GUIDE TO LITERATURE ON SYSTEMATIC BIOLOGY OF PACIFIC SALMON

SPECIAL SCIENTIFIC REPORT–FISHERIES No. 209

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Department of the Interior, Fred A. Seaton, Secretary
U. S. Fish and Wildlife Service

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by

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Natural History Museum
Stanford University

Special Scientific Report--Fisheries No. 209

Washington, D.C.

April 1957

EXPLANATORY NOTE

The series embodies results of investigations, usually of restricted scope, intended to aid or direct management or utilization practices and as guides for administrative or legislative action. It is issued in limited quantities for official use of Federal, State or cooperating agencies and in processed form for economy and to avoid delay in publication.

This report prepared under the auspices of the

Pacific Salmon Investigations
U. S. Fish and Wildlife Service
Terminal Report
Contract 14-19-008-2413

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There is no easier method to destroy a sense of perfection or to bring on criticism than to publish a bibliography.

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INTRODUCTION

The importance and significance of salmon (Oncorhynchus spp.) in the economy of nations bordering the North Pacific Ocean is too well known to require any lengthy justification for our need to study the biology of these fishes. This widespread interest in the salmon by both the lay and scientific public has resulted in the publication of a vast literature on these species. The extent of the data available has become such that it is virtually impossible for one person to become familiar with all of it. To aid those investigators studying the systematic biology of the Pacific salmon, the following subject index and annotated bibliography was prepared.

Scope of the Bibliography

This report is intended to serve as a guide to those papers (within the range of the literature examined by us) treating the systematic biology of the Pacific salmon (Oncorhynchus spp.). The word systematics is used in its modern or broad sense and not merely in the pure taxonomic or nomenclatorial sense. As defined by G.S. Myers (Systematic Zoology, 1952, volume 1, p. 106), "Systematic biology (= 'systematics') is the study of the nature and origin of the natural populations of living organisms, both present and past."

The following list of topics included within this bibliography will indicate our intent of the term "nature" in the above definition.

Nomenclature

The annotated bibliography will indicate whether a scientific name has been employed and which of the several common names is used in a particular reference.

Range and Distribution

The references indicate whether distributional data are included in the paper. As a rule, taxonomic papers listing the species from a region where it is already known have not been included in this bibliography.

Description - Counts and Measurements

Material in this category (particularly the counts and measurements) is that which is ordinarily considered of taxonomic importance.

Figures and Illustrations

Papers containing drawings and/or photographs of sufficient detail so as to be useful in systematic analysis are so indicated.

Life Colors

As natural populations of fishes may have distinctive color patterns, an attempt was made to isolate data on life colors so as to aid in racial analysis.

Relationships

References containing data on relationships whether in the form of comparisons, keys or phylogenetic discussions are included.

Racial Analysis

All available information on the progress or methods of analysis of races and populations in Pacific salmon was included.

Anatomy and Physiology

Included within this category are references concerning the anatomy, histology, osteology (including sub-fossil finds) and the physiology of salmon.

Biochemistry

Materials on the natural biochemical characteristics of salmon were abstracted. Data on the canned product was not considered.

Flesh Color

Comparisons of flesh color in the various salmon species were indexed for their possible aid in racial analysis.

Behavioral Studies

Within the literature abstracted by us the minimal available data on the ethology of salmon was included.

Sex Ratios

In using the papers containing data on sex ratios, the original method of data collection should be considered for possible differences between the statistics and the natural population.

Hybridization

Time of Spawning Migration
As defined in the subject index, two categories are included under this heading: Time of Return from Ocean to Stream Mouth
Time of Upstream Migration

Size at Time of Return
These references include data expressed either as length or weight or both.

Age at Time of Return

Type of Spawning Stream
Some additional data of this nature may possibly be included in the sections treating the nature of spawning sites and the section on distance traveled upstream.

Distance Traveled Upstream

Nature of Spawning Site

Spawning Period
This category includes both statements regarding the dates on which spawning activity was observed or was about to occur, and those statements of the duration of the spawning period.

Sexual Dimorphism
The majority of references in this category contain only brief remarks on sexual dimorphism. Papers containing data only on weight or length differences between the sexes are not included in this section.

Spawning Behavior

Post-spawning Behavior
Papers containing data on the activity of salmon after spawning, even if the statements only indicated that the fish were observed dying, are included in this category.

Date Eggs Hatch
Included in this category are records of both the date of egg hatching and those noting the date salmon fry emerge from the gravel and are first visible on the stream bottom. Hatchery observations are not included.

Behavior of Fry and Fingerlings

Time Young Spend in Freshwater
Information on this topic includes data both from scale readings of young or adults, and from direct observation.

Date of Seaward Migration

Size at Time of Seaward Migration

Movements in the Ocean

This category contains references having any mention of salmon movements in the ocean, whether near the shore or on the high seas.

Marking or Tagging and Recapture Data

This section should provide material to aid in racial analysis, determination of migration rates and distances and for the study of homing behavior.

Homing Instinct

Growth Rates

This section includes both ocean and stream growth data. Hatchery records are not included.

Food and Feeding Habits

Parasites and Diseases

Although the material is extremely limited, on the basis of present data there is the strong possibility that the hosts (salmon) have partially different parasitic spectra. A more complete knowledge of parasites and diseases infecting salmon should offer considerable information on other life history factors of the host, as migratory paths, distributional patterns, major food, etc.

Introductions and Acclimatization

References containing records of the introduction and/or acclimatization of salmon into exotic waters are included so as to aid in the analysis and comparison of waters in which salmon may naturally occur.

Egg Counts

Relative Abundance

Examination of the annotated bibliography will indicate whether the references in this category contain data on catch records, or as counts of migrant adults.

As the above list shows, not included in this bibliography are data on hatchery propagation methods, hatchery foods, studies of salmon in relation to obstructions as dams, or to pollution, predation studies, or data on escapement.

