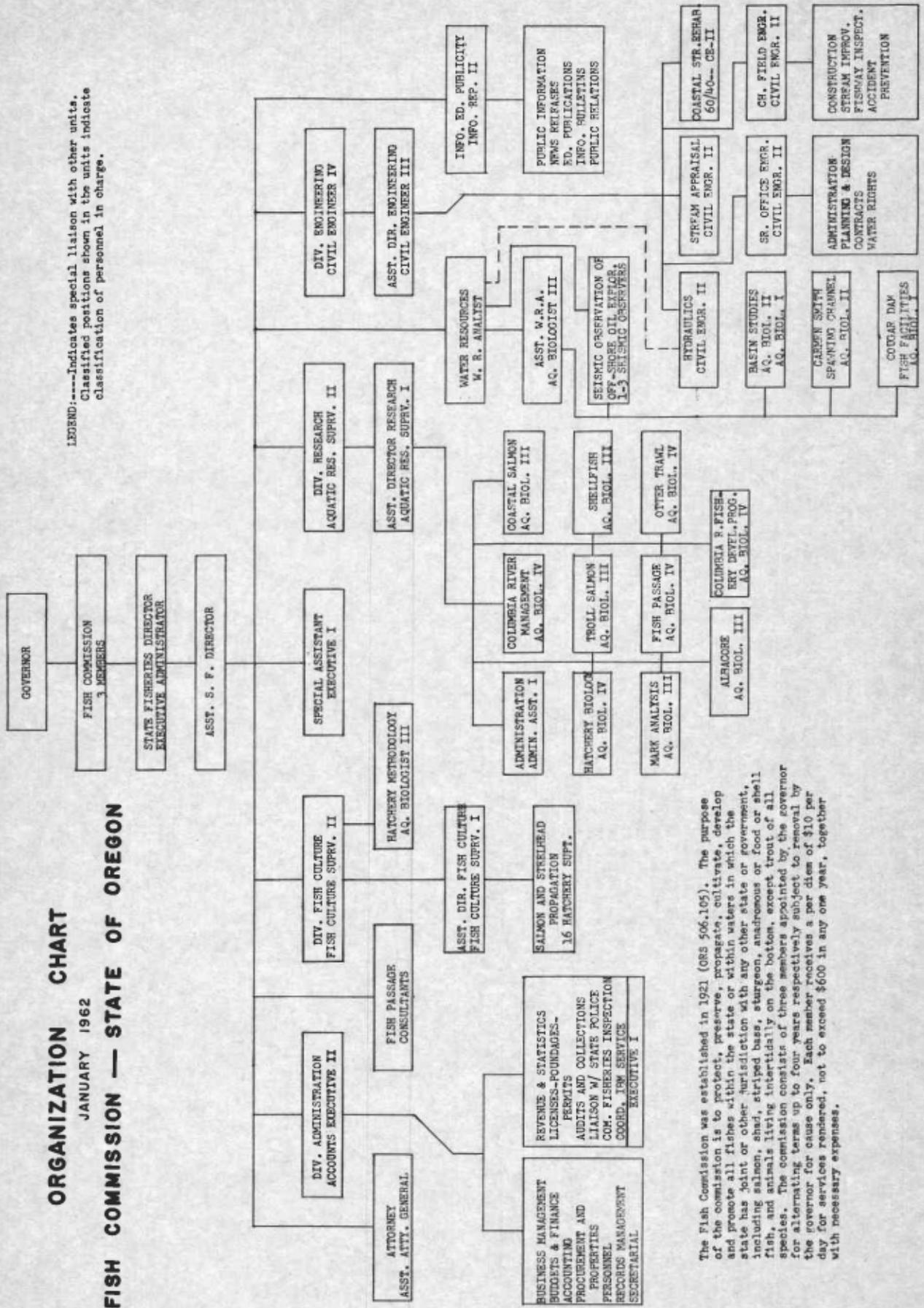
	Page
Organization Chart .....	4
Introduction .....	5
From the Director's Desk .....	6
Administration Division .....	9
Engineering Division .....	11
Research Division .....	13
Fish Culture Division .....	17
Service Recognition Program .....	20
Retirements .....	21
Suggestion Awards Program .....	21
Financial Statement .....	22
 STATISTICS:	
Liberations .....	26
Egg Take .....	28
Fish Landings .....	29
Licenses Issued .....	30
Law Enforcement .....	33

# ORGANIZATION CHART

## JANUARY 1962

### FISH COMMISSION — STATE OF OREGON

LEGEND:-----Indicates special liaison with other units.  
 Classified positions shown in the units indicate  
 classification of personnel in charge.



The Fish Commission was established in 1921 (ORS 506.105). The purpose of the commission is to protect, preserve, propagate, cultivate, develop and promote all fishes within the state or within waters in which the state has joint or other jurisdiction with any other state or government, including salmon, snail, striped bass, sturgeon, anadromous or food or shell fish, and animals living intertidally on the bottom, except trout of all species. The commission consists of three members appointed by the governor for alternating terms up to four years respectively subject to removal by the governor for cause only. Each member receives a per diem of \$10 per day for services rendered, not to exceed \$600 in any one year, together with necessary expenses.



Governor Mark Hatfield, right, accepts, on behalf of the people of the state, a mounted chinook salmon presented by the Fish Commission in commemoration of the 1961 state legislature's act declaring the chinook the official state fish of Oregon. This magnificent specimen tipped the beam at 54 pounds when taken at the Commission's Cascade Salmon Hatchery. Left to right: Commission Chairman Herman P. Meierjurgan and Commissioners Edw. G. Huffschtmidt and Leonard N. Hall.

## INTRODUCTION

"The duty of protection, preservation, propagation, cultivation, development and promotion of all fishes within the state or within waters in which the state has joint or other jurisdiction with any other state or government is delegated to and imposed upon the fish commission, except as provided in ORS 496.010 (Definitions of Game Fish). For such purpose the fish commission has exclusive jurisdiction over salmon, shad, striped bass, sturgeon and all other anadromous or food or shell fish, including all non-food forms such as starfish, sea urchins, sea cucumbers, shore, hermit and other small crabs, snails, bivalves, worms, coelenterates and all other living animals living intertidally on the bottom, except trout of all species including steelhead trout, within the waters over which the state has jurisdiction, or joint or other jurisdiction with any other state or government over all such fishes within the

waters of the Columbia River and its tributaries within the confines of the States of Oregon and Washington where such waters form the boundaries of the states." Oregon Revised Statutes 506.155 (Amended by 1961 c 275).

In these words the State Legislature has defined the Fish Commission's responsibilities in managing, on a sustained yield basis, the food fish resources of the state. Upon progressive management of this segment of Oregon's natural wealth depends an industry currently contributing some 22.5-million dollars annually to the economy of the state.

How the commission is organized, what it is doing to discharge its statutory responsibilities to the resource and to the people of Oregon, and the highlights of its operations during the biennium from July 1, 1960 to June 30, 1962 form the basis of this report.

## FROM THE DIRECTOR'S DESK

The 1960-62 biennium was a period of considerable progress in the management of the food fish resources of Oregon. In the following pages are detailed some of the more important activities and accomplishments of your Oregon Fish Commission during the past two years. I would like to take this opportunity, however, to touch on some matters that have been passed over in the body of the report. These items, while not readily lending themselves to treatment elsewhere in this report, are nonetheless important in the overall fisheries conservation picture.

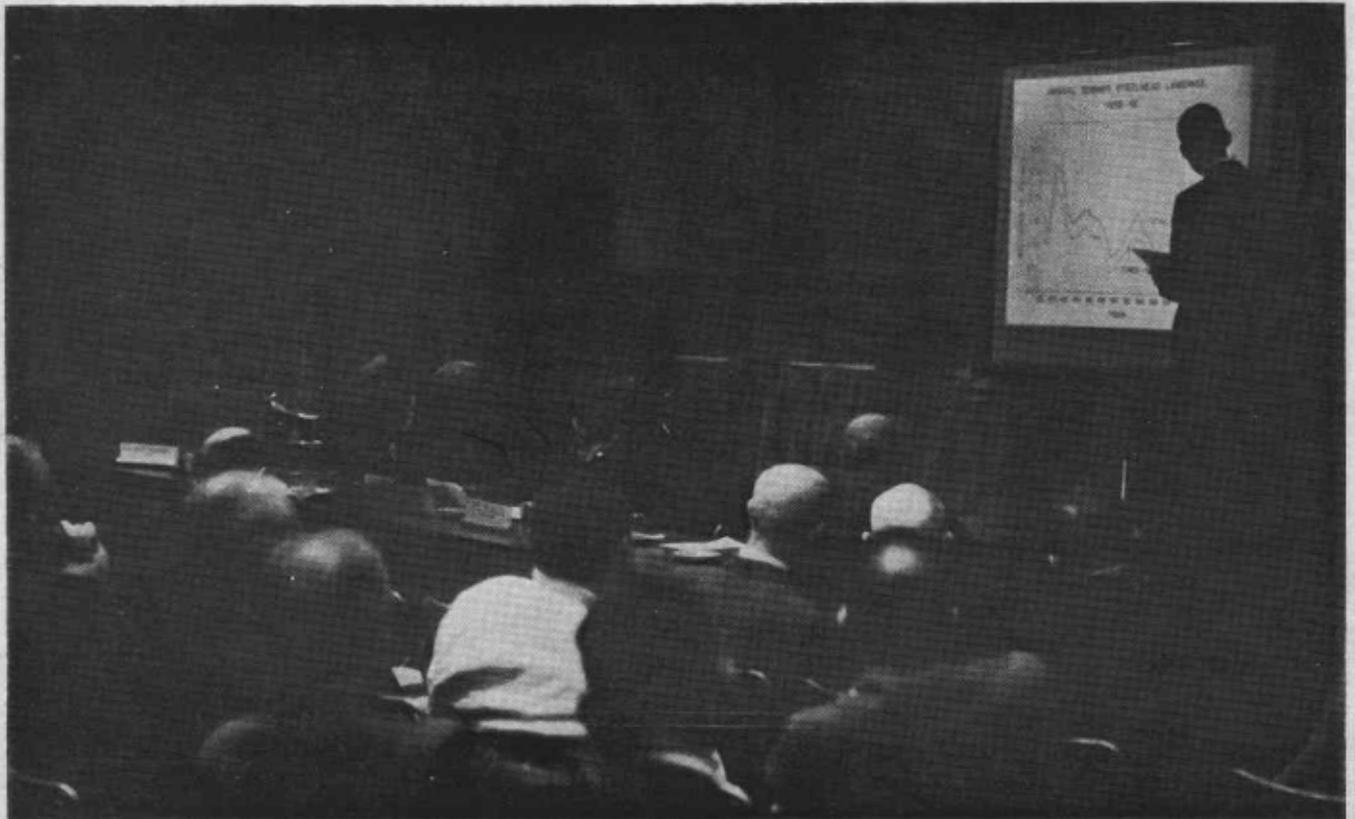
It is a privilege to bring to your attention the wonderful record of public service displayed by the three commissioners, Messrs. Meierjurgan, Huffschtmidt, and Hall, who have donated from their busy schedules uncounted hours to Fish Commission affairs. Not only have they religiously attended the monthly Commission meetings—only one meeting was missed by one Commissioner in the two year period, and that because of illness—but have devoted additional time to public hearings, meetings with various fishery-oriented

groups, and visits to Commission installations and trouble spots to gain a better understanding of the problems of the agency.

