COMMERCIAL FISHING OPERATIONS ON THE COLUMBIA RIVER

AUGUST 1938

A STUDY OF

COMMERCIAL FISHING OPERATIONS ON THE COLUMBIA RIVER

Submitted by the

Oregon State Planning Board

to

THE HONORABLE CHARLES H. MARTIN

Governor of Oregon

August 22, 1938

The purpose of the Oregon State Planning Board is to serve the people as a progressive advisory body cooperating with public and private agencies and individuals in studying Oregon's problems and needs; and formulating recommendations for development of the State

STATE OF OREGON

STATE PLANNING BOARD

Portland, Oregon
August 22, 1938

Honorable Charles H. Martin
Governor of Oregon
Salem, Oregon

Dear Governor Martin:

Submitted herewith is report of the State Planning Board's study of commercial fishing operations on the Columbia River, requested in your letter of March 4, 1938.

Respectfully yours,

Ormond R. Bean
Chairman

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PURPOSE AND SCOPE OF REPORT

This report presents results of the Oregon State Planning Board's study of commercial fishing in the Columbia River and its tributaries requested by Governor Charles H. Martin. Governor Martin's letter of March 4, 1938, asked the Board

> "to make such study of the commercial fish operations of this state as will determine the comparative merits of the fixed and drifting type of gear being used, with particular reference to the provisions of the enclosed proposed initiative measure".

The proposed initiative petition accompanying the Governor's request was entitled

> "A bill for an act prohibiting the taking of salmon by the use of drag and whip seines, fish traps, and other fixed fishing appliances, in the waters of the Columbia River and its tributaries, and providing penalties for violation thereof."

(Copy of this initiative petition is included in the Appendix, Exhibit A.)

On March 24, 1938, Governor Martin further advised the Planning Board:

> "The study of commercial fishing operations should not be limited to operations in the Columbia River or its tributaries but should include all rivers and streams of the state. Where commercial fishing exists to any considerable extent it should receive consideration in your study. However, it would be entirely permissible for the State Planning Board to devote its first attention to commercial fishing in the Columbia River and its tributaries."

Since the initiative petition deals only with the taking of salmon representing the largest commercial fishing operations on the Columbia River, and since the conflicts over different types of commercial fishing gear also revolve around salmon, this first report is limited to the salmon fisheries on the Columbia River. A later report will present results of the Board's study of commercial fishing operations on Oregon coastal streams.

The report presents a brief history of the Columbia River salmon

fisheries and description of the principal salmon species taken on the river, a summary of the restrictions and regulations affecting commercial fishing operations, types and effects of commercial fishing gear in use, quantities and species of fish taken by the various types of gear in recent years, and a general discussion of the problems involved in conserving the salmon runs on the Columbia River.

Data concerning the Columbia River salmon fisheries were obtained from reports and publications of the U. S. Bureau of Fisheries, from the Oregon Fish Commission, and the Washington State Department of Fisheries. Public hearings were held by the Planning Board in Portland on March 29, and May 23, 1938, and on July 11, 1938, at Astoria at which information and statements on this subject were submitted to the Board by interested organizations and individuals. During the Astoria meeting Board members inspected commercial fishing operations on the Lower Columbia River.

Numerous communications received from organizations and individuals offering information and opinions about the Columbia River fisheries were carefully reviewed and considered during this study.

SUMMARY AND CONCLUSIONS

1. The Columbia River is the most important salmon stream in the United States. Its tributaries provide spawning grounds for migratory salmon that range along the North Pacific coast and yield products having a total annual retail value of about $10,000,000.

2. The salmon runs in the Columbia River support a commercial fishing and canning industry in Oregon and Washington employing thousands of workers and ranking high among the basic industries of these states.

3. These salmon runs, particularly the steelhead trout, also provide healthful recreation and enjoyment for thousands of sports fishermen in both states. Oregon receives a large annual income from game fishing licenses and expenditures by residents, tourists, and others attracted to the Columbia Basin by its abundance of salmon.

4. Salmon species taken commercially on the Columbia River are chinook, blueback or sockeye, silver salmon or silversides, chum or dog salmon; and steelhead trout, a sea-run species of rainbow trout.

5. Each of these salmon species migrates to spawning grounds up the Columbia River during different months of the year. The steelhead trout is the only species which returns to the ocean after spawning in fresh water.

6. Commercial fishing on the Columbia River is regulated by the states of Oregon and Washington through the Oregon Fish Commission and the Washington State Department of Fisheries.

7. Although an agreement by the two states providing for concurrent jurisdiction over the Columbia River fisheries was enacted and ratified by Congress in 1918, laws governing commercial fishing operations are not uniform on both sides of the river, and regulations are established independently by the two states.

8. Commercial fishing on the Columbia River is limited to the area extending from its mouth to five miles below Bonneville Dam and from fifteen miles above Bonneville Dam to the mouth of the Deschutes River.

9. Two general types of commercial fishing gear are in use on the Columbia River:

   a) Fixed gear - pound nets or fish traps, drag or haul seines, set gill nets, and set lines;

   b) Floating gear - dip nets, drift gill nets, and troll lines.

   (Fish wheels were abolished by Oregon in 1927 and by Washington in 1935)

10. Fixed gear were prohibited on the Washington side of the Columbia River in 1935 by Initiative Measure No. 77, but are permitted in Oregon, except that traps are prohibited above Cascade Rapids.

11. Considerable numbers of chinook and silver salmon are taken by commercial trollers in the Pacific Ocean outside the mouth of the Columbia River; also along the Oregon and Washington coasts both inside and outside of the three mile limit. Ocean troll fishing is not regulated by state legislation and, except for a poundage tax on fish delivered at Oregon, Washington, and California ports, is practically unrestricted.

12. From the beginning, Columbia River fishing operations have been marked by conflicts between commercial fishermen using different types of fishing gear. Also, conflicts between commercial and sports fishermen have added to the difficulties of establishing fishing regulations equitable to all interests.

13. All types of fishing operations catch fish and hence tend to deplete the salmon runs.

14. The number of fish taken by different types of commercial gear on the Columbia River has varied from year to year (as shown by Tables in the Appendix.)

15. Many factors affect the total catch, such as fluctuations in size of salmon runs, consumer demand and market prices, labor troubles, flood and other water conditions.

16. Complete, accurate, and unbiased determination of specific effects of each type of commercial gear in use on the Columbia River, on the different salmon species and runs, cannot be made from available data. For example, the extent to which elimination of different kinds of gear would increase escapement of fish to spawning grounds is unknown.

    Only with adequate information on the size of each salmon run, recorded over a number of years, and by thorough analysis of all other factors affecting the total catch, could specific effects of different gears be definitely determined and evaluated.

17. Except insofar as each takes fish, conclusive evidence is lacking that any one type of commercial gear used on the Columbia River is more injurious to the fish resources than any other type now in use.

18. In certain areas, one type of gear may take more fish of a particular salmon species, or a larger proportion of the total catch than other types, depending on number and location of each type of gear and its period of operation.

    On the Oregon side of the Columbia River during the seven years 1928-34, inclusive, fixed gear took 20.2 per cent, floating gear 63.6 per cent, and ocean trolling 16.2 per cent of the total catch. On the

Washington side these proportions were quite different, fixed gear taking 54.2 per cent, floating gear 40.0 per cent, and ocean trolling 5.8 per cent.

19. During the seven-year period 1928-1934, inclusive, fixed gear on both sides of the Columbia River took 34.9 per cent, floating gear 53.4 per cent and ocean troll11.7 per cent of the total catch of all salmon species landed in the Columbia River district.

20. In 1935, the only year (since abolition of fixed gear in the State of Washington) for which catch-by-gear figures are available, fixed gear took 23.3 per cent of total take on the Oregon side, and 17.1 per cent of the total catch of all salmon species in the whole Columbia River district in that year.

Since the catch of each salmon species in different areas is so greatly affected by many unknown variables, accurate quantitative determination of the effects on the salmon runs of abolition of fixed gear by Washington in 1935 cannot be made from available data.

However, it may safely be concluded that, while elimination of fixed gear generally tended to decrease the total catch in the Grays Harbor and Willapa Harbor districts and on the Washington side of the Columbia River, the net reduction in take was not as great as might have been expected because the number of fish caught by floating gear remaining in use was considerably increased. Thus, the abolition of a particular type of gear would probably not decrease the total catch by the quantity of fish previously taken by that gear.

However, elimination of a particular type of gear may lower the total catch below the quantity which would be taken had that gear remained in use.

21. The abolition of fixed gear on the Oregon side of the Columbia River, as set forth in the proposed initiative measure (Exhibit A) would not alone solve the problems of conserving the Columbia River salmon runs.

22. Although it is obviously desirable that the fish resource be conserved the means for conservation should respect the interests of all types of commercial fishermen depending on the fishing industry for their livelihood.

23. If certain types of gear were eliminated, fishermen using other gear would undoubtedly benefit, since experience shows that the quantity of fish taken by remaining gear would probably increase if the salmon runs and market demand continued unchanged.

The ban of any particular gear now in use would give a preference to fishermen operating with other kinds of gear.

A group of commercial fishermen should not be discriminated against unless it is clearly demonstrated that their fishing operations

injure or deplete the fisheries resource to a greater extent than other types of fishing.

24. In considering different methods of commercial fishing operations, if no type of gear in use harms the resource (except that it catches fish) the activities of any particular group of fishermen should not in equity be curtailed without a corresponding curtailment in other groups.

25. An equitable method of conserving the salmon species would be to limit the total catch of each run allowed to be taken by all gear to the quantity which would permit sufficient escapement necessary for conservation of the run.

Shortening the commercial fishing season by prohibiting fishing in certain months would conserve only the particular run during the prohibited period and would not affect runs in other months.

26. The annual commercial catch of all salmon species on the Columbia River has shown a definite downward trend since 1911. (Chart No.1)

27. The high quality spring run of chinooks apparently has suffered the greatest depletion, and the annual runs of bluebacks, steelhead trout, and silver salmon apparently also have been considerably reduced.

28. Commercial production of Columbia River salmon is affected by many varying factors and accurate determination of the extent and rate of depletion of each salmon species can not be made from available data.

Comprehensive scientific studies by competent experts are required to determine equitable and effective means for preserving and building up the several salmon runs.

29. In order to conserve the salmon runs in a manner equitable to both states, uniform regulations governing commercial fisheries should be established for both sides of the Columbia River.

RECOMMENDATIONS

Need for Action by Federal and State Governments

1. Conservation of the Columbia River salmon is urgently needed. Aggressive and immediate action should be taken to preserve this great natural resource.

2. Perpetuation of the salmon runs on the Columbia River requires close and effective cooperation between the Federal Government and the states of Oregon and Washington, and to some extent, Idaho, to preserve the spawning grounds on the tributary streams.

   The State of California also is involved, since many Columbia River salmon are caught in the ocean and landed in California. Pilchard and other small fish on which the salmon feed in the ocean are also caught in California waters.

3. The enactment of legislation to regulate fishing on the Columbia River and its tributaries, is a state responsibility. Without constitutional amendments, it is doubtful that the states could relinquish their jurisdiction over waters of the Columbia Basin, with respect to fish and fishing.

4. The Federal Government alone has authority to establish regulations governing ocean troll fishing outside the statutory three-mile limit, which must be included in any adequate conservation program. In order to conserve the Columbia River salmon, international treaties may be necessary to regulate ocean fishing by subjects of other nations and the taking of salmon and small fish on which the salmon feed.

5. Full and uniform regulation of all Columbia River fisheries by cooperative action between the states and the Federal Government through interstate compacts approved by Congress, or other legal measures, is essential to conserve the Columbia River salmon.

Legislation Required

6. The conclusions and recommendations of the U. S. Commissioner of Fisheries (as set forth in Senate Document 87, 75th Congress) concerning the need for joint action by the several states and the Federal Government to regulate the Columbia River fisheries, are concurred in.

7. It is therefore recommended that the legislatures of the states of Oregon Washington and Idaho, enact at their next sessions interstate compacts, or other legislation, establishing a Joint Columbia River Fisheries Commission. The Federal Government should be represented on this Joint Commission by the U. S. Commissioner of Fisheries, either as a member with full voting power or as an ex-officio advisory member.

The Joint Commission should have authority:

To impose necessary immediate regulations on all commercial fishing in the Columbia River and its tributaries;

To establish fishing seasons in various sections of the river system;

To prescribe the kinds and amounts of commercial fishing gear to be used;

To regulate the total catch in order to assure adequate escapement of adult fish on their spawning migrations; and

To determine the extent of cooperation required from the State of California in conserving Columbia River salmon, and endeavor to obtain an interstate compact with California so that necessary conservation measures may be established in areas under the jurisdiction of that state.

8. Enactment of these interstate compacts, congressional approval thereof, and establishment of a Joint Columbia River Fisheries Commission, are urgently needed and should not be postponed. The necessary scientific surveys and studies could then be made under the direction of the Commission in cooperation with the U. S. Bureau of Fisheries and the fish and game commissions of the several states.

Pending completion of these comprehensive studies the Joint Commission should have power to regulate commercial fishing on both sides of the Columbia River, as well as ocean troll fishing for salmon, and should institute such temporary regulatory measures as may be necessary to prevent further depletion of the salmon runs.

Procedure for Conservation

Essential facts and data are lacking for determining specific regulations and other means by which the Columbia River salmon can best be conserved and augmented.

9. Procedure recommended for effective conservation:

a) A thorough scientific study of the many complex problems involved in perpetuating the different species and runs of salmon;

b) Legislative and administrative action to regulate the quantity of fish taken, the manner of taking the fish, natural and artificial propagation and feeding, and the other uses of Columbia Basin waters affecting fish life.

10. The comprehensive studies should cover effects of the heavy take of pilchard and other small fish in the ocean upon which the Columbia River salmon feed.

11. The program of Columbia River salmon investigations, initiated by the U. S. Bureau of Fisheries in 1934, should be continued and expanded. The establishment of the federal fish cultural stations in Oregon, Washington, and Idaho, and the investigations recently authorized under S.B. 2307 (75th Congress) should greatly aid these essential scientific studies and also provide for increased artificial propagation of the salmon species.

12. The inroads of civilization--pollution of tributaries, construction of dams for navigation improvement, power, flood control, irrigation developments, etc.--have been a major cause of depletion of the Columbia River salmon. Both natural and artificial propagation are necessary to insure perpetuation of these migratory fish.

Full conservation of the Columbia River salmon will probably require that the waters of the Columbia River and its tributaries be controlled and used for other purposes in such a way as not to reduce fish life.

In planning the development of the Columbia River and its tributaries for other water uses, the effects of each such development upon the fish resource should be carefully considered. Where the waters are to be controlled and used for other purposes, provision should be made as far as practicable for perpetuation of the salmon runs. Certain tributaries may have to be preserved for natural spawning alone; some tributaries might be reserved exclusively for other water uses, and still others developed both for fish conservation and other purposes.

These determinations will depend upon the findings from the comprehensive investigations recommended herein.

THE COLUMBIA RIVER SALMON FISHERIES

History

The following brief history of the Columbia River salmon fisheries, and much of the other information presented herein, were condensed from a Report of the U. S. Commissioner of Fisheries[1] and from a statement prepared by Joseph A. Craig, of the U. S. Bureau of Fisheries[2], which describe in detail the development and operations of these fisheries.