The report consists of three main parts, a general subject index, an index to topics by species, and an annotated bibliography.

Literature Examined

The following publications were searched for materials on the Pacific salmon. Except where noted otherwise, these publications were examined from their onset to the end of 1955. Where the name of a journal or serial has been changed, only the most recent title is listed and it is to be understood that the former title(s) has been examined.

American Fisheries Society, Transactions
vol. 24 - to date examined

Alaska Fisheries Board, Annual Report
no. 1 - 5 examined

Alaska Fish Commission, Special Report
1923

Bingham Oceanographic Collection, Bulletin

Bingham Oceanographic Collection, Occasional Papers

Biological Reviews
vol. 1 - 23, 29 examined

British Columbia, Report of the Fisheries Commissioner
1902-1955, except for 1910 and 1915

California Academy of Sciences, Bulletin

California Academy of Sciences, Proceedings
first series: vol. 3-6
second series: vol. 1-6
third series: vol. 1-4
fourth series: to date

California, Report of the Commissioner of Fisheries

California Fish and Game

California Fish Bulletin

Canada, Biological Board of Canada, Bulletin
no. 1 - 103

Canada, Biological Board of Canada, Reports, Annual
1931, 1935 - 1954

Canada, Department of Marine and Fisheries, Fisheries Branch
no. 1 - 24, except 5 and 23

Canada, Department of Marine and Fisheries, Fisheries Branch, Annual Report
1926-1929

Canada, Fisheries Research Board, Journal

Canada, Fisheries Research Board, Atlantic Biological Stations, General Circular
no. 19-25

Canada, Fisheries Research Board, Pacific Coast Stations, Progress Report

Canada, Fisheries Research Board, Studies from the Stations
1951, 1952, 1954

Canada, Royal Society, Transactions
series three: 20, 29, 34, 35, 42, and 47

Canadian Field Naturalist
vol. 1-67 except for 35-37, 43-49, 60-61, and 64-65

Canadian Fish Culturist
16-17

Copeia

Ecological Monograph
to date except for 17

Ecology
vol. 17-30

FAO, Fisheries Studies

Formosa, Taihoku, Taiwan Fisheries Institute, Fish Culture Report
no. 1 and 2

Formosa, Taipei, Quarterly Journal of the Taiwan Museum

International Fisheries Commission, Reports
1-12

International North Pacific Fisheries Commission, Bulletin

International Pacific Salmon Fisheries Commission, Annual Report
1937-1942, 1945

International Pacific Salmon Fisheries Commission, Bulletin

Japan, Central Fisheries Station, Contributions

Japan, Fisheries Abstracts, 1950

Japan, Hokkaido Regional Fisheries Research Laboratory, Bulletin

Japan, Hokkaido Fish Hatchery, Scientific Reports
nos. 6-8, 10

Japan, Hokkaido University, Bulletin of the Faculty of Fisheries
vol. 4 to date

Japan, Hokkaido University, Journal of the Faculty of Fisheries
to 1948

Japan, Hokkaido University, Memoirs of the Faculty of Fisheries
vol. 2 to date

Japan, Hyogo University, Memoirs
vol. 1

Japan, Fisheries Society, Journal
no. 117-121, 216

Japan, Naikai Regional Fisheries Research Laboratory, Bulletin

Japan, Naikai Regional Fisheries Research Laboratory, Research Report
to 1950

Japan, Naikai Regional Fisheries Research Laboratory, Supplementary Report
to 1953

Japan, Seikai Regional Fisheries Research Laboratory, Report
2-3

Japan, Sapporo Natural History Society, Transactions
vol. 6-19

Japan, Shimonoseki, College of Fisheries, Contributions
to 1951

Japan, Shimonoseki, College of Fisheries, Journal

Japan, Tohoku Regional Fisheries Laboratory, Bulletin

Japan, Tokai Regional Fisheries Laboratory, Special Bulletin
1-4

Japan, Tokai Regional Fisheries Research Laboratory, Bulletin

Japan, Tokyo, Freshwater Fisheries Research Laboratory, Bulletin

Japan, Tokyo, Imperial Fisheries Experimental Station, Contributions
1-177

Japan, Tokyo, Imperial Fisheries Experimental Station, Journal
1-77-10

Japan, Tokyo, Imperial Fisheries Institute, Journal
vol. 20 todate

Japan, University of Mie, Faculty of Fisheries, Journal,
to 1953

Japan, University of Mie, Faculty of Fisheries, Report
to 1954

Japanese Journal of Ichthyology

Journal of Morphology
vol. 1-10, 57

Journal of Parasitology
vol. 1-41, except vol. 33, 34

Journal of Wildlife Management
to vol. 12

New Zealand, Marine Department, Fisheries Bulletin
all except no. 8

New Zealand, Marine Department, Report on Fisheries
1928-41, 1945, 1947-1950

North American Wildlife Conference, Transactions

Ontario Fisheries Research Laboratory, Biological Series
1-60

Oregon Fish Commission, Biennial Report
1931, 1933, 1941, 1943, 1949

Oregon Fish Commission, Contributions
1-21

Oregon, State Game Commission, Bulletin
vol. 1-8

Oregon, State, Fish and Game Protector, Annual Report
3-4

Pacific Fisherman

Pacific Fisherman Yearbook

Pacific Fisheries Society, Transactions

Pacific Science Congress, Proceedings
1921, 1923, 1928-29, 1933, 1940, 1946

Pacific Marine Fisheries Commission, Annual Report

Pacific Marine Fisheries Commission, Bulletin
no. 1-2

Parasitology
vol. 1-45

Philadelphia Academy of Natural Sciences, Journal
1-8

Philadelphia Academy of Natural Sciences, Monograph
2, 4-7

Philadelphia Academy of Natural Sciences, Proceedings
all except vol. 9, 14, 18, 41-52, 65, 79

