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NUMBER 17

PACIFIC COAST HALIBUT LANDINGS 1888 TO 1950 AND CATCH ACCORDING TO AREA OF ORIGIN

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FOREWORD

This report is the seventeenth published by the International Fisheries Commission under the terms of the Conventions of 1923, 1930, and 1937, between the United States and Canada for the preservation of the halibut fishery of the Northern Pacific Ocean and Bering Sea. It deals with the statistics of catch and landings of the Pacific Coast halibut fishery.

From the outset of its investigations in 1925, the Commission has recognized the importance of complete and accurate statistics of the fishery and has directed particular attention to their collection and analysis. The successful regulation of the fishery has been due in large measure to the availability of suitable statistics.

In the present report are given the annual halibut landings on the Pacific Coast from 1888 to 1950, the origin of those landings according to the 1950 regulatory areas and the larger subdivisions thereof, and the distribution of the landings on major sections of the coast after 1910. These statistics are fundamental to the regulation of the fishery and to studies upon the principles of stock management such as were instituted for the halibut fishery in Commission Report No. 8.

Many of the figures presented herein for earlier years vary so widely from those published in earlier official documents and trade journals that a considerable amount of supporting analysis is included to demonstrate the validity of the present data.

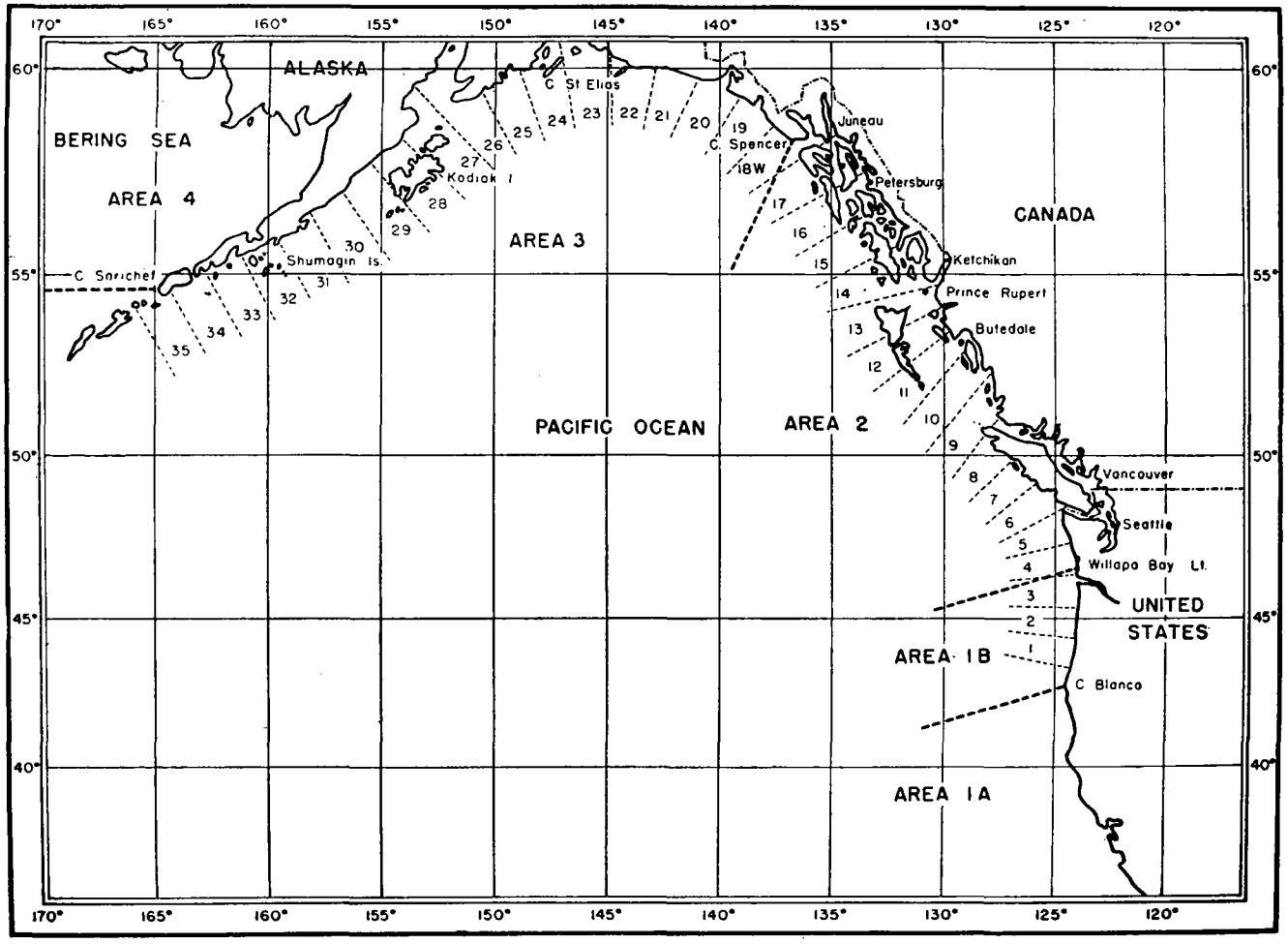

Figure 1.—Map of the Pacific Coast showing the 60-mile statistical areas, and the 1950 regulatory areas.

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INTRODUCTION

The annual production of halibut in the Pacific Coast fishery has been a subject of interest to all concerned in the industry since its inception. For the fisheries administrator it is an indicator of the productiveness of the resource, and for the industry a measure of its own magnitude. The statistics of total catch and yield from each stock have been basic to the Commission's program of investigation and regulation. They have shown the removals from the stocks by man and have been used in conjunction with fishing records, to compute the intensity of fishing effort from year to year.

Periods of rapid development of the facilities for marketing the catch, such as rail transportation and cold storages, and increase of population caused periods of increased exploitation with at least temporary increases in landings. Years of favorable economic conditions, the discovery of highly productive banks and the use of cheaper, more efficient power encouraged increases in the fleet to the point where production was in excess of what the stocks could safely yield and was at times above what the market could absorb.

Though the annual Pacific Coast production has not shown great fluctuations from one period to another, continual change has been a dominant feature of the fishery. A long period of declining abundance to 1930 and a subsequent rise, an ever-widening range of fleet operations, periods of rising and declining prices, the use of more efficient methods of fishing, changes in the size of fleets, and a pronounced alteration in the length of the fishing season and in the amount of fishing must be evaluated and understood, not only to explain the changes that have occurred but to assess the relative accuracy of previously published statistics. Some of these factors have been discussed elsewhere in the Reports of the Commission.

This report deals with the compilation and synthesis of the annual catch as landed on the various sections of the coast. The origin of this catch is also shown according to present regulatory areas and major subdivisions thereof.

ACKNOWLEDGMENTS

For access to the books and invoices of their dealings in halibut, the International Fisheries Commission is grateful to all companies in the industry. The following companies also placed a vast number of historical records at the disposal of the Commission: the Canadian Fish and Cold Storage Company, the New England Fish Company, the San Juan Fishing and Packing Company, the Booth Fisheries Corporation, and the Canadian subsidiaries of each; the Royal Fish Company; the former Marlyn Fish Company; and the Juneau Fish and Cold Storage Company.

Particular recognition is due to the various fishery and customs officials of each government for their cooperation and aid in granting access to current and historical records of the fishery. Special mention is due to Jarvis McLeod, former Collector of Customs, Prince Rupert, and to his staff; to the late M. S. Dobbs, Deputy Collector of Customs, Ketchikan; and to the late A. Mackie, while Supervisor, Dominion Department of Fisheries, Prince Rupert.

For the records of the actual fishing operations the Commission is in-

debted to hundreds of fishing vessel captains for their freely given assistance in the form of log records and other information regarding the fishery.

Many present and former members of the staff have assisted in the collection and compilation of the data. Norman L. Freeman and Olaf E. Eriksen were responsible for the field collection of most of the data between the years 1928 and 1940. The collection of the historical material prior to 1928 was largely under the immediate direction of Henry A. Dunlop. Since 1928, F. Heward Bell has supervised the collection of all statistical data and is primarily responsible for the organization and text of this report. Miss Dorothy Myers, formerly with the Commission and Mrs. Alix Jane Wennekens have contributed greatly to the compilation of the data.

Special recognition is due to William F. Thompson who, as Director of Investigations from the outset of the Commission's work until 1938, was responsible for laying the sound foundations of the Commission's program of observation and control. It has been a source of great satisfaction and profit to the present authors to have been associated with him from the beginning of the Commission's investigations in 1925.

The authors express their appreciation to the members of the Commission, to Drs. John L. Hart and William E. Ricker of the Fisheries Research Board, Canada, to Dr. William Hoar, Department of Zoology, University of British Columbia, to Dr. William F. Thompson, Fisheries Research Institute, University of Washington, and to Dr. Richard Van Cleve, School of Fisheries, University of Washington, for their painstaking and critical reading of this manuscript and for their many constructive suggestions.

TOTAL PACIFIC COAST LANDINGS

Compilation of satisfactory total annual landings in the halibut fishery was beset with many difficulties in the past. Trans-shipment of fish greatly increased the chances of duplication or omission of poundage by the government agencies previously responsible for the statistics of the fishery. This has made it necessary to inquire into the published records with greater detail than would be normally necessary, so that an accurate and consistent series of annual yields could be derived for those years for which the Commission did not possess its own records.

The total Pacific Coast landings since the beginning of the fishery are presented in Table 1, and are the most accurate figures available. The sources and reliability of the data are reviewed in detail in subsequent sections.

For years after 1910 it was possible to segregate the catches according to the major sections of the coast where landed and by nationality of vessel. The totals for each section shown in Table 1, page 10, are based on Tables 14, 11 and 18, pages 36, 31, and 43, respectively, for Puget Sound, British Columbia and Alaska for years up to and including 1928. The 1929 to 1950 totals are from detailed records collected currently by the Commission.

Before 1911 the Alaska and Puget Sound annual landings were shown only as a combined total by the U.S. Bureau of Fisheries. Some of those annual totals have been amended to eliminate inconsistencies and duplications.

For example, in 1902 the Bureau of Fisheries reported 20,050,000 pounds for Alaska and Washington, but the *Pacific Fisherman* of that year stated that this total included 5,019,000 pounds which were shipped East via Vancouver, B.C. This latter figure is almost equal to the landings of the two vessels of the United States registry which were headquartered in Vancouver and whose landings were made there.

The British Columbia figures for the years prior to 1911 are the amended Canadian government data from Table 11, page 31. In 1905 and 1907 *Pacific Fisherman* data are used for a coast total. Examination of figures from other sources for the years 1904 to 1908 reveals that the totals given for 1905 and 1907 by that journal were within reason and, though obviously only approximate, are the best available.

Certain features of the total landings stand out sharply. From the inception of a significant fishery in 1888, yearly landings developed slowly and remained well below the 10 million mark as late as 1899. The operation of a number of large company-owned steamers brought landings to 50 million pounds yearly by 1907. Fishing on new prolific banks and a rapidly increasing fleet of independently owned vessels resulted in landings of 69 million in 1915. Economic conditions, the withdrawal of some of the large steamers and a falling abundance produced a sharp recession in total landings, to below 38 million in 1918. A period of expansion followed with the application of diesel power to a constantly increasing fleet and the landings remained consistently over the 50 million mark, reaching a maximum of 57 million in 1929. After 1929 the annual total declined due to economic conditions and declining abundance.

In 1932 a catch limit of 46 million pounds was prescribed by the regulations but only 44 million were caught as economic conditions reduced the activity of the Area 3 fleet*. Thereafter, total landings were increased as the rehabilitation of the fishery progressed. The Canadian fleet nearly trebled its production. In the years 1946 to 1950, the annual United States and Canadian catch averaged about 56.8 million pounds.

Economic conditions have been important in modifying the trend of production in this fishery. Strikes, effects of wars, economic depression, changing price patterns and costs of operation, and new facilities for marketing and consumer preferences, all have molded the course of this fishery. But underlying each and every consideration is the condition and productivity of the various stocks. The unrestricted decline and subsequent controlled increase in abundance of fish, the reduction and subsequent increase in average size caught, the broadening and later contraction in geographical range of the commercial fishery, and increase and decline in the intensity of fishing on the several stocks of halibut are some of the underlying problems involved in the maintenance and change of trend of total production.

Great changes have occurred in the condition of the supply and equally great changes have been made in the amount and application of the fishing effort while attempting to maintain the total yield.

*Regulatory and statistical areas are shown in frontispiece chart, Figure 1.