Progress was made in resolving the complicated Indian fishing rights dilemma. The Warm Springs and Umatilla tribes signed an agreement with the Washington Department of Fisheries and the Oregon Fish Commission to severely restrict their fishing activities in the Columbia River in the interest of conservation. The Fish Commission provided the Indians with hatchery salmon carcasses to partially replace fish lost from their catch by the self imposed restriction. Tribal adherence to the agreement was outstanding. Toward the end of the period the Yakima tribe passed ordinances restricting to a lesser degree the fishing activities of tribal members. The action was soundly based on conservation needs and is an encouraging sign that this tribe will also acknowledge in a tangible way its responsibilities in perpetuating the fisheries resources of the Columbia River basin. The problem is neither simple nor solved but a united and cooperative effort is a big step toward simplification and solution.

During the last session of the State Legislature,

A biologist discusses summer steelhead landings during an annual public hearing on Columbia River commercial fishing regulations conducted jointly with the Washington Department of Fisheries. The law provides that no rule, order or regulation shall be made, promulgated, modified, adopted or amended until after the Fish Commission has held a hearing.



exclusive jurisdiction was given to the Fish Commission over non-food forms such as starfish, sea urchins, sea cucumbers, shore, hermit and other small crabs, snails, bivalves, worms, coelenterates, and all other living animals living intertidally on the bottom. With the increasing use of intertidal forms and the resulting depletion, almost to a state of extinction of certain species in some areas, the bill was passed to protect for future generations these living resources. Subsequently, the Fish Commission placed limitations on their harvest.

The State Legislature during its 1961 session designated the chinook salmon as the official state fish of Oregon, in recognition of the qualities that have made it the top commercial species as well as the ultimate prize for sport fishermen of the state. In commemoration of the event, a mounted chinook was presented by the Fish Commission to Governor Mark Hatfield on behalf of the people of Oregon. The magnificent 54-pound, 50-inch specimen was taken at the Commission's Cascade Hatchery near Bonneville in September 1960. It is on permanent display in the visitors' lounge in the State Capitol building in Salem. In making the presentation, Commission Chairman Herman P. Meierjurgan remarked that it appeared "only fitting that this specimen should be one that was reared and liberated as a young fish at a state hatchery and eventually returned as an outstanding product of the cooperative effort of man and nature."

Legislation was passed to permit other states having rivers or streams tributary to the Pacific Ocean to become members of the Pacific Marine Fisheries Commission. Congress and the other member states of Washington and California took similar action. Alaska was the first new state to accept this opportunity and pass a law providing for membership. This will provide for closer cooperation on a coast-wide basis in managing fishery stocks of common interest.

During its 1961 session the Legislature provided \$120,000 of general fund money to the Fish Commission to be used for rehabilitating and improving anadromous fish runs on the coast south of the Columbia River.

It can be used only on a matching basis with 40 per cent of the total project cost coming from other funds. Considerable interest from chambers of commerce, port and county commissions, sportsmen's groups, commercial fishing industry, public and private forest interests, other agencies, and the general public has been shown on relatively short notice in helping the salmon and steelhead runs on the coast. Although all the money has not yet been committed, progress to date has been encouraging.

**New Social Status For The Common People**



Portland daily newspaper, THE OREGONIAN, heralded the Fish Commission's new intertidal forms protective regulations with this cartoon by Art Bimrose.

Significant progress was made in utilizing on a production basis the Oregon pellet which is a hatchery food developed by the Oregon State University Seafoods Laboratory and the Fish Commission. The pellet is receiving widespread use throughout the salmon-raising business. Results to date indicate healthy fish can be raised at a reduced food cost with considerably less effort on the part of the hatchery personnel. The initiation of this pellet along with other improved techniques has resulted in record silver salmon egg-takes from hatchery streams of 32 and 35 million in the past two years and with the increasing numbers of fish returning to the hatcheries, it is logical that greater numbers are also being harvested by the various sport and commercial fisheries in the ocean and fresh water.

There were commercial salmon fisheries in a number of the coastal streams until 1956 when they were prohibited by initiative petition. A special provision however allowed a chum salmon net fishery in Tillamook Bay. Chums are the only species of the four salmonids previously taken in Tillamook Bay that were not caught in numbers



Port of Toledo commissioners inspect site of proposed fishway on Mill Creek, Siletz River tributary in Lincoln County. Subsequently the project became the first completed under the Fish Commission's 60:40 coastal salmon rehabilitation program.

by other commercial or sport gear during their life cycle in fresh and salt water. Without a river net fishery, the resource for all practical purposes would go unharvested. At the time of the coastal closure bill, summaries of landings by species and time period clearly indicated that chum catches were of a magnitude great enough to justify a commercial fishery. For some years there has been a marked similarity in declining abundance of the chum stocks along the entire Pacific Coast. The condition does not appear to be caused by over-fishing in the rivers inasmuch as populations which are not subjected to river fisheries are following similar trends. The salmon harvest by foreign nationals in the North Pacific is not now affecting runs in coastal states. Because the conditions of fresh water environment and the fisheries vary in different areas, it is believed that ocean environment and survival are controlling factors. Tillamook Bay landings have ranged from 2,800,000 pounds in 1928 to only 12,000 pounds in 1960. On the basis of the decline in chum runs, the Fish Commission closed Tillamook Bay to commercial fishing in 1962 with the declared intention of keeping it closed until the runs justify a commercial harvest.

It seems appropriate to point out here that promulgation of regulations governing the taking of those species under its jurisdiction is one of the legislatively assigned responsibilities of the Fish Commission. In discharging this duty, primary consideration must be given the needs of the resource.

The statutes provide that no rule, order or regulation "shall be made, promulgated, modified, adopted or amended until after the fish commission has held a hearing." It is also provided that "the fish commission shall promulgate such rules, orders and regulations it finds, after investigation, to be convenient or necessary to prevent the taking, catching or fishing for any such fishes at such times or places or by such means or in such manner as will impair the ultimate supply thereof." Thus the public is afforded an opportunity to be heard in establishing food fish regulations, but the basis for all decisions must be the needs of the resource.

During recent years improved fish culture techniques have given rise to optimism regarding the role of hatcheries in maintaining and enhancing certain runs. An outstanding example is the return to the Klaskanine station of hatchery-reared silver salmon far in excess of fish cultural requirements. Previous experiments have indicated that the short-run fish are not available to the gill net fishery in the main Columbia River. Test netting was conducted by the Commission in Young's Bay, through which Klaskanine River fish pass in reaching the hatchery. On the basis of the experimental work, and the predicted heavy run, provision was made by the Fish Commission to allow a controlled commercial harvest in Young's Bay in 1962. This would allow both a capacity egg take at the Klaskanine Hatchery and a commercial harvest of excess fish that otherwise would go unutilized. Additional fish were available to the sport fishery as well.

Improved hatchery operations have also greatly enhanced runs on the coastal rivers. Some years ago for example, it was impossible to take enough silver eggs from the Alsea River alone to make it feasible to operate the Fish Commission hatchery there. During the 1961-62 spawning season, however, enough eggs were taken here to exceed the yearling rearing capacity of all of the coastal hatcheries combined, truly an outstanding example of salmon rehabilitation activities. The indications for the following year are equally bright.

These are some of the accomplishments of the Oregon Fish Commission during the past biennium. Others are cited in the pages that follow. The foodfish resource management problems are becoming increasingly complex and numerous. Only by cooperative and dedicated study will we insure fish for future generations. May the challenges facing us be met with efforts as productive as they are sincere.



Underwater check by divers from the Oregon Fish Commission and the Washington Department of Fisheries was part of the investigation of the effects of seismic oil exploration activities on fish and shellfish off the Oregon coast.

## ADMINISTRATION DIVISION

The Administration Division conducts the business management activities of the commission including general accounting, preparation of budgets, budgetary control, personnel administration, records management, general secretarial work, issuance of licenses, purchasing, poundage tax collection, statistics compilation, property inventories, and preparation of general records and reports.

During the biennium the number of regular employees on the Fish Commission payroll averaged 185. Of this number, 20 were employed in the engineering division, 25 in administration, 69 in research and 71 in fish culture.

Three commissioners, appointed by the Governor for four year staggered terms and representing no specific interest or area, have full power to transact any business and exercise all rights, duties, and powers of the commission as described by law, including the promulgation of rules, orders, and regulations. The commission delegates to the state fisheries director, appointed by them for a four year period, all authority, power, and

duties necessary to fully accomplish the purpose of the law. He is executive head of and responsible to the commission for administration of all the laws of the state applicable to commercial fishing. Aiding the state fisheries director in his administrative and supervisory functions is an assistant state fisheries director, holding the highest fish commission civil service position.

Activities of the Fish Commission are financed by funds obtained from three sources: (1) appropriation from the state general fund, amounting to approximately \$1,737,000 for the 1961-63 biennium; (2) federal funds granted for the conduct of specific fisheries management programs, totaling about \$1,586,000 for the two year period; and (3) donation funds provided the commission by private companies and other agencies to conduct research on specified subjects, totaling approximately \$49,000 for the two year period.

Among the changes initiated by the division during the biennium was the abolition of the fishermen's pass book system of keeping fish and shellfish landing records. A new system was put

into effect under which packers and dealers voluntarily remit poundage fees directly to the commission. A Fish Commission traveling auditor makes periodic on-the-spot checks of packers' and dealers' records upon which poundage fee payments are based. A fisherman's catch record book is used by fishermen to record landings not purchased by dealers at the point of landing and is the basis upon which poundage fees are collected on this portion of the commercial harvest. The new system is expected to result in a biennial savings of about \$30,000 in poundage fee system administrative costs.