Progressive Fish Culturist

Puget Sound Biological Station, Publications

Quarterly Review of Biology
vol. 6-14

Salmon and Trout Magazine

Sears Foundation, Journal of Marine Research

Stanford Ichthyological Bulletin

United Nations, Food and Agriculture Organization, Fisheries Bulletin

United States Fish and Wildlife Service, Bulletin

United States Fish and Wildlife Service, Conservation Bulletin
no. 1, 7-8, 10-21, 23-25, 27-38

United States Fish and Wildlife Service, Fisheries Service Bulletin
no. 110-307

United States Fish and Wildlife Service, Fishery Circular
no. to 28

United States Fish and Wildlife Service, Fishery Leaflet
to no. 412

United States Fish and Wildlife Service, Investigational Reports
to no. 44

United States Fish and Wildlife Service, Report of the Commissioner

United States Fish and Wildlife Service, Research Reports

United States Fish and Wildlife Service, Special Scientific Report

United States Fish and Wildlife Service, Special Scientific Report, Fisheries

United States National Museum, Bulletin

United States National Museum, Proceedings

Washington, Department of Fisheries, Bulletin
35-45

Washington, Department of Fisheries, Fisheries Research Papers
1953, 1955

Washington, Department of Fisheries, Research Bulletin
to 1954

Washington, State, Department of Fisheries, Biological Circular

Washington, State, Department of Fisheries, Report
9-11

Washington, State, Department of Fisheries, Special Report
1953

Washington, University Publications in Fisheries
vol. 1-2

Washington, Biological Society, Proceedings

Washington, Helminthological Society, Proceedings
vol. 7-22

In addition to the foregoing serials and journals, many hundreds of individual articles were examined. These are indexed and contained in the annotated bibliography, but it would serve no useful purpose to list the journals as the entire sets were not searched.

ACKNOWLEDGEMENTS

The preparation of this subject index and annotated bibliography was supported by a contract between the Pacific Salmon Investigations, U.S. Fish and Wildlife Service and Stanford University (Contract 14-19-008-2413). We wish to thank Clinton E. Atkinson, Chief of the Pacific Salmon Investigations and his aid in this field, Paul T. Macy, for their full cooperation, as well as Miss Margaret H. Storey who made the full facilities of the Natural History Museum library available for our use. This report would not have been possible within the time available, without the help of our group of bibliographic aides and typists. Our thanks go to H. H. DeWitt, A. K. Doheny, L. Lanz, H. E. Munsterman, J.C. Oben, M. E. Sands and B. Westinghouse, but particularly to Mrs. Lucille Mlodnosky, Miss Patricia Dolan and Miss Isabella Halsted who bore the brunt of this labor. Last but not least, Miss Florence Yao of the Inter-library Loan Department of Stanford University, helped track down many obscure references and journals.

LIMITATIONS OF CROSS-INDEX

The nature of the coding on the punch cards employed makes the subject index inclusive, but the species index may contain some extra entries (less than 2% of the total). It is to be emphasized that these latter entries are extra and that within the scope of the literature examined by us, no references are omitted.

SUBJECT INDEX

NOMENCLATURE

Under each species are listed the scientific name and most frequently employed common names. The annotated bibliography will indicate whether a scientific name has been employed and which of the several common names is used in a particular reference.

RANGE AND DISTRIBUTION

Under each species the natural occurrence is defined. Examination of the annotated bibliography will indicate whether a specific reference contains distributional data.

DESCRIPTION - COUNTS AND MEASUREMENTS

Data on descriptive matter and/or counts and measurements are presented under each species entry.

FIGURES AND ILLUSTRATIONS

Drawings and/or illustrations are listed under each species entry.

LIFE COLORS

Data on life colors or color pattern are presented under each species.

RELATIONSHIPS

The following references contain data on the interrelationships of salmon. Distinctions employed in keys are included in this category.

Babcock, 1931a
Berg, 1948
Boulenger, 1895
Bryant & Evermann, 1919
Burner, 1951
Chamberlain, 1907
Clemens, 1935b, 1946b
Clothier, 1950
Eigenmann, 1895
Evermann, 1897
Foerster, 1947b
Foerster & Pritchard, 1935
Gill, 1862
Girard, 1857
Hagerman, 1951
Hallock, 1952
Hoar, 1951a
Jordan & Evermann, 1896
Jordan & Gilbert, 1882
Kobayasi, 1951, 1953, 1955
Locke, 1929
Murphy & Shapovalov, 1951
Nomura, 1953
Rich, 1921b
Ricker, 1938b
Schultz, 1934
Shapovalov, 1947
Smith, 1895a, 1898b

Snyder, 1931
Taft, 1937b
Tchernavin, 1938
Walford, 1931

RACIAL ANALYSIS

Comments or data on races or populations are included under the specific accounts.

ANATOMY AND PHYSIOLOGY

Included within this category are references concerning the anatomy, histology, osteology (including sub-fossil finds) and physiology of the salmon.

Anon., 1955a
Bailey, 1937
Black, 1953
Black, 1951a, 1951b
Brett, 1952b
Brett & MacKinnon, 1952, 1954
Chapman, 1938
Cobb, 1921
Coker, 1922
Davidson & Shostrom, 1936
Foerster, 1929d
Greene, 1905, 1911a, 1911b, 1912, 1913, 1914, 1915a, 1915b, 1919, 1921a, 1921b
Greene & Greene, 1915
Hoar, 1951c, 1953
Hoar & Bell, 1950
Holmes, 1928
Honma & Murakawa, 1955
Igarshi & Zama, 1953
Jordan, 1904a
Katz, 1950, 1951
Katz & Southward, 1950
Kendall, 1922
Kobayashi, 1955
Kobayashi & Yuki, 1954a, 1954b
Kubo, 1954, 1955
Lowman, 1953
Lowman & Jensen, 1955
Nishida, 1953a, 1953b, 1954, 1955
Nomura, 1953
Okada, 1954
Palmer, et al., 1954
Pentegov, et al., 1928
Potter & Hoar, 1954
Powers, 1939
Reagan, 1917
Saito, 1940
Smith, 1916
Sumner, 1906
Tchernavin, 1938
Tuge, 1937
Weisel, 1947
Yamamoto, 1955

BIOCHEMISTRY

The following papers contain data on the biochemistry of salmon. It should be noted that a much greater literature exists in journals not abstracted by us.