TABLE 1

UNITED STATES AND CANADIAN HALIBUT LANDINGS BY SECTIONS OF THE COAST FROM 1888 TO 1950

in Thousands of Pounds

Year	Calif. and Oregon	Washington			British Columbia			Alaska			Pacific Coast			Year
	U.S.	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	
1888	†	*	.....	*	.....	246	246	*	.....	*	1220	246	1466	1888
1889	.....	.....	.....	.....	.....	605	605	.....	.....	.....	685	605	1290	1889
1890	.....	.....	.....	.....	.....	633	633	.....	.....	.....	740	633	1373	1890
1891	.....	.....	.....	.....	.....	1136	1136	.....	.....	.....	995	1136	2131	1891
1892	.....	.....	.....	.....	.....	1358	1358	.....	.....	.....	1411	1358	2769	1892
1893	.....	.....	.....	.....	.....	1369	1369	.....	.....	.....	.....	1369	.....	1893
1894	.....	.....	.....	.....	.....	1730	1730	.....	.....	.....	.....	1730	.....	1894
1895	.....	.....	.....	.....	.....	2537	2537	.....	.....	.....	1714	2537	4251	1895
1896	.....	.....	.....	.....	.....	2281	2281	.....	.....	.....	.....	2281	.....	1896
1897	.....	.....	.....	.....	.....	1968	1968	.....	.....	.....	.....	1968	.....	1897
1898	.....	.....	.....	.....	.....	.....	1970	.....	.....	.....	.....	.....	.....	1898
1899	.....	.....	.....	.....	.....	.....	2075	.....	.....	.....	.....	.....	8936	1899
1900	.....	.....	.....	.....	.....	.....	3598	.....	.....	.....	.....	.....	.....	1900
1901	.....	.....	.....	.....	.....	.....	4998	.....	.....	.....	.....	.....	.....	1901
1902	.....	.....	.....	.....	.....	.....	7312	.....	.....	.....	.....	.....	22343	1902
1903	.....	.....	.....	.....	.....	.....	9062	.....	.....	.....	.....	.....	.....	1903
1904	.....	.....	.....	.....	.....	.....	12180	.....	.....	.....	.....	.....	28077	1904
1905	.....	.....	.....	.....	.....	.....	7200	.....	.....	.....	.....	.....	22000	1905
1906	.....	.....	.....	.....	.....	.....	9950	.....	.....	.....	.....	.....	.....	1906
1907	.....	.....	.....	.....	7822	5093	12915	.....	.....	.....	37085	12915	50000	1907
1908	.....	.....	.....	.....	7820	8072	15892	.....	.....	.....	.....	8072	.....	1908
1909	.....	.....	.....	.....	.....	.....	19460	.....	.....	.....	.....	.....	.....	1909
1910	.....	.....	.....	.....	.....	.....	19387	.....	.....	.....	.....	.....	51850	1910
1911	.....	32900	.....	32900	.....	.....	15854	8177	.....	8177	.....	.....	56931	1911
1912	.....	28938	.....	28938	.....	.....	21127	10369	.....	10369	.....	.....	60434	1912
1913	.....	30912	.....	30912	.....	.....	22347	13284	.....	13284	.....	.....	66543	1913
1914	.....	36712	.....	36712	.....	.....	21444	9269	.....	9269	.....	.....	67425	1914
1915	273	28327	.....	28327	13160	18609	31769	8387	.....	8387	50147	18609	68756	1915
1916	253	16104	.....	16104	14538	12185	26723	6928	.....	6928	37823	12185	50008	1916
1917	299	15592	.....	15592	13129	9901	23030	9977	.....	9977	38997	9901	48898	1917
1918	297	10076	20	10096	11485	6308	17793	9796	.....	9796	31654	6328	37982	1918
1919	321	11400	62	11462	13014	7070	20084	8257	334	8591	32992	7466	40458	1919
1920	324	12580	.....	12580	14617	8616	23233	10802	.....	10802	38323	8616	46939	1920
1921	307	11795	.....	11795	19735	10157	29892	10467	.....	10467	42304	10157	52461	1921
1922	351	9982	.....	9982	17689	9217	26906	5246	10	5256	33268	9227	42495	1922
1923	1012	8218	5	8223	20922	9107	30029	12051	9	12060	42203	9121	51324	1923
1924	610	7429	.....	7429	20379	9618	29997	15088	10	15098	43506	9628	53134	1924
1925	697	9821	.....	9821	22194	7353	29547	10598	.....	10598	43310	7353	50663	1925
1926	617	10080	13	10093	19803	7878	27681	14077	.....	14077	44577	7891	52468	1926
1927	803	11911	6	11917	18326	8460	26786	15446	.....	15446	46486	8466	54952	1927
1928	707	13935	.....	13935	20258	10209	30467	9151	.....	9151	44051	10209	54260	1928
1929	965	13080	.....	13080	19649	9007	28656	14189	33	14222	47883	9040	56923	1929
1930	760	12583	.....	12583	16874	7592	24466	11657	41	11698	41874	7633	49507	1930
1931	892	15221	13	15234	10604	7770	18374	9722	.....	9722	36439	7783	44222	1931
1932	865	21998	.....	21998	10637	6409	17046	4575	3	4578	38075	6412	44487	1932

*No suitable figures available until 1911 for an accurate separation of Alaska and Washington landings.

†No figures available for California and Oregon landings until 1915, but they are known to have been inconsequential in early years.

TABLE 1—Continued

Year	Calif. and Oregon	Washington			British Columbia			Alaska			Pacific Coast			Year
	U.S.	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	
1933	736	22231	20	22251	8763	8264	17027	6781	2	6783	38511	8286	46797	1933
1934	1361	20718	.....	20718	8595	9718	18313	7155	.....	7155	37829	9718	47547	1934
1935	1281	22389	.....	22389	6927	10202	17129	6543	6	6549	37140	10208	47348	1935
1936	708	22995	.....	22995	6265	10736	17001	8759	5	8764	38727	10741	49468	1936
1937	697	21728	18	21746	7021	11896	18917	8877	3	8880	38323	11917	50240	1937
1938	705	21416	166	21582	7349	12158	19507	8421	26	8447	37891	12350	50241	1938
1939	1013	20580	79	20659	9323	13594	22917	7180	15	7195	38096	13688	51784	1939
1940	1014	19461	.....	19461	11211	12895	24106	9721	5	9726	41407	12900	54307	1940
1941	1124	19646	60	19706	10037	13033	23070	9148	16	9164	39955	13109	53064	1941
1942	792	15061	.....	15061	13419	11178	24597	10243	66	10309	39515	11244	50759	1942
1943	1046	13377	95	13472	12309	12801	25110	14169	44	14213	40901	12940	53841	1943
1944	876	11957	.....	11957	5444	13312	18756	21982	59	22041	40259	13371	53630	1944
1945	756	12693	.....	12693	4575	14929	19504	20785	192	20977	38809	15121	53930	1945
1946	931	14312	.....	14312	4378	18146	22524	22579	491	23070	42200	18637	60837	1946
1947	813	6366	270	6636	2585	23889	26474	22524	.....	22524	32288	24159	56447	1947
1948	595	10367	.....	10367	2479	18604	21083	23895	178	24073	37336	18782	56118	1948
1949	625	10367	41	10408	4205	18239	22444	21698	641	22339	36895	18921	55816	1949
1950	723	8938	.....	8938	3684	18929	22613	25305	70	25375	38650	18999	57649	1950

LANDINGS IN PACIFIC COAST STATES IN BRITISH COLUMBIA AND IN ALASKA

From time to time various sections of the coast have been dominant centers of landing for the halibut fleets. Shifting from one to another has been occasioned by such basic considerations as the location of the grounds being fished, depletion of nearby grounds and their subsequent rebuilding, changes in the structure and motive power of the fishing vessels, the length of the fishing season, wartime conditions, and many other economic and biological factors.

During the past 25 years the proportion of the total catch landed at various ports has largely been determined by whether one port or another received a greater or smaller share of the landings from Area 3. The magnitude of such Area 3 landings on each part of the coast is discussed in later sections of this report, along with a detailed analysis of the sources of the statistics and of the methods used in determining the totals for each section of the coast.

A brief discussion of the landings on each portion of the coast is given in the following pages.

1. CALIFORNIA AND OREGON

The fishing grounds off these states are at the southern end of the commercial range of the species and possess relatively small stocks of halibut. Annual landings of halibut in Oregon and California ports have rarely exceeded one million pounds.

A very limited fishery was conducted from Oregon and northern California ports prior to 1915, but no landing figures are available. After 1923, annual landings fluctuated between 600,000 and 1,400,000 pounds until the shortening of the fishing season in recent years reduced landings in the two states to levels consistently below one million pounds.

For the most part, the catches were taken from grounds off the coast of Oregon and northern California. In very recent years some Oregon landings have originated from grounds further north. Quantities of halibut caught off the Oregon coast have, in turn, from time to time, been landed in Washington and are recorded in the totals for that state.

The statistics for these two states have been secured for earlier years from reports of the California Fish and Game Commission and of U.S. Bureau of Fisheries. Since 1926 the Commission has compiled its own totals with the generous cooperation of the two aforementioned agencies and the latter's successor, the U.S. Fish and Wildlife Service.

2. WASHINGTON

Significant landings in Washington state had their inception in 1888 at Tacoma, upon the completion of a transcontinental railroad, but Seattle soon became the chief port of landing. Development proceeded slowly, annual landings being less than 10 million pounds until the turn of the century. Large company-owned steamers and many independent auxiliary-powered sloops capable of tapping more distant prolific banks were introduced and Washington landings passed the 30 million mark annually by 1911. In 1916 a sharp fall from this level occurred with a deflection of landings to Prince Rupert and the restrictive effects of World War I. Decline continued until 1924, in which year the total was slightly over seven million pounds.

From 1924 to 1931 a steady increase occurred. A primary factor was the development of faster vessels permitting the economical exploitation of banks west of Trinity Islands, Alaska, directly from Washington ports. In addition, the establishment of the closed season by the Halibut Treaty of 1923 tended to bring the last trips of the season of the Washington vessels to their home ports.

From 1932 to 1936 voluntary tie-ups between trips and generally low prices resulted in a very considerable increase in the amount of fish landed in Seattle, the home port of most of the Area 3 fleet. After 1936, in spite of the continuation of the voluntary tie-up program, landings in Seattle declined due to improvement in the relative prices paid in northern ports and a steady increase in the number of vessels attempting to augment their number of trips per year by landing closer to the fishing grounds. Conditions arising chiefly from World War II caused a further decline after 1941.

Canadian vessels have landed only inconsequential amounts of halibut in Washington ports.

3. BRITISH COLUMBIA

Early landings in British Columbia were concentrated in the southern ports. From a first record of a quarter of a million pounds in 1888, the

British Columbia total remained in the vicinity of one or two million pounds until 1900. Additional company-owned steamers were placed in service and landings rapidly increased to a maximum of 12 million by 1904. After a decline in the two succeeding years, due to the wreck of one large steamer, a pronounced increase in landings resulted from the addition of new vessels to the fleet. Landings were about 21 million pounds annually in the years 1912 to 1914. The opening of Prince Rupert, and the landing there in bond by United States vessels after 1915, and the building of independently-owned Canadian vessels further augmented the landings with Prince Rupert attaining a position of chief importance.

Landings between 1915 and 1930 fluctuated between 24 and 30 million pounds annually except in 1918 when they dropped to about 18 million. After 1930 economic conditions, the fleet's program of between trip lay-ins and the effects of World War II caused a decline in total landings. The great growth of landings by Canadian vessels did not offset the reduced landings of the United States fleet in Canadian ports.

From the opening of Prince Rupert to U.S. vessels in 1915 until 1935, British Columbia ports as a whole received 51 per cent of the total United States and Canadian landings. Between 1935 and 1950 they received 41 per cent.

4. ALASKA

Alaska landings prior to 1910 were about three to four million pounds annually. The subsequent building of cold storages and increased fishing in Alaskan waters brought landings in Alaska to about 13 million by 1913. They declined to below 10 million pounds in 1914 when vessels fishing west of Cape Spencer found it profitable to take their fares to Seattle. After Prince Rupert had been opened to U.S. vessels, landings fluctuated between 7 to 10 million pounds until 1921. Due to a strike and depressed economic conditions in 1922 the Alaska total declined to slightly over five million pounds. Between 1923 and 1930, receipts were between 9 and 13 million pounds annually. Very low prices and to some extent the fleet's voluntary between-trip lay-in program reduced Alaska landings to between four and nine million pounds from 1931 to 1941. World War II conditions caused a sharp increase. In more recent years landings have been above 22 million pounds.

As in Washington ports, landings by Canadian vessels in Alaskan ports have not been consequential.

LANDINGS ACCORDING TO AREA OF ORIGIN

Management of the fishery since 1932 has involved the separate control of the stocks west and south of Cape Spencer. The biological basis for this primary separation has been presented in Reports Nos. 1, 2, 5, 6, 8 and 9 of the Commission*. Further division of these areas has been considered on several occasions.

For the years 1920 and earlier it has been possible to separate the landings with full assurance only as to whether they originated from grounds south or

*A list of Reports of the Commission is appended.

west of Cape Spencer, regulatory Areas 2 and 3 respectively. From 1921 to 1928 the total catch can be assigned to the following smaller sections of the coast.

1. South of Willapa Harbor, Washington.
2. Willapa Harbor, Washington, to Cape Scott, at north end Vancouver Island.
3. Cape Scott to Dixon Entrance.
4. Dixon Entrance to Cape Spencer.
5. Cape Spencer to Cape St. Elias.
6. Cape St. Elias to Trinity Islands.
7. Trinity Islands and west.

Since 1929 a broadened statistical coverage of the fishery has permitted the assignment of catches to 60 miles or smaller sections of the coast as shown in the frontispiece chart, Figure 1.

TABLE 2

CATCHES FROM PRESENT REGULATORY AREAS
AREAS 1A AND 1B COMBINED, AREA 2 AND AREA 3, 1910 TO 1950
In Thousands of Pounds

Year	Areas 1A & 1B	Area 2	Area 3	Year	Areas 1A & 1B	Area 2	Area 3
1910	.....	51850	.....	1930	843	21387	27276
1911	.....	56931	.....	1931	923	21627	21672
1912	.....	59534	900	1932	902	21988	21598
1913	.....	55436	11107	1933	743	22530	23525
1914	.....	44476	22949	1934	1613	22638	23295
1915	273	44023	24460	1935	1489	22817	23041
1916	253	30278	19477	1936	710	24911	23847
1917	299	30803	17796	1937	716	26024	23499
1918	297	26270	11415	1938	706	24975	24559
1919	321	26602	13535	1939	1073	27354	23358
1920	324	32358	14257	1940	779	27615	25914
1921	412	36572	15477	1941	332	26007	26725
1922	363	30482	11650	1942	286	24321	26153
1923	1047	28008	22269	1943	420	25311	28110
1924	659	26155	26321	1944	320	26517	26793
1925	1203	22637	26823	1945	401	24378	29151
1926	897	24711	26860	1946	629	29678	30530
1927	1193	22934	30825	1947	430	28652	27365
1928	1061	25416	27783	1948	285	28409	27424
1929	1225	24565	31134	1949	427	26942	28447
				1950	392	27046	30211

Prior to 1910 the total recorded Pacific Coast catch (Table 1, page 12) was taken from Area 2.

The catches determined to have been taken each year since 1910 from each section of the grounds comprising the 1950 regulatory Areas* 1A, 1B, Areas 2 and 3 are shown in Table 2, above. These catches include corrections and additions for poundage taken in contravention of the regulations in closed areas and falsely reported from open areas, and for poundage not formally reported.