A second important change was the formation of a secretarial pool to replace the older system under which secretaries were assigned to specific divisions and sections. The results of this change include maximum work production, the better utilization of secretarial personnel, efficient work flow with minimum effort, and better utilization of available office space.

During the biennium a management analyst was employed to review in detail the activities of the various divisions and sections and to recommend, on the basis of the study, changes, refinements, and improvements for more efficient operation of the commission.

A coordinator position was established during the biennium to provide supervision and coordination of Fish Commission activities under the federal Columbia River Fishery Development Program. Among the matters involved in the CRFD program are; operation of five state-operated, federally-financed hatcheries on the Columbia River, stream clearance activities, and fish passage facility planning and development.

**Water Resources Section**—The program of this section is concerned with developing and recommending adequate means for solving fisheries problems resulting from multiple-use development of the state's water resources by private landowners, hydro-electric power interests, fishermen, conservation groups, navigationists, flood control groups, municipalities, pulp and paper companies, lumber companies, and recreationists.

Activities of the section were considerably increased during the biennium due to accelerated planning and activity on projects which cause fishery problems. Continued maintenance of anadromous fish runs in Oregon is being threatened by construction of dams on the Columbia, Snake, and Willamette Rivers, and other important salmon-producing streams of the state. It is the responsibility of the water resources section to review proposals and plans for all water development projects that affect food and shellfish

resources and recommend to the state fisheries director policies and mitigative measures for their preservation.

Four new projects initiated during the biennium have been placed under the supervision of the section. These include: (1) Carmen-Smith spawning channel on the McKenzie River, (2) Cougar Dam salmon trapping and transport facility on the South Fork of the McKenzie, (3) seismic oil exploration observations, and (4) development of criteria for minimum stream flow required for maintenance of fish life.

The section is frequently called upon to represent the commission at meetings and hearings before the State Engineer, Water Resources Board, Corps of Engineers, Federal Power Commission, and other public and private agencies. Liaison between other divisions of the commission and outside agencies is also a significant function of the section.

**Information Education Section**—It is the responsibility of the I&E section to provide to the general public information regarding the activities of the Fish Commission in protecting, preserving, propagating, cultivating, developing, and promoting the food fish and intertidal non-food form resources of the state. Various media are employed in discharging this responsibility, including news releases, television news clips, displays and exhibits, movies and color slides, informational publications, and talks to sportsmen's groups, service clubs, school classes, and others. The section frequently supplies photographs to newspapers and periodicals requesting illustrations connected with the food fish resources of the state and handles much correspondence in which information not available in published form is requested.

Trends of abundance of spawning salmon and steelhead are determined each year by counting spawners in specific index areas.



## ENGINEERING DIVISION

Headquartered in the Portland administrative center of the Fish Commission, the Engineering Division provides a variety of technical services. The division is divided into two sections; an office group concerned primarily with planning and administration and a field group involved mainly with construction and field engineering activities.

The office staff prepares designs, drawings, specifications, contract documents, and estimates; handles cost control and administration of contract work; and maintains files and records for the division.

The field engineering group is charged with the execution of construction and stream improvement programs, both on contracts with private construction companies and with regular commission crews. Other duties include inspection, operation, and maintenance of fish passage facilities; inspection and maintenance of Fish Commission structures and facilities; maintenance of the warehouse located in Portland; and conduct of engineering field surveys.

During the 1960-62 biennium, engineering division activities have been varied and widespread, consisting of new construction, remodeling and repair of existing facilities, spawning stream improvement, and planning of future projects. Financing of these activities has been augmented by the federal government through the Columbia River Fishery Development Program.

Wahkeena Lake, a 20-acre salmon rearing pond adjacent to the Columbia River Highway near Benson State Park some 20 miles east of Portland, was constructed and put into operation. This experimental facility was designed to test the feasibility of rearing salmon fry to migratory size without supplemental feeding.

A federally financed pathology laboratory was designed and bids let for construction at the Clackamas research division headquarters.

Construction of a denil-type fishway over a falls on Lookingglass Creek, a tributary of the Grande Ronde River in Union County was completed. The structure makes available at all water stages several miles of excellent spawning gravel for salmon and steelhead. Denil ladder baffles are so arranged that water currents flush leaves, twigs, and other debris through without allowing them to accumulate, making this type of construction especially suitable for isolated sites where frequent inspection is not practical.

Removal of a 20-foot high splash dam on the Luckiamute River near Valseltz returned to salmon and steelhead production 10 miles of prime spawning gravel. Two 10-case charges of dynamite were required to loosen debris and create a channel through the dam face so clearance work could begin.



Plans were prepared for construction of a vertical slot fishway on Wiley Creek, a tributary of the South Santiam River in Linn County, and also for two fishways on the Lostine River in Wallowa County. The Lostine fishways will stabilize the river bed and provide passage over Sheep Ridge and City of Lostine dams.

Assistance in design of fishways was given to other agencies, including the U. S. Forest Service.

During the biennium 33 log jams totaling some 11,000,000 board feet of logs were removed from Oregon's streams. These varied in size from relatively small jams consisting of a few thousand board feet of logs to a half-mile long accumulation



Above: Falls and temporary fishway on Lookingglass Creek, a Grande Ronde tributary in Union County.

Below: New Denil-type fishway gives access to spawning areas at all water stages.



that contained an estimated 2,000,000 board feet. This huge jam was located on Rock Creek in the Nehalem River system.

The blasting of a 20-foot high, 150-foot long, and 50-foot wide splash dam on the Luckiamute River near Valsetz returned to production 10 miles of spawning area for silver salmon and steelhead. The dam, built in 1903 to provide log storage, had not been used for this purpose in nearly 40 years. Debris had backed up behind the timbered structure for over 300 feet and was 20 feet deep in some spots. Two ten-case charges of dynamite were required to loosen debris and create a channel through the dam face so clear-

ance work could begin. Three other fish-obstructing dams were removed during the two-year period.

Success was experienced in blasting steps and pools over natural falls where rock was found to be sound and stream flows not excessive during the period of the year when salmon and steelhead were moving upstream. Twenty-one falls were thus treated during the course of which 5,000 cubic yards of rock were removed.

Installation of an additional pump at Cascade Hatchery assures sufficient hatching and rearing water during periods when the primary supply is reduced by low flows or blocked by ice. A recirculation pump installed at the Sandy River Hatchery assures full capacity rearing even during the period of low water flow.

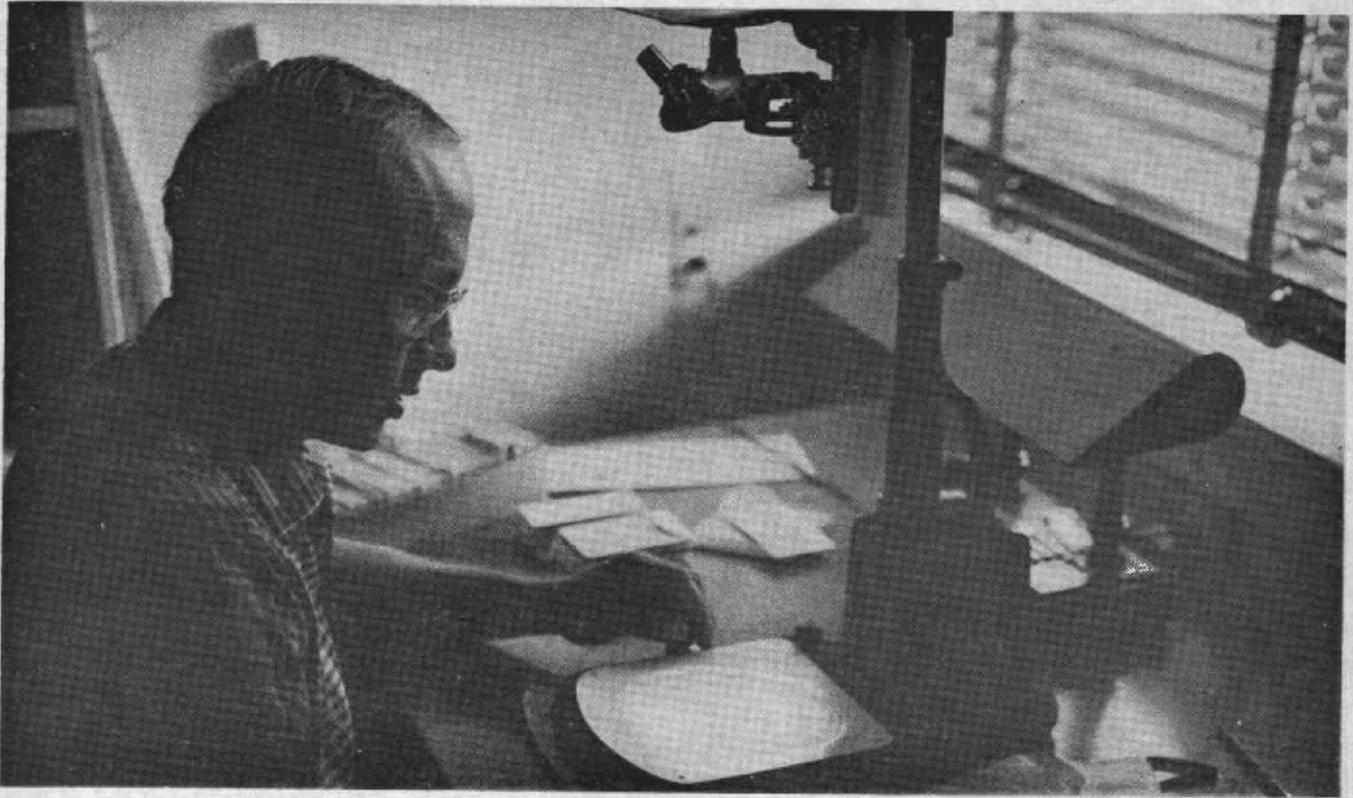
Plans and specifications for construction of a holding pond at the Big Creek Hatchery were prepared. Contract construction will begin early in 1963.

The dwelling at Oxbow egg-taking station on Herman Creek was raised above the Columbia River high water line, set on a concrete foundation, enlarged and modernized. The holding ponds were remodeled to improve adult handling and egg-taking. Steel picket panels were used to replace wooden ones, eliminating beaver damage and reducing maintenance time and expense. Flood lights were installed and roadways paved.