Atwater, 1892
Bailey, 1952
Beveridge, 1947
Brocklesby, 1933, 1940
Brocklesby & Denstedt, 1933
Dyer, 1952
Fallera, 1926
Jampolsky & Hoar, 1954
Jarvis, et al., 1926
Ney, et al., 1950
Pugsley, 1942
Pottinger & Baldwin, 1940
Riddell, 1936b

FLESH COLOR

Remarks and/or comparisons of flesh color of salmon are contained in the following references:

Cobb, 1919
Evermann & Goldsborough, 1907b
Marsh & Cobb, 1907, 1908
Prince, 1916b
Rounsefell & Kelez, 1940

BEHAVIOR: LEAPING HABITS

Studies on the ethology of salmon are still in their infancy. However, it seems that the following remarks on leaping constitute our entire knowledge (within the journals abstracted) on this phase of salmon behavior.

Bean, 1894
Chamberlain, 1907
Foskett, 1952b
MacKinnon & Brett, 1953
McGregor, 1922a
Pritchard & Neave, 1942
Ward, 1909, 1910

SEX RATIOS

The following references contain data on the sex ratios of salmon. In using this material, the limitations of the original method of data collection should be borne in mind. Of the literature examined by us, only two papers contained notice of hermaphroditism in salmon (Crawford, 1927: Rutter, 1904b).

Chamberlain, 1907
Gibson, 1930, 1931
Gilbert, 1914a, 1914b, 1915, 1916, 1920, 1922, 1923, 1924a, 1924c, 1925
Henry, 1954
Marr, 1944
Robertson, 1948
Rich, 1922
Snyder, 1931
Stone, 1928a, 1928b, 1929a, 1930b, 1931a

HYBRIDIZATION

The following references contain information on inter-specific hybridization in salmon. Terao, 1935, records a cross between the cod and the salmon!

Bonham & Seymour, 1949
Clemens, 1953
Collins, 1892
Duff, 1932a
Foerster, 1930a, 1935
Gaylord & Marsh, 1914
Gibson, 1929
Oshima, 1934
Raveret-Wattel & Barrett, 188?
Smith, 1915

TIME OF SPAWNING MIGRATION

Under this heading are grouped two categories of data, the time a particular species returns from the ocean to the river mouth, and the time the species migrates upstream.

If a paper contains a statement that would restrict the time of return of the mature fish to their appearance offshore in the vicinity of the stream mouths, the reference is included in the first category. Should data be recorded on the time a mature fish are observed migrating upstream at any point in its course, the paper is cited in the second category. To facilitate compilation and comparison of data, the references are arranged geographically.

Time of return from ocean to stream mouth

Alaska

Atkinson, 1955
Chamberlain, 1907
Cobb & Kutchin, 1907
Davidson & Hutchinson, 1942
Davidson & Vaughan, 1941
Davidson, et al., 1943
Gilbert, 1895, 1924
Hanavan & Skud, 1954
Hutchinson, 1944
Thompson, 1931

British Columbia

Anon., 1903b
Babcock, 1916, 1918, 1931a
Bolton, 1930
Davidson, et al., 1943
Ekbaum, 1936
Fraser, 1917a
McHugh, 1915
Neave, 1949
Pritchard, 1932, 1936, 1941, 1944
Pritchard & DeLacy, 1944
Rounsefell & Kelez, 1940
Royal, 1951
Williamson, 1929
Williamson & Clemens, 1932

Washington

Anon., 1903b
Alexander, 1905
Jordan & Starks, 1896
Rich & Holmes, 1928
Stone, 1878

Oregon

Henry, 1953
Rivers, 1947

California

Anon., 1903b
Briggs, 1953
Clark, 1939
Dunn, 1880
Fry & Hughes, 1954
Green, 1887
Redding, et al., 1933
Scofield, 1920
Snyder, 1922
Stone, 1874

New Zealand

Hefford, 1929

Japan

Sano, 1955
Tokahisa & Takeshi, 1934
U.S. Foreign Economic Administration, 1945

Siberia

Berg, 1948
Dymond, 1940
International North Pacific Fisheries Commission, 1955
Kuznetzov, 1929
Novisoff, 1912
Popov, 1933

Alaska

Anon., 1914c, 1938c, 1942b
Bean, 1887b, 1891
Bower, 1920a, 1920b, 1922, 1923, 1925a, 1925b, 1926, 1927, 1929a, 1929b, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1938a, 1938b, 1940, 1941
Bower & Aller, 1915, 1917a, 1917b, 1919
Bower & Fassett, 1914
Bowers, 1899
Bowser, 1909
Brett & McConnell, 1950
Chamberlain, 1907
Chamberlain & Bower, 1913
Chapman, 1941
Cobb, 1910, 1917
Coker, 1922
Evermann, 1905
Davidson, 1940a, 1940b
Davidson & Christey, 1940
Davidson & Vaughan, 1939a, 1941
Davidson, et al., 1943 Dymond, 1940
Edson, et al., 1955
Evermann et al., 1907b
Higgins, 1940
Hume, 1893
Hutchinson, 1944
Kirkness, et al., 1952, 1953
Leach, 1926, 1927, 1932
Marsh & Cobb, 1908, 1910
McDonald, 1894a
Moser, 1899, 1902

Alaska (cont.)