*The totals shown for the present Areas 2 and 3 differ from the totals shown for grounds "south and west of Cape Spencer" in Tables 1 and 2, page 12, Report No. 8 of the Commission for two reasons. They include corrections for erroneous or lack of reporting of some catches and they are divided according to the present boundary between Areas 2 and 3 rather than that which prevailed in 1932.

These adjustments of totals were determined from information that came to hand sometimes long after the compilation of the totals as first reported.

The unadjusted totals are in themselves satisfactory for general statistical purposes, and have been used in the general annual reports of the Commission. Any biological assessment of the stocks requires the use of the more complete actual catches and for this reason preliminary totals of the adjusted catches were published* for the years 1930 to 1941.

The differences between the figures in Table 2 for 1930 to 1941 compared to those published in 1942 are insignificant and arise from small changes subsequently made in the tabulation of the records. Preliminary totals of adjusted catches from Areas 2 and 3 for selected years were also published in Report No. 15, page 19. These approximate very closely the figures for corresponding years in Table 2, except for 1945, which were significantly modified, particularly those for Area 2, to eliminate duplication of transhipped fish landed by small boats in isolated places.

Adjustments in the declared catches in the two areas are greatest for the years 1936 to 1941. They involved chiefly a transfer of poundage that had been taken in the closed Area 2 in contravention to the regulations and declared from Area 3. The adjustments from 1934 to 1942 ranged from a minimum of one-quarter million pounds in 1934 to a maximum of nearly 3 million in 1939. Since 1942 the adjustments ranged from one-quarter to one and one-quarter million pounds in Area 2 and from none in 1950 up to one-half million pounds in 1947 for Area 3.

The catches from Areas 2 and 3 are further divided in Table 3, page 16, according to sections of the two large regulatory areas. The trend of production for each section of the coast is shown in Figures 2 and 3, page 17.

Major sections of Area 2 (which area includes the grounds between Willapa Harbor and Cape Spencer) show the same general trend of production individually since 1921 as they do combined. The level of production in all sections declined during the period from 1921 to 1931, but at different rates.

In the case of the two important producing sections, namely Southeastern Alaska and British Columbia north of Cape Scott, the yield increased after the early 1930's. They now approximate those taken at the beginning of the 1920's. In the less important section, from Willapa Harbor to Cape Scott, production declined sharply from 1921 to 1925 and continued the decline at a lower rate until 1930. Subsequently the yield from this section increased moderately until 1943 after which it again declined to a relatively low level.

In the 1920's production from the grounds that lie westward of Cape St. Elias in Area 3 increased at a very rapid rate from about 4 million in the earlier years to 24 million in the later years of the decade. During the same period the trend of landings from the eastern part of Area 3 from Cape Spencer to Cape St. Elias was sharply downward from a level of 11 million at the outset to about 5 million by 1931. The inauguration of the closed season, which largely eliminated winter fishing on the spawning grounds, played a substantial part in this reduction.

*Dunlop and Bell, Pacific Fisherman Yearbook, 1942, p. 233.

After 1931 the main trend of the yield from the extreme westerly portion of Area 3, from Trinity Island and west, increased gradually until 1943 and more sharply until 1945. Since the latter year a steady decline up to and including 1950 will be noted.

SOURCES OF STATISTICS

All available series of published and unpublished data on Pacific Coast halibut landings were consulted, compared, checked, and recompiled to derive the total annual halibut landings. A description of the methods of compilation is necessary in order to justify the wide discrepancies with previously published figures and to indicate the limits of accuracy of the data accepted in this report.

The important general sources of data were records of individual vessel landings secured by the International Fisheries Commission from fish-selling

TABLE 3

HALIBUT LANDINGS FROM VARIOUS SECTIONS OF THE PACIFIC COAST, 1921 TO 1950
in Thousands of Pounds

Columns		A	B	C	D	E	F	G
Statistical areas		0 - 3	4 - 8	9 - 13	14 - 18▲	18W - 23	24 - 28	29 - 37
Year	1921	412	5960	20390	10222	9345	5402	730
	1922	363	4485	16773	9224	7085	4547	18
	1923	1047	3154	15137	9717	12095	9503	671
	1924	659	2322	13977	9856	8462	16359	1500
	1925	1203	1995	12655	7987	7312	14848	4663
	1926	897	2854	14692	7165	5367	15647	5846
	1927	1193	2846	12669	7419	8183	14440	8202
	1928	1061	2410	15425	7581	8052	14484	5247
	1929	1225	1903	12815	9847	6857	15416	8861
	1930	843	1476	11381	8530	5655	12534	9087
	1931	923	1410	12827	7390	5095	9513	7064
	1932	902	2000	12250	7738	5797	10913	4888
	1933	743	2008	12368	8154	7134	12425	3966
	1934	1613	1679	13275	7684	6369	12342	4584
	1935	1489	2080	12885	7852	7691	11529	3821
	1936	710	1884	13121	9906	7036	11170	5641
	1937	716	2072	14557	9395	5419	12929	5151
	1938	706	2647	14590	7738	6612	13011	4936
	1939	1073	1609	17975	7770	5576	13503	4279
	1940	779	1883	17874	7858	5021	16263	4630
	1941	332	2444	15757	7806	4302	16119	6304
	1942	286	2420	13454	8447	4399	16196	5558
	1943	420	2959	14087	8265	5236	15046	7828
	1944	320	1744	14056	10717	3841	16223	6729
	1945	401	982	14327	9069	3217	16409	9525
	1946	629	1242	17983	10453	5477	16349	8704
	1947	430	1144	17344	10164	7112	12734	7519
	1948	285	2018	16241	10150	4774	14846	7804
	1949	427	2038	15086	9818	5947	15001	7499
	1950	392	1921	16188	8937	6588	17247	6376

Columns A South of Willapa Harbor.
B Willapa Harbor to Cape Scott.
C Cape Scott to Dixon Entrance.
D Dixon Entrance to Cape Spencer.
E Cape Spencer to Cape St. Elias.
F Cape St. Elias to Trinity Islands.
G Trinity Islands and Westward.

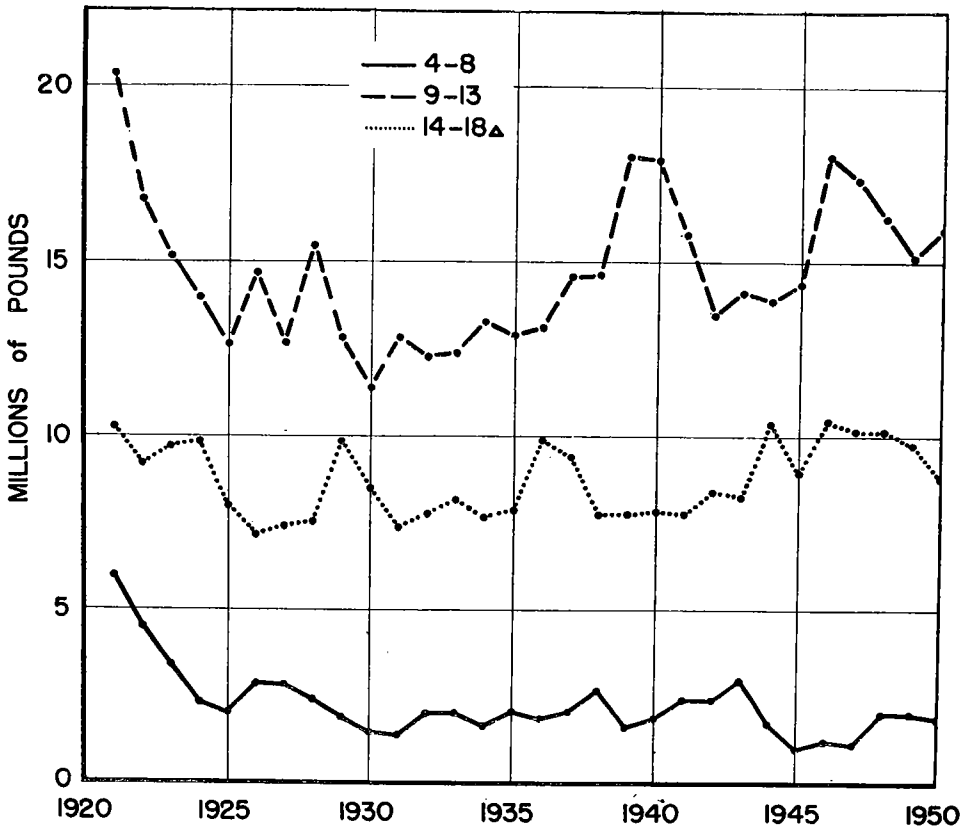

Figure 2.—Landings from sections of Area 2; Willapa Harbor to Cape Scott (areas 4-8), Cape Scott to Dixon Entrance (areas 9-13), Dixon Entrance to Cape Spencer (areas 14-18▲).

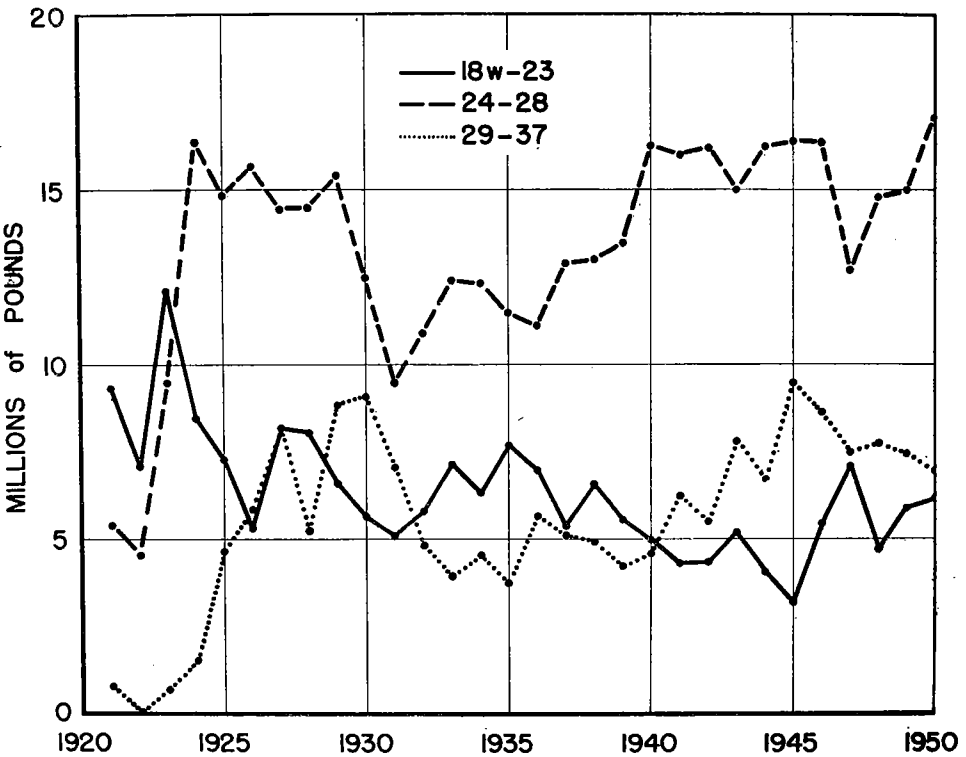

Figure 3.—Landings from sections of Area 3; Cape Spencer to Cape St. Elias (areas 18W-23), Cape St. Elias to Trinity Islands (areas 24-28), Trinity Islands and westward (areas 29-37).

exchanges and from dealers, published tables of both the Canadian and United States governments, and of the *Pacific Fisherman*, a Pacific Coast fish trade journal published in Seattle. Since 1929 no detailed comparison will be made of the Commission figures with those from other sources, as in general there is a satisfactory degree of correspondence. In many instances the Commission has been the source for data published elsewhere.

There are certain peculiarities of the halibut fishery and in the marketing of its product that have resulted in the recording of data which, if properly evaluated, provides useful information upon the size and origin of the catches in early years when vessels' fishing records covered only a very limited portion of the total landings.

The fleet was for the most part independently-owned after 1915. This independence of the fisherman resulted in the fish being tendered for sale in the open market for the highest price offered.

To handle these sales, fish exchanges had been established in the more important ports where the fishermen "hail their fares." This estimate or hail of the load of fish is placed upon a blackboard and the fish is auctioned off daily to interested dealers. To provide the latter with as much information as possible regarding this unseen load of fish, the "age" in days of the earliest caught fish, the estimated size composition of the catch and a bank of origin were often listed. This information, in addition to the knowledge of their probable accuracy which was obtained by experience, permitted the dealer to judge the suitability of the fare in meeting the requirements of his trade for that day.

These hailed records, where the reputed bank of origin is included, are available for Prince Rupert since 1921. For 1919 and 1920 but half years were obtainable. For Seattle they extend in detail back to 1922, and prior to that time records published by the Bureau of Fisheries give the monthly totals for each reputed bank of origin from 1916 to 1922. The source of the United States Bureau of Fisheries data for these early years is the same as that used for 1922 to 1928 by the International Fisheries Commission, namely, the hails of the Seattle Fish Exchange.

In addition to these data for the two principal ports, there are other data that enable the classification of the landings in the minor ports according to their source. The possession of log records for many vessels and of data respecting their size and cruising range, particularly for the very small vessels, permit a satisfactory apportionment of the landings by general areas of the coast. The log records and interviews with captains also provided a sample check upon the accuracy of the hailed information.

For years prior to 1920 chief reliance for bank of origin of the catches had to be placed upon a cross-checked testimony of the captains and owners of the boats operating at that time. However, log books and other historical data provided a control upon the accuracy of such testimony. The Customs records of clearance and entry of vessels also supplied information as to their movements and the general area of operations.