Fishing on the Columbia River was begun by the original Indian inhabitants of the Columbia Basin. The Indians caught large quantities of salmon, part of which was consumed fresh and the remainder smoked and stored for winter consumption. When trappers, traders, and settlers arrived in the Pacific Northwest, they also found salmon a valuable food, either cooked fresh, or salted and smoked for future consumption. A considerable trade in salted salmon soon developed. By 1861 commercial fishing on the Columbia had become an important industry, and by 1863 several firms were engaged in packing and shipping salt salmon.

In 1866 salmon canning was started by the firm of Hapgood, Hume & Company which built a cannery at Eagle Cliff, Washington. The industry developed very rapidly. By 1873, eight canneries were in operation, and in 1882 the number had increased to thirty-seven. In the year 1883 canning reached a peak with thirty-nine commercial canneries in operation on the Columbia. The number of canneries has gradually been reduced since that date until 1935 when only 11 were in operation.

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[1] "Bonneville Dam and Protection of Columbia River Fisheries", Report of the Commissioner of Fisheries, Senate Document No. 87, 75th Congress, 1st Session, June 22, 1937.

[2] "Memorandum Regarding Fishing in the Columbia River Above and Below Bonneville Dam," Joseph A. Craig, Assoc. Aquatic Biologist, U. S. Bureau of Fisheries.

The reduction in number of canneries did not proportionately affect the capacity and output of the industry, since the reduction in number was accompanied by an increase in size of plant and efficiency of operation. The average output per plant has been increased from about 200 cases per day to 2,500-4,000 cases per day in the modern plants.

Columbia River salmon are now processed in several ways. The largest part of the take is canned for export. A considerable quantity also of mild-cured salmon is exported. Much is frozen and shipped to the East, and many fresh salmon are consumed locally.

Salmon Species

The salmon species taken commercially on the Columbia River are chinook, blueback or sockeye, silver salmon or silversides, chum or dog salmon; and steelhead trout, a sea-run species of rainbow trout.

The average weight of mature fish varies for each species:

Chinook salmon	20-25 pounds
Blueback salmon	2- 4 pounds
Silver salmon	8- 9 pounds
Chum salmon	9-10 pounds
Steelhead trout	10 pounds

These various species of salmon migrate to the spawning grounds up the river at different times of the year. The seasonality of the various runs must be considered in determining the effects of commercial and sports fishing on the salmon resource. Steelhead trout is the only species which returns to the ocean after spawning in fresh water. The spring and summer runs of chinook and blueback salmon are of highest quality and generally bring the highest prices. Detailed description of the natural history and spawning period for each species is given in the Report of the U. S. Commissioner of Fisheries.[1]

[1] Senate Document 87, 75th Congress 1st Session.

Commercial Fishing Regulations

Commercial fishing on the Columbia River is controlled by the states of Oregon and Washington which began to regulate fishing operations at an early date. Since 1899 joint committees of the Oregon and Washington legislatures have met several times in an effort to agree on fishing regulations for the Columbia. A compact and agreement between the two states, covering concurrent jurisdiction over the Columbia River fisheries, was ratified by Congress in 1918. This compact stipulates that changes affecting concurrent jurisdiction must be made by mutual consent. The compact was intended to cover all regulations of the Columbia River salmon fisheries. However, according to court interpretations, the compact does not prevent one state from limiting, further than the other state, the commercial fishing privileges of its own citizens.

Oregon has established a state fish commission which is responsible for the administration of laws affecting commercial fisheries and the management of commercial fish hatcheries. However, specific regulations must be enacted by the State Legislature since authority of the Oregon Fish Commission is somewhat limited.

Washington has established a state department of fisheries, vesting full regulatory powers in the director who has authority to regulate fishing seasons and to close certain areas to commercial fishing.

As a result of regulations established separately and independently by the two states, laws governing commercial fishing are not uniform on both sides of the river; this creates many conflicts and controversies between fishing interests.

At the present time (July 1938) commercial fishing on the Columbia is limited to the river itself, from its mouth to its confluence with the

Deschutes River. Commercial fishing is not permitted on any of the tributaries of the Columbia River in either Oregon or Washington. Commercial fishing operations are also prohibited by both states within the area five miles below Bonneville Dam, and until March 1938, within the area five miles above the Dam. On March 23, 1938, the prohibited area was extended from five to fifteen miles above Bonneville Dam by joint action of the Oregon Fish Commission and the Washington State Department of Fisheries.

Commercial fishing gear is regulated by both states as to type, length, mesh, general design, and location. All commercial fishermen operating fixed fishing gear in the waters of the Columbia River lying within the State of Oregon must be licensed by the Oregon Fish Commission. Commercial fishermen operating floating gear in the Columbia River must be licensed either by the Oregon Fish Commission or the Washington State Department of Fisheries. Licenses for operating floating gear issued by either state permit fishing in any part of the commercial fishing area of the Columbia River regardless of the state line. Residents of the State of Washington may apply for and obtain Oregon licenses, but Washington licenses are issued only to residents of the State of Washington.

A detailed chronological history of the establishment by the states of Oregon and Washington of regulations governing commercial fishing areas, closed seasons and types of gear as given in "Report of U. S. Commission of Fisheries," Senate Document No. 87, 75th Congress , pages 24 to 27, inclusive, is included in the Appendix.

Types of Gear in Use

Two general types of commercial fishing gear are licensed by the Oregon Fish Commission for use on the Oregon side of the Columbia River:

a) Fixed gear - pound nets or fish traps, drag or haul seines, set gill nets, and set lines;

b) Floating gear - dip nets, drift gill nets, and troll lines. Detailed description of each type of gear is given in the Appendix.

Fixed fishing gear - fish traps, drag seines, and set nets - are operated only in certain locations on the Oregon side of the river under specific license from the Oregon Fish Commission. Fish traps and pound nets are prohibited above the Lower Cascade Rapids.

Licenses issued by the Oregon Fish Commission for set nets, traps, and seines, authorize fishing only at fixed locations along the river. Permits authorizing construction of fish traps must be obtained from the U. S. Customs Office before a trap is built. Before issuing permits for seines, the Oregon Fish Commission requires evidence that seining grounds are owned or leased by the licensee.

The number of licenses issued by the Oregon Fish Commission and Washington State Department of Fisheries from 1930 to 1937, inclusive, for different types of commercial fishing gear in the Columbia River are listed in Tables 21 and 22.

The number of licenses issued for each type of fixed and floating gear is greater than the number of these gear in actual use, because some fishermen purchase licenses which they do not use.

The number of licenses issued for seines is greater than the actual number of fishing grounds, as more than one seine may be used on one location.

Floating fishing gear are licensed both by Oregon and Washington for use anywhere in the river channel except in the prohibited areas. Gill net and dip net licenses are issued only to individual fishermen. In 1927 Oregon established the maximum length of gill nets as 250 fathoms, and Initiative Measure 77, enacted by Washington in 1935, likewise restricted the length of gill nets to 250 fathoms for fishermen licensed by Washington.

"Practically all of the dip netting is carried on at either Celilo Falls or the rapids just below. This fishing is done almost exclusively by Indians and is of considerable importance. Celilo Falls and the area near them have been centers of Indian fishing since long before white men entered the Columbia Basin, and the dip nets have always been used by the Indians. They make them now of modern materials, but the design is much the same as that used before white men appeared. The Indians at Celilo come considerable distances from various parts of Washington and Oregon and probably Idaho to take part in the salmon fishing. Some of their catch is dried for their own use, but much of it is sold to the neighboring cannery situated in Oregon near The Dalles."*

Ocean Troll Fishing

Chinook and silver salmon are taken by trolling in the Pacific Ocean outside the mouth of the Columbia; also along the Oregon and Washington coasts, both inside and outside the three-mile limit, as well as by commercial fishing on the Columbia River. Troll fishing off the mouth of the Columbia started in 1912 and increased until 1919. Since then the actual number of troll boats off the Columbia has decreased although some ocean trollers are now large in size, are powered with Diesel engines, and contain cold storage space. Troll boats stay on the schools of fish for two weeks or more at a time, fishing continually 24 hours a day.

Since troll fishermen operate beyond the three-mile limit, they pay no license fee but do pay a poundage tax on fish delivered in port. Ocean troll fishing is not regulated by state legislation and is practically unrestricted.

Some ocean troll boats catch Columbia River salmon off the mouth of the river and at other places in the ocean and land these fish at Seattle and

* From "Memorandum Regarding Fishing in the Columbia River Above and Below Bonneville Dam", by Joseph A. Craig, Associate Aquatic Biologist, U. S. Bureau of Fisheries.

other ports outside the Columbia River district. Such catches of Columbia River salmon are not included in the troll catches reported for the Columbia River district.

Proposed Initiative Measure

The initiative measure, referred to by Governor Martin, (Exhibit A) and to be submitted to Oregon voters at the general election in November 1938, would prohibit the taking of salmon and steelhead in the waters of the Columbia River and its tributaries within the State of Oregon by drag and whip seines, pound net, fish trap, fish wheels, scow fish wheel, set net, weir, or any fixed appliance.

Fish wheels were abolished on the Oregon side in 1927, and on the Washington side in 1935 by an initiative measure known as "Initiative 77", which also prohibited seines for salmon, set nets, and pound nets or fish traps on the Washington side. With certain regulations and restrictions, seines, set nets, and fish traps are still legal in Oregon.

Whip seines were prohibited in 1923 by acts of both the Oregon and Washington state legislatures, although the laws did not define completely the type of gear prohibited. While different types of gear are not specifically defined by Oregon law, the licenses issued by the Oregon Fish Commission define gear sufficiently for all practical purposes. On January 11, 1938, the Oregon Fish Commission defined in detail the type of seine for which licenses would henceforth be issued. This regulation prohibited certain types of drag seines previously in use. Copy of this regulation is included in the Appendix, Exhibit B.

Analysis of Catch Statistics

Tables 1 to 20 in the Appendix show poundage of the several salmon species caught by different types of commercial fishing gear and landed in the

Columbia River district of Oregon and Washington for each year 1928-1936, inclusive, as reported by the U. S. Bureau of Fisheries.* Catch statistics for 1937 were obtained from the Oregon Fish Commission and the Washington State Department of Fisheries. In these tables, ocean troll catch is the poundage of fish taken by trollers outside the mouth of the Columbia River and landed in the Columbia River district of Oregon and Washington.

The method by which these catch statistics are reported and tabulated was not uniform throughout the period 1928-1936, but varied from time to time. The states of Oregon and Washington collect a poundage tax upon all commercial fish based on the catch weights as reported to the Oregon State Fish Commission and Washington State Department of Fisheries on blanks furnished by these agencies. These blanks are filled out by the buyers of the fish.

From 1928 until 1931 each fish buyer reported all his purchases to the state in which his station was located, regardless of which state licensed the individual fisherman from whom the fish were purchased. From 1931 to the middle of 1937 the procedure of reporting purchases varied. Uniform procedure was probably not followed by all buyers through this latter period. Some buyers reported to each state their purchases from fishermen licensed by that state. Other buyers might have reported all purchases of fish caught by floating gear to the state in which the buyer's station was located, but reported purchases of fish caught by fixed gear to the state which licensed that gear. Still other buyers might have continued to report their poundage under the procedure in effect prior to 1931.

Concerning the methods of compiling catch statistics of salmon for the Columbia River district, the U. S. Bureau of Fisheries states:

*Fishery Industries of the United States, 1929-1936, incl., U. S. Department of Commerce, Bureau of Fisheries Publication. For the year 1936 statistics were obtained from preliminary data compiled by the U. S. Bureau of Fisheries.

"The Columbia River catch statistics reported by the U. S. Bureau of Fisheries in their annual publication entitled Fishery Industries of the United States, are obtained from data furnished by the fish buyers to the Oregon Fish Commission and the Washington State Department of Fisheries, which data are used by those departments primarily for purposes of collecting their poundage tax.

"For the years 1928 to 1934, inclusive, the catch of fish was credited to the state in which the fishermen resided and obtained gear licenses as reported on the blanks turned in by the fish buyers. Accordingly, the salmon reported by Washington buyers but caught by Oregon fishermen were credited back to Oregon. Likewise, the Oregon purchases from Washington fishermen were credited back to Washington in our presentation of these statistics.

"Starting with the year 1935 the method of reporting catch statistics was changed. Catches were credited to the state to which they were reported by the buyer regardless of which state licensed the fishermen from whom the fish were purchased.

"Generally speaking, the earlier procedure (for 1928-1934, incl.) presented the catch of the fishermen licensed by the respective states. The later procedure (1935 and later) represents more nearly the catch landed in the respective states.

"This method is now used in presenting our statistical tabulation of catch by gear and by states in the Columbia River district .

"The catch by gear figures, considered without regard to the states for which reported, however, are not appreciably changed by the difference in our tabulation of these statistics since 1935 and for practical purposes are comparable with earlier years."

In view of the variations in methods used by fish buyers in reporting their purchases and the changes in the methods of the U. S. Bureau of Fisheries in reporting catch statistics during the period 1928-1936, incl., it is evident that the poundage of fish credited to each state as shown in the Appendix tables is not the exact weight of fish caught on that state's side of the Columbia River; neither do the poundages given in these tables for each state represent exactly the weight of fish caught by fishermen licensed by that state alone.

However, the statistics published by the U. S. Bureau of Fisheries are believed to be the most reliable data available. Although subject to the

inaccuracies described before, it is believed these statistics show approximately the weight and proportions of the total catch of each salmon species taken by different types of gear for the years 1928 to 1935, inclusive.

As indicated from the statement of the U. S. Bureau of Fisheries quoted above, accurate, quantitative comparisons can not be made of the catch of each salmon species landed in each state or caught by fishermen licensed by each state. However, in spite of the weaknesses of the data, the tables show clearly that the total catch of fish credited to the State of Washington was greatly reduced following the enactment of Initiative No. 77 in 1935 prohibiting the use of traps, drag seines, and other fixed gear on the Washington side of the Columbia River.

In dealing with catch statistics of salmon and steelhead trout, it must always be kept in mind that these species migrate and spawn in cycles varying from two to six years and that in analyzing effects of different fishing operations on the salmon runs, catch statistics for consecutive years are not directly comparable. In other words, the effect of the take one year is not reflected in the catch of the following year, but in the seasonal runs several years later.

It must also be remembered that each of these species migrates up the river only at certain months or seasons of the year and each seasonal run is distinct and independent of the other runs. Hence, depletion of the run in one month may not show up in the total annual catch statistics because it may have been offset by an increase in take in other months.

Also because of the many factors affecting the total catch each year, such as fluctuations in size of the salmon runs, consumer demand and market prices, flood and other water conditions, and labor troubles, the number of each species taken by different types of gear on the Columbia River varies

from year to year.

In light of the unknown factors and qualifications affecting the division of the reported catch between the two states, the following analysis of catch statistics is useful chiefly in showing some general approximations of past trends in total take and the relative proportions caught by different types of gear.

Catch During the Ten-Year Period 1928-1937, Inclusive

1. The total annual catch of all salmon species delivered in the Columbia River district varied from year to year. The maximum reported catch, in 1930, was 28,886,670 pounds and the minimum reported catch in 1936, was 22,913,400 pounds.

2. For the ten years, the total reported catch of all salmon species was 257,908,825 pounds, an average annual take of 25,790,883 pounds.

3. The total catch of all salmon species reported for the Oregon side during the ten years was 158,145,137 pounds or 61.3 per cent of the whole district and the total reported catch for the Washington side was 98,963,688 pounds or 38.7 per cent of the district.