Parker & Kirkness, 1951
Rathbun, 1894
Rich & Ball, 1929b
Skud, 1955
Smith, 1917
Townsend, 1899
Vaughan, 1947
Ward, 1920a, 1920b
Wynne-Edwards, 1947a

British Columbia

Anon., 1904b
Aro, 1952
Babcock, 1903, 1906, 1907, 1910, 1914, 1916, 1918, 1921, 1922, 1923, 1929, 1930, 1931b
Barnaby, 1944
Brett & Pritchard, 1946a
British Columbia, 1941
Carl & Clemens, 1948
Clemens, 1946b
Clemens, et al., 1938
Craigie, 1926
Davidson, et al., 1943
Dombroski, 1952
Foerster, 1929a, 1935, 1955
Foerster & Pritchard, 1935
Foerster & Ricker, 1953
Foskett, 1947a
Fraser, 1917a
Gibson, 1923
Gilbert, 1922, 1923, 1924a
Godfrey, et al., 1954
Hunter, 1948, 1949a
Killick, 1955
Milne, 1950b, 1955
Milne, 1917
Neave, 1943, 1953
Pritchard, 1931a, 1937a, 1940b 1943c, 1945b
Pritchard & Cameron, 1940
Pritchard & DeLacy, 1944
Rathbun, 1900
Ricker, 1947
Ricker & Robertson, 1935
Royal, 1951

British Columbia (cont.)

Thompson, 1941, 1942
Williamson, 1927

Washington

Anon, 1915, 1931b, 1938b, 1939
Abernathy, 1887
Brice, è¢°al., 1898
Bryant, 1949
Burner, 1951
Chapman, 1941
Cobb, 1911
Crawford, 1908
Davidson, 1940b
Evermann & Meek, 1898
Fish, 1948
Gilbert & Evermann, 1895
Jordan & Starks, 1896b
Leach, 1927
Little, 1898
Marr, 1944
O'Malley, 1904
Parkhurst, 1950b
Parkhurst, et al., 1950
Radcliffe, 1920
Rathbun, 1900
Rich, 1922, 1942
Rich & Holmes, 1928
Silliman, 1950
Smith, 1898b, 1900
Smoker, 1954
Snyder, 1936a
Stone, 1878c

Oregon

Anon., 1938a
Barin, 1887
Chapman, 1941
Cleaver, 1951
Cobb, 1911
Jordan & Gilbert, 1887
Leach, 1927
McKernan, et al., 1950
Parkhurst, 1950b
Parkhurst, et al., 1950
Radcliffe, 1920
U.S. Fish and Wildlife Service, 1924
Van.Hyning, 1951

California

Anon., 1916a, 1917
Bean, 1892
Brown, 1937
California, State of, 1874-1875, 1876-1877, 1886, 1898, 1900, 1945, 1952-1954
Clark, 1929b, 1939, 1943
Cobb, 1911
Collins, 1892
Curtis & Fraser, 1948
Erkkila, et al., 1950
Greene, 1911b, 1915b
Hanson, et al., 1940a
Hatton & Clark, 1942
Jordan, 1892
Kerr, 1953
Kimsey, 1951
Leach, 1927
McLean, 1945
Moffett, 1949
Moffett & Smith, 1950
Murphy, 1952
Murphy & Shapovalov, 1951
Needham, et al., 1943
Needham, et al., 1941
Parker & Hanson, 1944
Radcliffe, 1920
Ravenel, 1896
Rich, 1922
Rutter, 1904b, 1908
Scofield, 1919a, 1919b, 1929
Shapovalov & Taft, 1954
Shebley, 1921
Smith, 1900
Smedley, 1952
Snyder, 1923, 1931, 1936a
Stone, 1874a, 1874b, 1883a
Sumner & Smith, 1940
Townsend, 1904
Van Cleve, 1945
Worth, 1895

Idaho

Evermann, 1897

New Hampshire

Hoover, 1936

New Zealand

Hefford, 1930, 1931, 1932, 1934a, 1934b, 1935, 1936, 1938, 1940, 1941
Hobbs, 1937
Young, 1949

Pacific Coast

Brice, et al., 1898
Cobb, 1917
Coker, 1922
Evermann, 1905
Hume, 1893

SIZE AT TIME OF RETURN

The following references give the size, expressed as length or weight, or both, attained by the species at the time of its capture. These data include captures of returning migrants either in salt or freshwater, as well as salmon taken during or immediately after spawning. To facilitate compilation and comparison of data, the references are arranged geographically.

Siberia

Baievsky, 1926
Cobb, 1917
Kuznetzov, 1928
Novisoff, 1912

Alaska

Bean, 1887a, 1887b
Cobb, 1910, 1917
Davidson & Vaughan, 1941
Evermann & Goldsborough, 1907b
Gilbert, 1924c
Holmes, 1934
Kirkness, et al., 1952, 1953
Marsh & Cobb, 1910
Moser, 1899
Parker & Kirkness, 1951
Parker, et al., 1952
Skud, 1955
Tanner, et al., 1890
Townsend, 1899

British Columbia

Anon., 1903b
Andreksen, 1950b
Andrekson & Foskett, 1950a
Aro, 1952
Babcock, 1918
Carl, 1939
Clemens, 1930, 1932, 1935, 1938a, 1939a, 1939b, 1940a, 1941, 1942,

British Columbia (cont.)