At the Trask River Hatchery a new rearing and hatching water supply system was constructed. The system consists of a concrete diversion dam on Gold Creek, water control headworks and fishway, a 16-inch steel pipe line, headers and valves. The system was designed to allow for ultimate expansion of the hatchery. Two holding ponds were excavated on the site and provided with temporary wooden water control structures.

The division provided skilled mechanics, drawings, specifications and equipment for many small jobs such as re-roofing buildings, replacing septic and fuel tanks, refrigeration system repair and remodeling, painting, pump and motor repairs, rack installations rigging, tree topping and falling, installation of trap facilities, cabinet and carpentry work, electrical work and other general maintenance items.

Fifty-seven fishways, both public and privately owned, were inspected periodically. Public-owned fishways were repaired, maintained, and operated as required. Privately-owned fishways were often operated by the division, but usually repaired and maintained by the owner. Willamette Falls fishways required the greatest amount of attention, regulation, and repair and will continue to do so until new facilities are provided.



Biologist "reading" projected image of fish scale to determine age of specimen at capture. Age composition of runs is an important consideration in evaluating status of various stocks.

## RESEARCH

It is the function of the Research Division to seek solutions to the many perplexing biological problems with which the commission is confronted in its efforts to properly manage the fishery resources of the state. Headquartered at Clackamas on the site of an early day federal fish hatchery, the Clackamas Laboratory is the focal point of commission research activities. Laboratories are maintained at six other sites located strategically for study of specific problems. Included are research facilities at Astoria, Newport, Charleston, Sandy, Oakridge, and Redmond.

The following summarizes the principal research projects that were active during the 1961-63 biennium.

**Albacore Investigations**—This study is concerned primarily with albacore tuna taken in the northeastern Pacific and landed in Oregon, and secondarily with pelagic forage species such as anchovies. Present activities of project personnel include: (1) an annual cruise to explore early season ecological conditions off Oregon to relate these data to subsequent albacore abundance and to scout for albacore along a predetermined cruise track and report fishing success to the commercial

fleet; (2) documentation of catch locality and catch-per-effort so these essential data will be available to all agencies involved in albacore research; (3) study selected phases of the biology and population structure of albacore through collection of size composition samples of the catch; (4) investigate the movement and migration habits of albacore off Oregon; and (5) represent the Fish Commission at coastwide interagency meetings to plan and coordinate albacore research.

**Otter Trawl Investigations**—This study is concerned with research and management investigations on the groundfishes and shrimp, exploited primarily by the otter trawl fishery on grounds off the Oregon coast.

Long-term studies are directed primarily toward monitoring the status of the Pacific Ocean Perch (one of the rockfishes) and the more important groundfish stocks such as Dover, English, and petrale soles. The groundfish have a life span of from 20 to 30 years and may require from 4 to 7 years to attain harvestable size. Short-range investigations of these species yield little practical information except in regard to fecundity, maturity, and length-weight relationships.

**Hatchery Biology Investigations**—Continuing studies in nutrition of hatchery fish were concerned mainly with autoxidized fats and their relationship with vitamin E, activity of several antioxidants, dehydrated Oregon pellets, and Oregon pellets “crumbled” for small fish. A technique was devised for medicating Oregon pellets. Sulfa drugs commonly used for treating fish diseases were tested for bacteriostatic activity and rate of absorption in the blood to determine optimum treatment levels. Salmonid tissue cells were cultivated in test tubes and progress was made in developing a stable cell line for future experimental work. Hematology of salmon blood was studied and a technique developed for using cellular morphology as a diagnostic tool. Valuable technical assistance was provided the Fish Culture

Division by regularly monitoring fish health and recommending prophylactic and therapeutic treatment measures. Several fish diseases were investigated in an effort to develop means of prevention or control. Oregon pellet manufacturing specifications were improved, quality control procedures were devised, and results of the feeding program were evaluated.

**Columbia River Fishery Development Program**—The primary activities of the program consisted of providing biological data under seven separate contracts between the Oregon Fish Commission and the U. S. Bureau of Commercial Fisheries.

Also, additional data were summarized during the biennium in mark processing and analysis, Columbia River and ocean commercial fishery mark sampling, silver salmon spawning ground surveys, and Willamette spring chinook status determination.

Six new operational studies to aid in developing improved fish cultural techniques were initiated during the biennium, and a summary report was prepared for each of the following projects: (1) the development of methods for determining the age of adult salmon; (2) the testing of electronic, photo-electric and photographic methods for determining numbers and weight of fish in hatchery ponds; (3) the comparison of migration and growth of wild and hatchery-reared silver



Left, above: Count out of silver salmon fingerlings at Wahkeena Pond.

Left, below: Experimental plants of steelhead eggs in plastic screen containers used to determine incubation success under varying water conditions.



Right, below: Pathologists seek control methods for fish diseases at Clackamas laboratory.



salmon in three streams; (4) the collection of limnological and fish production data at the Wahkeena natural rearing pond; (5) determination of the feasibility of inducing an identifiable "check" on the scales of silver salmon by temporary starvation; and (6) the collection and analysis of data from the Gnat Creek upstream-downstream weir.

**Coastal Rivers Investigations**—The coastal rivers investigations section continued monitoring the adult salmon spawning population in rivers along the Oregon coast. Annual trends of abundance of spawning fish are determined each year by counting the spawning salmon in specific index areas. The peak counts on these areas are used as the indicator of annual abundance, reflecting the relative condition of the spawning stocks and the potential of the succeeding brood year.

Studies have continued to determine the value of lakes for natural rearing of juvenile silver salmon. An intensive survey program was completed with physical data and productivity measurements taken on 17 lakes to determine their suitability for rearing silver salmon. Juvenile silvers were planted in eight of seventeen lakes surveyed.

Fish passage obstacles and potential pond rearing sites were investigated, and where appropriate, reviewed with other agencies, to determine the biological justification for recommending projects under the 60/40 salmon rehabilitation appropriation.

Technical advice and assistance were provided to Salmon Unlimited, a dedicated Gold Beach area sportsmen's group, in operation of a pond rearing facility in Curry County. Silver salmon fry were provided the organization during both years of the biennium.

Information was collected from the two commercial fisheries remaining on the coastal streams. The shad and striped bass landed from the Coquille, Umpqua, Smith, and Coos Rivers were sampled for sex, size, maturity, and age composition. Similar data were collected from the November chum salmon fishery in Tillamook Bay.

**Mark Analysis Investigation Section**—This section is responsible for the coordination, supervision, and analysis of Fish Commission salmonid fin-marking experiments. Fin marking is a general tool used in fisheries research in order to obtain information relative to a number of important problems; for example, rate of survival, contribution to fisheries, distribution, timing and most suitable size for liberation, disease, and diets. Field work in this section is minimal. Because large amounts of data are collected, IBM data



Fish Commission biologists aboard the Fish and Wildlife Service vessel JOHN N. COBB tag sole as part of long-term otter trawl investigations.

processing methods are utilized. Card punching and machine processing are currently handled by the State Board of Health in Portland. The activities of the section are supported by both state and federal funds.

**Fish Passage Research Investigation**—The activities of this non-state financed section are concerned with both adult and juvenile anadromous salmonids in relation to dams, with the objective of developing adequate passage facilities. Four studies, financed through contract with other organizations, have been active during this biennium. These include an evaluation of fish passage facilities at Pelton Dam on the Deschutes River, financed by the Portland General Electric Company; an evaluation of passage facilities at the North Fork Dam on the Clackamas River, also financed by PGE; a study of the behavior of juvenile anadromous salmonids in reservoirs, financed by the Bureau of Commercial Fisheries under provisions of the Saltonstall-Kennedy Act; and a study of the effects of small impoundments on the behavior of juvenile chinook, silver salmon, and steelhead, financed by the Bureau of Commercial Fisheries under Secretary Udall's accelerated fish passage research program.

**Troll Salmon Investigations**—Complete management of the salmon resource dictates the need for information on the marine as well as the fresh-water aspects of the salmon's life cycle. To this end, the catch of the ocean commercial fishery is observed for the presence of fin-marked (usually hatchery-reared) salmon and determination of the importance of each age group to the troll catch. In addition, studies are being carried out at sea, using chartered commercial fishing vessels to measure the mortality incurred by releasing small non-marketable salmon and testing barbless hooks in reducing the damage done to the small salmon released in the fishing operations. These sea studies also yield information on the ocean movements of salmon originating in a particular river system and the maturity of fish comprising the commercial catch.

**Shellfish Investigations**—Activities of this section are devoted to investigations concerned with the management of crabs, razor clams, bay clams, and other shellfish.

The development of the "splitting line" tagging method for marking Dungeness crabs was a major accomplishment of the section during the past two years. Crabs marked by the new method retain the identifying tab through several successive shell moultings, rather than losing them as formerly during the first shedding following tagging. The new method makes possible much more comprehensive studies of age, growth, migration, population, mortality, and degree of harvest.

During the two-year period, bay clam populations were surveyed in all estuaries and work was conducted on tagging techniques for these species.

A personal-use shellfish regulation change recommended by the section to reduce wastage of clams in areas containing mixed bay clam populations was adopted by the commission. The commercial and personal-use razor clam takes in Clatsop County were closely monitored as in the past, and abalone and scallop explorations off southern Oregon were continued. The section was active in delineating areas of protection and restricted harvest of intertidal non-food forms, under the action of the 1961 Legislature which granted the Fish Commission jurisdiction over these species.

**Columbia River Investigations**—Activities of this section are concerned with the management of the multi-million dollar Columbia River commercial fishery which includes runs of steelhead, four species of salmon, two species of sturgeon, shad, and smelt. The management program is subject to an interstate compact with the State of Washington.



Biologist using flow meter to determine water velocity in salmon spawning area.

Activities of the investigation are based on the monitoring of the fishery to determine its influence on the various runs, the use of predictors to guide in determining the rate of harvest and to permit desired escapements, the assessment of escapement to relate to future production, and the determination of age groups in the catch to ascertain the contribution of specific year classes to the fishery.



A highlight of the biennium's operations was the excellent return of silver salmon to the hatcheries during the 1961-62 season. In the photo above, spawned-out silver salmon are being loaded at Alsea Hatchery for disposal.

## FISH CULTURE

The role of Fish Commission hatcheries in maintaining salmon and steelhead runs becomes increasingly important as the effects of expanding industry, agriculture, hydroelectric development, and domestic demands make their influence ever more apparent in reduced quantity and quality of salmonid spawning and rearing habitat.

The Division of Fish Culture operates sixteen hatcheries to produce spring chinook, fall chinook, chum, blueback, and silver salmon and steelhead for release into the state's waters. Five of these hatcheries are located on tributaries of coastal streams, six on small tributaries of the Columbia River, four in the Willamette River drainage, and one on a tributary of the Deschutes River.