The possession of individual cards for each boat for each year showing

the landings trip by trip, prices paid, amount of catch, port of sale, and the date of entry and clearance greatly facilitated the canvass of the captains. In spite of the passage of time, the captains, when interviewed in 1926 and 1927 were able to recollect with remarkable accuracy the locus of much of their earlier operations from year to year. Each year was distinctive and many trips had an individuality born of unusual circumstances that occurred on them. Prior to 1920 the larger mobile vessels were relatively few in number and the grounds were in a process of rapid development which made it easier to define the broader limits of operations in any one year. It was also known that no significant fishing had occurred in Area 3 prior to 1913. In addition the fleet had certain well marked seasonal habits as to the grounds fished and the nature of the catches reflected these changes. The available log books for this period often recorded the presence of other vessels on the grounds or in harbor which gave a valuable check upon the verbal testimony of those boats that were so "spoken." It was found that the information as to the sources of the fish from year to year, as secured from the captains, coincided in general with all known facts regarding their operations. The northern or western limit of fishing, though being continually extended, was well known from year to year. It was a period of discovery with vessels' names and specific dates having historical importance.

Although it might have been possible to use smaller divisions of the coast for some years between 1910 and 1920 with some confidence, the landings have been divided for present purposes into those from south of Cape Spencer and those originating from west of Cape Spencer for the years prior to 1921. The manner in which this was done for the years 1915 to 1920 was to subtract the landings ascertained to have been taken west of Cape Spencer from the total landings on the coast.

From 1921 to 1928 inclusive the further separation of the west and south of Cape Spencer landings is possible. Since 1929 detailed data are available showing the exact origin of all landings. These are derived from the log records and by trip to trip canvass of the few mobile vessels not keeping such a written record.

The sixty mile area numbers used in this paper refer to divisions of the coast as shown in the charts in Figures 1, 2, and 3. These areas were determined by drawing lines every sixty miles at right angles to the trend of the coast. A detailed description of the method may be found in International Fisheries Commission Report 6, page 46.

RELIABILITY OF THE STATISTICS OF CATCH AND OF ORIGIN

All figures presented are for salable halibut with heads off and viscera removed. Inquiry of older members of the industry indicated that in general such net weights have been used in this fishery since early times, with the exception of California landings which to the present time are not all recorded as net weights. The U.S. Bureau of Fisheries published statistics of halibut landings that have been "corrected" by adding certain arbitrary allowances for heads or for viscera but fortunately it has been unnecessary to use such

figures due to the availability of more consistently collected data. There are some differences, however, from port to port in the manner of making allowances for the heads. The differences are not large enough to be significant in this analysis.

To what extent the amount of fish sold represents the actual catch of halibut is a question of importance. It is well known that from the time the fish is caught to final sale there is a certain amount of "culling" or rejection. Some of this is done at the time of hauling or of stowing in the hold of the vessel and some by the purchaser at the landing slip. There are no data available by which it would be possible to evaluate the extent of such practices from year to year. Dependent as culling is upon the habits of the fishermen and in part upon market conditions, it is only possible to estimate the course of events.

In earlier years of abundant stocks there may have been greater culling at the landing dock or rejection of the smaller sizes at sea. At other times, with the scarcity of the more desirable sizes on many grounds, there has been a tendency to land and sell all fish caught. However, this tendency is counteracted by the increased culling or rejection by the dealer on account of poor quality arising from longer voyages to more distant grounds and longer sojourn per trip on the nearby banks during periods of low abundance.

There is a considerable quantity of halibut caught that does not reach the market, being consumed locally or retained by the fisherman. From time to time critical estimates have been made of this total and there is no reason to believe that the proportion has not remained relatively constant from one period to another.

In addition to the non-marketed catch there has been from time to time a considerable quantity of halibut sold but not formally reported. Some of this unrecorded poundage resulted from the failure of vessels and buyers to report formally the poundage landed in excess of the trip limits that the fleets voluntarily imposed upon their member vessels during the years from 1933 to 1941. Other unrecorded poundage resulted from various types of fishing in contravention of the regulations. By means of extended study it has been possible to determine closely the amounts of fish that were involved in these practices. In assessing the actual yield of the various stocks, all such poundage has been taken into consideration as well as any false declaration as to the bank of origin.

It might be surmised that in so far as the hailed or estimated weights of the fishermen are largely utilized in the totals prior to 1931 they would uniformly represent their catch from year to year regardless of market conditions changing the amount of culling by the buyers. Such, however, is not necessarily the case as the fisherman's estimate is based on what he expects to weigh-out and he may unconsciously adapt the estimates or "hailed amounts" to anticipate any changed marketing conditions.

Since the hailed totals are only estimates of the amount of fish in the fare, it is necessary to know the extent of error that is involved in using them as indicators of the total yield in earlier years.

The monthly total weighed-out weights and total hailed weights for United States vessels landing in Prince Rupert in 1927 and 1928 are shown in Table 4, below. The deviations of hailed totals from the weighed-out totals are shown as percentages in the last column. The deviations from month to month are within five per cent and the yearly totals, pertinent to this report, deviate less than one per cent. Similar evidence of the reliability of the fishermen's estimates of landed poundage is available for the Canadian fleet landings in Prince Rupert when allowance is made for the fares that are sold direct without hailing. For Seattle the weighed-out values available for comparison have shown similar results.

TABLE 4

COMPARISON OF THE HAILED AND WEIGHED-OUT UNITED STATES VESSEL LANDINGS IN PRINCE RUPERT, 1927 AND 1928
in Thousands of Pounds

1927				1928			
Months	Weighed-out Totals	Hailed Totals	Percentage Deviation of Hailed Total	Months	Weighed-out Totals	Hailed Totals	Percentage Deviation of Hailed Total
February	111	106	—4.5	February	610	603	—1.1
March	2195	2146	—2.2	March	1959	1869	—4.6
April	1876	1859	—0.9	April	2239	2280	1.8
May	2012	1979	—1.6	May	2181	2116	—3.0
June	2126	2049	—3.6	June	2131	2032	—4.6
July	1950	1903	—2.4	July	2086	2110	1.1
August	2606	2534	—2.8	August	2315	2285	—1.3
September	1847	1855	0.4	September	2229	2246	0.8
October	2320	2300	—0.9	October	3008	3022	0.5
November	1404	1407	0.2	November	1519	1542	1.5
Total	18447	18138	—1.7	Total	20277	20105	—0.9

Since hailed locations were used in part to determine the bank of origin of the catches prior to 1929, it is imperative to inquire to what degree these data may be relied upon. The chief requirement of the data is not one of absolute accuracy but of suitable consistency from year to year and a knowledge of their limitations. Since the landings in Prince Rupert and Seattle represent a large proportion of the coast total and provide the most extensive series of hailed records they will be sufficient to demonstrate the relative accuracy of the hailed amounts and of the area of origin.

1. ACCURACY OF THE PRINCE RUPERT HAILED LOCATIONS

The possession of log records for many vessels in later years permits the comparison of the actual fishing locations and the hailed banks for representative Prince Rupert data. The figures for 1926, 1927, and 1928 will be used to show the nature of the comparison. For Seattle the 1929 logs are more complete and the data for this year will be used to indicate the degree of reliability of the data for that port. Since there have been no known changes in the method of hailing for the years under consideration and since the habits of the

TABLE 5

COMPARISON OF HAILED AND ACTUAL FISHING LOCATIONS FOR PRINCE RUPERT TRIPS OF UNITED STATES VESSELS FOR WHICH LOG RECORDS WERE AVAILABLE FOR 1926, 1927 AND 1928

Area Actually Fished	Hailing Areas 13-18						Hailing Areas 19-23					
	1926		1927		1928		1926		1927		1928	
	No. Trips	%	No. Trips	%	No. Trips	%	No. Trips	%	No. Trips	%	No. Trips	%
13	1	1.5	13	21.0	2	3.2	....	.....	....	.....	....	.....
14	15	23.1	6	9.7	12	19.4	....	.....	....	.....	....	.....
15	27	41.5	17	27.4	17	27.4	....	.....	....	.....	....	.....
16	15	23.1	17	27.4	30	48.4	....	.....	....	.....	....	.....
17	1	1.6	3	4.8	....	.....	....	.....	....	.....	....	.....
18	4	6.2	3	4.9	....	.....	1	2.1	....	.....	1	1.0
19	....	.....	1	1.6	....	.....	8	17.0	10	18.2	10	10.4
20	....	.....	....	.....	1	1.6	23	48.9	14	25.5	26	27.1
21	....	.....	1	1.6	....	.....	4	8.5	9	16.4	19	19.8
22	1	1.5	....	.....	....	.....	4	8.5	6	10.9	11	11.5
23	....	.....	....	.....	....	.....	....	.....	4	7.3	5	5.2
24	1	1.5	....	.....	....	.....	2	4.3	2	3.6	6	6.3
25	....	.....	1	1.6	....	.....	2	4.3	3	5.4	13	13.5
26	....	.....	....	.....	....	.....	2	4.3	4	7.3	4	4.2
27	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
28	....	.....	....	.....	....	.....	1	2.1	1	1.8	1	1.0
29	....	.....	....	.....	....	.....	....	.....	1	1.8	....	.....
30	....	.....	....	.....	....	.....	....	.....	1	1.8	....	.....
31	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
32	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
Total	65	100.0	62	100.0	62	100.0	47	100.0	55	100.0	96	100.0
%*		97.0		94.2		98.4		82.9		78.3		74.0

Area Actually Fished	Hailing Areas 24-26						Hailing Areas 27-32					
	1926		1927		1928		1926		1927		1928	
	No. Trips	%	No. Trips	%	No. Trips	%	No. Trips	%	No. Trips	%	No. Trips	%
13	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
14	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
15	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
16	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
17	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
18	....	.....	2	2.6	....	.....	....	.....	....	.....	....	.....
19	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
20	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
21	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
22	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
23	....	.....	1	1.3	1	1.0	....	.....	....	.....	....	.....
24	4	4.3	12	15.4	16	15.2	....	.....	....	.....	....	.....
25	54	58.0	9	11.5	37	35.2	....	.....	....	.....	3	6.8
26	16	17.2	25	32.0	13	12.4	1	3.3	3	5.7	....	.....
27	5	5.4	2	2.6	15	14.3	3	10.0	....	.....	10	22.7
28	9	9.7	15	19.2	12	11.4	12	40.0	20	37.7	7	15.9
29	4	4.3	6	7.7	6	5.7	8	26.7	10	18.9	5	11.4
30	1	1.1	2	2.6	5	4.8	6	20.0	13	24.5	9	20.5
31	....	.....	....	.....	....	.....	....	.....	4	7.5	10	22.7
32	....	.....	4	5.1	....	.....	....	.....	3	5.7	....	.....
Total	93	100.0	78	100.0	105	100.0	30	100.0	53	100.0	44	100.0
%*		79.5		58.9		62.8		96.7		94.3		93.2

*Percentage of trips within strict limit of the hailed area.

fleet are fairly well established, the results should apply to the other years not so compared. It must be borne in mind that the fisherman's definition of an area of fishing does not coincide with the actual geographical limits of the area. The hailed location is usually some important body of water or landmark which is in the general vicinity of the place where fishing operations were conducted.

Comparison of the actual fishing location shown in the log records with that hailed in Prince Rupert is made for the three years 1926, 1927 and 1928 in Table 5, page 22. Certain groups of hailed areas, namely, 13 to 18, 19 to 23, 24 to 26, and 27 to 32, are shown with the actual fishing locations plotted against them. For the group 14 to 18, 94 to 98 per cent of the actual fishing locations in the three years fell within this group of areas. The group of areas 24 to 26 is presented as an example of the limitations of the hailed data for restricted areas. Since the general tendency of vessels is to hail east of where they were actually fishing, the group 27 to 32 would provide good minimum totals for that section of the coast.

The comparisons in the three years also show considerable consistency in the degree of error from year to year between the hailed and actual locations. It is also to be noted that as far as the separation of west and south of Cape Spencer catches are concerned, the hailed locations are very satisfactory, particularly when corrected by means of log records for a large proportion of the fleet and by other information regarding the operation of the boats.

On account of the tendency of some vessels to hail from grounds eastward of the actual fishing area, it was necessary to use a combination of data in distributing the total catches for the years 1921 to 1928 from grounds west of Cape Spencer to each of the major sections of that area.

The total adopted as having originated each year from the section of Area 3 extending from Cape Spencer to Cape St. Elias (areas 18W to 23) was the average of the amount determined from the hailed records as modified by the log records and the amount calculated on the basis of the proportionate representation of the section in the total poundage in the log records for Area 3.

The catches shown in Table 3 as originating between Cape St. Elias and Trinity Islands (areas 24-28) and from westward of Trinity Islands (areas 29-37) were determined by distributing the differences between the above areas 18W-23 total and the total for Area 3 as a whole in accord with the proportion of the poundage represented in the log records. This representation for grounds west of Cape St. Elias (areas 24 to 37) varied from 25 per cent in 1921 to 60 per cent in 1926 of the total caught. There are no reasons to believe that the distribution of log samples during these years were not reasonably representative of the total catches for this section of the coast.

The Hecate Strait hails at Prince Rupert are not shown in the accompanying table. These landings are made mostly by small Canadian vessels of limited cruising radius with the result that over 70 per cent of the trips so hailed come from within the strict geographical limits of the area. If the immediately adjacent areas are included, over 95 per cent of the hailed loca-

tions for the area studied are found to coincide with the actual fishing locations.

2. ACCURACY OF SEATTLE HAILED LOCATIONS

Logs of Seattle landed fares are sufficiently numerous in 1929 for a similar comparison there, Table 6. The records for this port show hailed locations for "Oregon," "Cape," "Hecate," and various grounds west of Cape Spencer.