4. Chinook comprised by far the largest proportion of the take each year, averaging 17,584,675 pounds or 68.2 per cent of the total for the district. Next in quantity was silver salmon averaging 3,737,201 pounds annually or 14.5 per cent ot the total, followed by steelhead trout with an average of 2,460,280 pounds annually or 9.5 per cent; chum salmon, 1,641,372 pounds or 6.4 per cent; and blueback, 367,355 pounds or 1.4 per cent.

Curves showing variations in the annual production or catch of these salmon species for the years 1924-1937, are given on the Charts, Nos. 1 to 5, inclusive, in the Appendix.

Proportions of Catch Taken by Different Types of Gear

In comparing the catches taken by different types of gear in the states of Oregon and Washington, the seven-year period 1928-1934 (during which fixed gear, including fish wheels, were licensed on the Washington side of the river) has been considered separately from the years 1935, 1936, and 1937 (after fixed gear and fish wheels had been abolished in Washington under Initiative 77). In the following comparisons of salmon taken by fixed and floating gear, fish caught by ocean troll are not included.

Catch During Seven Years, 1928-1934, Inclusive

1. The total reported catch of all salmon species on both sides of the

Columbia River during this seven-year period (ocean troll excluded) was 164,031,880 pounds, an average of 23,433,130 pounds per year. The catch reported for the Oregon side of the Columbia River was 88,303,430 pounds, or an average of 12,614,919 pounds per year. This Oregon catch was somewhat larger than the catch reported for Washington which amounted to 75,728,450 pounds, an average of 10,818,350 pounds per year.

2. During this period the catch by floating gear reported for the Oregon side of the river, 67,012,069 pounds, was more than three times the catch by fixed gear, 21,301,361 pounds.

   On the Washington side of the Columbia these conditions were reversed, fixed gear taking 43,551,448 pounds while floating gear took 32,176,520 pounds.

3. The total catch of all salmon species by fixed gear reported for the Washington side during this period was more than twice as large as the total catch by fixed gear reported for the Oregon side. On the Washington side, 43,551,488 pounds, averaging 6,221,639 pounds annually, were caught by fixed gear while on the Oregon side fixed gear took only 21,301,361 pounds, or an annual average of 3,043,053.

4. On the other hand, the total catch of all salmon species during this period by floating gear reported for the Oregon side, 67,012,069 pounds, an average of 9,573,153 pounds per year, was more than twice as large as the total catch of 32,176,520 pounds by floating gear reported for the Washington side, which averaged 4,596,646 pounds per year.

5. Of the fixed gear catch reported for the Oregon side, about one-third was taken by fish traps and two-thirds by seines. Of the reported Washington catch, however, fish traps took nearly three times the weight of the fish taken by seines. Fish wheels, which were in operation on the Washington side during this period, took an average of about 376,000 pounds per year.

6. Fixed gear took 20.2 per cent of the total salmon catch landed on the Oregon side during this period; floating gear took 63.6 per cent and ocean troll 16.2 per cent.

7. On the Washington side fixed gear took 54.2 per cent, floating gear 40 per cent and ocean troll 5.8 per cent of the total catch reported during this period.

8. Of the total catch of chinook salmon alone reported for the Oregon side of the river, fixed gear took 19.2 per cent and floating gear 74.9 per cent, ocean troll taking 5.9 per cent. On the Washington side fixed gear took 52.4 per cent of the reported total chinook catch, floating gear 45.5 per cent, and ocean troll 2.1 per cent.

   Proportions of the total catch of other salmon species taken by different types of gear on the Oregon and Washington sides of the Columbia River during this period are given in Tables 15 and 16.

Catch in 1935, 1936, and 1937

1. For the three years 1935-1937, inclusive, the total reported catch of all salmon species on both sides of the Columbia River district (ocean troll excluded) was 63,343,363 pounds, an average of 21,447,787 pounds per year. This was only 1,985,343 pounds less than the corresponding annual average catch during the seven years previous.

2. The average annual catch of all salmon species (ocean troll excluded) reported for the Oregon side of the Columbia River during the three-year period was 15,694,154 pounds and for the Washington side 5,753,633.

   On the basis of these reported catch figures, the average annual catch credited to Oregon since 1935 was slightly larger than the average reported for the Oregon side for the seven previous years, while the average annual catch credited to Washington was only about half of the catch reported for Washington during the period 1928-1934.

   As stated before, accurate quantitative comparisons for the two periods can not be made of the catch landed in each state or taken by fishermen licensed by each state because of the manner in which fish buyers reported their purchases. However, it is obvious that since the enactment of Initiative No. 77 in 1935 abolishing fixed gear in the State of Washington, the catch of salmon credited to the Washington side of the Columbia River has been considerably reduced.

3. Since the abolition of fixed gear and fish wheels in the State of Washington by Initiative 77, detailed catch statistics by types of gear are available for both sides of the river for the year 1935 only.

   The proportions of the total catch of each salmon species taken by different types of gear and reported separately for the Oregon and Washington sides of the Columbia River for 1935 are given in Tables 17 and 18.

The average annual catch of each salmon species credited to the states of Oregon and Washington and to ocean troll for the two periods 1928-1934 and 1935-1937 are given in Table 19.

The average annual catch of each salmon species in per cent of the total catch for the period 1928-1934, inclusive, and 1935-1937, inclusive, are given in Table 20.

General conclusions concerning the effects of the abolition of fixed fishing gear in the State of Washington are discussed in a later section of this report.

Effects of Different Gear on the Fish

Claims have been made that fixed gear, which in general uses a small size mesh, catches smaller fish than floating gear and, hence, takes a considerable quantity of immature salmon. Data are not available from which to determine accurately the number and proportion of different size fish taken by various gear, but it seems generally recognized that traps and seines catch more small fish than floating gear which uses a larger mesh.

However, small salmon are not necessarily immature fish. The average weight of mature blueback or sockeye salmon is about 2 to 5 pounds. These are caught by traps, seines, and gill nets. Gill netters use a smaller size net when fishing for blueback than for other species of salmon.

Chinook reach maturity at ages varying from 2 to 6 years, although the majority mature at 4 or 5 years. Male chinooks generally mature at an earlier age than females, the youngest of the mature chinooks being exclusively males. Further, the rate of growth of the salmon is such that the youngest of the mature fish are distinctly smaller than the older mature fish. These perfectly normal male salmon, which have matured at an early age, but are of smaller size than salmon of later maturity, are called "Jack salmon". Except for this youngest age group which has matured unusually early, the other age groups differ so little in size that their ages cannot be determined from size alone.

Undoubtedly a considerable number of these Jack salmon are caught by fixed fishing gear. Nevertheless, investigations show these are not immature fish. It has been argued that the taking of these small males by commercial fishermen benefits the salmon resource by preventing their mating with the female salmon on the spawning grounds and thus increasing the proportion of this smaller size fish.

Studies made by the U. S. Bureau of Fisheries show that salmon do not

migrate up the river in any appreciable quantity until they are sexually mature. Bureau of Fisheries Document No. 974*, page 41, states:

> "With the exception of the three collections made in the lower part of the Columbia estuary, the fish found inside the river are all mature. This is so obviously in accord with the familiar facts of the life history of the Chinook salmon that it would be quite unnecessary to present the data given in Table 7, were it not for the unusual presence of immature fish in those collections made in the estuary and to the desirability of presenting a table that may be compared with a similar table for the fish taken in the ocean."

Under "Summary and Conclusions" page 69, the Document states:

> "While in general, as would be expected, fish taken within the Columbia River are mature, there are times when a few immature fish are taken by seines and traps in the lower part of the estuary."

The claim has been made that fixed gear take a larger proportion of female salmon than floating gear. Authoritative evidence to support this claim is lacking.

Salmon caught in gill nets often become entangled in the mesh and may be severely marked and scarred during their struggles. It is asserted that a considerable number of these fish manage to extricate themselves and proceed up the river, but that their injuries prevent them from spawning. In other words, the gill nets may kill more salmon than are reported in the catch statistics. Whether any appreciable number of escaped fish are sufficiently injured to prevent spawning cannot be determined from available data.

It is claimed that fish taken by fixed gear bring a premium price because they are clean and unscarred by the nets. Salmon taken for hatchery purposes are usually caught by fixed gear to prevent injury to the fish. By specific exemption, the proposed initiative petition (Exhibit A) permits Indians to take salmon by fixed gear under federal regulations; state and

*"Growth and Degree of Maturity of Chinook Salmon in the Ocean", by Willis H. Rich, PhD, Asst, in Charge of Scientific Inquiry, U. S. Bureau of Fisheries, Department of Commerce, 1925.

federal governments are allowed the same concession for propagation or scientific purposes.

It has been claimed that fixed gear, by taking more steelhead than floating gear, depletes the steelhead run and is therefore more injurious to sports fishing than other types of gear. Sport fishing for steelhead trout in the Columbia River and its tributaries is at its peak during the late fall and winter months, while most of the steelhead taken from the Columbia by commercial fishermen are caught during June, July, August, and September. Whether the steelhead which the sportsmen fish for during the winter months are fish which have passed through the commercial fishing district during the summer months is unknown. Steelhead trout is a commercial fish in Oregon, and the steelhead catch is an appreciable proportion of the total commercial catch of the salmon species. In 1929 the State of Washington classified steelhead as a game fish and prohibited their retail sale as fresh fish. However, this does not affect commercial fishing for steelhead as the canning and freezing of these fish for shipment is still permitted in Washington.

During the period 1926-1934, inclusive, fixed gear on both sides of the river took 34.9 per cent of the total catch of all salmon species but 64.3 per cent of the total steelhead catch. Since 1934 statistical data for catch of each species by different types of gear are available for 1935 only. In 1935 fixed gear on the Oregon side caught 23.3 per cent of the total catch of all salmon species on the Oregon side and 54.3 per cent of the total steelhead catch on the Oregon side. A study of the annual commercial production of steelheads from 1928 to 1937, Tables 9 and 14, and Chart No. 3 show a gradual diminution in take during this period.

Effects of Abolition of Fixed Fishing Gear in Washington State In Puget Sound, Willapa Harbor and Grays Harbor Districts

The quantitative effects of the abolition of fixed gear in 1935 in Puget Sound, Willapa Harbor, and Grays Harbor districts of the State of Washingron are impossible of accurate determination from data now available. During the study, several comparisons of the catch statistics published by the Washington State Department of Fisheries for these districts were made in an attempt to obtain such information. Because of the change in 1935 in the method of assembling catch statistics published by the Washington State Department of Fisheries, it is believed that a larger share of the catch was reported in 1935, 1936, and 1937 than was reported prior to these dates; hence, the statistics for 1934 are not comparable with the statistics for 1935 and later years.

Comparable cycles of catch statistics would have to be compared in order to determine whether the total landings increased or decreased in proportion to the actual size of the run. In addition, it is recognized by fisheries agencies that the methods for analyzing fisheries statistics, in order that conclusions may be based on fact, is a project for which adequate technical methods have not been completely outlined.

Many factors influence the interpretation of catch statistics in determining sizes of fish runs, making it almost impossible to account for errors in calculations unless more data are available. Changes in the size of the run, fishing intensity, speed of migration, weather conditions, and other factors all influence the catch per unit of gear.

It is evident, however, that the elimination of fixed gear left a larger available number of fish to be taken by the floating gear and as a consequence, total landings and the intensity of fishing activities by floating

gear increased. The total catch apparently declined in relation to the size of the total fish run, but not by the amount represented by the catch of fixed gear prior to its elimination. While these conclusions can be accepted as qualitatively accurate, quantitative evidence of just how much the landings by floating gear increased cannot be ascertained at the present time.

In the Columbia River District

With respect to the Columbia River, it is evident from preliminary analyses of the total landings that the elimination of the fixed gear generally tended to decrease the total catch on the Washington side of the Columbia River. The net reduction in take, however, was not so great as might have been expected because the number of fish caught by floating gear remaining in use was considerably increased. The indications are that the elimination of fixed gear on the Washington side of the Columbia River has decreased the total catch of salmon by an unknown percentage, and that the reduction in the total catch is not so great as the catch taken by the fixed gear before it was eliminated.

It is evident that the annual fish cycles since the elimination of the fixed gear are insufficient for reliable statistical comparisons with the period to 1935, since comparable cycles of fish must be compared in order to determine whether the total landings have increased or decreased. To analyze even the available statistics accurately would require much time and funds since only the catch data on the Washington side of the Columbia River after 1935 is available for accurate analysis. The data prior to 1935 is still in its original form, which is not suitable for analysis.

Observations made at the Bonneville Dam should provide in the next few years a reasonable accurate analysis on the relationship between the catch per unit of gear and the escapement which can be utilized for analyzing the relationship between the catch per unit of gear and the escapement for years prior to 1935.

CONSERVATION OF COLUMBIA RIVER SALMON

Depletion of Salmon Runs

The various species of Columbia River salmon run at different times of the year. It is therefore difficult to determine quantitatively the extent and rate of depletion of each species, since complete data on past and present runs are not available. To obtain this information a comprehensive study of the several runs of each salmon species over a considerable period of time would be necessary. However, it is definitely known that particular runs of certain species, such as the spring run of chinooks and several runs of bluebacks, have been seriously depleted, if not completely destroyed, on many tributaries of the Columbia River.

Commercial salmon production is affected by many varying influences other than the abundance or scarcity of fish, such as fluctuations in public demand and market prices, labor troubles, additional restrictions on commercial fishing, floods and other water conditions, extent of artificial propagation, and production of salmon in Alaska and other places along the Pacific coast.

Dams for navigation improvement, power and flood control, irrigation developments, pollution of tributaries from industrial and domestic wastes, and other effects of civilization have also contributed heavily to depletion of the salmon runs. How much greater the salmon catch in the Columbia River would have been, or might be in the future, if the fish were more abundant, is also problematical.

While variations in the yearly output of salmon do not therefore directly measure the growth or decline of the fisheries resource, nevertheless the distincly downward trend of production since 1925 in the canning and packing industry, (Shown by Table 23 and Chart 1, 1900-1937, Incl.) together with

the known depletion of particular runs, clearly indicates that the fish are less abundant than formerly and that conservation measures are urgently needed to preserve and build up the Columbia River salmon species.

The Columbia River fishing industry employs large numbers of people and is one of the major economic activities of the Pacific Northwest. Thousands of sportsmen and tourists are attracted to the Columbia Basin each year by the salmon fishing. Continued depletion of the salmon runs would therefore work a great hardship not only on the commercial fishing industry but on sportsmen, tourists, and residents who now enjoy game fishing. Columbia River salmon is a food fish of national importance. Destruction of the species would bring irreparable social and economic losses to the region and the nation.

Effects of Ocean Troll Fishing

Chinook and silver salmon are practically the only species taken by trollers since other salmon do not bite a baited hook or lure. These two species, particularly chinook, migrate widely with the result that the coast-wide troll fisheries take heavy toll of Columbia River salmon over a large area. Tagging experiments, conducted by the Biological Board of Canada on chinook salmon caught by trollers off the coast of British Columbia, showed that from 12 to 60 per cent of the tagged fish were Columbia River salmon.

In addition to the mature fish caught and sold, the ocean trolls kill countless immature salmon each year, that is, salmon under 18 inches in length which is the smallest size that can be sold commercially. Large numbers of young salmon are caught, pulled in, and snapped off the hook and thus probably fatally wounded. It therefore appears that deep-sea troll fishing has placed a heavy additional strain on the stock of chinook and silver salmon breeding in the Columbia River and coastal streams. The other types of commercial fishing operations in the Columbia River catch salmon only during

their migration to the spawning beds up the river.

Problems of Conservation

Concerning conservation of the Columbia River fisheries, the report of the U. S. Commissioner of Fisheries* states:

> "The conservation of a great fisheries resource involves a variety of circumstances concerning which there is a dearth of information at the present time....."