Clemens (cont.), 1943, 1944, 1946a, 1946b, 1947, 1948, 1950
Clemens & Clemens, 1926, 1927, 1928, 1929, 1930, 1931, 1932a, 1933, 1934, 1935, 1936, 1937
Cobb, 1917
Dombroski, 1952, 1954
Dymond, 1932, 1936
Foerster, 1929a, 1929b, 1947b, 1955
Foerster & Pritchard, 1941
Foerster & Ricker, 1953
Foskett, 1951a, 1952a, 1953, 1954, 1955b
Fraser, 1917a, 1921
Gilbert, 1913b, 1914b, 1915, 1916, 1918, 1919, 1920, 1922, 1923, 1924a, 1925
Godfrey, et al., 1954
Hunter, 1949b
Milne, 1950a
Neave, 1939, 1949
Neave, et al., 1953
Pritchard, 1932a, 1937c
Rathbun, 1900
Ricker, 1939b
Robertson, 1948
Scattergood, 1949
Stone, 1928a, 1928b, 1930b
Tanner, et al., 1890
Williamson & Clemens, 1932

Washington

Anon., 1903b
Burner, 1951
Chapman, 1940a
Evermann & Meek, 1898
Jordan & Starks, 1896b
McDonald, 1895
Pressey, 1953
Radcliffe, 1920
Rathbun, 1900
Rich, 1940a
Rich & Holmes, 1928
Scattergood, 1949
Silliman, et al., 1947
Stone, 1878c

Oregon

Henry, 1954
Van Hyning, 1951

California

Anon., 1903b, 1918a, 1928,
Briggs, 1953
California, State of, 1894
Cheney, 1931
Clark, 1929b, 1930
Collins, 1892
Curtis, 1948
Fraser & Pollitt, 1951
Greene, 1911b
Hanson, et al., 1940a
Jordan, 1892
Kimsey, 1951
McLean, 1945
Needham, et al., 1941
Radcliffe, 1920
Rutter, 1904b
Scofield, 1916, 1920b
Shapovalov & Taft, 1954
Smedley, 1952
Snyder, 1921a, 1921b, 1922, 1923
1924b, 1931
Stone, 1874b, 1876a, 1880, 1883a, 1884c
Taft, 1938b
Wales & Coots, 1955a

Idaho

Evermann, 1896
Evermann & Meek, 1898
Jordan, 1884

Montana

Beal, 1955

Maine

Scattergood, 1949
Smith, 1920
U.S. Fish and Wildlife Service, 1940b

New Hampshire

Hoover, 1936

Lake Ontario

Anon., 1921a, 1923

New Zealand

Hefford, 1929, 1932, 1934a, 1934b,
1935, 1936, 1938, 1940, 1941,
1946
U.S. Fish and Wildlife Service, 1887
Young, 1948

Pacific Coast

Brice, et al., 1898
Cobb, 1911, 1917
Coker, 1922
Evermann, 1905
Gilbert, 1914a
Hume, 1893
Jordan & Gilbert, 1887

Data on the age composition of salmon at the time of their spawning migrations as determined by scale, or marking and recapture studies, are contained in the following references. To facilitate compilation and comparison of data, the references are arranged geographically.

Japan

Mihara, et al., 1951
Oshima, 1934

Siberia

Berg, 1948
International North Pacific Fisheries Commission, 1955
Kuznetzov, 1928

Alaska

Bean, 1891
Bower, 1933
Bower & Aller, 1917a
Chamberlain, 1907
Davidson, 1940a, 1940b
Davidson & Hutchinson, 1942
Davidson & Shostrom, 1936
Davidson & Vaughan, 1939b, 1941
Davidson, et al., 1943
Edson, et al., 1955
Gilbert, 1924c
Gilbert & Rich, 1929
Higgins, 1932
Holmes, 1934
Juday, 1935
Kirkness, et al., 1952, 1953
Koo, 1955
Parker & Kirkness, 1951
Vaughan, 1947

British Columbia

Andrekson, 1950b
Anon., 1914a, 1951c, 1953c, 1954, 1955c
Babcock, 1907, 1908, 1931a
Barnaby, 1944
Bowser, 1913
Carl & Clemens, 1948
Chatwin, 1953a

British Columbia (cont.)

Clemens, 1930, 1935a, 1935b, 1938a, 1938b, 1939a, 1939b, 1940a, 1941, 1942, 1943, 1944, 1946a, 1946b, 1947, 1948, 1950, 1952
Clemens & Clemens, 1926, 1927, 1928, 1929, 1930, 1931, 1932a, 1932b, 1933, 1934, 1935, 1936, 1937
Cobb, 1917
Davidson, et al., 1943
Dombroski, 1952, 1954
Dymond, 1932
Foerster, 1929b, 1934, 1935, 1936a, 1936b, 1938a, 1943, 1947b, 1949, 1954b, 1955
Foerster & Pritchard, 1935
Foerster & Ricker, 1953
Foskett, 1951a, 1953, 1954, 1955a, 1955b
Fraser, 1921
Gilbert, 1913a, 1913b, 1914b, 1916, 1918, 1919, 1922, 1923, 1924a, 1925
Godfrey, et al., 1954
Hunter, 1949b
Milne, 1955
Mottley, 1929
Neave, 1949, 1951, 1953
Neave, et al., 1953
Neave & Pritchard, 1942
Pritchard, 1932a, 1932d, 1937b, 1937c, 1938a, 1939a, 1940a, 1940b, 1943a, 1943b
Ricker, 1938b
Robertson, 1948
Rounsefell & Kelez, 1940
Thompson, 1941, 1942, 1945b
Williamson & Clemens, 1932

Washington

Davidson, 1940b
Fish, 1948
Kelez, 1937
Oregon Fish Commission, 1931
Pressey, 1953
Rich, 1921b, 1922, 1926, 1948
Rich & Holmes, 1928
Smith, 1900
Smoker, 1954

Oregon

Cleaver, 1951
Henry, 1953, 1954

Pacific Coast

Anon., 1937
Cobb, 1917
Higgins, 1932
Jordan, 1896c, 1904a
Milne, 1913
Neave, 1948
O'Malley, 1920a
U.S. Fish and Wildlife Service, 1945

California

Briggs, 1953
Brown, 1937
Clark, 1929a, 1929b
Curtis & Fraser, 1948
Eigenmann, 1890
Fry & Hughes, 1954
Greene, 1915b
Murphy, 1952
Rich, 1921b, 1922, 1926
Rutter, 1902, 1904b
Scofield, 1922
Shapovalov & Taft, 1954
Smedley, 1952
Smith, 1900
Snyder, 1921a, 1921b, 1922, 1924b, 1931, 1936b
Snyder & Scofield, 1924a
Stone, 1874b

Idaho

Evermann, 1897

New Hampshire

Hoover, 1936

Maine

U.S. Fish and Wildlife Service, 1940b

New Zealand

Hefford, 1929, 1931

TYPE OF SPAWNING STREAM

Statements on or general descriptions of the types of streams in which salmon migrate or in which the young occur are contained in the following references. Some data of this nature may be included in the sections treating the nature of spawning sites and the section on distance traveled upstream.