Trips hailed from "Oregon" are relatively few in number. The term "Oregon" by the fishermen's definition is south of Cape Flattery. In this area 72 per cent of the trips are accurately hailed. The "Cape" hails, i.e., Cape Flattery, show a very close adherence to the actual fishing locations, particularly for the smaller vessels as their limited cruising radius automatically prevents any extensive error. If the term "Cape" is construed to include those banks off the West Coast of Vancouver Island, areas 5 to 8, 81 per cent of such Cape hails for all classes of vessels fall within those areas, as may be seen in Table 6, below. The "Hecate" hails, i.e., Hecate Strait, consist of all areas between 9 and 13. In this area over 85 per cent of the trips are accurately hailed. Trips hailed in Seattle from banks west of Cape Spencer can be accurately classified only as originating from the entire area. However, by checking the hails with certain log records and with data respecting the habits

TABLE 6

COMPARISON OF HAILED AND ACTUAL FISHING LOCATIONS FOR SEATTLE TRIPS, 1929

Area actually fished	Hailing Areas 5-8		Hailing Areas 9-13	
	No. of Trips	Percentage	No. of Trips	Percentage
1	4	1.2	1	.2
2	6	1.7	5	1.1
3	6	1.7	1	.2
4	6	1.7	.....	.....
5	69	19.8	3	.6
6	123	35.2	8	1.7
7	87	24.9	17	3.6
8	5	1.4	13	2.8
9	18	5.2	67	14.3
10	19	5.4	178	37.9
11	4	1.2	139	29.6
12	2	.6	4	.8
13	.....	.....	9	1.9
14	.....	.....	9	1.9
15	.....	.....	12	2.6
16	.....	.....	.....	.....
17	.....	.....	2	.4
18	.....	.....	.....	.....
19	.....	.....	2	.4
Total	349	100.0	470	100.0
Percentage*		81.3		84.5

*Percentage of trips within strict limit of the hailed area.

of such vessels, it is possible to make a satisfactory separation of these Seattle hails from banks west of Cape Spencer into those east and west of Cape St. Elias, a separation at least equal in accuracy to that possible for the Prince Rupert data.

Comparison of Seattle hailed fishing locations for other years with the corresponding log record locations shows the same degree of accuracy.

This discussion of the reliability of the hailed data prior to 1929 indicates that the errors are relatively low. Combined with log records for a large portion of the fleet and other information* as to the actual fishing locations, the use of the hailed bank of origin permits segregation of the catches according to general areas of origin within very satisfactory limits of accuracy. After 1928, the possession of the weighed-out weights of the catches and log records of the origin of all catches of mobile vessels assures a very high degree of accuracy.

BRITISH COLUMBIA

The British Columbia section of the Pacific Coast is very important in the halibut fishery because of its proximity to fishing grounds which at one time were the most productive known in the entire history of the fishery and which in their still partially rehabilitated state produce a very large share of the coast total and yield more per unit of area than any other section of the coast. Its major ports, Prince Rupert and Vancouver, received 51.0 per cent of all vessel landings on the coast between 1916 and 1934. British Columbia ports as a whole received 41 per cent of the coast's landings from 1935 to 1950. They have been important bases of operations for both the Canadian and United States fleets, particularly Prince Rupert, the most northerly situated trans-continental railhead.

The published statistics of British Columbia landings by the Canadian government and by the *Pacific Fisherman* have been examined to determine whether they provide suitable figures for annual totals for years prior to 1929. Since that year the Commission has secured its own figures from the original invoices of the buyers and checked them for completeness with other data.

The Canadian Government published its fisheries statistics in the Report of the Department of Marine and Fisheries until 1913, in the Report of the Fisheries Branch of the Department of Naval Service from 1914 to 1917, and since that time in the Report of the Dominion Bureau of Statistics, who were supplied with the data by the Department of Fisheries. The poundage was shown separated by nationality of landing vessel after 1915, and according to departmental districts from the beginning.

The Dominion Department of Fisheries administrative districts have been changed from time to time so it has been necessary to regroup the totals for various subdivisions to obtain comparable district totals. In this discussion Districts 1, 2 and 3 of the Dominion Department of Fisheries comprise Vancouver and the lower mainland ports; Prince Rupert and adjacent areas, and Vancouver Island and adjacent mainland points, respectively.

*See Page 18.

The fiscal year April 1 to March 31 was used until 1917, when the calendar year was substituted. At that time the Dominion Bureau of Statistics took over the publication of the data, which are still collected by officers of the Department of Fisheries. The totals of the Dominion statistician and of the 51st and 56th Annual Reports of the Department of Fisheries, along with those of the *Pacific Fisherman*, as listed in their 1929 Annual, are shown in Table 7.

The 51st Annual Report (1917), although not including the usual statistical tables, published the annual catches for 1913 to 1917 inclusive. These figures agree with the combined totals compiled by the Department of Fisheries for the Dominion statistician in those years when the American landings were not given separate mention, but from 1915 to 1917 they agree only with the totals for Canadian vessels.

The question arises as to whether the total British Columbia landings published by the Dominion Government for the period previous to the fiscal year 1915-1916 included the landings by American bottoms at Vancouver. The total landings shown for British Columbia were too large for the Canadian fleet known to be operating.

In the Annual Report of the Department of Marine and Fisheries for 1909-1910 the statement is made that five steamers landed the given total. However, it is known from Canadian Customs and other historical records that there were but three Canadian steamers operating at that time. In the

TABLE 7

LANDINGS IN BRITISH COLUMBIA ACCORDING TO VARIOUS PUBLISHED SOURCES, 1913 TO 1928

in Thousands of Pounds

Year	Dominion Statistician*			51st Report	56th† Report	*Pacific Fisherman* Annual Review‡		
	U.S.	Can.	Total			U.S.	Can.	Total
1913/14	.....	.....	22347	22347	12785	.....	12785	12785
1914/15	.....	.....	21444	21444	15611	1877	13734	15611
1915/16	13564	19490	33054	19490	24559	11324	13236	24560
1916/17	13562	12306	25868	12306	25779	13811	11969	25780
1917	13448	11353	24801	11353	23741	14216	9525	23741
1918	11365	7258	18623	.....	16681	10791	5890	16681
1919	13001	8077	21078	.....	19199	13001	8077	21078
1920	14676	9201	23877	.....	22089	14676	9201	23877
1921	19531	13055	32586	.....	28204	19531	13055	32586
1922	17249	12070	29319	.....	26077	17249	12070	29319
1923	20367	13100	33467	.....	.....	20367	13100	33467
1924	20913	12225	33138	.....	.....	20913	12225	33138
1925	22435	39389	31824	.....	.....	22435	9389	31824
1926	20484	11026	31510	.....	.....	20484	11026	31510
1927	18664	11389	30053	.....	.....	18664	8464	27128
1928	20242	10040	30282	.....	.....	20363	9231	29594

*Canadian totals since 1917 derived by substracting United States' figures from total.

†Identical with totals in Pacific Fisherman Annual Review, Jan., 1923, p. 92, "Pacific halibut catch since 1913."

‡As taken from 1929 Annual. From 1919 on identical with Dominion Statistician's report, with the exception of the years 1927 and 1928. Pacific Fisherman and the 56th report totals are for calendar years 1913 to 1916.

Report for 1911-12 (p. 295) it is said that the decrease in landings in District 1 was due to the fact that two U.S. registered steamers of the New England Fish Company of Vancouver, B.C., were landing fish in Alaska or undergoing repairs. Other direct references to the inclusion of landings by vessels of American registry in the early years are found in the Reports. Therefore, totals in the 51st Annual Report (1917) cannot be used in any compilation requiring a separation of the landings of both fleets for the reason that, subsequent to 1915, they do not include the landings of the United States vessels.

In the 56th Annual Report (1922) a table of combined American and Canadian landings in British Columbia was published for the years 1913 to 1922, inclusive. This was a revision of data previously published by the Dominion Bureau of Statistics. The totals given correspond to those for the two major ports, Vancouver and Prince Rupert, compiled by the *Pacific Fisherman* for those years with landings at the minor ports including those in District 3 omitted. The *Pacific Fisherman's* table, from which the figures of the 56th Report apparently were secured, was published in their 1923 Annual. However, in their 1925 Annual Review the *Pacific Fisherman* unfortunately abandoned their own figures and adopted those of the Dominion statistician from 1919 on.

The non-inclusion of the landings in minor ports and District 3 by the *Pacific Fisherman* explains in part the great discrepancies between the totals of that journal for 1912-13 to 1915-16 as published in later Annual Reviews and those of the Dominion statistician. The differences are large from 1913 to 1916, although the use of fiscal years by the Dominion statistician and of calendar years by the *Pacific Fisherman* hinders a critical comparison.

For many years the *Pacific Fisherman* published each month the individual boat landings for the principal ports. These detailed landings were summed for each month and at the end of the year a total for each port was taken. Up to 1923 the totals for their Annual Review were based on such monthly figures, but in 1925 they were amended to make them agree with official Canadian statistics. This practice was continued until 1937, after which International Fisheries Commission figures were used.

Thus, for example, in 1926 the journal published monthly figures, which have been summed in Table 8, below. In the Annual review for that year it amended the figures in the light of Canadian Government preliminary totals. But in the 1927 Annual it supplanted these amended figures by those pub-

TABLE 8

LANDINGS IN 1926 ACCORDING TO "PACIFIC FISHERMAN" SOURCES
in Thousands of Pounds

	Vancouver and Butedale, etc.		Prince Rupert	
	U.S.	Can.	U.S.	Can.
Combined Monthly Totals	44	620	19650	6236
Annual Review	129	2570	20356	6869
Subsequent Annual Reviews	129	4156	20355	6869

lished in the reports of the Dominion statistician. The several totals for the Canadian fleet landings at Vancouver and Butedale vary widely.

The Canadian Department of Marine and Fisheries issued from their Vancouver office a mimeographed correction for 1927, reproduced in Table 9, below. This correction eliminated certain duplications of halibut shipped into Vancouver and reported by the consignees after having been reported by the consignors in other ports, notably Prince Rupert. It will be observed that the correction reduced landings approximately three million pounds in that year.* It seemed probable that such duplications explain in part the differences between original *Pacific Fisherman* totals and Department figures.

TABLE 9

BRITISH COLUMBIA REVISED 1927 HALIBUT LANDINGS ACCORDING TO MIMEOGRAPHED NOTICE OF THE DEPARTMENT OF FISHERIES
in Hundredweights

Port of Subdistrict	District No.	Amended statistics of the Canadian Department of Marine and Fisheries		
		Canadian	U.S.	Total
Vancouver	1	7374	1274	8648
Prince Rupert, Skeena River District	2	69410	185024	254434
Butedale	2	1650	346	1996
Cape Scott to Tatchu Point	3	1505	.....	1505
Tatchu Point to Wreck Bay	3	496	.....	496
Wreck Bay to San Juan	3	3264	.....	3264
San Juan to North Side Cowichan Bay	3	745	.....	745
North Side of Cowichan Bay to Big Qualicum River	3	15	.....	15
Big Qualicum River to Oyster River	3	7	.....	7
Pender Harbour	3	66	.....	66
Quathiaski	3	98	.....	98
Alert Bay	3	80	.....	80
Totals		84710	186644	271354

NOTE: These figures are to correct those given in the Dominion Bureau of Statistics Report for 1927.

There was no way in which the actual landings in Vancouver and vicinity (District 1) could be checked for trans-shipped fish after this lapse of time, except by recompiling the individual landings by fishing vessels. Such records were secured by the Commission from the New England Fish Company, checked against those of the *Pacific Fisherman*, and are considered to be reasonably complete. Records prior to 1915 are incomplete because of the burning of the Vancouver plant of the New England Fish Company and its subsidiary, the Canadian Fishing Company. However, earlier records were secured from Captain A. Freeman for the steamers of the New England Fish Company and the Canadian Fishing Company. Since these vessels accounted for most of the landings in the years prior to 1912, their catches may be used to check previously published figures for the years prior to 1913-14.

*Burkenroad, (Bull. Bingham Oceanog. Coll. Peabody Mus. Nat. Hist. Yale Univ. XI:4:1947), compiled a total of 61.3 million pounds for 1921 obtained by adding certain published records, including duplications. As the latter statistics are in error, his conclusions (p. 96) regarding the relative accuracy of the statistics used by Thompson and Bell (Rept. 8. I.F.C., 1934) are unfounded.

It will be seen in Table 10, below, that the Commission's records of landings by United States vessels in District 1 varied from those of the Dominion Government by less than 200,000 pounds in any one year, with the exception of 1916-17. With regard to the Canadian fish, wherein much duplication has been shown, the Canadian Government totals must be supplanted by those of the Commission.

The question naturally arises as to the existence of duplications in the years preceding 1915-16. The *Pacific Fisherman* gives the individual vessel landings in Vancouver by months for the years 1913 and 1914, and states "only that landed by fishing vessels is shown." These landings when totalled account very nearly for those given by the Dominion statistician for 1913-14 and 1914-15.

Year	Dominion Statistician	*Pacific Fisherman*
1913/14	9367700	9211000
1914/15	7856000	7287000

The correspondence is so close as to eliminate the chances of extensive duplication from any source, either Prince Rupert, Vancouver Island, or Ketchikan. The purchases in Ketchikan of a Vancouver company making trans-shipments were about 4.5 millions in 1913 and three millions in 1914. These large quantities shipped through Vancouver obviously were not duplicated to any significant extent.

TABLE 10

CANADIAN AND UNITED STATES VESSEL LANDINGS IN BRITISH COLUMBIA DISTRICT 1 ACCORDING TO INTERNATIONAL FISHERIES COMMISSION AND DOMINION GOVERNMENT — 1915-1928

in Thousands of Pounds

Year	Dominion Government		International Fisheries Commission	
	Canadian	United States	Canadian	United States
1915	.....	.....	6651	3266
1915/16*	7531	3670	6448	3700
1916	.....	.....	4509	1860
1916/17*	4630	883	4626	1285
1917	4143	.....	2691	881
1918	2300	575	1351	385
1919	1484	1408	1387	1284
1920	1614	2191	1030	2155
1921	3782	3326	883	3256
1922	3380	483	527	345
1923	3086	113	794	67
1924	3316	79	709	94
1925	2718	74	681	181
1926	3814	43	667	43
1927	3430	127	726	158
1928	1044	.....	1214	27

*Canadian Government ficsal year April 1 to March 31.

Prior to 1913-14 the landings assigned to District No. 1 appear to be unusually large. The abrupt fall from 16,927,000 pounds in 1912-13 to 9,367,-000 in 1913-14 requires consideration, since in the Report of the Inspector of this district for 1913-14 it was said that this year's landings were "very satisfactory." In the Report for 1912-13 for District No. 1, it is stated that "a great deal of this (the landings) was taken by the 'New England Fish Co.', and brought into this district in bond and sent direct through for consumption in the United States." Whether this only applies to landings from fishing vessels of American registry is difficult to say, but in the light of the foregoing data it appears that previous to 1913-14 trans-shipped fish from other British Columbia districts was included in District 1 totals and possibly some Ketchikan fish.