> "Policies announced and adopted today will be modified and extended tomorrow when additional information resulting from continuing studies is available. The resource we seek to conserve is itself a living and dynamic thing, developing and adapting itself to new circumstances and conditions resulting from natural growth and changing economic conditions. Conservation, although its objective is always the same, is the application of continually increasing knowledge and continually shifting viewpoints. Wildlife resources can be conserved only by eternal vigilance in balancing the productive forces of natural growth and replacement against the destructive forces of man's exploitation."

> "The foundation of a rational system of conservation is an extensive body of well-established facts secured through intensive scientific investigation. The habits and natural requirements of the species to be protected must be fully understood. With the facts now being established through the extensive program of investigation undertaken by the Bureau of Fisheries, it will be possible to base recommendations for regulatory legislation by the States, and to propose measures for increasing the yield of the fisheries, whether through augmenting natural reproduction or by artificial propagation."

Recommendations of U. S. Commissioner of Fisheries

The report* offers the following recommendations for the conservation of Columbia River salmon:

> "1. Scientific investigations should be continued on a more extensive scale than heretofore to supply the many gaps in our knowledge regarding the natural requirements of each of the important commercial fish species in the Columbia River and to provide a factual basis for a program of restoration of favorable environments, to improve methods of artificial propagation, to direct a program of restocking and transplantation, and to devise a system of fish management that will permit the fullest utilization of the resource for economic benefit without impairing the future supply.

* Senate Document No. 87, Seventy-fifth Congress

"2. The program of national planning of economic and social development on a regional basis, begun so auspiciously during recent years, should be continued and strengthened to permit comprehensive economic studies of the various resources of the Columbia River Basin, to plan for their development and utilization each in relation to every other form of wealth and activity in the region, and with sufficient authority to direct such development.

"3. Governmental machinery should be devised to regulate the exploitation of the Columbia River fishery resources regardless of State lines, and with authority to carry into effect the principles of fishery management devised through scientific investigations and fostered by the planning agency.

"The obvious cure for conflict and delay in enacting uniform regulations for the fisheries of the Columbia River where it forms the boundary between Oregon and Washington is to draft a new interstate compact whereby complete authority over the fisheries is delegated to a commission with power to enforce its regulations and which is sufficiently removed from political influence to resist the demands of minority pressure groups in both States.

"The fisheries of the Columbia River could well be regulated and a system of management instituted by an improved interstate compact including Washington, Oregon, and Idaho.

"Under the terms of such a compact a commission should be established to represent the three Commonwealths. This commission should be small in number to insure effective functioning and its members should be appointed for several years with overlapping terms of office to assure continuity of policy. Washington, Oregon, and Idaho should be represented in proportion to their respective interests in the fisheries and the United States Commissioner of Fisheries should be included either as a member with full voting power or as an ex officio advisory member. The commission should have delegated authority to impose the necessary regulations on commercial fishing that would have the force of law and would be subject to enforcement through the courts. Of course, such regulations would be imposed only as a result of needs conclusively demonstrated by adequate investigation. The commission should have authority to define fishing seasons in the various sections of the river, to prescribe the kinds and amounts of gear to be employed, and above all to regulate by appropriate means the total catch in order to assure adequate escapement of adult fish on their spawning migrations.

"The success of unified control over a great fishery by a single authority has been demonstrated by the Halibut Commission, established under authority of the international treaty between Canada and the United States. The rehabilitation of an important fishery has been undertaken and success is now apparent in a region far greater than the Columbia River Basin and where control is more difficult--the high seas of the North Pacific from Washington to Bering Sea. A similar future may be anticipated for the Columbia River fisheries with a program of adequate scientific investigation on which to base practical action by the Federal and State Governments."

APPENDIX

EXHIBIT A

PROPOSED OREGON INITIATIVE PETITION

"A Bill

For an act prohibiting the taking of salmon by the use of drag and whip seines, fish traps and other fixed fishing appliances in the waters of the Columbia River and its tributaries, and providing penalties for violation thereof.

Be it Enacted by the People of the State of Oregon:

Section 1. It shall be unlawful to construct, install, use, operate, or maintain any drag seine in the waters of the Columbia River or its tributaries in the State of Oregon.

Section 2. It shall be unlawful to construct, install, use, operate, or maintain, within any of the waters of the Columbia River or its tributaries fish wheels, set net, or weir, or any fixed appliance for the purpose of catching salmon, salmon trout, or steelhead, or to take salmon, salmon trout, or steelhead by any such means.

Section 3. It shall be unlawful to construct, install, use, operate, or maintain any whip seine in the waters of the Columbia River or its tributaries in the State of Oregon.

Section 4. A set net is defined to be a gill mesh net which is anchored and catches fish by gilling and is not free to move with the current or tide.

Section 5. A seine is defined to be a mesh net, one edge provided with sinkers and the other with floats. It hangs in the water, and when its ends are brought together or drawn ashore, or whipped on to a sandbar, or into shoal water encloses the fish.

Section 6. The provisions of this Act do not apply to fishing by Indians under Federal regulation, or the use of any device or means by the State or National Government in catching fish for propagation, or scientific purposes.

Section 7. If any section or provision of this Act shall be held unconstitutional, or for any other reason invalid, the invalidity of such provision shall not affect the validity of this Act as a whole, or of any section, provision or part thereof not adjudged to be invalid or unconstitutional.

Section 8. Any person who shall violate any of the provisions of this Act, or who shall aid, abet, or assist in the violation thereof, shall be guilty of a misdemeanor, and upon a conviction thereof shall be punished by imprisonment in the county jail of the county in which said offense is committed for not less than thirty (30) days or more than one (1) year, or by a fine of not less than one hundred dollars ($100.00) or more than One Thousand Dollars ($1,000.00) or by both such fine and imprisonment. Any and all gear and appliances used in violation of the provisions of this Act, including boats, traps, nets, weirs,

fish wheels, truck or trucks, automobile or automobiles, motor vehicle or motor vehicles, or other vehicle or vehicles of any kind whatsoever, or other appliances used or employed in connection with the violation of this Act shall be condemned and sold, and the proceeds of such sale or sales, together with all money arising from fines for the violation of this Act, shall be paid to the State Treasurer of the State of Oregon for the benefit of the State Fish Commission of the State of Oregon.

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INITIATIVE PETITION

Sponsored by OREGON WILDLIFE COUNCIL
J. G. Beck, President
Frederick S. Wilhelm, Secretary

and

J. G. Beck, Prescott, Oregon
Frederick S. Wilhelm, 420 S. W. Third Avenue, Portland, Oreg.

Preliminary petition filed with Secretary of State, January 31, 1938"

EXHIBIT B

OREGON FISH COMMISSION

"GENERAL ORDER NO. IV

REGULATIONS DEFINING A DRAG SEINE, PROVIDING REQUIREMENTS FOR OBTAINING A LICENSE THEREFOR, AND REGULATING THE OPERATION THEREOF.

Under authority vested in the Fish Commission for the regulation of commercial fishing in the waters of the State of Oregon in accordance with provisions of statute,

IT IS HEREBY ORDERED:

REGULATION NO. I

In licensing drag seines, as provided under Section 40-515, Oregon Code 1935 Supplement, as amended by Chapter 346, Laws of Oregon 1937, the Fish Commission through its Master Fish Warden will recognize only such seines as come within the following definition.

'A drag seine is hereby defined to be a net consisting of a single seine web not to exceed 400 fathoms in length, attached to one cork line and one lead line.'

REGULATION NO. II

Any person, firm or corporation applying to the Fish Commission of the State of Oregon for a license to operate a drag seine in the waters of the Columbia River shall indicate on such application a definite location on which such seine is to be operated, and shall show in the space provided an exact description of said location in metes and bounds.

Each and every applicant for a drag seine license for the license year beginning April 1, 1938, shall attach to the application a map or plat showing the location desired and certified to by a competent civil engineer and/or surveyor as having been prepared from a bonafide survey of lands, beach, or tide flats comprising said location. The description on the application as herein provided for shall coincide and be identical with the description of the location as shown by the map or plat accompanying same, and said description shall be written into and made a part of the drag seine license issued by the Master Fish Warden pursuant thereto. In making application for the renewal of any seine license held during the license year beginning April 1, 1938, it shall not be required that the certified map or plat accompany the application for renewal in instances wherein the location and the description thereof are identically the same as those under the license for the preceeding year. If, however, any change in location or in the description thereof is made, all requirements as to description of location, filing of certified map or plat, etc., shall be fully complied with as in the case of an application for a license covering a new location.

REGULATION NO. III

Every applicant for a drag seine license hereunder shall deliver to the Master Fish Warden a copy of that document or instrument showing said applicant's title or "color of title" to or in the location for which the license is applied for. Except in instances wherein ownership of location changes, it shall not be necessary to submit a copy of such document or instrument from year to year in making renewals or obtaining subsequent licenses for the same location.

REGULATION NO. IV

All drag seines licensed in accordance herewith shall be landed or hauled on the specific location described in the license under which operated, and at no other place. In event that, during the course of operation, question arises as to whether or not a drag seine is being landed on its location, the licensee, upon request of the Master Fish Warden, either written or oral, shall forthwith mark the location described in such license, in the manner and as directed by the Master Fish Warden.

The foregoing is hereby approved and ordered filed as GENERAL ORDER NO. IV.

Dated: January 11, 1938

FISH COMMISSION OF OREGON

By JOHN C. VEATCH, Chairman
By M. R. CHESSMAN, Commissioner
By ROBERT F. CRONEN, Commissioner"

EXHIBIT C

HISTORY OF REGULATIONS GOVERNING FISHING SEASONS AND TYPES OF COMMERCIAL FISHING GEAR ON THE COLUMBIA RIVER

Taken From Report of the Commissioner of Fisheries, Senate Document No. 87, Seventy-fifth Congress, First Session, July 22, 1937.

"SEASON REGULATIONS ON THE COLUMBIA RIVER

1877. Washington: March, April, August, and September closed to salmon fishing. May, June, and July had a weekly closed period from 6 p.m. Saturday to 6 p. m. the Sunday following.

1878. Oregon: Same as above except that April was open to fishing subject to weekly closed period.

1879. Washington: Regulations changed to agree with those of Oregon.

1880. Oregon: Weekly closed period from sunset Saturday to sunset the Sunday following at any season of the year.

1881. Washington: September open to fishing. No weekly closed period provided.

1890. Washington: Closed seasons from March 1 to April 10 and from August 10 to September 10.

1891. Oregon: Closed seasons made same as Washington. Weekly closed period from 6 p. m. on Saturday to 6 p. m. the Sunday following.

1895. Washington: Weekly closed period done away with.

1897. Washington: Illegal to capture or possess sturgeon between March 1 and November 1.

1898. Oregon: Closed seasons from 12 m. February 15 to 12 m. April 15, and from 12 m. August 10 to 12 m. September 10.

1899. Oregon: Spring closed season from 12 m. March 1 to 12 m. April 15. possession of sturgeon illegal from March 1 to November 1.
Washington: Closed season from 12m. March 1 to 12 m. April 15, and from 12 m. August 10 to 12 m. September 10. No mention made of weekly closed periods.

1901. Oregon: Closed seasons from 6 a. m. March 1 to 6 a. m. April 15, and from 6 a. m. April 15 to 6 a. m. September 10. Weekly closed period from 6 p. m. Saturday to 6 p. m. the Sunday following from April 15 to August 15.
Washington: Fall closed season shortened 5 days by moving its starting time back to 12 m. August 15.

1903. Oregon: Weekly closed periods removed.

1905. Washington: Spring closed season began 12 m. March 15, and the fall closed season 12 m. August 25. The fishing season was thus lengthened 25 days.

1908. Oregon: Initiative petitions were passed at a general election which radically changed the seasons and the legal gear, but these regulations were repealed before they had been in effect long.

1909. Oregon: Closed seasons from 12 noon March 1 to 12 noon May 1 and from 12 noon August 25 to 12 noon September 10 and between 6 p. m. Saturday to 6 p. m. the Sunday following from May 1 to August 25.
Washington: Regulations made the same as those of Oregon. These 1909 seasons were for that part of the Columbia which is west of a line across the river near the mouth of the Deschutes River. Washington had regulations for the river east of this dividing line, and other regulations for the Snake River.

1937. Oregon, Washington: The fishing season opened at 12 noon April 26. New State laws permit Oregon and Washington fisheries officials to change seasons.

GEAR REGULATIONS ON THE COLUMBIA RIVER

1866. Washington made it unlawful to build a fish trap that would reach more than two-thirds of the way across or wholly prevent the passage of fish up and down the Walla Walla River.

1871. Washington: An act made it unlawful to build or place a fish trap, weir, seine, or net that would reach more than two-thirds of the way across fresh-water streams or creeks, or that would wholly prevent the passage of fish either up or down. The above gear was not to be used in lakes.

1878. Oregon passed its first gear regulation. Specified minimum mesh sizes and spacing between slats on traps. Also required traps and weirs to have an opening to permit the free passage of fish during the weekly closed period.

1879. Washington passed legislation similar to the 1878 legislation of Oregon.

1890. Washington: Fixed appliances could not extend more than halfway across any channel or slough.

1891. Oregon: Fixed appliances could not extend more than one-third the way across a channel or slough.

1893. Washington: Specified the maximum length of fixed gear and the minimum distances between such gear.

1897. Washington: Minimum size of mesh of fixed gear specified.

1898. Oregon: A fishwheel could not be prepared to take fish during a closed season.

1899. Oregon, Wash.: Chinese sturgeon lines prohibited.

1901. Oregon: Gaffs, spears and foul-hooks prohibited.

1907. Oregon: Purse seines prohibited.

1909. Oregon: Purse seines permitted in Columbia River if licensed.

1913. Oregon: Maximum length of fixed gear and minimum passageways between such specified.

1915. Washington: Length of appliances to be not more than one-third the width of the river. Gill net minimum mesh of 5 inches. Further regulations of fixed gear.
Oregon: Further regulations of fixed gear. Also provided for licenses for trolling in the Columbia River and for purse seines.

1917. Washington: Purse seines prohibited in Columbia River. Regulations provided for V-shaped opening in trap leads, to be opened during closed periods. Hood-and-line fishing in Columbia licensed.

1917. Oregon: Purse-seine fishing prohibited in Columbia River. Commercial trolling license provided for.

1919. Oregon: Illegal to have a purse seine on the Columbia River even if not fishing.
1921. Washington: Salt-water hood-and-line fishing licensed (possibly meant trolling).
1921. Oregon: Attempted to prohibit trolling in the Pacific Ocean.
1923. Oregon, Washington: Whip seines prohibited in Columbia River. (Apparently this type of gear has not been defined.)
1927. Oregon: Fish wheels prohibited in Oregon waters. Unlawful to use traps or seines above Cascade Locks in Oregon waters. Gill net maximum length set at 250 fathoms.
1935. Washington: Drag seines and fixed appliances prohibited. Gill net maximum length set at 250 fathoms.
1935. Oregon: Seines again permitted east of Cascade Locks.

The obvious cure for conflict and delay in enacting uniform regulations for the fisheries of the Columbia River where it forms the boundary between Oregon and Washington is to draft a new interstate compact whereby complete authority over the fisheries is delegated to a commission with power to enforce its regulations and which is sufficiently removed from political influence to resist the demands of minority pressure groups in both States.