Commission fish cultural operations have become self-sustaining in that salmonids now return to hatchery streams in sufficient quantities to provide rearing-capacity egg takes, plus enough escapement above hatchery racks to assure adequate utilization of natural spawning areas.

During the 1961 fiscal year, 33,000,000 salmon and steelhead eggs were taken at commission hatcheries, followed by a take of 52,000,000 during fiscal 1962. Liberations of fingerling steelhead and salmon totaled over 61,000,000 during the biennium. Approximately 20 per cent of these were

released into coastal streams and the balance into the Columbia and Willamette systems.

In addition to fingerling salmon and steelhead liberations, quantities of fry are released in areas where natural rearing potential is good; for example, in the Hall-Schuttpelz Lakes chain in Coos County. Hatchery liberations are also important in establishing or re-establishing runs in areas where laddering, log jam removal, dam blasting, or other stream improvement activities have made "new" water available. For example, removal by a Fish Commission engineering crew of a large splash dam on the upper Luckiamute River near Valsetz made available about ten miles of prime spawning gravel that had been blocked for nearly half a century. A release of 105,000 silver salmon fry was made as an initial step in re-establishing a run in that part of this important Willamette River tributary.

During the second year of the biennium, the egg take at commission hatcheries greatly exceeded the rearing capacity of the stations. As a result, 6-million eggs were distributed to other agencies, including the U. S. Fish and Wildlife Service, the Washington Department of Fisheries, Oregon Game Commission, and the California Department of Fish and Game.



One million eggs from late fall-spawning chinook salmon were received from the California Department of Fish and Game and planted in the gravel of the South Fork of the Coos River. The experimental eyed-egg plant was made in an effort to establish a later-spawning chinook run that would take advantage of better water flows and more advantageous temperatures than the remnant of the early fall-spawning native run that normally is faced with poor spawning conditions.

During the biennium, a man was assigned to the full-time evaluation of fish cultural techniques employed at commission hatcheries as well as at installations operated by other state and federal agencies, and monitoring of the current literature for ideas to improve hatchery operations. A number of improvements in fish cultural procedures and techniques already have resulted.

Streamlining of hatchery records keeping was accomplished during the biennium. The weekly report has been replaced by a monthly summary which requires fewer man hours to compile, eliminates duplication and inaccuracies, provides additional data, and yields a more up-to-date picture of operations.

With the development during the biennium of the commission's new plastic scoop "100-egg counter", it has become possible to record with a high degree of accuracy the annual egg takes at the various stations.

Improved methods of handling young fish in rearing ponds were developed during this report period. Included were development of a crowder that is easier to move and which minimizes losses of fish from crushing against the sides and bottom of cement rearing ponds, formerly the source of some mortality, and the development of a net-lined rigid weighing basket that reduces piling-up damage to fish during counting-out operations.

In fish liberation activities several improvements were initiated during the biennium, including development of small-mesh wire baskets which are suspended in liberation tanks to facilitate handling unfed fingerlings in scatter planting and to eliminate fingerling pile-up losses.

Constant improvement in fish cultural techniques is characteristic of Fish Commission hatchery operations. Innovations by employees include: top, a time-saving food pellet distributor; center, an improved fingerling weighing basket; and bottom, a new device for killing mature salmon in preparation for egg-taking.

Investigations to determine the most favorable time of the year and the optimum size range for fingerling liberations continued during the period. Holding fingerlings of all species until they attain a larger average size than most of those released during former years appears at present to be advisable.

Mechanical graders were in use at the hatcheries during the latter part of the biennium, although a new automatic in-pond grader presently in the development stage gives promise of further simplifying this operation. It is believed that grading or sizing of fingerlings in the rearing ponds is at least partially responsible for the better food conversions during the past two years.

Improved diagnostic techniques and development of more positive treatments for certain diseases have resulted in greater quantities of prime fingerlings liberated. Kidney disease and fish tuberculosis have been cut drastically by dietary refinements. Sulfonamids were used to control furunculosis and bacterial gill disease, serious afflictions in hatchery fish.

Spectacular advances have been made during recent years in the field of fish nutrition. Previously the diet of hatchery fish was composed of a large variety of packing house by-products, fish cannery wastes, raw ground carcasses of hatchery-spawned salmon, and miscellaneous meals, mainly of vegetable origin.

Beginning in 1948, nutrition specialists at Oregon State University, in cooperation with Fish Commission biologists, began experiments directed toward development of a more satisfactory hatchery diet. The end result was the formulation of the Oregon pellet. This highly efficient, nutritionally balanced fish ration has been widely acclaimed as a major advance in fish culture. Its acceptance by other agencies involved in hatchery operations, both state and federal, attests to the degree of interest in this new Oregon product.

Mechanical difficulties in producing smaller-sized pellets have been overcome, making it possible to obtain the Oregon pellet in sizes small enough to be accepted by fish after only one month on a wet starter diet. Formerly, hatchery fingerlings had to be fed for three months on the wet diet before being put on pellets. This makes it possible for the young fish to obtain the benefits of the superior moist pellet diet earlier in life.

Centralization of wet starter diet preparation at the larger hatcheries better equipped for the operation began during the biennium. It has proven to be more economical than having each station prepare the ration.

During fiscal 1961, the hatcheries fed 920,000

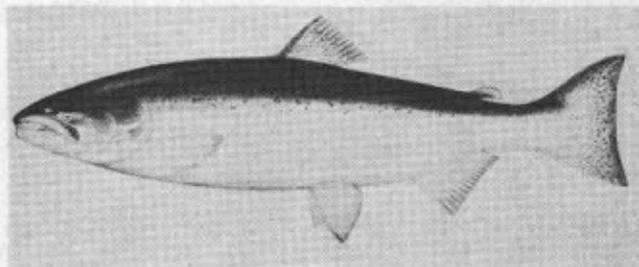
pounds of pellets and 770,000 pounds of wet diet costing approximately \$190,000. Over 27,000,000 salmon and steelhead, weighing some 574,000 pounds, were produced.

In fiscal 1962, 1,150,000 pounds of pellets and 385,000 pounds of the wet diet costing \$223,000 produced about 34.5-million salmon and steelhead weighing 655,000 pounds.

One of the highlights of the past two years' operations was the excellent return of silver salmon to the hatcheries during the fall and winter of 1961-62. These were fish reared from eggs taken in 1958. As fingerlings, they had been fed the Oregon pellet after being started on a wet diet which included pasteurized salmon viscera. Good ocean survival conditions, coupled with vastly improved physical condition of fingerlings released from the hatcheries, appear to have played an important role in making returns among the highest since the 1930's. Preliminary investigations indicate that kidney disease and fish tuberculosis, formerly the source of heavy losses of young hatchery fish, have been drastically reduced by the pasteurization of the salmon viscera component in the wet diet.

In addition to the hatchery take of 32-million silver salmon eggs during the 1961-62 season, females with an egg potential of over 3 million, and an appropriate number of males, were allowed to pass hatchery racks to spawn naturally. Since both fall and spring chinook return to spawn as four-year fish and older, results of the improved feeding and disease control program did not become apparent in these runs during the biennium. The return of the first adults reared under the improved program is expected during the fall of 1962. Based on the excellent condition of fingerlings released, there is considerable optimism that returns of both spring and fall chinook will be better than the average of recent years.

The present hatchery facilities are being improved and rearing capacities increased as funds become available. Prospects are bright for the commission's fish cultural activities to continue to make an ever greater contribution to the management of salmon and steelhead in Oregon.



Chinook Salmon



## FISH COMMISSION SERVICE RECOGNITION PROGRAM

Nearly a thousand man years of service to the Fish Commission have been publicly heralded since the inauguration in April 1960 of the department's service recognition program.

Official expression of appreciation for extended periods of public service is manifested by presentation of a lapel pin marked with the appropriate period of employment with the Fish Commission, in multiples of 10 years.

At a staff conference in Astoria during the early part of 1960, the program was launched with a group presentation of 53 service pins representing a total of over 700 man years of service to the people of Oregon. Subsequently 13 more pins representing a period of nearly 300 years of state service were awarded before the end of the 1960-62 biennium.

Since the initial group presentation, it has been customary at the regular monthly meetings for the Commission chairman to award pins, with a brief ceremony which includes an account of the outstanding accomplishments of the individual being honored.

An outstanding example of service with the Fish Commission is the case of Frank W. Smith, hatcheryman of Dellwood, Coos County. Frank was 20 years of age when he accepted employment at the Commission's Coos Hatchery on July 19, 1900. He remained at the Coos station as a full-time employee for over half a century, retiring in 1953. He had been superintendent of the Coos Hatchery since 1947. Frank's retirement has been an active one and his services as a hatcheryman and fish cultural consultant are still in demand by the Commission on a part-time basis. In presenting a 50-year pin in recognition of his long service to the state, Commission Chairman Herman P. Meierjurgan noted that Frank W. Smith, hard work, devoted service, and Coos River salmon have become synonymous over the six decades Frank has been actively associated with Oregon conservation.



### 50 YEAR SERVICE AWARD

Frank W. Smith

### 30 YEAR SERVICE AWARD

Archie W. Anderson  
Irvine French  
M. T. Hoy  
H. S. Smith  
H. C. Warren

### 20 YEAR SERVICE AWARD

Max V. Frame  
Orval Greer  
Charley Hansen  
T. C. Harrison  
H. F. Linse  
Arthur Minney  
Clifford M. Ritter  
John C. Ryckman  
Lloyd N. Taylor  
Marion T. Welborn

### 10 YEAR SERVICE AWARD

Ned E. Abrams	Claude L. McCool
William H. Asplund	Thomas B. McKee
Kenneth C. Bennett	Alfred R. Morgan
Otto J. Bodie	Edward K. Neubauer
Richard H. Bolle	Emmett Nordlund
Raymond N. Breuser	Deloris L. Parsons
Paul F. Chadek	Earl F. Pulford
Marion G. Christensen	James M. Ray
Melvin D. Collins	Robert L. Rulifson
John F. Conrad	Robert W. Schoning
Ralph M. Conway	Malvin A. Sharp
Lewis W. Curtis	Harley C. Shirley
Howard V. Drago	Charles F. Shroy
E. C. Fesselt	Orville H. Shroy
John Glegor	George V. Smalley
Mary D. Goetsch	Quentin E. Smith
Robert T. Gunsolus	Ernest L. Spadafore
Richard S. Harrison	Perry A. Sullivan
George Hirschhorn	Virgil C. Summers
Wallace F. Hublou	Jack M. Van Hyning
Ernest R. Jeffries	Sigurd J. Westheim
Floyd A. Jones	Reed G. White
Vernon P. Knowles	Theodore W. Williams
Robert E. Loeffel	Raymond A. Willis
Lowell D. Marriage	Richard A. Whitlatch

## RETIREMENTS

**HARRY F. LINSE**—An employee of the Fish Commission for twenty-one years and three months, Harry Linse retired from the commission on June 30, 1962. He started his career with the commission as an accountant on March 24, 1941, becoming Fiscal Officer and Office Manager in 1947. In 1961 he was appointed to the newly created position of Federal Coordinator dealing with fiscal matters between the Fish Commission and various federal agencies. He is widely known in state administrative circles for his outstanding abilities in administrative and fiscal affairs.