It is not possible to check all years regarding this condition, but some representative periods may be taken. During the fiscal year 1908-09 (April 1 to March 31), five steamers operating out of Vancouver landed 13,852,000 pounds. These figures, laboriously secured from Canada Customs Manifests, were completed from the vessel logs made available by Captain A. Freeman, and are about two million pounds less than those given for District 1 in the Dominion Fisheries Report for that fiscal year. This difference cannot be accounted for by any shipments from Alaska via Vancouver, as the Vancouver company which operated these steamers had no Ketchikan plant at that time. Furthermore, there was little local market, if any, for fish from Districts 2 and 3, and no railroad out of Prince Rupert at that time. Therefore it must be assumed that the poundage from those districts was shipped to Vancouver. On this basis the total poundage for District 1, less the poundage for Districts 2 and 3, as officially reported, approximates closely that derived by the Commission from dealers' records.

During the fiscal year 1909-1910, 19,460,000 pounds are recorded for District 1. Detailed records of five of the seven steamers operating give a total of 12,386,000 pounds for the same period. Knowledge of the fishing capacity of the remaining two vessels operating enables a liberal estimate of 4,500,000 pounds to be attributed to them. This leaves about 2,600,000 pounds unaccounted for. In Districts 2 and 3 a total of 2,519,700 pounds were recorded and it would appear that considerable amounts of this fish had been reported by both the consignor in district of origin and by consignee in District 1. Ketchikan shipments would not yet have been a very significant factor as the plant opened very late in 1909 and the period in question extends only to March 30, 1910.

The other years between 1900 and 1913-14 suggest a similar condition prevailing. The years 1900 to 1903, for which detailed trip records of the vessels operating are available, show a similar defect that can be accounted for only by the duplication of some fish from districts where it had been reported by the consignors. The abrupt fluctuations in these figures, after the subtraction of District 2 and District 3 poundage, are in harmony with available information respecting the number and potential landing capacity of vessels operating from Vancouver. It must be remembered that the

addition or loss of one company steamer would cause a difference of as much as 3.5 million pounds in a port's annual receipts.

TABLE 11

LANDINGS IN BRITISH COLUMBIA BY DEPARTMENTAL DISTRICTS‡, 1888-1928
BASED ON REPORTS OF THE DOMINION GOVERNMENT
AS REVISED BY THE INTERNATIONAL FISHERIES COMMISSION
in Thousands of Pounds

Year	District No. 1			District No. 2			District No. 3	Totals for All Districts		
	Can.*	U.S.	Total	Can.	U.S.†	Total	Can.	Can.	U.S.	Total
1888	.....	.....	.....	.....	.....	.....	.....	.....	.....	246
1889	.....	.....	166	.....	.....	77	362	.....	.....	605
1890	.....	.....	277	.....	.....	75	281	.....	.....	633
1891	.....	.....	758	.....	.....	90	288	.....	.....	1136
1892	.....	.....	617	.....	.....	100	641	.....	.....	1358
1893	.....	.....	637	.....	.....	95	637	.....	.....	1369
1894	.....	.....	1123	.....	.....	93	514	.....	.....	1730
1895	.....	.....	1381	.....	.....	86	1070	.....	.....	2537
1896	.....	.....	1927	.....	.....	79	274	.....	.....	2281
1897	.....	.....	1525	.....	.....	70	373	.....	.....	1968
1898	.....	.....	1500	.....	.....	90	380	.....	.....	1970
1899	.....	.....	1550	.....	.....	95	430	.....	.....	2075
1900	.....	.....	2935	.....	.....	181	482	.....	.....	3598
1901	.....	.....	4295	.....	.....	221	482	.....	.....	4998
1902	.....	.....	6207	.....	.....	290	815	.....	.....	7312
1903	.....	.....	7915	.....	.....	310	837	.....	.....	9062
1904	.....	.....	11079	.....	.....	267	834	.....	.....	12180
1905	.....	.....	5499	.....	.....	1099	603	.....	.....	7201
1906	.....	.....	8483	.....	.....	854	613	.....	.....	9950
1907/08	.....	.....	11525	.....	.....	774	616	.....	.....	12915
1908/09	.....	.....	14271	.....	.....	1005	616	.....	.....	15892
1909/10	.....	.....	17214	.....	.....	1456	790	.....	.....	19460
1910/11	.....	.....	16867	.....	.....	1575	945	.....	.....	19387
1911/12	.....	.....	12060	.....	.....	2794	1000	.....	.....	15854
1912/13	.....	.....	16927	.....	.....	2908	1293	.....	.....	21128
1913/14	.....	.....	9368	.....	.....	10749	2230	.....	.....	22347
1914/15	.....	.....	7857	.....	.....	11895	1693	.....	.....	21445
1915/16	6651	3266	9917	9625	9894	19519	2333	18609	13160	31769
1916/17	4509	1860	6369	6877	12678	19555	799	12185	14538	26723
1917	2691	881	3572	6441	12248	18689	769	9901	13129	23030
1918	1351	575	1926	4655	10910	15565	302	6308	11485	17793
1919	1387	1409	2796	5383	11606	16989	300	7070	13015	20085
1920	1029	2191	3220	7306	12426	19732	281	8616	14617	23233
1921	883	3326	4209	9051	16409	25460	223	10157	19735	29892
1922	528	483	1011	8510	17206	25716	179	9217	17689	26906
1923	794	114	908	7955	20808	28763	358	9107	20922	30029
1924	709	79	788	8539	20300	28839	370	9618	20379	29997
1925	681	75	756	6381	22119	28500	290	7352	22194	29546
1926	667	43	710	6997	19759	26756	215	7879	19802	27681
1927	731	127	858	7106	18198	25304	628	8465	18325	26790
1928	1214	27	1241	8571	20231	28802	424	10209	20258	30467

*International Fisheries Commission calendar year totals.
†International Fisheries Commission figures for 1917-1928.
‡See page 25 for description of same.

Thus the utilization of the data available from the Canadian Government Reports for the years 1900-01 to 1913-14 necessitates the subtraction of Districts 2 and 3 poundage from that of District 1. These amended figures are given in Table 11, page 31. Prior to 1900 they must be accepted as there is little information by which they can be corrected. However, from the few records that are available and the small size of the landings in the respective districts, it may be assumed that but little duplication was involved in years prior to 1900.

A similar analysis of the landings in the other British Columbia Districts should be carried out. However, it is impossible to obtain past records of the scattered landings along the west coast of Vancouver Island (District 3). Published figures must be accepted as given, despite possible duplication. This cannot introduce any significant error in the grand total for the province, as the largest of the landings from this district in years immediately prior to 1929 was the 1927 total of 853,000 pounds, which was subsequently corrected by the Department to 627,600 pounds.

In District 2, north of Vancouver Island, the landings are largely concentrated at Butedale and Prince Rupert. Commission and Dominion Fisheries Department totals for landings of the Canadian fleet in this district are shown in Table 12.

Bearing in mind that most of the Commission figures for these early years are "hailed weights," and the Dominion Statistician's figures are presumably the actual weights of fish accepted by the dealer, the discrepancy of approxi-

TABLE 12

CANADIAN VESSEL LANDINGS* IN BRITISH COLUMBIA DISTRICT NO. 2 FOR 1915-1928 ACCORDING TO INTERNATIONAL FISHERIES COMMISSION AND DOMINION GOVERNMENT SOURCES
in Thousands of Pounds

Year	International Fisheries Commission			Dominion Government†
	Butedale	Prince Rupert	Total	Total Dist. 2
1915	.....	8927	8927	9625
1916	.....	7068	7068	6877
1917	38	5961	5999	6441
1918	52	4748	4800	4655
1919	102	5281	5383	6293‡
1920	10	6993	7003	7306
1921	61	8803	8864	9050
1922	.....	8459	8459	8510
1923	279	7676	7955	9656§
1924	334	7952	8287	8539
1925	183	6053	6235	6381
1926	158	6546	6704	6997
1927	138	6864	7002	7106
1928	109	8243	8352	8571

*Including landings of miscellaneous small boats.
†Derived from totals for calendar years except 1915 and 1916.
‡Believed to include landings amounting to 396,037 pounds by Canadian boats in Ketchikan and Seattle, due to Canadian rail strike that year.
§Unduly high, see text, p. 33.

mately five per cent between the totals over a period of years is to be expected. Studies show that the weighed-out weights are usually about two per cent more than the weights hailed by the fishermen.

The difference of more than two million pounds in the year of 1923 must be assignable to a typographical error in the official figures, as the *Pacific Fisherman* gives in its 1924 yearbook original figures comparable to those of the Commission, namely, 8,068,000 pounds of halibut landed by Canadian vessels. The *Pacific Fisherman* states in its yearbooks that it only substituted Canadian Government figures in issues subsequent to 1924. Thus, its adoption of governmental figures after 1924 does not invalidate the use of their own original figures for 1923 as an independent verification of the Commission's total.

Comparison of the landings of United States vessels in District 2, compiled by the Commission from hailed records for Prince Rupert and weighed-out weights for Butedale, with those published by the Dominion statistician, Table 13, below, reveals that the Canadian Government totals are less than those of the Commission for the years prior to 1924 and then subsequently they exceed them. It is known that in later years the Canadian Government figures are weighed-out weights, which weights tend to exceed the hailed data. Some variation between two series of data is to be expected as the omission or duplication of but a few landings of larger vessels may cause differences of several hundred thousand pounds in the earlier years when the trips were very large.

The hailed weights have been carefully examined by the Commission for fares that were sold at one port for delivery at another. This has been a considerable source of error in other compilations of hails. A source of error with weighed-out weights, unless each purchase is carefully checked, is the possible duplication of fish caused by transfers from one dealer to another. Thus, on the grounds of maintaining a uniform series of totals, the figures of

TABLE 13

UNITED STATES VESSEL LANDINGS IN BRITISH COLUMBIA DISTRICT 2 FOR 1918-1928 ACCORDING TO INTERNATIONAL FISHERIES COMMISSION AND DOMINION GOVERNMENT SOURCES

in Thousands of Pounds

Year	International Fisheries Commission			Canadian Government
	Butedale	Prince Rupert*	Total	
1918	10	10900	10910	10790
1919	4	11602	11606	11592
1920	6	12420	12426	12486
1921	9	16400	16409	16205
1922	.....	17206	17206	16765
1923	43	20765	20808	20253
1924	51	20249	20300	20834
1925	38	22081	22119	22360
1926	85	19674	19759	20440
1927	60	18138	18198	18537
1928	126	20105	20231	20242

*Commission totals for Prince Rupert are based on hailed weights.

the Commission should be used for the United States landings in District 2, including Prince Rupert. Comparison of these figures with *Pacific Fisherman* compilations shows a general correspondence.

Satisfactory British Columbia totals up to 1928 may be obtained by using the Canadian Government totals with the following general amendments:

(1) Replace all District 1 Canadian landings by International Fisheries Commission figures for the years after 1914.

(2) Subtract Districts 2 and 3 data for each year from 1900-01 to 1912-13 from District 1.

(3) Replace District 2 Canadian data for 1919 and 1923 by Commission figures.

International Fisheries Commission figures are used since 1929, supplemented in some years by Department of Fisheries totals for their District 3.

The transfer of the center of operations from District 1, Vancouver, to District 2, Prince Rupert, is most marked. This was brought about by various circumstances. Up to 1898 Vancouver receipts depended upon the fishing from shore stations and operations on the inshore banks. Profitable consignment of this fish to eastern markets induced a large eastern firm to operate out of Vancouver.

The necessity for exploiting more distant banks further offshore resulted in the introduction of steamers, which operated as self-sustaining fishing units. The number of steamers which ultimately became engaged in the fishery were responsible for the growth of the landings in District 1, Vancouver. This development reached its peak in 1912. In 1910 the most important company operating steamers from Vancouver opened a branch in Ketchikan. Since the vessels were now forced to go farther afield for their catches, the opening of this cold storage deflected some of the landings from Vancouver to Ketchikan.

The effect of the First World War in reducing available man power, the wreck of some steamers and prohibitive cost of replacement, coupled with the ability of smaller independently-owned vessels to produce fish more cheaply, gradually forced most of the company-owned and operated steamers from the business. Their withdrawal marked the passing of Vancouver as a major halibut port.

As landings at Vancouver fell off receipts at Prince Rupert, in District 2, rose. This latter port, being the railroad terminus closest to the more distant northern halibut banks, became the outstanding port of landings on the Pacific Coast. At first, company-owned steamers provided the bulk of the landings but subsequently a rapidly increasing independent fleet established headquarters there. The opening of the port in 1915 to American vessels for shipment of fish East in bond greatly augmented the total landed. Except for a post World War I recession, a continuous rise occurred until 1924. This coincided with the expansion of the Area 3 fishery. With the present relatively fixed total catch, any increased receipt of fish in Alaskan ports or Seattle is reflected by decreased landings for Prince Rupert. As in the case of Seattle and Alaska, the disposition of the U.S. Area 3 landings is now the determining factor in this balance.

Prince Rupert's receipts of the United States Area 3 total declined from 53 per cent in 1929 to 17 per cent in 1935, due primarily to the low prices of the period. The operations of an American fishermen's cooperative during 1931, gave added impetus to this shift of landings to United States ports. Voluntary curtailment programs may have been partly responsible for sustaining the decline in landings of Area 3 fish in Prince Rupert through 1935.

From 1936 to 1942, Prince Rupert's share of the U.S. Area 3 catch increased from 17 per cent to 45 per cent, despite the fact that voluntary between-trip tie-ups were at a maximum during most of this period. The progressive shortening of the Area 3 season, the reduction in price differentials between chicken and large and medium in Prince Rupert to the point where they more closely approximated those in Seattle were largely responsible for the shift in landings. U.S. Navy convoy regulations of 1942 also tended to direct landings to the northern ports of Ketchikan and Prince Rupert.