As the above tabulation shows, the compact regarding concurrent legislation has not ended continual negotiation between the fishery departments or between legislative committees but still permits delay in securing agreement and uncertainty of uniform enforcement. This machinery is too cumbersome to permit prompt changes in regulations, even when an agreement is reached.

On the other hand, a commission appointed in such a way as to be responsive to popular will, yet be free from local pressure and composed of a membership with overlapping terms of office to assure a continuing policy, would be able to adopt and apply the necessary corrective measures. Moreover such a commission, with continuing personnel, would accumulate a fund of experience and would be able to weigh and evaluate technical data supplied by scientific research more effectively than any legislative body. Its program would be readily integrated with other phases of fishery protection and development carried out by the Federal and State Governments throughout the Columbia River Basin."

EXHIBIT D

FISHING GEAR LICENSED ON COLUMBIA RIVER

Following are brief descriptions of the several types of commercial fishing gear licensed in 1938 by the Oregon Fish Commission and the Washington State Department of Fisheries for use on the Columbia River:

1. Fixed Gear

a) Pound Nets or Fish Traps

A fish trap is an arrangement of fish nets such that the fish are guided through a small opening into an area enclosed by nets and once trapped therein cannot find their way back through the small opening. Fish traps generally have a long webbing lead strung on piling to guide the fish into the trap. The lead, consisting of a single net generally of 6 inch mesh, is limited to 800 feet in length. The spiller, or section which traps the fish, is usually a net of 4 inch mesh.

Fish traps are allowed to be used only in specific locations. Most of the piling and supporting framework for the fish traps remain in the water all year round but the webbing is so expensive it is usually removed and stored away after the fishing season is over.

b) Drag Seine or Haul Seine

The drag seine, sometimes called the "haul seine", is a long straight piece of single wall net, limited to 400 fathoms in length, fastened to a cork and a lead line. The seine is laid out the desired distance from shore by boats which drift downstream. The inshore end of the net is landed on the beach while the other end continues to be carried downstream by the current. The outside end is pulled around by the boat, thereby causing the fish to be caught in the net as it pulls to shore. Both ends of the net then are hauled or drawn by horses until the entire net is hauled onto the beach and the fish surrounded thereby are landed.

It is possible to operate two drag seines at once. While one is being pulled in downstream, another is dropped in the water upstream, thus making continuous operation. Drag seine operations are rather expensive, are done usually at low-tide, and are somewhat selective inasmuch as seining is carried on only at the time fish are in abundance. The size of the mesh used in the net is not important, except that the mesh is small enough to permit catching all sizes of mature fish.

A drag seine is required to be hauled and landed only on a specific location on the river-bank.

c) Set Gill Nets

A set net is a straight piece of webbing, generally a piece of old gill net with one end anchored at or near the shore and the other end extending out into the stream. Set nets are usually used in eddies as operations of these nets require certain flow conditions in order to keep the net in place. Set nets are seldom over 200 feet long. Set nets are classed as fixed fishing gear and are used only in specific locations, the license specifying where these nets may be operated.

d) Set Lines

A set line is a long line on which at intervals are attached a number of short lines. At the end of each short line a single baited hook is attached. In operation the set line is anchored on the river bottom to catch sturgeon. Relatively few salmon species are caught by this gear.

2. Floating Gear or Other Gear Not Classified as Fixed

e) Dip Net

A dip net is a small bag of netting attached to a metal ring on a long wooden handle. The net either is dipped through the water or held in place by hand. Dip nets are used almost exclusively in swift current and rapids, particularly by the Indians at Celilo Falls.

f) Gill Nets or Drift Gill Nets

A gill net consists of a web with from one to five walls. Special size mesh is used in gill nets which catch the fish by permitting part of his head, but not the rest of his body, to go through the mesh, and the fish is therefore caught in the webbing itself, usually by the gills. Hence, the name "Gill Nets".

There are two types of drift gill nets as follows:

One, known as the "Floater Gill Net", consists of a straight piece of webbing like the set net but instead of being anchored in place, it is spread across the stream and permitted to drift with the current intercepting the fish as they come up the river. The Oregon law effective in 1928, that prohibited the use of fish wheels, placed a limit on the length of these gill nets.

The second type of gill net, known as a "Diver" or "Combination" net, has two distinctive features--first, it is heavily weighted at the lead line and thus sinks to the river bottom. Second, it may consist of several layers of webbing of different sizes of mesh, all of which are attached to one cork line but some of which have separate lead lines. This combination of different size webbing causes

fish of various sizes to become entangled.

Gill nets in most general use are of several types known as Combination, Trannel, Blueback and Steelhead nets, some of which are used as Floaters and some as Divers. Different sizes of mesh are used in catching different species of fish. In fishing for chinook or large salmon the mesh used is generally from 6 or 7 inches up to 9 or 10 inches. In fishing for bluebacks, the net usually has a single wall of 4 inch mesh. For steelheads the net is generally of 6 inch mesh. Combination and trannel nets usually have from 4 to 5 walls with mesh running from 6 or 7 inches up in size.

Gill nets are limited to 250 fathoms in length. They may be used anywhere on the river from the bar at the mouth of the Columbia to the upper limit of the commercial fishing area. Gill nets usually permit small fish to pass through without injury.

Diver gill nets are becoming more popular all the time and are used where the stream bottom is smooth and clear of debris. Snags have to be cleared from stream bottoms before the season opens in order to keep the gill nets from being snagged.

In certain places several types of gill nets are used. Usually the fishermen get together and clean the drifts, and there is an unwritten law that no one except those who help clean the drift are allowed to fish in that particular place. Since the success of the gill net depends on the inability of the fish to see the net in the water, gill net fishing is usually done at night or in muddy water during the daytime; sometimes the fishermen make two or more drifts in one night.

g) Troll Lines

Troll lines are merely hooks and lines attached to poles using artificial bait. Most of the troll fishing is done in the ocean outside the mouth of the river. The quantity of fish caught by troll lines within the river itself is relatively small.

TABLES AND CHARTS

TABLES OF CATCH STATISTICS

The following Tables 1-20, inclusive, show poundage of salmon caught by different types of commercial fishing gear and landed in the Columbia River district of Oregon and Washington during 1928-1937, inclusive. Figures in parentheses shown on these tables refer to the following:

(1) Catch statistics for years 1928-1935, inclusive, were taken from the annual reports entitled "Fisheries Industries of the United States", published by the Bureau of Fisheries, U. S. Department of Commerce. Catch statistics for the year 1936 were obtained from preliminary data compiled by the Bureau of Fisheries for that year.

Catch statistics reported for the State of Oregon for the year 1937 were obtained from the Oregon Fish Commission. Catch statistics reported for Washington for the year 1937 were obtained from the Washington State Department of Fisheries.

(2) Catch statistics reported for the Oregon side of the Columbia River for the years 1936 and 1937 were not segregated between fixed and floating gear.

The total catch reported for Oregon for the year 1937 includes catch by fixed gear licensed in Oregon but landed in Washington.

Fixed gear were not licensed in Washington during the years 1935, 1936 and 1937.

TABLE 1

SUMMARY OF ANNUAL CATCH IN COLUMBIA RIVER DISTRICT, 1928-1937

ALL SALMON SPECIES[1]

Oregon

Year	Fixed Gear (pounds)	Floating Gear (pounds)	Ocean Troll (pounds)	Total Catch (pounds)
1928	3,700,664	9,756,725	1,950,565	15,407,954
1929	2,858,090	8,912,762	2,524,127	14,294,979
1930	3,520,020	9,184,279	3,511,395	16,215,694
1931	3,722,111	10,864,860	1,419,905	16,006,876
1932	1,968,024	8,594,760	2,766,645	13,329,429
1933	2,195,152	10,144,383	2,576,635	14,916,170
1934	3,337,300	9,554,300	2,273,500	15,165,100
1935	3,997,200	10,277,800	2,857,100	17,132,100
1936	(2)	(2)	1,428,856	16,873,226
1937	(2)	(2)	1,440,515	18,803,609
Total for 10 year period, 1928-1937 Inc.			22,749,243	158,145,137
Annual average catch			2,274,924	15,814,514

Washington

1928	6,885,122	4,880,987	823,831	12,589,940
1929	6,042,474	4,423,930	900,162	11,366,566
1930	6,443,900	4,247,133	1,979,943	12,670,976
1931	6,407,900	4,702,594	575,548	11,686,042
1932	5,273,632	4,328,783	198,258	9,800,673
1933	5,936,602	5,191,393	78,649	11,206,644
1934	6,562,300	4,401,700	133,600	11,097,600
1935	--	5,669,000	543,700	6,212,700
1936	--	5,101,641	932,655	6,040,174
1937	--	6,484,380	607,993	7,092,373
Total for 10 years period, 1928-1937 Inc.			6,774,339	98,963,688
Annual average catch			677,434	9,896,369

Total Catch Both States

1928	10,585,786	14,637,712	2,774,396	27,997,894
1929	8,900,564	13,336,692	3,424,289	25,661,545
1930	9,963,880	13,431,412	5,491,338	28,886,670
1931	10,130,011	15,567,454	1,995,453	27,692,918
1932	7,241,656	12,923,543	2,964,903	23,130,102
1933	8,131,754	15,335,776	2,655,284	26,122,814
1934	9,899,600	13,956,000	2,407,100	26,262,700
1935	8,997,200	15,946,800	3,400,800	23,344,800
1936	(2)	(2)	2,361,511	22,913,400
1937	(2)	(2)	2,048,508	25,895,982
Total for 10 year period, 1928-1937 Inc.			29,523,582	257,908,825
Annual average catch			2,952,358	25,790,883

TABLE 2 SUMMARY OF ANNUAL CATCH ON OREGON SIDE OF COLUMBIA RIVER 1928-1937 INCL. BY TYPE OF GEAR

ALL SALMON SPECIES (1)

Year	Catch by Fixed Gear (pounds)				Catch by Floating Gear (pounds)			Total Catch in River (pounds)
	Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Total	Drift Gill Nets	Dip Nets	Total	
1928	3,053,978	(3)	646,686	3,700,664	9,615,383	141,342	9,756,725	13,457,389
1929	2,130,800	(3)	728,002	2,858,090	8,786,364	126,398	8,912,762	11,770,852
1930	2,516,369	(3)	1,003,651	3,520,020	8,831,691	352,588	9,184,279	12,704,299
1931	2,795,166	(3)	926,945	3,722,111	10,349,272	515,588	10,864,860	14,586,971
1932	1,429,239	(3)	538,785	1,968,024	8,470,244	124,516	8,594,760	10,562,784
1933	1,459,020	135,517	600,615	2,195,152	9,658,011	486,372	10,144,383	12,339,535
1934	2,427,700	71,800	837,800	3,337,300	9,269,900	284,400	9,554,300	12,891,600
1935	2,992,700	90,000	914,500	3,997,200	9,170,400	1,107,400	10,277,800	14,275,000
1936	(2)	(2)	(2)	(2)	(2)	(2)		15,444,370
1937	(2)	(2)	(2)	(2)	(2)	(2)		17,563,094

Year	Catch by Ocean Troll (pounds)	Total Catch Including Troll (pounds)
1928	1,950,565	15,407,954
1929	2,524,127	14,294,979
1930	3,511,395	16,215,694
1931	1,419,905	16,006,876
1932	2,766,645	13,329,429
1933	2,576,635	14,916,170
1934	2,273,500	15,165,100
1935	2,857,100	17,132,100
1936	1,428,856	16,873,226
1937	1,440,515	18,803,609

(3) Catch by Set Gill Nets 1928-1932 inclusive, included in catch by Drift Gill Nets.

TABLE 3 SUMMARY OF ANNUAL CATCH ON WASHINGTON SIDE OF COLUMBIA RIVER 1928-1937, INCL. BY TYPE OF GEAR

ALL SALMON SPECIES(1)

Year	Catch by Fixed Gear (pounds)					Catch by Floating Gear (pounds)			Total Catch in River (pounds)
	Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Fish Wheels	Total	Drift Gill Nets	Dip Nets	Total	
1928	1,367,381	299,333	4,886,177	332,231	6,885,122	4,880,322	665	4,880,987	11,766,109
1929	969,431	198,206	4,629,845	244,923	6,042,405	4,148,297	275,633	4,423,930	10,466,335
1930	1,225,331	128,784	4,832,460	258,952	6,443,527	3,172,293	274,840	4,247,133	10,690,660
1931	1,632,922	129,133	4,415,824	230,021	6,407,900	4,376,175	326,419	4,702,594	11,110,494
1932	1,317,669	33,653	3,409,964	512,346	5,273,632	4,222,105	106,678	4,328,783	9,602,415
1933	1,628,286	141,224	3,418,916	748,176	5,936,602	4,826,145	365,248	5,191,393	11,127,995
1934	2,110,600	87,100	4,056,900	307,700	6,562,300	4,155,600	246,100	4,401,700	10,964,000
1935	--	--	--	--	--	5,125,500	543,500	5,669,000	5,669,000
1936	--	--	--	--	--	4,712,536	394,983	5,101,641	5,107,519
1937	--	--	--	--	--	6,000,266	484,114	6,484,380	6,484,380

Year	Catch by Ocean Troll (pounds)	Total Catch Including Troll (pounds)
1928	823,831	12,589,940
1929	900,162	11,366,566
1930	1,979,943	12,670,976
1931	575,548	11,686,042
1932	198,258	9,800,673
1933	78,649	11,206,644
1934	133,600	11,097,600
1935	543,700	6,212,700
1936	932,655	6,040,174
1937	607,993	7,092,373

TABLE 4

ANNUAL CATCH EACH SALMON SPECIES IN COLUMBIA RIVER DISTRICT 1928-1937[1]

Year	Oregon (pounds)	Washington (pounds)	Troll[4] (Both States) (pounds)	Total Catch (pounds)
Chinook Salmon				
1928	9,581,866	6,390,964	958,608	16,931,438
1929	8,378,293	6,065,391	1,217,835	15,661,519
1930	9,924,448	6,694,913	1,009,481	17,628,842
1931	12,439,438	7,687,197	202,369	20,329,004
1932	8,656,605	7,175,940	209,675	16,042,220
1933	10,171,600	8,187,971	1,356,436	19,716,007
1934	10,316,000	7,806,700	534,600	18,657,300
1935	10,967,400	4,173,800	275,400	15,416,600
1936	11,888,454	3,650,859	974,887	16,514,200
1937	13,512,246	4,882,233	555,142	18,949,621
10 Yr. Total	105,836,350	62,715,968	7,294,433	175,846,751
Ave. Per Yr.	10,583,635	6,271,597	729,443	17,584,675
Silver Salmon				
1928	531,168	933,770	1,811,486	3,276,424
1929	810,625	1,484,057	2,204,385	4,499,067
1930	694,252	1,251,430	4,480,531	6,426,213
1931	254,362	869,822	1,792,929	2,917,113
1932	298,594	511,470	2,755,228	3,565,292
1933	472,543	734,922	1,298,688	2,506,223
1934	658,800	999,800	1,871,700	3,530,300
1935	1,528,900	647,700	3,125,200	5,301,800
1936	810,168	333,680	1,385,252	2,529,100
1937	935,349	392,400	1,492,725	2,820,474
10 Yr. Total	6,994,761	8,159,121	22,218,124	37,372,006
Ave. Per Yr.	699,476	815,912	2,221,812	3,737,201
Steelhead				
1928	1,128,909	1,461,296	2,128	2,592,307
1929	1,323,892	1,512,207	2,069	2,838,194
1930	1,487,154	1,869,816	1,326	3,358,296
1931	1,390,201	1,585,769	155	2,976,125
1932	965,708	1,134,975	--	2,100,683
1933	1,072,659	1,221,766	160	2,294,585
1934	1,167,600	1,316,400	800	2,484,800
1935	1,283,600	464,300	200	1,748,100
1936	1,904,248	401,380	1,372	2,307,000
1937	1,612,422	289,650	641	1,902,713
10 Yr. Total	13,336,393	11,257,559	8,851	24,602,803
Ave. Per Yr.	1,333,640	1,125,756	885	2,460,280

(4) In this table, poundage for Oregon and Washington separately do not include catch by ocean troll. Poundage reported for ocean troll includes fish landed in the Columbia River District in both states.