Siberia

Kuznetzov, 1928

Alaska

Anon., 1904a
Bean, 1891

Alaska (cont.)

Chamberlain, 1907
Davidson & Hutchinson, 1942
Davidson & Vaughan, 1941
Davidson, et al., 1943
Hanavan & Skud, 1954
Hutchinson & Shuman, 1942

Alaska (cont.)

Kirkness, et al., 1952
McDonald, 1894a
Wynne-Edwards, 1947a

British Columbia

Babcock, 1931a
Clemens, 1935a, 1946b, 1951
Davidson, et al., 1943
Foerster, 1935, 1936c
Foerster & Pritchard, 1935
Gilbert, 1914b
Neave, 1949
Neave & Wickett, 1953
Pritchard, 1934e, 1940b, 1949
Radcliffe, 1928
Rathbun, 1900
Thompson, 1945b

Washington

Anon., 1937
Bryant, 1949
Burner, 1951
Fish, 1948
O'Malley, 1904
Rathbun, 1900
Rich, 1948

California

Brown, 1937
Clark, 1943
Curtis, 1945
Curtis & Fraser, 1948
Fraser & Pollitt, 1951
Greene, 1911b
Hatton, 1940
Hatton & Clark, 1942
Kimsey, 1951
Moffett, 1949
Murphy & Shapovalov, 1951
Parker & Hanson, 1944
Rutter, 1904b
Sumner & Smith, 1940
Van Cleve, 1945

Pacific Coast

Anon., 1937
Brice, et al., 1898
Evermann, 1905
Hume, 1893
Jordan & Gilbert, 1887

Maine

U.S. Fish and Wildlife Service, 1940b

New Zealand

Hobbs, 1937

DISTANCE TRAVELED UPSTREAM

The information on this subject consists chiefly of brief, isolated statements on the maximal or minimal distances from the river mouths that populations of a particular salmon species ascend a drainage system. The references are arranged geographically.

Siberia

International North Pacific Fisheries Commission, 1955
Kuznetzov, 1928

Alaska

Bean, 1887b, 1891
Davidson & Christey, 1940
Davidson & Hutchinson, 1942
Davidson, et al.,
Evermann & Goldsborough, 1907b

Alaska (cont.)

Gilbert, 1924c
Gilbert & O'Malley, 1921
Hanavan & Skud, 1954
Rich, 1924
Townsend, 1899
Ward, 1920a
Wynne-Edwards, 1946, 1947a, 1952

British Columbia

Babcock, 1931a
Carl & Clemens, 1948
Clemens, 1935b
Davidson, et al., 1943
Foerster & Pritchard, 1935
Fraser, 1917a
Killick, 1955
Neave, 1953
Pritchard, 1936a
Radcliffe, 1928

Washington

Anon., 1903b
Bryant, 1949
Burner, 1951
Gilbert & Evermann, 1895
McDonald, 1895
Stone, 1878c

California

California, State of, 1870-1871
Green, 1887
Greene, 1911b
Hallock, et al., 1952
Jordan, 1892
Murphy, 1952
Redding, et al., 1933
Stone, 1874b
Sumner & Smith, 1940
Van Cleve, 1945

Pacific Coast

Brice, et al.,
Evermann, 1905
Jordan & Gilbert, 1887

NATURE OF SPAWNING SITE

The following references contain data (usually brief and incomplete) concerning the spawning grounds utilized by the various salmon species. The entries are arranged geographically.

Japan

Sano, 1955

Alaska

Bower, 1925b
Chamberlain, 1907
Davidson & Hutchinson, 1942
Davidson, et al., 1943
Gilbert & Rich, 1929
Hanavan & Skud, 1954
Leach, 1922
Moser, 1899
Parker, et al., 1952

British Columbia

Anon., 1954
Brett, 1952a
Davidson, et al., 1943
Foerster, 1929a, 1935, 1936c

British Columbia (cont.)

Foskett, 1947a, 1947b
Hickman, 1932
Mac Day, 1931
Pritchard, 1940b
Robertson, 1920
Rounsefell & Kelez, 1940

Washington

Burner, 1951
Crawford, 1908
Gangmark & Fulton, 1952
Rich, 1948
Schultz, 1935
Smith, 1900
Stone, 1878c

Oregon

Hasler & Farner, 1942

California

Briggs, 1953
Brown, 1937
Clark, 1930
Curtis, 1945
Curtis & Fraser, 1948
Fraser & Pollitt, 1951
Hallock, et al., 1952
Hanson, 1940
Hatton, 1940
Jordan, 1892
Kimsey, 1951
Redding, et al., 1933
Rutter, 1902
Smith, 1900
Sumner & Smith, 1940
Taft, 1938b
Van Cleve, 1945
Worth, 1895

Pacific Coast

Evermann, 1905
Jordan, 1896c, 1904a
Leach, 1922
O'Malley, 1920a
U.S. Fish and Wildlife Service, 1945

Idaho

Evermann, 1896

New Hampshire

Hoover, 1936

France

De Bellesme, 1896

New Zealand

Hobbs, 1937

SPAWNING PERIOD

References containing data on spawning period include both statements regarding the dates on which spawning activity was observed or was about to occur, and those statements of the duration of spawning period. It is to be noted that remarks regarding the duration of spawning period may be only approximations based on duration and/or peak of upstream migration, and not on direct observation of spawning fish.