In 1944 receipts of the U.S. Area 3 fish in Prince Rupert fell off abruptly to 21 per cent due to wartime price fixing and allocation of landings. Fixed prices eliminated the "gamble" of securing a better price than that offered in Ketchikan. Customs bonding requirements in Prince Rupert also prevented evasion of United States price ceilings. Between 1944 and 1948 the percentage declined from 21 per cent to 8 per cent and recovered in 1949 to 15 per cent. The downward trend that also prevailed in Seattle and Ketchikan was due in part to the increase of landings in central Alaska ports. Inasmuch as a decline again occurred in 1950, no significance can be attached to the 1949 rise, which was caused by taxation in Alaska and a price war between two buyers.

WASHINGTON STATE

The ports of Seattle, Tacoma, Everett, and recently to a very limited extent, Anacortes and Bellingham have been factors in the halibut fishery since its inception. Small quantities of halibut have been landed at Columbia River ports in Washington, at Grays and Willapa Harbors and at Neah Bay. Tacoma, the first Puget Sound transcontinental railhead, participated in the early development of the shipping of fish to the East. However, Seattle soon became the pre-eminent port of landing in the State of Washington and has received over 95 per cent of the landings made in the Puget Sound region in recent years. In addition to the fish actually landed in Seattle by fishing vessels, it has been the main United States port of entry for most of the fresh and frozen halibut originally landed by fishing vessels in Alaska.

Although there were several series of published statistics of landings in Washington State it will be necessary to inquire into their accuracy by comparison with detailed data secured from original sources by the International Fisheries Commission.

Three series of records of the United States Bureau of Fisheries pertain to Puget Sound receipts of halibut. One series, a record of "fresh halibut entering Puget Sound," includes both boxed fish shipped by common carrier from Alaska as well as landings from fishing vessels and is thus not useable.

A second series, commencing in 1916 and shown in Table 14, below, is presumed to include only landings from fishing vessels inasmuch as they show a satisfactory correspondence with those subsequently collected by the Commission. In addition to the above two series the Bureau of Fisheries in some years published Pacific Coast totals by counties. Such totals are not useable as they are related to the ownership of the vessels by counties and not to the places of landing, which were frequently in British Columbia or Alaska.

The totals published by the Washington State Fisheries Board (latterly, Department) are shown in Table 14 and evidently include more than the landings by fishing vessels. This is substantiated by the fact that for 1911 and 1912 the Board's totals for its fiscal years ending March 31 were identical with the totals shown in the January numbers of the *Pacific Fisherman* for Puget Sound vessel landings plus the boxed fish from Alaska during the preceding calendar year. For 1917, 1918 and 1919 the totals were also approximately equal to the Seattle landings plus the boxed fish from Alaska. From 1920 to 1924 the totals are not large enough to include all boxed fish but they are too large for Seattle landings only. However, in 1925 and 1926 only Seattle landings are represented. Since this series was not compiled consistently in early years it could not be used.

Totals published by the Seattle Port Warden for landings in Seattle by fishing vessels support the Bureau of Fisheries' figures for Seattle landings and appear to have been secured from the same sources. However, vessels

TABLE 14

WASHINGTON LANDINGS, 1911 TO 1928, ACCORDING TO VARIOUS SOURCES
in Thousands of Pounds

Year	International Fisheries Commission		U.S. Bureau of Fisheries	*Pacific Fisherman*	Wash. State Department Fisheries*
	U.S.	Can.	U.S.	U.S.	U.S.
1911	32900	....	.....	30546†	35047
1912	28938	....	.....	27346†	34052
1913	30912	....	.....	29917	.....
1914	36712	....	.....	35520	.....
1915	28327	....	.....	27906	.....
1916	16104	....	15318	16152	.....
1917	15592	....	13950	14876†	20895
1918	10076	20	10244	9933†	15076
1919	11400	62	11111	11474	17000
1920	12580	....	12683	12639	16174
1921	11795	....	11481	11891	12009
1922	9982	....	9938	10018	11300
1923	8218	5	7805	8568	9556
1924	7429	....	7363	7378	9815
1925	9821	....	9685	9676	9791
1926	10080	13	10051	10157	9450
1927	11911	6	11789	11917	13870
1928	13935	....	13753	13789	13603

*For Fiscal Years ending March 31. No figures given for years 1913 to 1916 inclusive.
†Correction made for errors in addition by Pacific Fisherman for their Annual Review.

entering and clearing from a British Columbia port but landing in Seattle were at times classified by the Port Warden as imported fish. As there is no way of correcting this, the series is not used.

The totals of the *Pacific Fisherman* in Table 14, page 36, have been compiled from the monthly issues and annual reviews of that journal. The totals recorded in the yearly publication differ somewhat from those derived from the monthly issues. Apparently it has been their long standing practice to amend their annual totals in the light of figures secured from other sources.

The International Fisheries Commission's figures up to and including 1930 were based on the weights as hailed or estimated by the captain prior to sale of the individual fares on the Seattle Fish Exchange. Since 1931 weighed-out weights from dealers have been used. It has been shown that these hailed weights average well within two per cent of the actual weighed-out totals. The weighed-out figures tend to exceed the hailed records, since small amounts of halibut are landed by boats not hailing their fares. Fortunately in the years prior to 1931 only negligible quantities of such non-hailed poundage existed.

The 1911-28 figures of the International Fisheries Commission are, in general, closely corroborated by those of the *Pacific Fisherman*, Port Warden, and the United States Bureau of Fisheries. Since 1928 corroboration is unnecessary as the Commission was in a position to verify its own totals. For the years prior to 1911, the United States Bureau of Fisheries combined Alaska and Puget Sound totals must be used. These combined figures for the early years and the Commission's figures since 1911 are shown in Table 1, page 10.

Washington State landings reflect in large measure the shifting of the fishery from near-by to more distant grounds and the change from the use of company-owned steamers to independently-operated power schooners. Though no separate landing figures are available for Washington prior to 1911, the rapid rise of the fishery after 1905 coincided with the addition to the fleet of many of the largest company-owned steamers. A steadily increasing fleet of smaller vessels fishing the nearby banks augmented the large landings by steamers and from 1910 to 1915 Washington landings averaged over 31 million pounds annually.

The opening of Prince Rupert to American vessels and the abandonment of company-owned steamers because of high operating costs caused a sharp set-back in Washington landings. An abrupt fall occurred from 1915 to 1916 due to a strike. A gradual decline followed until 1924, as the fleet, now composed largely of independent boats, extended their operations to the more distant banks and landed in the northern ports. The portion of the fleet still fishing the nearby grounds continued to increase in size but produced a progressively smaller annual poundage up to 1931 from those depleted banks.

The rise in the Seattle landings after 1924 was brought about by increased receipts of fish caught on grounds west of Cape Spencer. By 1924, new vessels and vessels already fishing Area 3 grounds had installed diesel oil engines which reduced their running expenses and permitted many of them

to make the longer run to Seattle. The closed season, first effective in 1924, encouraged the landing of the last trip of the season in Seattle, the home port of most of the Area 3 fleet. The increasing proportion of small fish in the catches may also have played a role in this increase of landings, as the relative price for small fish was best in Seattle.

The character of the fluctuations in total landings in each port is largely determined by the extent to which the large mobile Area 3 vessels may use each port as its base of landing. Since the distribution of landings on each section of the coast is of vital concern to the industry a brief analysis of the factors that have influenced the flow of Area 3 fish to one port or another is given below. The extent of the landings from Area 2 in any port largely reflects the size of the Area 2 fleet that has been developed in each port.

In 1929, when Seattle received about 17 per cent of the Area 3 production, its total landings from all areas were about 14.2 million pounds. By 1931, even before inauguration of voluntary between-trip tie-ups, Area 3 production had increased to 35 per cent. The port total from all areas increased to 15.2 million pounds in spite of the decline in receipts from Area 2.

The collapse of prices in 1932 brought the Seattle share of the Area 3 catch to 63 per cent. A further increase to 73 per cent in 1935 and 1936 was undoubtedly in part due to the fleets voluntary program of between-trip tie-ups. Generally low price levels prevailed and continued to direct landings to Seattle, where better prices were offered. The vessels thereby could at least earn their operating costs. Under these conditions annual landings in Washington ports from Areas 2 and 3 ranged between 20 and 23 million pounds from 1932 to 1939.

From 1936 to 1948 Seattle's share of the United States Area 3 catch declined, with some fluctuations, from 73 per cent to 30 per cent. Total landings declined from 22.5 million in 1936 to 10 million in 1948. The progressive shortening of the season and improved prices after 1936 tended to divert landings to northern ports in spite of the continuation of the fleets' voluntary tie-up program. In 1937 and 1938, the Commission's regulation setting a last date of departure in addition to a closing date for Area 3 vessels, also tended to increase landings in northern ports.

In 1942, U.S. Navy convoy requirements in Area 3 and the abandonment of between-trip tie-ups due to war conditions reduced Area 3 landings in Seattle still further. A sharp recession occurred after July, 1943, when the Office of Price Administration stabilized Seattle fresh fish prices at the same level as those in Prince Rupert.

In 1944, 1945 and 1946 Seattle improved its position slightly. Disregarding the year 1947, which was abnormal on account of an owner-crew dispute that tied up the entire Seattle fleet until after the closure of Area 2, Seattle landings from Area 3 have shown a downward trend since 1946. This is attributed to relatively strong prices being offered in northern ports, and the shortening of the Area 3 season.

ALASKA

The halibut fishery in Alaska has been of increasing importance in the affairs of the territory since the early years of the industry. The development of the Alaskan fishery is in part revealed by the statistics of catch that have been credited to this section of the coast. Since the responsible administrative agency was more interested in the amount of fish taken from waters contiguous to Alaska than in the amount landed therein, fish known or supposed to have been caught in territorial waters or off the Alaska coast were usually credited to Alaska in the early statistics, regardless of the port of landing. This practice led to extensive duplication of poundage in coastwise totals compiled at that time.

The statistical reports of the Bureau of Fisheries reveal that from at least 1910 to 1923 all halibut passing through Alaska Customs ports were included in the totals. Prior to 1912 the totals are divided in the reports into two main categories, those actually sold and landed in Alaska, Table 15, column 1, and those caught by Puget Sound vessels and shipped by them from Alaska to Seattle in boxes, column 2. It is stated in the report for 1912 that the landings are for all vessels fishing Alaskan waters, including those landing

TABLE 15

ALASKA HALIBUT LANDINGS ACCORDING TO REPORTS OF THE UNITED STATES BUREAU OF FISHERIES

in Thousands of Pounds

Year	Alaska Landings	Puget Sound Fleet, Shipped Boxed to Seattle	Central Alaska	Total
1905	3741	.....	.....	3741
1906	3397	2003	.....	5400
1907	3590	2641	.....	6231
1908	4526	1528	.....	6054
1909	4184	2260	.....	6444
1910	17278	3532	51	20861
1911*	17316	2399	89	19804
1912	16757†	.....	140	16897
1913	13688†	.....	.....	13688
1914	.....	.....	.....	14808
1915	.....	.....	.....	15418
1916	.....	.....	.....	11496
1917	.....	.....	.....	13153
1918	.....	.....	.....	13870
1919	.....	.....	.....	14279
1920	.....	.....	.....	15296
1921	.....	.....	.....	17176
1922	.....	.....	.....	11075
1923	.....	.....	.....	12173
1924	.....	.....	.....	15038
1925	.....	.....	.....	10972
1926	.....	.....	.....	14390
1927	.....	.....	.....	15052
1928	.....	.....	.....	9805

*The ratio of round to dressed fish is given as 10 to 8. Figures are stated to be for round weights for some other years, and there is doubt as to whether those for Central Alaska are round or dressed.

†Stated to include both "Alaska Landings" and Puget Sound Fleet, shipped boxed to Seattle.

for convenience at Vancouver and Seattle. Though this was not stated for 1910 and 1911, the same appears to be true. In the 1915 report, the source of the Alaska statistics is stated to have been the vessel entry and clearance records of the United States Customs, and to include the fish "passing through Alaskan ports." It is apparent that until 1923 the totals included all fish purported to be Alaskan in origin, irrespective of where the fish was actually unloaded from the fishing vessel.

After 1923, the reports credit Alaska with fish "landed in Alaska," but not until 1925 is it explicitly stated that "only landings at Alaskan ports are shown for the Alaska halibut industry, and hence do not represent the entire catch from the banks off the coast of Alaska, as large quantities are landed at ports in British Columbia as well as at Seattle." Since that time, this basis has been used by the Bureau of Fisheries and its successor, the Fish and Wildlife Service, in compiling the Alaska total.

In recent years some of the Bureau of Fisheries figures had been adjusted to a "round" basis by the addition of approximately 11 per cent to the original weights. This applies particularly to the Alaska landings included in their nation-wide figures. However, this conversion was made only for certain sections of the Pacific Coast. Such partially converted totals have not been used in this anaylsis of the published Alaska landings.

Thus, it is only after 1923 that the published Alaska figures become useful in compiling a coast total. Before that time they gave merely a minimum value for the total fish **caught** but not necessarily **landed** in that area. To corroborate the above interpretation the International Fisheries Commission has secured records of the cargoes passing southbound through Ketchikan from early records of the New England Fish Company of that port, and these are shown in Table 16, below. The addition of this "in transit fish" to the total landings, as derived by the International Fisheries Commission later in this report for the years 1915 to 1921 inclusive, gives a total of 103,418,000 pounds. The Bureau of Fisheries' totals for the same period amounted to

TABLE 16

COMPARISON OF BUREAU OF FISHERIES TOTALS WITH THOSE OF THE INTERNATIONAL FISHERIES COMMISSION FOR LANDINGS IN ALASKA AND FISH IN TRANSIT THROUGH KETCHIKAN, 1915-1921

in Thousands of Pounds

Year	International Fisheries Commission			Bureau of Fisheries
	Southbound Fish Ketchikan	Alaska Landings	Total	
1915	8502	8387	16889	15418
1916	8667	6928	15595	11496
1917	4542	9977	14519	13153
1918	2653	9796	12449	13870
1919	2457	8591	11048	14279
1920	5257	10802	16059	15296
1921	6392	10467	16859	17176
1915-1921 Totals	38470	64948	103418	100688

100,688,000 pounds. A group of years was used for this comparison to minimize the effect of carry-over from one year to the next of some frozen stocks which is present in the Commission's totals and not in the other. This relatively close correspondence indicates that the compilation of the Bureau of Fisheries' totals was done in the manner described and also that the data of the Commission, respecting the fish in transit and that actually landed, is reasonably complete and reliable.