TABLE 4 (cont.)

ANNUAL CATCH EACH SALMON SPECIES IN COLUMBIA RIVER DISTRICT, 1928-1937(1)

Chum Salmon

Year	Oregon (pounds)	Washington (pounds)	Troll (Both States) (pounds)	Total Catch (pounds)
1928	2,063,169	2,812,905	2,174	4,878,248
1929	931,097	1,057,734	--	1,988,831
1930	318,771	579,842	--	898,613
1931	379,205	838,460	--	1,217,665
1932	550,862	686,269	--	1,237,131
1933	517,884	655,830	--	1,173,714
1934	542,200	631,900	--	1,174,100
1935	452,700	357,700	--	810,400
1936	556,800	588,700	--	1,145,500
1937	1,057,572	831,942	--	1,889,514
10 Yr. Total	7,370,260	9,041,282	2,174	16,413,716
Ave. Per Yr.	737,026	904,128	217	1,641,372

Blueback (Sockeye)

1928	152,277	167,200	--	319,477
1929	326,945	346,989	--	673,934
1930	279,674	295,032	--	574,706
1931	123,765	129,246	--	253,011
1932	91,015	93,761	--	184,776
1933	104,849	327,436	--	432,285
1934	207,000	209,200	--	416,200
1935	42,400	25,500	--	67,900
1936	284,700	132,900	--	417,600
1937	245,505	88,155	--	333,660
10 Yr. Total	1,858,130	1,815,419		3,673,549
Ave. Per Yr.	185,813	181,542		367,355

(4) In this table, poundage for Oregon and Washington separately do not include catch by ocean troll. Poundage reported for ocean troll includes fish landed in the Columbia River District in both states.

TABLE 5 ANNUAL CATCH ON OREGON SIDE OF COLUMBIA RIVER 1928-1937 INCL. BY TYPE OF GEAR

CHINOOK SALMON (1)

Year	Catch by Fixed Gear (pounds)				Catch by Floating Gear (pounds)			Total Catch in River (pounds)
	Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Total	Drift Gill Nets	Dip Nets	Total	
1928	2,385,271	(3)	240,291	2,625,562	6,875,216	81,088	6,956,304	9,581,866
1929	1,409,382	(3)	248,700	1,658,082	6,629,359	90,852	6,720,211	8,378,293
1930	1,887,311	(3)	355,078	2,242,389	7,428,041	254,018	7,682,059	9,924,448
1931	2,205,281	(3)	434,686	2,639,967	9,367,847	431,624	9,799,471	12,439,438
1932	1,019,283	(3)	252,253	1,271,536	7,275,704	109,365	7,385,069	8,656,605
1933	974,608	87,452	307,559	1,369,619	8,351,281	450,700	8,801,981	10,171,600
1934	1,850,400	37,700	424,300	2,312,400	7,787,300	216,300	8,003,600	10,316,000
1935	2,168,500	62,500	403,100	2,634,100	7,347,000	986,300	8,333,300	10,967,400
1936	(2)	(2)	(2)	(2)	(2)	(2)		11,888,454
1937	(2)	(2)	(2)	(2)	(2)	(2)		13,512,246

Year	Catch by Ocean Troll Landed in Oregon (pounds)	Total Catch Including Troll (pounds)
1928	726,789	10,308,655
1929	907,729	9,286,022
1930	624,179	10,548,627
1931	141,732	12,581,170
1932	188,401	8,845,006
1933	1,329,163	11,500,763
1934	504,400	10,820,400
1935	233,300	11,200,700
1936	643,889	12,532,343
1937	357,252	13,869,498

(3) Catch by Set Gill Nets 1928-1932 inclusive, included in catch by Drift Gill Nets.

TABLE 6 ANNUAL CATCH ON OREGON SIDE OF COLUMBIA RIVER 1928-1937 INCL. BY TYPE OF GEAR

BLUEBACK (SOCKEYE) SALMON(1)

Year	Catch by Fixed Gear (pounds)				Catch by Floating Gear (pounds)			Total Catch in River (pounds)
	Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Total	Drift Gill Nets	Dip Nets	Total	
1928	48,004	(3)	6,253	54,257	97,332	688	98,020	152,277
1929	59,821	(3)	18,730	78,551	247,970	424	248,394	326,945
1930	76,154	(3)	23,077	99,231	165,579	14,864	180,443	279,674
1931	34,389	(3)	17,528	51,917	60,802	11,046	71,848	123,765
1932	16,843	(3)	32,980	49,823	39,786	1,406	41,192	91,015
1933	10,012	27,224	10,277	47,513	46,185	11,151	57,336	104,849
1934	57,900	4,400	7,000	69,300	133,700	4,000	137,700	207,000
1935	20,900	2,200	3,900	27,000	10,700	4,700	15,400	42,400
1936	(2)	(2)	(2)	(2)	(2)	(2)		284,700
1937	(2)	(2)	(2)	(2)	(2)	(2)		245,505

(3) Catch by Set Gill Nets 1928-1932 inclusive, included in catch by Drift Gill Nets.

TABLE 7 ANNUAL CATCH ON OREGON SIDE OF COLUMBIA RIVER BY TYPE OF GEAR 1928-1937, INCL.

SILVER SALMON(1)

Year	Catch by Fixed Gear (pounds) Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Total	Catch by Floating Gear (pounds) Drift Gill Nets	Dip Nets	Total	Total Catch in River (pounds)
1928	86,719	(3)	139,574	226,293	303,069	1,806	304,875	531,168
1929	90,580	(3)	220,283	310,863	497,619	2,143	499,762	810,625
1930	49,438	(3)	287,606	337,094	353,808	3,350	357,158	694,252
1931	11,529	(3)	118,755	130,284	121,322	2,756	124,078	254,362
1932	3,861	(3)	77,909	81,770	212,538	4,286	216,824	298,594
1933	69,284	4,180	123,209	196,673	272,597	3,273	275,870	472,543
1934	67,800	4,700	185,900	258,400	400,400		400,400	658,800
1935	258,100	5,600	282,800	546,500	981,000	1,400	982,400	1,528,900
1936	(2)	(2)	(2)	(2)	(2)	(2)	(2)	809,974
1937	(2)	(2)	(2)	(2)	(2)	(2)	(2)	935,349

Year	Catch by Ocean Troll (pounds)	Total Catch Including Ocean Troll (pounds)
1928	1,219,932	1,751,100
1929	1,614,329	2,424,954
1930	2,886,150	3,580,402
1931	1,278,018	1,532,380
1932	2,578,244	2,876,838
1933	1,247,312	1,719,855
1934	1,768,500	2,427,300
1935	2,623,700	4,152,600
1936	784,802	1,594,776
1937	1,082,753	2,018,102

(3) Catch by Set Gill Nets 1928-1932 inclusive, included in catch by Drift Gill Nets.

TABLE 8 ANNUAL CATCH ON OREGON SIDE OF COLUMBIA RIVER 1928-1937 INCL. BY TYPE OF GEAR

CHUM SALMON(1)

Year	Catch by Fixed Gear (pounds)				Catch by Floating Gear (pounds)			Total Catch in River (pounds)
	Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Total	Drift Gill Nets	Dip Nets	Total	
1928	99,149	(3)	106,487	205,646	1,853,369	4,164	1,857,533	2,063,169
1929	47,763	(3)	28,316	76,079	854,030	988	855,018	931,097
1930	23,827	(3)	41,357	65,184	252,314	1,273	253,587	318,771
1931	2,457	(3)	18,880	21,337	326,682	31,186	357,868	379,205
1932	29,441	(3)	30,775	60,216	490,646	--	490,646	550,862
1933	55,296	966	38,272	94,534	422,102	1,248	423,350	517,884
1934	22,100	10,100	21,400	53,600	488,600	--	488,600	542,200
1935	45,000	4,100	43,000	92,100	360,400	200	360,600	452,700
1936	(2)	(2)	(2)	(2)	(2)	(2)	(2)	556,800
1937	(2)	(2)	(2)	(2)	(2)	(2)	(2)	1,057,572

Year	Catch by Ocean Troll (pounds)	Total Catch Including Ocean Troll (pounds)
1928	2,174	2,065,343
1929	--	931,097
1930	--	318,771
1931	--	379,205
1932	--	550,862
1933	--	517,884
1934	--	542,200
1935	--	452,700
1936	--	556,800
1937	--	1,057,572

(3) Catch by Set Gill Nets 1928-1932 inclusive, included in catch by Drift Gill Nets.

TABLE 9

ANNUAL CATCH ON OREGON SIDE OF COLUMBIA RIVER 1928-1937 INCL. BY TYPE OF GEAR

STEELHEAD TROUT(1)

Year	Catch by Fixed Gear (pounds)				Catch by Floating Gear (pounds)			Total Catch in River (pounds)
	Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Total	Drift Gill Nets	Dip Nets	Total	
1928	434,835	(3)	154,081	588,916	486,397	53,596	539,993	1,128,909
1929	522,542	(3)	211,973	734,515	557,386	31,991	589,377	1,323,892
1930	479,589	(3)	296,533	776,122	631,949	79,083	711,032	1,487,154
1931	541,510	(3)	337,096	878,606	472,619	38,976	511,595	1,390,201
1932	359,811	(3)	144,868	504,679	451,570	9,459	461,029	965,708
1933	349,820	15,695	121,298	486,813	565,846	20,000	585,846	1,072,659
1934	429,500	14,900	199,200	643,400	459,800	64,100	524,000	1,167,600
1935	500,200	15,600	181,700	697,500	471,300	114,800	586,100	1,283,600
1936	(2)	(2)	(2)	(2)	(2)	(2)	(2)	1,904,235
1937	(2)	(2)	(2)	(2)	(2)	(2)	(2)	1,612,422

Year	Catch by Ocean Troll (pounds)	Total Catch Including Ocean Troll (pounds)
1928	1,670	1,130,579
1929	2,069	1,325,961
1930	1,066	1,488,220
1931	155	1,390,356
1932	--	965,708
1933	160	1,072,819
1934	600	1,168,200
1935	100	1,283,700
1936	165	1,904,400
1937	510	1.612,932

(3) Catch by Set Gill Nets 1928-1932 inclusive, included in catch by Drift Gill Nets

TABLE 10 ANNUAL CATCH ON WASHINGTON SIDE OF COLUMBIA RIVER 1928-1937 INCL. BY TYPE OF GEAR

CHINOOK SALMON (1)

Year	Catch by Fixed Gear (pounds) Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Fish Wheels	Total	Catch By Floating Gear (pounds) Drift Gill Nets	Dip Nets	Total	Total Catch in River (pounds)
1928	975,476	110,377	2,273,780	266,041	3,625,674	2,764,715	575	2,765,290	6,390,964
1929	671,075	129,262	2,162,663	194,887	3,157,887	2,695,834	211,627	2,907,461	6,065,348
1930	897,786	65,205	2,284,487	173,537	3,421,015	3,119,732	153,793	3,273,525	6,694,540
1931	1,386,416	91,061	2,279,062	200,086	3,956,625	3,453,608	276,964	3,730,572	7,687,197
1932	1,137,295	23,595	2,143,838	449,631	3,754,359	3,331,798	89,783	3,421,581	7,175,940
1933	1,339,380	81,094	2,345,635	478,444	4,244,553	3,665,013	278,405	3,943,418	8,187,971
1934	1,843,400	53,100	2,515,600	195,200	4,607,300	3,005,700	193,700	3,199,400	7,806,700
1935	--	--	--	--	--	3,753,000	420,800	4,173,800	4,173,800
1936	--	--	--	--	--	3,402,206	248,653	3,650,859	3,650,859
1937	--	--	--	--	--	4,476,789	405,444	4,882,233	4,882,233

Year	Set Lines (pounds)	Catch By Ocean Troll (pounds)	Total Catch Including Troll (pounds)
1928	--	231,819	6,622,783
1929	43	310,106	6,375,497
1930	373	385,302	7,080,215
1931	--	60,637	7,747,834
1932	--	21,274	7,197,214
1933	--	27,273	8,215,244
1934	--	30,200	7,836,900
1935	--	42,100	4,125,857
1936	--	330,998	3,981,663
1937	--	197,890	5,080,123

TABLE 11 ANNUAL CATCH ON WASHINGTON SIDE OF COLUMBIA RIVER 1928-1937 INCL. BY TYPE OF GEAR

BLUEBACK (SOCKEYE) SALMON (1)

Year	Catch by Fixed Gear (pounds)					Catch by Floating Gear (pounds)			Total Catch in River (pounds)
	Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Fish Wheels	Total	Drift Gill Nets	Dip Nets	Total	
1928	20,395	11,390	36,720	30,480	98,985	68,215		68,215	167,200
1929	28,156	7,563	95,833	28,093	159,645	181,481	5,863	187,344	346,989
1930	38,596	9,297	82,662	54,934	185,489	78,907	30,636	109,543	295,032
1931	14,660	2,559	43,231	21,947	82,397	33,823	13,026	46,849	129,246
1932	7,283	1,008	49,122	23,151	80,564	12,010	1,187	13,197	93,761
1933	8,911	12,279	31,013	204,406	256,609	24,334	46,493	70,827	327,436
1934	31,600	1,400	49,400	81,600	164,000	26,400	18,800	45,200	209,200
1935	--	--	--	--	--	4,500	21,000	25,500	25,500
1936	--	--	--	--	--	28,840	104,060	132,900	132,900
1937	--	--	--	--	--	42,625	45,530	88,155	88,155

TABLE 12 ANNUAL CATCH ON WASHINGTON SIDE OF COLUMBIA RIVER 1928-1937 INCL. BY TYPE OF GEAR

SILVER SALMON (1)

Year	Catch by Fixed Gear (pounds)					Catch by Floating Gear (pounds)			Total Catch in River (pounds)
	Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Fish Wheels	Total	Drift Gill Nets	Dip Nets	Total	
1928	34,090	12,780	699,070	70	746,010	187,740	20	187,760	933,770
1929	15,860	3,993	1,197,196	206	1,217,255	266,552	250	266,802	1,484,057
1930	17,147	2,754	1,036,224	2,596	1,058,721	188,789	3,920	192,709	1,251,430
1931	3,944	2,741	741,786	--	748,471	116,693	4,658	121,351	869,822
1932	24,140	1,563	340,685	54	366,442	141,161	3,867	145,028	511,470
1933	37,711	11,865	430,374	126	480,076	249,561	5,355	254,916	734,992
1934	20,300	8,100	522,500	--	550,500	448,900	--	448,900	999,800
1935	--	--	--	--	--	647,700	--	647,700	647,700
1936	--	--	--	--	--	333,680	--	333,680	333,680
1937	--	--	--	--	--	392,400	--	392,400	392,400

Year	Catch By Ocean Troll (pounds)	Total Catch Including Troll (pounds)
1928	591,554	1,525,324
1929	590,056	2,074,113
1930	1,594,381	2,845,811
1931	514,911	1,384,733
1932	176,984	688,454
1933	51,376	786,368
1934	103,200	1,103,000
1935	501,500	1,149,200
1936	600,450	934,130
1937	409,972	802,372