**ROBERT M. HAMILL**—Retiring from his post as Director of the Engineering Division on June 30, 1962, Bob Hamill had served with the commission for four years and three months. Prior to accepting this position with the commission, Hamill, a registered professional engineer, had been employed by the City of Portland as Senior Hydraulic Engineer. He previously had served in various engineering capacities with Harvey Aluminum Company, Morrison Knudson Company, the U. S. Army Corps of Engineers, and Willamette Iron and Steel Company.

## SUGGESTION AWARDS PROGRAM

The Employee Suggestion Awards Program was established by the State Legislature in 1955. The purpose of the program is to encourage and reward state employees for meritorious suggestions that will promote efficiency and economy in the performance of any function of state government.

From January 1959, when the first award was made to a Fish Commission employee, through June 1962, ten suggestions by Commission employees have been accepted under terms of the program.

<b>Suggestion</b>	<b>Employee</b>	<b>Date Accepted</b>
Envelopes for Collecting Fish Scales .....	Robert Loeffel .....	1-23-59
Egg Sampler or Counter .....	Keith Moore .....	5-20-59
Motorist Warning Sign for Fish Liberation Process .....	Kenneth Bennett .....	8-27-59
Improved Stream Survey Form .....	Raymond Breuser .....	10-29-59
New Holding Facility for Adult Salmon at Bonneville .....	Archie Anderson .....	8-11-61
New Hatchery Report Forms .....	Wallace Hublou .....	12-20-61
Improved Method for Handling Fry .....	George Smalley .....	11- 6-61
Trap for Collecting Fingerlings .....	George Smalley .....	11- 6-61
New Spawning Chute .....	George Smalley .....	5-31-62
Method for Removing Dead Fingerlings .....	T. C. Harrison .....	6-29-62

STATEMENT OF RECEIPTS AND DISBURSEMENTS

Biennium July 1, 1960 to June 30, 1962

RECEIPTS—APPROPRIATIONS—ALLOTMENTS

		Fiscal Year Ending June 30, 1961	Fiscal Year Ending June 30, 1962
APPROPRIATIONS FROM STATE GENERAL FUND:			
Unexpended Balance 1957-1959 .....	\$ 50,363.85		
Transferred to State General Fund .....	50,363.85		
	<hr/>		
Unexpended Balance 1959-1961 .....		\$ 916,287.78	\$ 93,312.08
Appropriation 1961-1963 .....	\$1,651,581.00		
Emergency Board—Salary Revisions .....	107,135.00		1,758,716.00
	<hr/>		
Total Appropriations .....		\$ 916,287.78	\$1,852,028.08
LICENSE FEE RECEIPTS:			
Fishing Licenses .....		\$ 64,085.50	\$ 62,096.00
Dealers and Processor Licenses .....		22,212.00	17,984.00
		<hr/>	
Total License Fees .....		\$ 86,297.50	\$ 80,080.00
Poundage Fee Receipts .....		\$ 100,435.92	\$ 108,662.14
Fines and Confiscated Property Sales .....		3,206.55	516.96
Miscellaneous State General Fund Receipts .....		1,569.88	922.64
		<hr/>	
Total State General Fund Revenue .....		\$ 191,509.85	\$ 190,181.74
Miscellaneous Receipts Account—Surplus Property Sales, and other .....		\$ 4,240.12	\$ 4,686.49
Total Appropriations, Revenues and Miscellaneous Receipts .....		\$1,112,037.75	\$2,046,896.31
Less: Revenues Transferred to State General Fund .....		191,509.85	190,181.74
		<hr/>	
Available for Expenditure from General Fund .....		\$ 920,527.90	\$1,856,714.57
UNITED STATES GOVERNMENT:			
Columbia River Fishery Development Program .....		\$ 815,778.53	\$ 833,955.81
Saltonstall-Kennedy Studies on Salmon Behavior in Forebays .....		32,815.03	12,161.70
Fish and Wildlife Service .....			52,291.07
Marion Forks Hatchery—North Santiam River .....		83,603.30	75,818.74
Willamette River Hatchery—Oakridge .....		67,798.21	75,828.32
Army Engineers: Cougar Dam Fish Passage .....		2,372.93	2,464.26
		<hr/>	
Total United States Government* .....		\$1,002,368.00	\$1,052,519.90

	Fiscal Year Ending June 30, 1961	Fiscal Year Ending June 30, 1962
DONATIONS:		
Portland General Electric Company—		
Evaluation Pelton Dam Fish Facilities .....	\$ 17,104.60	\$ 9,097.07
Evaluation North Fork Fish Facilities .....		16,100.00
Oregon State Game Commission—		
Tissue Culture Research Studies .....	10,000.00	16,452.56
Kimberly-Clark Corporation—		
Conducting bioassays on salmonid eggs .....	1,500.00	376.22
Pacific Northwest Power Company—		
Equipment for Salmon Disease Studies .....	2,500.00	1,825.00
Shell Oil Company—		
Seismic observer .....	800.00	6,086.27
Eugene Water and Electric Board—		
Watchman at Walterville Canal .....		2,100.00
Carmen-Smith Spawning Channel .....		12,670.75
Atomic Energy Commission—		
Marine Fish Offshore-Inshore Exchange of Groundfish .....		7,000.00
Total Donations* .....	\$ 31,904.60	\$ 71,707.87
Total Available for Disbursement from Foregoing Sources .....	\$1,954,800.50	\$2,980,942.34

\* Totals include balance from previous year.

STATEMENT OF RECEIPTS AND DISBURSEMENTS  
Biennium July 1, 1960 to June 30, 1962

**DISBURSEMENTS**

	Fiscal Year Ending June 30, 1961	Fiscal Year Ending June 30, 1962
STATE GENERAL FUND		
Division of Administration:		
Direction, Policy and General Supervision .....	\$ 36,860.29	\$ 38,471.47
Business Management .....	106,263.49	103,358.15
Information and Education .....	19,268.91	19,320.89
Water Resources .....	23,509.08	36,935.70
Pacific Marine Fisheries Commission .....	2,100.00	2,400.00
Total .....	\$ 188,001.77	\$ 200,486.21
Division of Fish Culture:		
Supervision .....	\$ 22,380.73	\$ 15,594.70
Hatchery Operation and Maintenance		
Lower Columbia River .....	60,816.61	61,372.93
Willamette Basin .....	71,738.30	75,583.70
Coastal Rivers .....	121,949.92	149,746.33
Total .....	\$ 276,885.82	\$ 302,297.66
Division of Research:		
Supervision .....	\$ 56,361.93	\$ 55,771.16
Coastal Salmon Investigations .....	33,287.59	40,579.72
Columbia River Investigations .....	48,750.46	43,399.80
Hatchery Biology, Nutrition and Disease Studies .....	32,211.08	24,705.87
Shell Fisheries Investigations .....	30,240.39	31,753.03
Marine Fisheries Investigations .....	58,628.24	60,478.99
Marking Analysis .....	12,440.30	13,720.74
Total .....	\$ 271,919.99	\$ 270,409.31

STATE GENERAL FUND—Disbursements—Continued	Fiscal Year Ending June 30, 1961	Fiscal Year Ending June 30, 1962
Division of Engineering:		
Supervision and General Services .....	\$ 54,456.41	\$ 56,928.98
Stream Improvement and Maintenance .....	31,711.71	49,089.87
Hatchery and Laboratory Improvement .....	.....	4,435.89
Total .....	\$ 86,168.12	\$ 110,454.74
Miscellaneous Receipts Account—Equipment (All Divisions) .....	8,713.53	21,344.02
Total State General Fund Disbursements .....	\$ 831,689.23	\$ 904,991.94
Balance Available from State General Fund—End of Period .....	\$ 93,312.08	\$ 968,380.16
UNITED STATES GOVERNMENT:		
Columbia River Fishery Development Program—		
Division of Fish Culture:		
Hatchery Operating and Maintenance—Lower Columbia River .....	\$ 320,767.08	\$ 293,011.13
Division of Research:		
Hatchery Biology, Nutrition and Disease Studies .....	37,130.26	44,509.22
Appraisal of Project Results, including Mark Analysis, River and Ocean Sampling, and Weir Operation .....	61,449.08	40,759.75
Stream Improvement Surveys—Columbia River Tributaries— Biological .....	9,357.55	.....
Operational Studies—Including age determination, early life history, artificial annulus, rearing pond and weir investiga- tions .....	8,096.30	78,709.52
Division of Engineering:		
Stream Improvement and Maintenance .....	32,874.23	72,951.26
Fishway Planning and Construction .....	4,974.56	33,601.78
Hatchery Planning and Construction .....	71,121.43	61,854.02
Pond Rearing Planning and Construction .....	51,196.18	711.38
Stream Improvement Surveys, Columbia River Tributaries— Engineering .....	12,620.73	243.83
Total Disbursements—Columbia River Fishery Development Program ...	\$ 609,587.40	\$ 626,351.89
Saltonstall-Kennedy Funds—		
Division of Research:		
Studies on Salmon Behavior in Forebays .....	\$ 20,653.33	\$ 8,929.34
Fish and Wildlife Funds—		
Development of methods for detection prevention and control of salmon diseases, fish behavior studies .....	.....	12,301.77
Statistical studies of the albacore tuna fishery .....	.....	291.07
Army Engineers—		
Division of Administration:		
Supervising Fish Passage at Cougar Dam .....	2,372.93	2,464.26
Marion Forks and Willamette River Hatcheries—		
Division of Fish Culture:		
Operation and Maintenance .....	140,085.58	138,341.29
Division of Research:		
Hatchery Biology, Nutrition and Disease Studies .....	11,315.93	13,305.77
Total Federal Aid Fund Disbursements .....	\$ 784,015.17	\$ 801,985.39
Balance Available from Federal Aid Funds at End of Period .....	\$ 218,352.83	\$ 250,534.51