The *Pacific Fisherman* annual reviews have included in their totals for the coast the fish shipped boxed from Alaska and, in addition, the fish frozen in Alaska. They state that there is a duplication in these due to the inclusion of fish frozen with that boxed. For the years 1923, 1924 and 1925, they made an arbitrary deduction for this. After 1925, this journal used the Alaska figures of the Bureau of Fisheries for a few years and those of the International Fisheries Commission subsequently. Unlike for other sections of the coast, *Pacific Fisherman* figures provide little aid in deriving Alaska figures for earlier years.

The absence of detailed boat landings for all dealers purchasing halibut in Alaska prior to 1925, such as were available in early years for Seattle, Vancouver and Prince Rupert prevented the Commission from using such sources. The only early individual boat landings available were those for Ketchikan, which were secured from the New England Fish Company.

Since most of the fish landed in Alaska by fishing vessels was shipped out, there being very little domestic consumption, the export records from Alaska or the imports therefrom into British Columbia and Washington ports could be used. Since there is no complete record of exports, we must concern ourselves with that of imports.

1. WASHINGTON IMPORTS FROM ALASKA

Seattle has been the chief port of entry for fish from Alaska. Records of imports of fish were compiled by the U.S. Customs Service, but not in the manner necessary for our purposes until recent years. The Seattle Port

TABLE 17

HALIBUT IMPORTS INTO SEATTLE FROM ALASKA FOR 1911 TO 1928 AS COMPILED BY THE PACIFIC FISHERMAN AND THE SEATTLE PORT WARDEN

in Thousands of Pounds

Year	*Pacific Fisherman*	Seattle Port Warden	Year	*Pacific Fisherman*	Seattle Port Warden
1911	5502	.....	1920	7054	7106
1912	6806	.....	1921	5237	5292
1913	8745	.....	1922	4585	4584
1914	6305	7396	1923	7949	8200
1915	5227	14926	1924	10011	10006
1916	4107	5818	1925	6686	6978
1917	7009	6936	1926	6964	7346
1918	6623	6304	1927	7911	8158
1919	5494	6090	1928	4572	5068

Warden, however, using the original United States Customs records, has made monthly and annual reports upon the waterborne commerce of Seattle, including halibut as a separate item since 1914. Imports from Alaska are separated from their "Pacific Ocean" landings, which are those actually landed by fishing vessels in Seattle, as previously noted in the discussion of Washington State landings.

The 1915 import figures of the Port Warden Table 17, page 41, show an excess of about 7 million pounds over the *Pacific Fisherman's* reports of fish received boxed from Alaska. However, the Port Warden's figures for fish from the "Pacific Ocean" are about 7 million pounds less than the total known to have been landed at Seattle, which would indicate that it was merely an error of tabulation.

Thus, there is available from the *Pacific Fisherman*, or from the Port Warden's Report, a record of landings of boxed fish from Alaska as far back as 1911. In later years the figures of the *Pacific Fisherman* tend to be slightly less than those of the Port Warden. Though there is some evidence that the somewhat higher values of the Port Warden may better express the magnitude of the landings in some years, *Pacific Fisherman* totals are more consistent over the whole period and are used in this report.

2. BRITISH COLUMBIA IMPORTS FROM ALASKA

Shipments to Vancouver, B.C., from Alaska are available from 1915 on and as far as can be ascertained were made by one company only, at least during the early years. Canada Customs' records of imports into Vancouver are not available in the desired form and for the early years the original cargo vessels' manifests of the common carriers have been destroyed. Since company records of such shipments to Vancouver are about 88 per cent of their actual purchases in Ketchikan, a more desirable total of Vancouver imports would be the purchases of that company in Alaska, which, fortunately, were available.

Custom house records of individual shipments into Prince Rupert from Alaska by transporting vessels are available with the name of the shipper. To arrive at the total British Columbia imports from Alaska, all Prince Rupert shipments, less those of the aforementioned Ketchikan company, must be added to the above calculated Vancouver total. It is not believed that any Alaskan firms, except the one previously mentioned, have shipped fish via Canadian ports other than through Prince Rupert. The error, if any, would not be large as no great amount of fish could be involved.

In Table 18, page 43, the Seattle and British Columbia receipts of Alaskan landings are shown separately and combined. Insofar as some of the fish exported in any one year includes varying amounts of fish held over from the previous year, the totals so compiled may not represent the actual poundage purchased in any one year. However, comparison of these "synthesized" totals with the total Alaska landings of the Bureau of Fisheries for 1923 to 1928, Table 15, page 39, and with the landings in Ketchikan alone, Table 18, confirm the relative changes in the magnitude of the landings from year to

year and indicate that the effect of the delayed shipping of frozen fish did not distort the trend.

The reliable nature of the basic data and manner in which they have been combined makes these synthesized totals a suitable gauge of the annual landings on this section of the coast from 1911 to 1926.

Totals of actual landings in Alaska, compiled by the Commission from dealers' records, are available and used from 1927 on.

For the years preceding 1911 a separate total for Alaska is unobtainable inasmuch as the United States Bureau of Fisheries and the *Pacific Fisherman* both included the Alaskan fish trans-shipped through Seattle with the Puget Sound totals, Table 1, page 10. As the firm which shipped via Vancouver commenced operations in Ketchikan late in 1909, their purchases must be added to the Puget Sound-Alaska total of the Bureau of Fisheries and *Pacific Fisherman* for 1910.

Despite possible duplication by the United States Bureau of Fisheries in the compilation of Alaska landings for the years 1905 to 1910, the size of the landings agrees with the known magnitude of the fleet in those years. From 1905 to 1909, the major part of the catch was taken by small sailing sloops of Seattle, which fished during the winter in the inside waters of Alaska. The large dory-fishing steamers also made occasional trips to these sheltered waters at that time of year, but did not usually land their catches in Alaska. After 1909, the decline in abundance and the decrease in average size of fish

TABLE 18

IMPORTS OF HALIBUT INTO SEATTLE AND BRITISH COLUMBIA PORTS AND LANDINGS IN KETCHIKAN BY UNITED STATES AND CANADIAN VESSELS, 1911-1928

in Thousands of Pounds

Year	Imports of Alaska Halibut			Ketchikan Landings	
	Through Seattle	Through British Columbia	Total	U.S.*	Canadian
1910	.....	.....	.....	1956	.....
1911	5502	2676	8178	2676	.....
1912	6806	3563	10369	3563	.....
1913	8745	4539	13284	4539	.....
1914	6305	2964	9269	3106	.....
1915	5227	3161	8388	3632	.....
1916	4107	2821	6928	3326	.....
1917	7009	2968	9977	3528	.....
1918	6623	3174	9797	4819	.....
1919	5494	3097	8591	4219	334
1920	7054	3748	10802	6197	.....
1921	5237	5230	10467	6624	.....
1922	4585	671	5256	2243	10
1923	7949	4111	12060	7597	9
1924	10011	5088	15099	7321	10
1925	6687	3911	10598	4297	.....
1926	6964	7113	14077	8808	.....
1927	7911	7536	15447	8393	.....
1928	4572	4579	9151	5037	.....

*The records of the United States landings in Ketchikan for the years 1910 through 1914 are incomplete.

on the banks south of Dixon Entrance caused these steamers to increase gradually the number of trips to waters off Southeastern Alaska, both inside and outside the sheltered channels. As a result, an intensive fishery by large steamers off Cape Omaney, Coronation Island, and Forrester Island developed. This accounted for the increased poundage shown by the Bureau of Fisheries as being produced in Alaskan waters, but not necessarily landed in Alaskan ports, in 1910. Their report for that year calls attention to this increase and assigns it in part to the opening of the New England Fish Company's cold storage plant and in part to the extension of the activities of the fleet.

The factors which have affected the magnitude of the landings from year to year in Alaska are complex and no effort will be made to evaluate them in detail. The growth in actual landings to 1913 was undoubtedly largely the result of the previous opening of the cold storage at Ketchikan, which brought both company-owned and independently-owned vessels to the area. The fall in 1914 was caused by the shift of the fleet to grounds west of Cape Spencer. The larger fares secured on these virgin grounds justified the longer run to Seattle and caused that port to show a gain which more than compensated for Alaska's loss. The low ebb reached in 1916 was occasioned by a strike of the halibut fishermen and the diversion of some fares to Prince Rupert.

Until 1929 the trend of landings in Alaska was upward, with the exception of the year 1922, when there was a marked reduction in activity of the fleet in general because of economic conditions and a price dispute. Despite temporary fluctuations, there was a steady rise in landings due in part to the increased distance of the fishing grounds from Seattle and Prince Rupert, the growing fleet of locally-owned boats and the rising importance of frozen fish. The longer trips of later years demanded that fish be sold as soon as possible to minimize loss from spoilage. This contributed to the development of the northern ports of sale.

The magnitude of the Alaska landings after 1929 depended largely upon the extent to which the U.S. Area 3 fleet, consisting mostly of Seattle vessels, landed their fares in Alaska. The trend of such landings in Alaska during all but the last few years of this period was determined by the landings of these Area 3 vessels at Ketchikan.

The proportion of the United States Area 3 production landed in Ketchikan increased from 13 per cent in 1929 to 19 per cent in 1931, due to the activity of a United States fishermen's cooperative, which drew fish from Prince Rupert. In 1932 the proportion dropped to 5 per cent as the low-priced fish of that year could not "carry" the common carrier transportation costs to railhead. There was little buyer interest and after April one dealer bought most of the fish that year.

From 1932 to 1941, inclusive, Ketchikan received only between 3 and 7.5 per cent annually of the U.S. Area 3 production. Prince Rupert, during the corresponding period, more than doubled its share, from 17 per cent in 1935

to 36 per cent in 1940, even though the fleets' voluntary control program was at its maximum of activity.

Wartime regulations provided the impetus for increased landings in Ketchikan. In 1942 and 1943, U.S. Navy convoy requirements were conducive to attracting landings as the convoys were made up at that point. Favorable Office of Price Administration's price differentials, an increased number of buyers and other advantageous marketing conditions increased receipts to 25 per cent of the total of U.S. Area 3 fish in 1944, 1945 and 1946.

Since 1946, a steady decline in Ketchikan landings has occurred, due in large part to the diversion of Area 3 catches to ports in Central Alaska. The latter area has been receiving numerous fares of boats endeavoring to land an extra trip after the advance announcement of the closure date for the area. Some of this "doubling up" formerly went to ports in Southeastern Alaska.

APPENDIX

Reports by The International Fisheries Commission

1. Report of the International Fisheries Commission appointed under the Northern Pacific Halibut Treaty, by John Pease Babcock, Chairman, and William A. Found, Miller Freeman and Henry O'Malley, Commissioners. Dominion of Canada, Ottawa, 1928.

   Ibid. Report of British Columbia Commissioner of Fisheries for 1928, pp. 58-76. Victoria, 1929.

   Same. Report of United States Commissioner of Fisheries for 1930, Appendix 1. U.S. Bureau of Fisheries Document No. 1073, Washington, 1930.

2. Life History of the Pacific Halibut (1) Marking Experiments by William F. Thompson and William C. Herrington. Victoria, B.C., 1930.

3. Determination of the Chlorinity of Ocean Waters, by Thomas G. Thompson and Richard Van Cleve. Vancouver, B.C., 1930.

4. Hydrographic Sections and Calculated Currents in the Gulf of Alaska, 1927 and 1928, by George F. McEwen, Thomas G. Thompson and Richard Van Cleve. Vancouver, B.C., 1930.

5. The History of the Pacific Halibut Fishery, by William F. Thompson and Norman L. Freeman. Vancouver, B.C., 1930.

6. Biological Statistics of the Pacific Halibut Fishery (1) Changes in Yield of a Standardized Unit of Gear, by William F. Thompson, Henry A. Dunlop and F. Heward Bell. Vancouver, B.C., 1931.

7. Investigations of the International Fisheries Commission to December. 1930, and their Bearing on Regulation of the Pacific Halibut Fishery, by John Pease Babcock, Chairman, William A. Found, Miller Freeman, and Henry O'Malley, Commisioners. Seattle, Washington, 1930.

8. Biological Statistics of the Pacific Halibut Fishery (2) Effect of Changes in Intensity upon Total Yield and Yield per Unit of Gear, by William F. Thompson and F. Heward Bell. Seattle, Washington, 1934.

9. Life History of the Pacific Halibut (2) Distribution and Early Life History, by William F. Thompson and Richard Van Cleve. Seattle, Washington, 1936.

10. Hydrographic Sections and Calculated Currents in the Gulf of Alaska, 1929, by Thomas G. Thompson, George F. McEwen, and Richard Van Cleve. Seattle, Washington, 1936.

11. Variations in the Meristic Characters of Flounders from the Northeastern Pacific, by Lawrence D. Townsend. Seattle, Washington, 1936.

12. Theory of the Effect of Fishing on the Stock of Halibut, by William F. Thompson. Seattle, Washington, 1937.

13. Regulation and Investigation of the Pacific Halibut Fishery in 1947, by Edward W. Allen, Milton C. James, George W. Nickerson and A. J. Whitmore, Commissioners. Seattle, Washington, 1948.

14. Regulation and Investigation of the Pacific Halibut Fishery in 1948, by Edward W. Allen, Stewart Bates, Milton C. James and George W. Nickerson, Commissioners. Seattle, Washington, 1949.

15. Regulation and Investigation of the Pacific Halibut Fishery in 1949, by Edward W. Allen, Stewart Bates, Milton C. James, George W. Nickerson and George R. Clark, Commissioners. Seattle, Washington, 1950.

16. Regulation and Investigation of the Pacific Halibut Fishery in 1950, by Edward W. Allen, George R. Clark, Milton C. James and George W. Nickerson, Commissioners. Seattle, Washington, 1952.

17. Pacific Coast Halibut Landings 1888 to 1950 and Catch according to Area of Origin, by F. Heward Bell, Henry A. Dunlop and Norman L. Freeman. Seattle, Washington, 1952.