TABLE 13 ANNUAL CATCH ON WASHINGTON SIDE OF COLUMBIA RIVER 1928-1937 INCL. BY TYPE OF GEAR

CHUM SALMON (1)

Year	Catch by Fixed Gear (pounds)					Catch by Floating Gear (pounds)			Total Catch in River (pounds)
	Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Fish Wheels	Total	Drift Gill Nets	Dip Nets	Total	
1928	95,580	44,496	1,133,847	--	1,273,923	1,538,982	--	1,538,982	2,812,905
1929	87,040	34,649	300,065	5,293	427,047	623,648	7,039	630,687	1,057,734
1930	14,447	2,977	368,014	1,024	386,462	187,761	5,619	193,380	579,842
1931	503	7,078	410,041	--	417,622	420,838	--	420,838	838,460
1932	1,120	--	316,463	--	317,583	368,686	--	368,686	686,269
1933	5,690	18,244	148,774	--	172,708	483,122	--	483,122	655,830
1934	1,000	21,900	202,200	--	225,100	406,200	600	406,800	631,900
1935	--	--	--	--	--	357,700	--	357,700	357,700
1936	--	--	--	--	--	588,700	--	588,700	588,700
1937	--	--	--	--	--	831,942	--	831,942	831,942

TABLE 14 ANNUAL CATCH ON WASHINGTON SIDE OF COLUMBIA RIVER 1928-1937 INCL. BY TYPE OF GEAR

STEELHEAD TROUT(1)

Year	Catch by Fixed Gear (pounds)					Catch by Floating Gear (pounds)			Total Catch in River (pounds)
	Drag Seines	Set Gill Nets	Pound Nets Fish Traps	Fish Wheels	Total	Drift Gill Nets	Dip Nets	Total	
1928	241,840	120,290	742,760	35,640	1,140,530	320,670	70	320,740	1,461,270
1929	167,300	22,739	874,088	16,444	1,080,571	380,782	50,854	431,636	1,512,207
1930	255,355	48,551	1,061,073	26,861	1,391,840	397,104	80,872	477,976	1,869,816
1931	227,399	25,694	941,704	7,988	1,202,785	351,213	31,771	382,984	1,585,769
1932	147,831	7,487	559,856	39,510	754,684	368,450	11,841	380,291	1,134,975
1933	236,594	17,742	463,120	65,200	782,656	404,115	34,995	439,110	1,221,766
1934	214,300	2,600	767,200	30,900	1,015,000	268,400	33,000	301,400	1,316,400
1935	--	--	--	--	--	362,600	101,700	464,300	464,300
1936	--	--	--	--	--	359,110	42,270	401,380	401,380
1937	--	--	--	--	--	256,510	33,140	289,650	289,650

Year	Set Lines (pounds)	Catch by Ocean Troll (pounds)	Total Catch Including Troll (pounds)
1928	--	458	1,461,728
1929	26	--	1,512,233
1930	--	260	1,870,076
1931	--	--	1,585,769
1932	--	--	1,134,975
1933	--	--	1,221,766
1934	--	200	1,316,600
1935	--	100	464,400
1936	--	1,207	402,587
1937	--	131	289,781

TABLE 15 PROPORTIONS OF AVERAGE ANNUAL CATCH OF EACH SALMON SPECIES TAKEN BY DIFFERENT TYPES OF GEAR ON OREGON SIDE OF COLUMBIA RIVER DURING 7 YEAR PERIOD 1928-1934 INCLUSIVE (1)

	Chinook		Chum		Steelhead		Blueback		Silver		All Species	
	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent
FIXED GEAR												
Drag Seines	1,675,934	15.8	40,004	5.3.	445,372	36.5	43,303	23.6	54,173	2.3	2,258,794	15.0
Set Gill Nets	17,878	0.2	1,581	0.2	4,371	0.3	4,518	2.5	1,268		29,617	0.2
Pound nets-Traps	323,267	3.2	40,784	5.4	209,293	17.2	16,549	9.0	164,748	7.1	754,638	5.0
Total Fixed	2,017,079	19.2	82,369	10.9	659,036	54.0	64,370	35.1	220,189	9.4	3,043,049	20.2
FLOATING GEAR												
Drift Gill Nets	7,673,535	72.7	669,677	88.4	517,952	42.5	113,050	61.6	308,764	13.3	9,282,980	61.7
Dip Nets	233,421	2.2	5,551	0.7	42,458	3.5	6,226	3.3	2.517	0.1	290,172	1.9
Total Floating	7,906,956	74.9	675,228	89.1	560,410	46.0	119,276	64.9	311,281	13.4	9,573,152	63.6
OCEAN TROLL	631,771	5.9	311		817				1,798,927	77.2	2,431,825	16.2
TOTAL CATCH INCLUDING TROLL	10,555,806	100.0	757,908	100.0	1,220,263	100.0	183,646	100.0	2,330,397	100.0	15,048,026	100.0

TABLE 16 PROPORTIONS OF AVERAGE ANNUAL CATCH OF EACH SALMON SPECIES TAKEN BY DIFFERENT TYPES OF GEAR ON WASHINGTON SIDE OF COLUMBIA RIVER DURING 7 YEAR PERIOD 1928-1934 INCLUSIVE (1)

	Chinook		Chum		Steelhead		Blueback		Silver		All Species	
	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent
FIXED GEAR												
Drag Seines	1,178,689	16.2	29,340	2.9	212,946	14.8	21,372	9.5	21,885	1.5	1,464,231	12.7
Set Gill Nets	79,099	0.1	18,478	1.8	35,014	2.4	6,499	2.9	6,256	0.4	145,347	1.2
Pound nets-Traps	2,286,438	32.3	411,343	39.6	772,829	53.5	55,426	24.7	709,691	47.8	4,235,726	36.9
Fish Wheels	279,689	3.8	902		31,792	2.2	63,516	28.4	436		376,337	3.3
Total Fixed	3,823,915	52.4	460,063	44.3	1,052,581	72.9	146,813	65.5	738,268	49.7	6,221,641	54.2
FLOATING GEAR												
Drift Gill Nets	3,148,057	43.1	575,605	55.5	355,819	24.7	60,739	27.1	228,485	15.4	4,368,705	38.0
Dip Nets	172,121	2.4	1,894	0.2	34,772	2.4	16,572	7.4	2,581	0.1	227,941	2.0
Total Floating	3,320,178	45.5	577,499	55.7	390,591	27.1	77,311	34.5	231,066	15.5	4,596,646	40.0
SET LINES	59				4						63	
OCEAN TROLL	152,373	2.1			131				517,495	34.8	669,999	5.8
TOTAL CATCH INCLUDING TROLL	7,296,525	100.0	1,037,562	100.0	1,443,307	100.0	222,694	100.0	1,458,457	100.0	11,488,349	100.0

TABLE 19 AVERAGE ANNUAL CATCH EACH SALMON SPECIES - REPORTED FOR OREGON AND WASHINGTON AND OCEAN TROLL 1928-1934 INCL.(1) (4) AND 1935-1935 INCL.

Species		1928-1934 Incl. Average Annual Catch		1935-1937 Incl. Average Annual Catch	
		Pounds	Per Cent	Pounds	Per Cent
Chinook Salmon	Oregon	9,924,036	55.6	12,122,700	71.6
	Washington	7,155,725	40.1	4,235,631	24.9
	Troll (both states)	784,143	4.3	601,809	3.5
	Total	17,863,904	100.0	16,960,140	100.0
Silver Salmon	Oregon	531,478	13.9	1,091,472	30.7
	Washington	969,334	25.4	457,927	12.9
	Troll (both states)	2,316,421	60.7	2,001,059	56.4
	Total	3,817,233	100.0	3,550,458	100.0
Steelhead Trout	Oregon	1,219,446	45.8	1,600,090	80.6
	Washington	1,443,176	54.2	385,106	19.4
	Troll (both states)	948		738	
	Total	2,663,570	100.0	1,985,934	100.0
Chum Salmon	Oregon	757,599	42.2	689,024	53.8
	Washington	1,037,564	57.8	592,780	46.2
	Troll (both states)	310			
	Total	1,795,473	100.0	1,281,804	100.0
Blueback (Sockeye) Salmon	Oregon	183,647	45.0	190,868	69.7
	Washington	224,123	55.0	82,815	30.3
	Troll (both states)				
	Total	407,770	100.0	273,683	100.0
Average all Salmon Species	Oregon	12,616,206	47.5	15,694,154	65.3
	Washington	10,829,922	40.8	5,754,259	23.9
	Troll (both states)	3,101,822	11.7	2,603,606	10.8
Total		26,547,950	100.0	24,052,019	100.0

(4) In this table, poundage for Oregon and Washington separately do not include catch by ocean troll. Poundage reported for ocean troll includes fish landed in the Columbia River District in both states.

TABLE 20 AVERAGE ANNUAL CATCH OF EACH SALMON SPECIES IN PER CENT OF TOTAL CATCH

1928-1934 INCL. AND 1935-1937 INCL.

Average Annual Catch 1928-1934 Incl. (Excluding Ocean Troll)

Species	OREGON		WASHINGTON		BOTH STATES	
	Pounds	Per Cent	Pounds	Per Cent	Pounds	Per Cent
Chinook Salmon	9,924,036	78.7	7,155,725	66.1	17,079,761	72.8
Silver Salmon	531,478	4.2	969,334	8.9	1,500,812	6.4
Steelhead Trout	1,219,446	9.7	1,443,176	13,3	2,662,622	11.4
Chum Salmon	757,599	6.0	1,037,564	9.6	1,795,163	7.7
Blueback Salmon	183,647	1.4	224,123	2.1	407,770	1.7
All Salmon Species	12,616,206	100.0	10,829,922	100.0	23,446,128	100.0

Average Annual Catch 1935-1937 Incl. (Excluding Ocean Troll)

Chinook Salmon	12,122,700	77.2	4,235,631	73.6	16,359,331	76.3
Silver Salmon	1,091,472	6.9	457,927	7.9	1,549,399	7.2
Steelhead Trout	1,600,090	10.2	385,106	6.7	1,985,196	9.3
Chum Salmon	689,024	4.4	592,780	10.4	1,281,804	5.9
Blueback Salmon	190,868	1.3	82,815	1.4	273,683	1.3
All Salmon Species	15,694,154	100.0	5,754,259	100.0	21,448,413	100.0

TABLE 21 NUMBER OF COMMERCIAL FISHING LICENSES ISSUED ON COLUMBIA RIVER BY OREGON FISH COMMISSION 1930-1937, INCLUSIVE

Year	Gill Net*	Set Net	Trap	Seines**	Bagnet	Set Line	Boat Pullers (Assisting Gill Netters)
1930	932	181	72	43	394	61	
1931	940	190	52	43	42	80	
1932	781	121	45	21	80	50	227
1933	828	125	36	32	76	58	369
1934	792	141	39	35	133	65	309
1935	818	143	68	50	114	63	359
1936	758	134	38	47	117	60	348
1937	709	148	32	44	159	76	387

* Number of individual licensees - no duplications with other licensees.

** Number of licensees - may be two or more licensees on same fishing ground.

Notes:

1930 figures are for the fiscal year, December 1 to November 30; 1931 to 1937 are for license year, April 1 to April 1.

Number of licenses does not necessarily mean that all licensees used their license

No constant relationship can be found between number of licensed gill netters and number of fish caught.

TABLE 22 NUMBER OF FISHING LICENSES ISSUED ON THE COLUMBIA RIVER BY WASHINGTON STATE DEPARTMENT OF FISHERIES 1930-1937 (INCL.)

	1930	1931	1932	1933	1934	1935	1936	1937*
Traps	381	366	353	348	315	--	--	--
Fish Wheels	39	37	34	30	29	--	--	--
Set Nets	271	249	216	205	165	--	--	--
Gill Nets	541	516	458	451	427	484	482	495
Drag Seines	57	56	44	39	37	5	7	5
Hook and Lines	26	5	--	4	3	26	49	63
Gill Net Boat Puller	164	173	117	169	154	193	162	160
Dip Nets	--	--	--	--	--	--	--	91

*1937 figures only for the period from April 1, 1937 to February 28, 1938. Other years are for the complete fiscal year of April 1 to March 31.

The table above lists only the licenses issued for gear that is employed in the capture of salmon. In the case of "Dip Nets" all catches of salmon by this gear prior to 1937 were made by unlicensed Indian fishermen, but beginning in 1937 Indians were required to obtain licenses for dipping salmon. As a result there were 135 dip net licenses issued in 1937 of which only 91 were for the purpose of salmon capture.

In the case of "Drag Seines" it is not possible to separate which of the licenses were used only for the capture of salmon as this type of gear is used for the capture of other fish. Beginning in 1935 Initiative No. 77 prohibited the use of drag seines for capturing salmon in the Columbia River proper; however, it did not prevent their use in tributaries to the Columbia River nor in bodies of water adjacent to the river, yet lying in the drainage area of the Columbia River.

TABLE 23 COMMERCIAL PRODUCTION OF COLUMBIA RIVER SALMON, ALL SPECIES (1900-1937, INCL.)*

Year	Canned (pounds)	Mild-cured (pounds)	Frozen (pounds)	Total (pounds)
1900	24,396,496	1,402,500		25,798,996
1901	26,532,444	3,300,000		29,832,444
1902	21,565,724	4,634,300		26,200,024
1903	23,091,236	7,397,500		30,488,736
1904	26,867,072	9,996,800		36,863,872
1905	27,014,564	10,785,500		37,800,064
1906	26,853,064	8,800,000		35,653,064
1907	22,043,628	6,677,000		28,720,628
1908	18,884,892	5,456,000		24,340,892
1909	18,441,328	6,094,000		24,535,328
1910	26,616,220	8,714,200		35,330,420
1911	37,626,508	9,003,500	2,850,000	49,480,008
1912	19,449,768	6,406,400	1,674,030	27,530,198
1913	18,120,572	6,320,600	2,115,000	26,556,172
1914	30,914,228	5,725,500	1,861,575	38,501,303
1915	37,980,312	4,485,800	1,372,568	43,838,680
1916	37,250,740	5,121,600	374,000	42,746,340
1917	37,627,528	2,074,600	745,858	40,447,986
1918	40,213,908	1,984,400	1,927,115	44,125,423
1919	39,441,904	3,660,800	1,831,793	44,934,497
1920	32,745,060	2,502,500	1,064,000	36,311,560
1921	21,962,028	3,356,100	1,394,419	26,712,547
1922	26,667,832	1,783,100	1,701,725	30,152,657
1923	32,702,900	1,945,900	1,018,450	35,667,250
1924	34,059,296	2,552,000	1,555,758	38,167,054
1925	36,750,736	3,020,600	2,562,107	42,333,443
1926	32,621,164	1,160,500	1,784,995	35,566,659
1927	35,347,012	1,046,100	1,295,303	37,688,415
1928	30,371,928	1,435,500	1,319,638	33,127,066
1929	28,703,956	2,165,900	1,451,425	32,321,281
1930	29,206,340	1,174,800	1,542,259	31,923,399
1931	24,051,532	1,376,100	1,604,108	27,031,740
1932	20,140,988	2,213,200	976,029	23,330,217
1933	22,896,348	2,674,100	1,276,352	26,846,800
1934	24,665,028	2,040,500	1,250,888	27,956,416
1935	22,626,252	1,903,000	1,206,754	25,736,006
1936	21,518,260	1,251,800	758,518	23,528,578
1937	28,344,440	664,400	737,000	29,745,840

*Data for 1900-1936, Inclusive, from "Report of Commissioner of Fisheries, Senate Document No. 87", pages 22 and 23. Data for 1937 from "Pacific Fisherman, 1938 Year Book".