**DONATION FUNDS:**

Division of Administration:		
Seismic observer .....	\$ 313.73	\$ 3,247.96
Carmen-Smith Spawning Channel .....		8,015.51
Division of Fish Culture:		
Conducting Bioassays on Salmonid Eggs .....	1,123.78	
Watchman at Walterville Canal .....	175.28	2,161.24
Division of Research:		
Evaluation of Pelton Dam Fish Facilities .....	11,007.37	7,218.97
Evaluation of North Fork Fish Facilities .....		5,552.07
Equipment for Salmon Disease Studies .....	375.00	1,825.00
Tissue Culture Research Studies .....	3,547.64	9,356.61
Marine Fish Offshore-Inshore Exchange of Groundfish .....	10.95	909.48
Total Donation Fund Disbursements .....	\$ 16,553.75	\$ 38,286.84
Balance Available from Donation Fund at End of Period .....	\$ 15,350.85	\$ 33,421.03

**CAPITAL CONSTRUCTION (Chapter 328, O.L. 1961)**

**APPROPRIATIONS FROM STATE GENERAL FUND:**

Water supply and control facilities—Millicoma River Rearing Pond ..	\$ .....	\$ 32,000.00
Hatchery residence and water control structure—Siletz Hatchery .....		38,500.00
Fishway—Euchre Creek, tributary Siletz River .....		24,900.00
Total .....	\$ .....	\$ 95,400.00
Disbursements .....		
Balance Available End of Period .....	\$ .....	\$ 95,400.00

**COASTAL STREAM REHABILITATION (Chapter 527, O.L. 1961)**

Appropriation .....	\$ .....	\$ 120,000.00
Disbursements .....		
Balance Available End of Period .....	\$ .....	\$ 120,000.00

**SEAL FUND ACCOUNT**  
Biennium July 1, 1961 to June 30, 1962

	Rate	Number Issued	Fiscal Year Ending June 30, 1961	Number Issued	Fiscal Year Ending June 30, 1962
Fund Balance at Beginning of Period .....			\$ 21,073.06		\$ 18,338.51
Gillnet .....	\$ 2.50	614	1,535.00	587	1,467.50
Canner .....	50.00	7	350.00	7	350.00
Total Receipts .....			\$ 1,885.00		\$ 1,817.50
Less 10% Tithing to State General Fund .....			188.50		181.75
Total, Beginning Balance and Net Receipts .....			\$ 22,769.56		\$ 19,974.26
<b>DISBURSEMENTS:</b>					
Bounties Paid for Seals Destroyed .....		(44 at \$25)	\$ 1,100.00	(106 at \$25)	\$ 2,650.00
Seal Hunting .....			3,331.05		3,163.43
Total Disbursements .....			\$ 4,431.05		\$ 5,813.43
Balance Available from Seal Fund at End of Period .....			\$ 18,338.51		\$ 14,160.83

BIENNIAL REPORT

Fiscal Year Ending June 30, 1961

NUMBER OF SALMON AND STEELHEAD LIBERATED INTO WATERS OF THE STATE OF OREGON BY THE FISH COMMISSION

Hatchery	Spring Chinook	Fall Chinook	Silver	Blueback	Chum	Steelhead	Total	Where Liberated
Alsea			571,079				571,079	Alsea River
Big Creek		1,723,491	1,024,616		218,926	62,478	3,029,511	Big Creek Gnat Creek
Bonneville		3,431,833	1,219,781				4,651,614	Tanner Creek Yamhill River Cedar Creek
Cascade		3,281,913	1,339,075		12,781		4,633,769	Columbia River System
Coos			128,143				128,143	Coos and Millicoma River Systems
Klaskanine		101,420	136,833				136,833	Hall and Schultze Lakes
Marion Forks	1,941,991						101,420	Youngs River
McKenzie	444,670		838,095				838,095	Klaskanine River
Metolius	224,602			42,619			2,025,678	North Santiam River
Nehalem			144,912				444,670	McKenzie River
Ox Bow		4,447,896	781,817				267,221	Metolius River
Sandy			264,186				144,912	Lake Lytle
Siletz			100,913				781,817	Foley Creek, Nehalem River System
South Santiam	126,373		101,158				4,712,082	Herman Creek
Trask		344,792	788,962				100,913	South Santiam River
Willamette	760,794		174,950				101,158	Wahkeena Pond
			469,783				1,346,154	Cedar Creek and Sandy River System
			1,263,002				174,950	Rock Creek
							126,373	South Santiam River
							469,783	Munsel Lake, Lane County
							1,607,794	Trask, Miami, Kilches River Systems
							22,069	Miami River
					22,069		760,794	Middle Fork Willamette River
Total Fingerlings	3,498,430	13,888,537	9,469,739	42,619	253,776	155,974	27,177,723	TOTAL FINGERLINGS LIBERATED
Total Pounds	139,912	68,894	353,995	1,833	295	8,863	573,792	TOTAL WEIGHT OF FINGERLINGS IN POUNDS

BIENNIAL REPORT

Fiscal Year Ending June 30, 1962

NUMBER OF SALMON AND STEELHEAD LIBERATED INTO WATERS OF THE STATE OF OREGON BY THE FISH COMMISSION

Hatchery	Spring Chinook	Fall Chinook	Silver	Blueback	Chum	Steelhead	Total	Where Liberated
Aalsea	1,079,891	1,139,939	1,079,891				1,079,891	Aalsea and Coos River Systems
	1,501,389		1,501,389				1,501,389	Mercer, Floras, Fahkenitch, Croft, Elbow, Kenneth, Thistle, Shuitpelz, Hall Lakes
Big Creek		983,269	49,951		314,577	103,927	49,951	Claskanie River
Bonneville	3,714,756	1,410,872	1,100,440				5,125,628	Willamette River System
			893,178				1,100,440	Devils Lake
Cascade		4,697,313	759,239				893,178	Tanner Creek
			428,861				5,456,552	Eagle Creek
Coos			428,861				428,861	Coos River System
Klaskanine		568,023	1,123,940				1,691,963	Klaskanine River
Marion Forks	1,415,536					752,358	2,167,894	North Santiam River
McKenzie	145,064		451,450				145,064	McKenzie River
							451,450	Sutton Lake
Metolitus	191,298						191,298	North Santiam River
Nehalem			330,753				330,753	Nehalem River System
			479,788				479,788	Lost and Lytle Lakes
Ox Bow		4,413,492	283,283				4,696,775	Herman Creek
Sandy		291,726	778,982				1,070,708	Sandy River
			186,826				186,826	South Santiam River
			224,354				224,354	Willamette River
Siletz			1,301,592				1,301,592	Siletz River System
South Santiam	146,767						146,767	South Santiam River
Trask	199,805	340,684	924,370				1,464,859	Tillamook Bay
			546,102				546,102	Devils Lake
Willamette	1,033,146		42,599			122,295	1,198,040	Middle Fork Willamette River
						60,606	60,606	North Santiam
Total Fingerlings	3,131,616	15,009,263	15,037,799		314,577	1,039,186	34,532,441	TOTAL FINGERLINGS LIBERATED
Total Pounds	114,160	59,184	443,447		573	37,299	654,663	TOTAL WEIGHT OF FINGERLINGS IN POUNDS

EGG TAKE

NUMBER OF EGGS TAKEN AT THE FISH COMMISSION HATCHERIES

Fiscal Year Ending June 30, 1961

Hatchery	Spring Chinook	Fall Chinook	Silver Salmon	Steelhead	Chum Salmon	Totals
Alsea .....			870,052			870,052
Big Creek .....		2,034,330	4,200,897	212,696	227,620	6,675,543
Bonneville .....		2,193,386	85,200			2,278,586
Cascade .....		4,224,961	183,278		16,000	4,424,239
Coos .....			629,213			629,213
Klaskanine .....		221,510	1,419,995			1,641,505
Marion Forks .....	2,143,285			386,291		2,529,576
McKenzie .....	271,139					271,139
Metolius .....						
Nehalem .....			1,061,336			1,061,336
Ox Bow .....		5,427,195	339,172			5,766,367
Sandy .....		510,535	1,024,884	29,000		1,564,419
Siletz .....			949,239			949,239
Trask .....	141,472	382,244	2,554,849		23,606	3,102,171
Willamette .....	1,012,693		55,005	422,798		1,490,496
Totals .....	3,568,589	14,994,161	13,373,120	1,050,785	267,226	33,253,881

Fiscal Year Ending June 30, 1962

Alsea .....			6,124,617			6,124,617
Big Creek .....		1,156,876	6,394,451	327,814	447,101	8,326,242
Bonneville .....		4,619,000	3,925,772			8,544,772
Cascade .....		4,547,687	1,588,887			6,136,514
Coos .....			466,410			466,410
Klaskanine .....		98,401	4,946,044			5,044,445
Marion Forks .....	878,722			637,521		1,516,243
McKenzie .....	1,158,618					1,158,618
Metolius .....						
Nehalem .....			884,902			884,902
Ox Bow .....		3,404,504	669,921			4,074,425
Sandy .....		193,601	4,000,465			4,194,066
Siletz .....			1,648,200			1,648,200
South Santiam .....						
Trask .....	225,692	486,230	1,736,057			2,447,979
Willamette .....	1,035,755			542,614		1,578,369
Totals .....	3,298,787	14,506,299	32,385,726	1,507,949	447,101	52,145,862

## OREGON LANDINGS OF FOOD FISH AND SHELLFISH

For License Year April 1-March 31

(All figures in pounds)