TABLE 24 COMMERCIAL PRODUCTION OF COLUMBIA RIVER CHINOOK SALMON

1900-1937 INCL.*

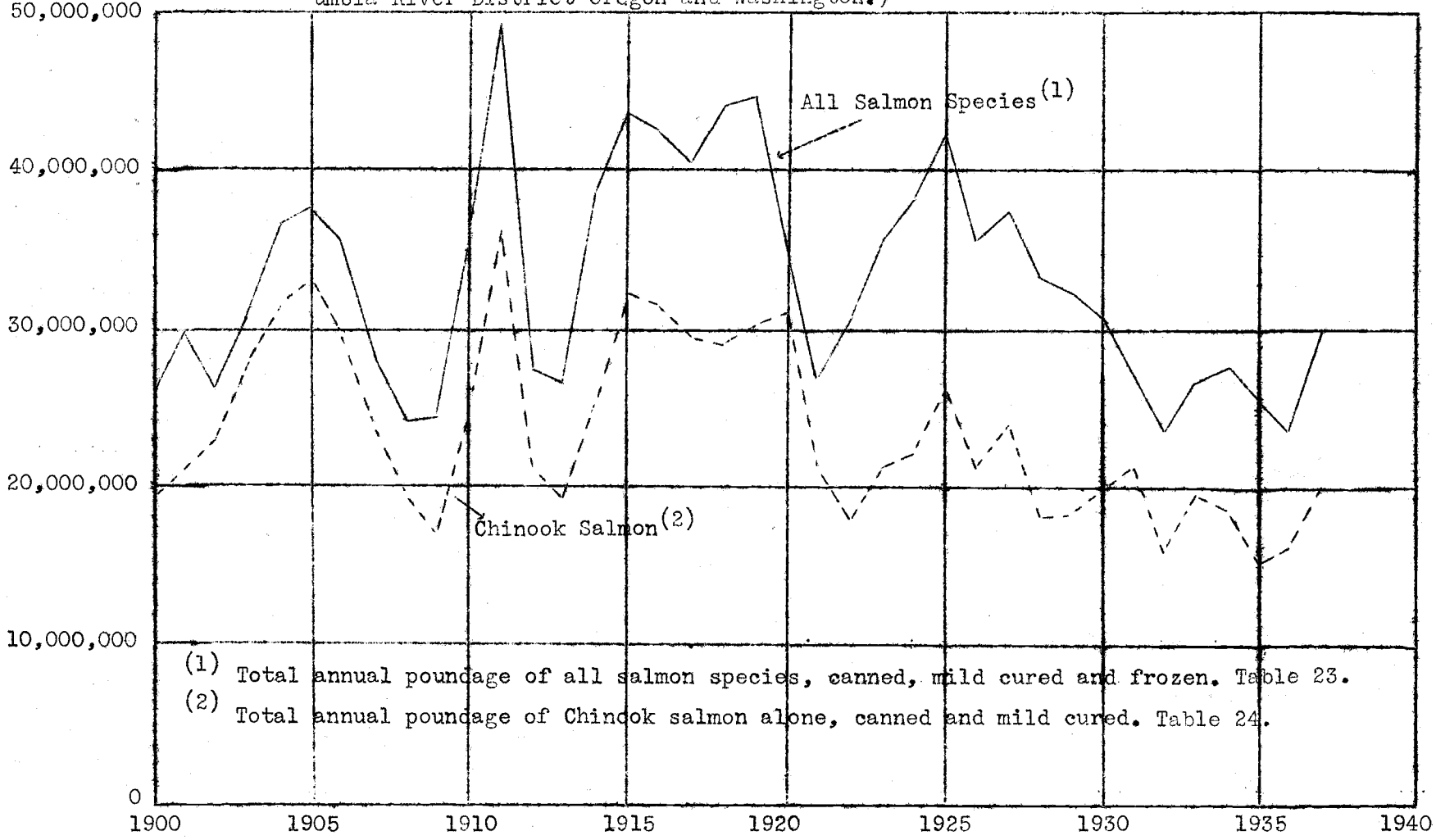
Year	Canned (pounds)	Mild-cured (pounds)	Total (pounds)
1900	17,842,656	1,402,500	19,245,136
1901		3,300,000	
1902	18,399,440	4,634,300	23,033,740
1903	20,519,816	7,397,500	27,917,316
1904	21,785,704	9,996,800	31,782,504
1905	22,243,208	10,785,500	33,028,708
1906	21,170,712	8,800,000	29,970,712
1907	17,573,444	6,677,000	24,250,444
1908	14,286,528	5,456,000	19,742,528
1909	11,024,908	6,094,000	17,118,908
1910	16,611,380	8,714,200	25,325,580
1911	27,598,616	9,003,500	36,602,116
1912	14,981,556	6,406,400	21,387,956
1913	13,063,888	6,320,600	19,384,488
1914	19,683,552	5,725,500	25,409,052
1915	27,641,048	4,485,800	32,126,848
1916	26,871,288	5,121,600	31,992,888
1917	27,447,316	2,074,600	29,521,916
1918	27,264,736	1,984,400	29,249,136
1919	26,664,500	3,660,800	30,325,300
1920	28,591,756	2,502,500	31,094,256
1921	18,195,576	3,356,100	21,551,676
1922	16,131,640	1,783,100	17,914,740
1923	19,691,848	1,886,500	21,578,348
1924	19,972,688	2,392,500	22,365,188
1925	23,855,012	2,805,000	26,660,012
1926	20,080,536	1,160,500	21,241,036
1927	23,082,328	928,400	24,010,728
1928	17,095,472	1,053,800	18,149,272
1929	16,519,784	1,631,300	18,151,084
1930	19,131,528	947,100	20,078,628
1931	20,046,264	1,332,100	21,378,364
1932	14,722,748	1,278,200	16,000,948
1933	17,078,676	2,449,700	19,528,376
1934	17,072,624	1,714,900	18,787,524
1935	13,999,160	1,267,200	15,266,360
1936	14,972,784	1,240,800	16,213,588
1937	19,811,324	664,400	20,475,724

*Data for 1900-1936, Inclusive, from "Report of Commissioner of Fisheries, Senate Document No. 87", pages 22 and 23. Data for 1937 from "Pacific Fisherman, 1938 Year Book".

CHART NO. 1

ANNUAL PRODUCTION OF SALMON, COLUMBIA RIVER DISTRICT, 1900-1937 INCLUSIVE

(Data from Senate Doc. No. 83, 75th Congress. Includes fish caught in Pacific Ocean and shipped to canneries in the Columbia River District Oregon and Washington.)



(1) Total annual poundage of all salmon species, canned, mild cured and frozen. Table 23.

(2) Total annual poundage of Chinook salmon alone, canned and mild cured. Table 24.

CHART NO. 2

ANNUAL CATCH OF SILVER SALMON 1924-1937, INCLUSIVE, COLUMBIA RIVER FISHERIES

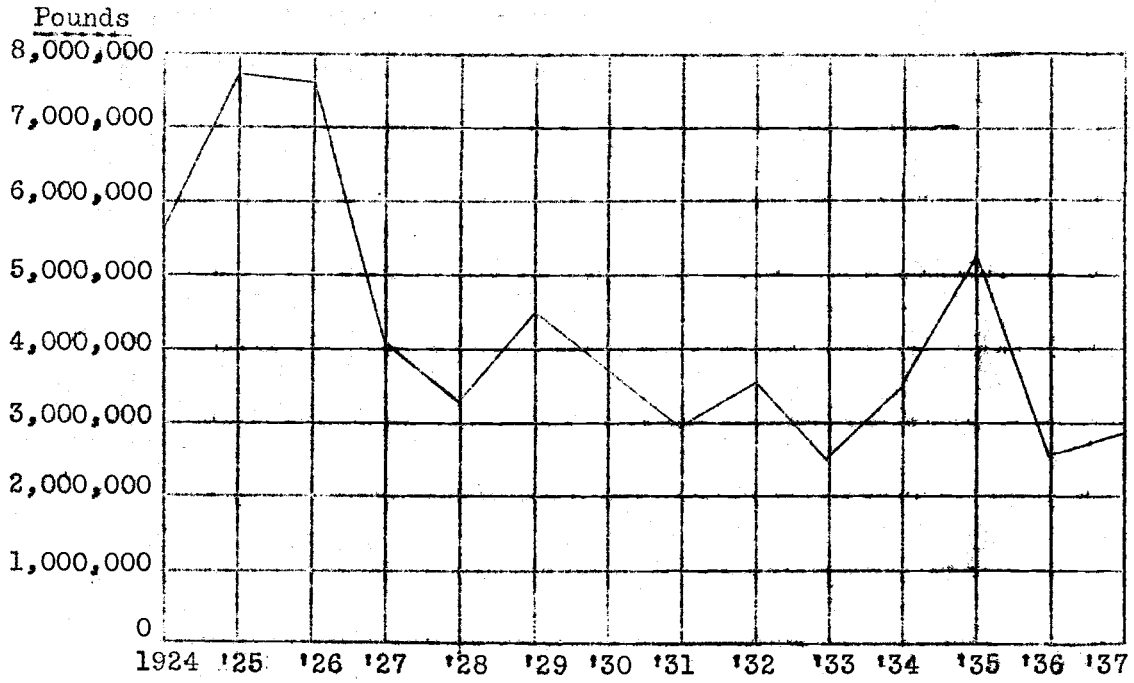
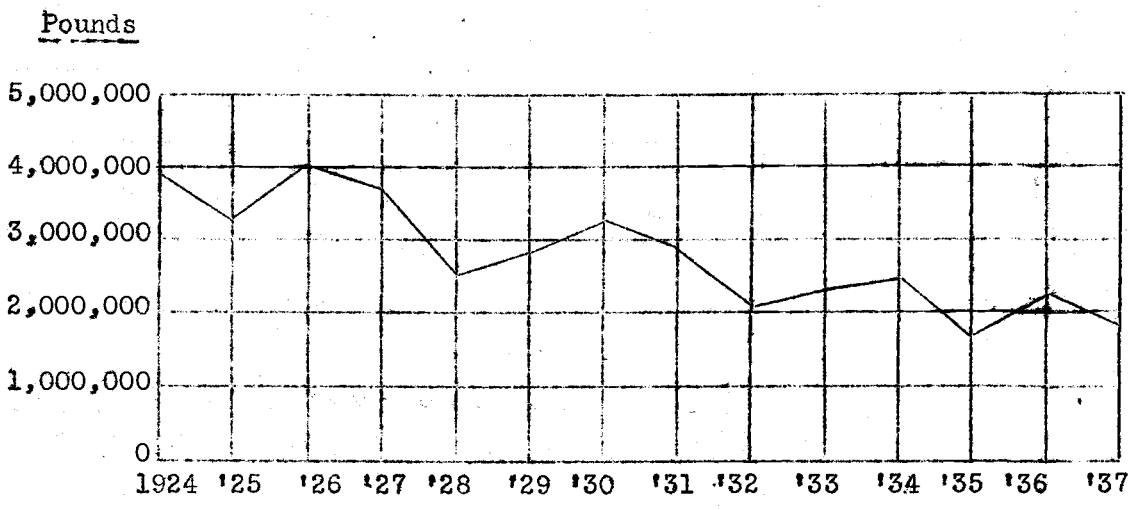


CHART NO. 3

ANNUAL CATCH OF STEELHEAD TROUT 1924-1937, INCLUSIVE,

COLUMBIA RIVER FISHERIES



Includes fish caught by ocean troll and landed in Columbia River District of Oregon and Washington.

Data for 1924-1936 are from U. S. Bureau of Fisheries Annual Report

Data for 1937 from Oregon Fish Commission and Washington State Department of Fisheries.

CHART NO. 4

ANNUAL CATCH OF CHUM SALMON 1924-1937, INCLUSIVE

COLUMBIA RIVER FISHERIES

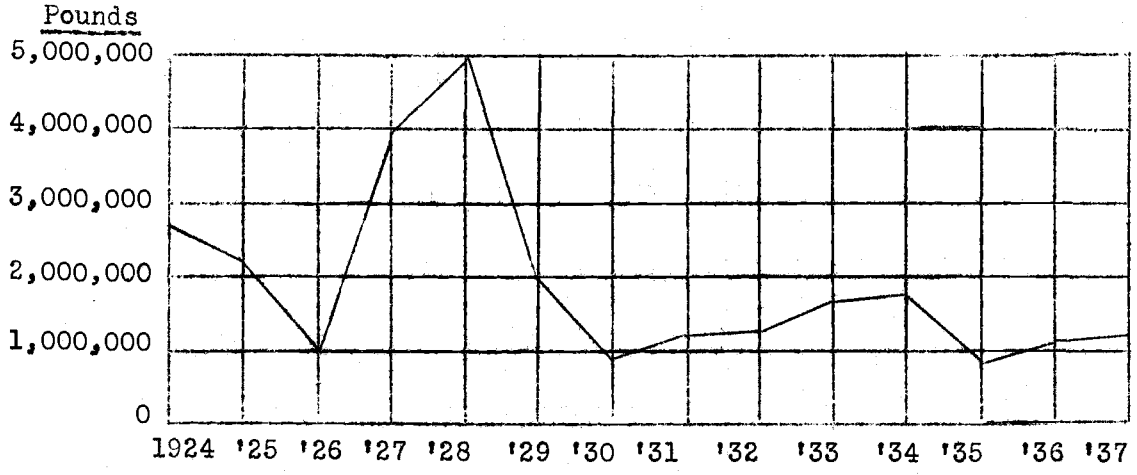
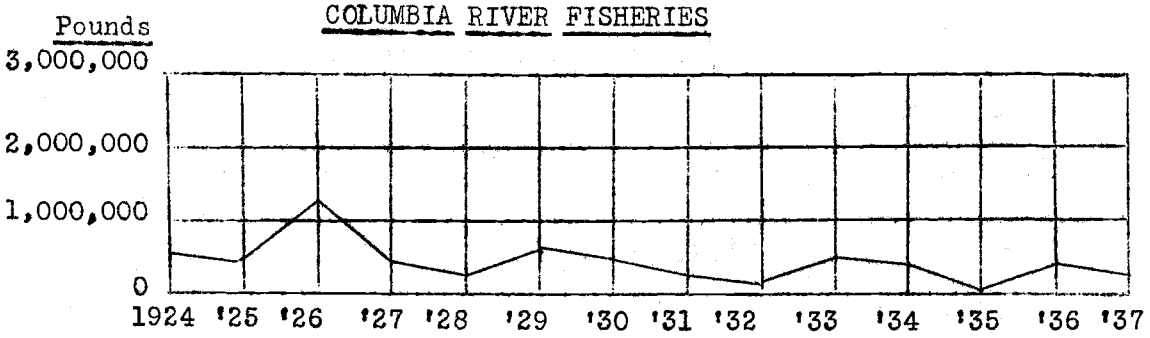


CHART NO. 5

ANNUAL CATCH OF BLUEBACK SALMON 1924-1937, INCLUSIVE

COLUMBIA RIVER FISHERIES



Includes fish caught by ocean troll and landed in Columbia River District of Oregon and Washington.

Data for 1924-1936 are from U. S. Bureau of Fisheries Annual Report
Data for 1937, from Oregon Fish Commission and Washington State Department of Fisheries.