FISH	1956	1957	1958	1959	1960	1961
Cod .....	190,642	562,121	472,582	367,655	216,424	103,751
Flounders .....	383,721	406,680	468,774	283,647	408,317	563,529
Halibut .....	472,148	414,008	583,850	211,510	340,598	350,114
Ling Cod .....	301,249	584,627	293,766	445,102	749,032	743,381
Mink Feed .....	11,500,903	9,829,844	8,139,744	6,171,908	4,421,768	6,716,733
Pacific Ocean Perch (Rosefish) .....	3,275,695	2,801,857	2,415,720	2,089,553	2,694,242	5,074,443
Rockfish .....	2,805,212	3,635,047	2,930,578	4,956,168	5,258,069	6,005,044
Sablefish .....	401,826	436,172	172,154	202,969	313,363	391,449
Salmon and Steelhead						
Blueback .....	159,818	189,708	533,841	473,106	291,445	106,206
Chinook .....	10,025,882	6,914,125	6,012,747	3,596,499	4,338,549	4,260,917
Chum .....	138,770	153,420	165,206	95,916	21,302	28,804
Humpback .....		100,154		6,436	62	207
Silver .....	3,952,546	4,129,279	1,472,319	887,312	984,398	2,600,981
Steelhead .....	620,653	539,953	463,617	730,628	576,553	594,605
Shad .....	516,095	341,490	448,803	329,752	400,008	759,996
Smelt .....	571,630	222,070	466,606	127,037	186,413	317,739
Sole						
Dover .....	2,749,206	3,548,789	3,376,352	4,653,528	5,227,674	4,148,265
English .....	1,252,435	1,760,726	1,568,616	1,862,868	2,215,812	2,352,116
Petrale .....	1,603,285	1,880,334	981,940	1,394,760	2,211,458	2,047,965
Other .....	1,313,075	613,579	591,059	977,864	1,626,478	1,277,031
Striped Bass .....	42,402	13,085	22,051	20,386	28,670	35,439
Sturgeon						
Green .....	35,461	69,464	42,994	128,947	44,846	98,102
White .....	168,237	177,455	143,860	134,079	115,348	105,301
Tuna .....	4,859,493	3,309,360	10,666,324	10,574,030	4,562,595	3,249,763
Other Fish .....	1,266,276	1,327,253	2,316,286	1,000,647	490,365	245,812
TOTAL FISH .....	48,606,660	43,960,600	44,749,789	41,722,307	37,723,789	42,177,693

### SHELLFISH

#### Clams

Bay .....	122,677	110,766	79,594	66,108	77,023	69,589
Razor (Clatsop Beaches) .....	104,704	78,582	88,464	51,378	29,555	17,845
Crabs .....	10,263,275	13,088,755	8,516,225	7,584,525	11,734,250	6,940,375
Shrimp .....	6,302	496,433	1,752,663	2,473,727	1,143,955	1,464,569

TOTAL SHELLFISH .....	10,496,958	13,774,536	10,436,946	10,175,738	12,984,783	8,492,378
-----------------------	------------	------------	------------	------------	------------	-----------

**COMPARATIVE STATEMENT OF LICENSES ISSUED**

License Year Ending on March 31

	1962	1961	1960	1959	1958	1957
<b>Alsea Bay and River</b>						
Fishing Licenses .....					6	52
Dealers and Processors .....	58	81	58	73	82	79
TOTAL, Alsea Bay and River .....	58	81	58	73	88	131
<b>Chetco Bay</b>						
Fishing Licenses .....			16	13	9	8
Dealers and Processors .....	31	18	1		1	
TOTAL, Chetco Bay .....	31	18	17	13	10	8
<b>Clatsop Beaches</b>						
Fishing Licenses .....					4	14
Dealers and Processors .....				1	3	4
TOTAL, Clatsop Beaches .....				1	7	18
<b>Columbia River and Tributaries</b>						
Fishing Licenses .....	773	764	679	656	600	674
Dealers and Processors .....	1,038	1,047	1,036	1,071	1,070	1,129
TOTAL, Columbia River and Tributaries	1,811	1,811	1,715	1,727	1,670	1,803
<b>Coos Bay and River</b>						
Fishing Licenses .....	41	43	45	51	62	67
Dealers and Processors .....	69	73	77	96	115	101
TOTAL, Coos Bay and River .....	110	116	122	147	177	178
<b>Coquille River</b>						
Fishing Licenses .....	28	13	26	23	12	22
Dealers and Processors .....	12	8	8	11	10	13
TOTAL, Coquille River .....	40	21	34	34	22	35
<b>Depoe Bay</b>						
Fishing Licenses .....						
Dealers and Processors .....	9	12	9	8	9	8
TOTAL, Depoe Bay .....	9	12	9	8	9	8
<b>Nehalem River</b>						
Fishing Licenses .....					2	47
Dealers and Processors .....	12	16	14	16	15	17
TOTAL, Nehalem River .....	12	16	14	16	17	64
<b>Nestucca River</b>						
Fishing Licenses .....						
Dealers and Processors .....	11	7	10	11	12	10
TOTAL, Nestucca River .....	11	7	10	11	12	10
<b>Netarts Bay</b>						
Fishing Licenses .....					4	17
Dealers and Processors .....	6	3	6	7	5	6
TOTAL, Netarts Bay .....	6	3	6	7	9	23

	1962	1961	1960	1959	1958	1957
<b>Pacific Ocean and Beaches</b>						
Fishing Licenses .....	1,209	1,050	1,086	1,255	1,263	1,192
Dealers and Processors .....	1	.....	.....	.....	.....	.....
TOTAL, Pacific Ocean and Beaches .....	1,210	1,050	1,086	1,255	1,263	1,192
<b>Port Orford</b>						
Fishing Licenses .....	.....	.....	6	11	12	11
Dealers and Processors .....	4	4	.....	.....	.....	.....
TOTAL, Port Orford .....	4	4	6	11	12	11
<b>Sand Lake</b>						
Fishing Licenses .....	.....	.....	.....	.....	.....	6
Dealers and Processors .....	.....	.....	.....	.....	.....	.....
TOTAL, Sand Lake .....	.....	.....	.....	.....	.....	6
<b>Sandy River</b>						
Fishing Licenses .....	.....	.....	.....	.....	.....	.....
Dealers and Processors .....	.....	2	.....	.....	5	10
TOTAL, Sandy River .....	.....	2	.....	.....	5	10
<b>Siletz River</b>						
Fishing Licenses .....	.....	.....	.....	.....	.....	24
Dealers and Processors .....	7	8	10	11	10	24
TOTAL, Siletz River .....	7	8	10	11	10	48
<b>Siuslaw River</b>						
Fishing Licenses .....	28	19	30	24	33	45
Dealers and Processors .....	26	27	38	28	28	32
TOTAL, Siuslaw River .....	54	46	68	52	61	77
<b>Tillamook Bay</b>						
Fishing Licenses .....	60	74	84	82	114	157
Dealers and Processors .....	33	43	48	40	44	47
TOTAL, Tillamook Bay .....	93	117	132	122	158	204
<b>Umpqua River</b>						
Fishing Licenses .....	61	47	59	58	50	93
Dealers and Processors .....	49	49	41	47	53	46
TOTAL, Umpqua River .....	110	96	100	105	103	139
<b>Yaquina Bay and River</b>						
Fishing Licenses .....	.....	.....	1	5	14	24
Dealers and Processors .....	119	110	116	107	91	94
TOTAL, Yaquina Bay and River .....	119	110	117	112	105	118
<b>Miscellaneous</b>						
Fishing Licenses .....	3,609	3,525	1,104	1,263	3,619	688
Dealers and Processors .....	1,223	1,325	3,983	4,294	1,209	4,153
TOTAL, Miscellaneous .....	4,832	4,850	5,087	5,557	4,828	4,841
GRAND TOTALS .....	8,517	8,368	8,591	9,264	8,566	8,924

COMPARATIVE STATEMENT OF LICENSES ISSUED—Continued

Recapitulation	1962	1961	1960	1959	1958	1957
Gillnet .....	676	704	699	678	594	675
Setnet .....	152	133	169	161	152	193
Troll .....	735	675	706	874	941	970
Retail Fish Dealer and Peddler .....	1,272	1,294	1,281	1,333	1,353	1,383
Wholesale Fish Dealer .....	158	150	141	148	150	165
Broker .....	3	3	2	2	4	4
Salmon Canner .....	12	12	13	11	14	15
Shellfish Canner .....	6	6	7	10	6	7
Reduction Plant .....	3	2	2	3	3	3
Bagnet .....	3	2	10	7	35	117
(Issued for Sandy River Smelt) .....	1	3	1	1	1	2
Clam .....	244	300	347	373	345	396
Crab .....	279	230	215	192	151	161
Shrimp .....	2	.....	.....	1	1	.....
Crawfish .....	19	17	19	18	19	25
Setline .....	2	1	1	4	6	5
Delivery .....	857	852	902	1,067	673	543
Supplemental to Delivery .....	2	3	4	3	6	.....
Personal .....	2,756	2,565	2,734	3,046	2,799	2,942
Buyer .....	51	50	53	51	53	63
Baitnet .....	6	3	7	12	10	6
Carp Permit .....	6	5	5	5	6	6
Longline .....	3	2	.....	2	1	.....
Otter Trawl .....	3	1	4	6	7	.....
Lost License .....	17	19	10	31	8	.....
Oyster Tonger .....	1	.....	1	.....	.....	.....
Retail Dealer Package Frozen Food Fish ....	1,122	1,238	1,167	1,163	1,146	1,142
Wholesale Distributor .....	57	56	54	44	49	52
Indian Gillnet .....	32	16	11	7	4	3
Indian Bagnet .....	.....	.....	.....	.....	4	3
Indian Personal .....	35	19	17	8	13	16
Indian Wholesale Fish Dealer .....	.....	.....	.....	.....	1	2
Indian Clam .....	2	7	9	1	8	13
Indian Setline .....	.....	.....	.....	.....	.....	3
Indian Troll .....	.....	.....	.....	.....	3	3
Indian Crab .....	.....	.....	.....	1	.....	1
TOTAL .....	8,517	8,368	8,591	9,262	8,566	8,924

# COMMERCIAL FISHERIES LAW ENFORCEMENT

## Department of State Police

		Fiscal Year Ending June 30, 1961		Fiscal Year Ending June 30, 1962	
		Warnings	Arrests	Warnings	Arrests
Fishing	closed season .....		2		1
	prohibited areas .....				
	hours or methods .....	4	15	3	53
No License	fishing .....	11	26	11	14
	personal .....	7	15	8	15
	retail .....	126	106	13	14
	wholesale .....	9	8	1	4
Possession	undersize food fish .....	123	71	74	37
	sale or shipment .....				
	closed season .....	2	4		
	other .....				3
Exceeding bag limit .....		126	131	84	111
Failure to file report .....		52	27	16	9
Failure to mark equipment .....		22	12	38	12
Possession clams—closed season .....		1			
Other commercial fisheries violations .....		2	12	3	15
Total .....		485	429	251	288
Amount of fines imposed .....			\$15,544.50		\$ 9,197.90
Licenses checked o.k.					
dealer .....			1,532		454
fishing .....			1,581		1,109
processor .....			2		26
Shellfish personal use diggers checked .....			13,967		11,175
Searches (without warrant) .....			1,166		808