Japan

Ohno, 1934

Siberia

Andriashev, 1955
Berg, 1948
Kuznetzov, 1928
Yenatina, 1954

Alaska

Bower, 1921, 1923, 1927, 1929a
Chamberlain, 1907
Davidson, 1940a, 1940b

Alaska (cont.)

Davidson & Vaughan, 1939, 1941
Davidson, et al., 1943
Gilbert & O'Malley, 1921
Gilbert & Rich, 1929
Hanavan & Skud, 1954
March & Cobb, 1907, 1908, 1911
Moser, 1899
Parker, et al., 1952
Ward, 1920b
Wynne-Edwards, 1947a

British Columbia

Anon., 1953c

British Columbia (cont.)

Babcock, 1914, 1915,1916, 1917, 1920 1921, 1923, 1927, 1928, 1930, 1931b
Birchall, 1915
Birchall & Hickman, 1914
Brett & Pritchard, 1946a
Clemens, 1935a, 1939b, 1946b
Collison & Hickman, 1917
Dymond, 1932
Foerster, 1929b, 1936a, 1937, 1944b
Foerster & Ricker, 1953
Foskett, 1947b
Fraser, 1918
Gibson, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1929, 1930, 1931, 1932
Gilbert, 1916
Hickman, 1914, 1915, 1918, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932
Hickman & Collison, 1920
Killick, 1955
McConnell & Brett, 1946
Motherwell, 1934
Neave, 1943, 1949, 1953
Pritchard & Cameron, 1940
Pritchard & Neave, 1942
Rathbun, 1900
Ricker, 1938b
Rounsefell & Kelez, 1940
Schaefer, 1951
Stone, 1914, 1915a, 1915b, 1916a, 1916b, 1917a, 1917b, 1918a, 1918b, 1919, 1920a, 1920b, 1921a, 1921b, 1922a, 1922b, 1923a, 1923b, 1924a, 1924b, 1925a, 1925b, 1926a, 1927a, 1928a, 1928b, 1929a, 1929b, 1930a,b, 1931a, 1931b, 1932a, 1932b,
Wisley, 1920
Withler, et al., 1949

Washington

Anon., 1903b
Bryant, 1949
Chapman, 1943
Craig & Hacker, 1940
Davidson, 1940b
Evermann & Meek, 1898
Fish, 1948
Gangmark & Fulton, 1952
O'Malley, 1904
Rathbun, 1900
Rich & Holmes, 1928
Stone, 1878c
Schultz, 1935

Oregon

Barin, 1887
Craig & Townsend, 1946
Stone, 1879a
Sumner, 1953

California

Clark, 1930, 1943
Cramer & Hammack, 1952
Curtis & Fraser, 1948
Hanson, et al., 1940
Hubbs, 1946
Kimsey, 1951, 1955
McLean, 1945
Moffett, 1949
Moffett & Smith, 1950
Murphy, 1952
Needham, et al., 1941
Parker & Hanson, 1944
Ravenel, 1896a
Redding, 1876
Redding, et al., 1933
Rutter, 1904b, 1907, 1908
Shaw & Maga, 1943
Stone, 1874b, 1876a, 1878b, 1880, 1883a
Sumner & Smith, 1940
Taft, 1938b
Van Cleve, 1945
Worth, 1895

Pacific Coast

Brice, et al., 1898
Hume, 1893
Leach, 1922, 1930, 1931, 1932
Ravenel, 1899, 1900, 1901, 1902
Smith, 1899, 1900

Idaho

Evermann, 1896, 1897
Evermann & Meek, 1898
Locke, 1929

New Hampshire

Hoover, 1936

France

De Bellesme, 1896

New Zealand

Ayson, 1910
Hobbs, 1937

Australia

Anon., 1949b

SEXUAL DIMORPHISM

The majority of references in this category contain only brief remarks on sexual dimorphism. It should be noted that papers presenting data only on weight or length differences are not included in this section.

Babcock, 1931a
Bean, 1891, 1894
Brett & Pritchard, 1946a, 1946b
Brice, et al., 1898
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1946b
Davidson, 1935
Davidson & Vaughan, 1941
Davidson, et al., 1943
Evermann & Goldsborough, 1907b
Foerster, 1954b
Foerster & Ricker, 1953
Gilbert, 1924c
Gilbert & O'Malley, 1921
Hoover, 1936
Jordan, 1892, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kimsey, 1951
Kuznetzov, 1928
Locke, 1929
Lockington, 1880
Marr, 1944
O'Malley, 1904, 1920a
Pritchard, 1937a
Ricker, 1940
Rutter, 1902, 1904b
Scattergood, 1949
Schultz, 1935
Shapovalov, 1947
Shapovalov & Taft, 1954
Stone, 1874b, 1878c, 1884a, 1897
Suckley, 1874
Taft, 1938b
Tohernavin, 1937

SPAWNING BEHAVIOR

Courtship, pairing, nest building and actual spawning activity are included in this category. The data hardly seems sufficient for the systematist to make reliable comparisons of spawning behavior pattern between the species.

Anon., 1953c
Babcock, 1931a
Bean, 1894
Berg, 1948
Bower, 1923
Brice, et al., 1898
Briggs, 1953
Burner, 1951
Chamberlain, 1907
Crawford, 1908
Curtis & Fraser, 1948
Evermann, 1896, 1897, 1905
Foerster, 1935
Hobbs, 1937
Hoover, 1936
Jordan, 1892, 1896c
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kimsey, 1951, 1955
McLean, 1945
Moser, 1899
Ricker, 1938b

Rutter, 1902, 1904b, 1907
Schultz, 1935
Shapovalov & Berrian, 1940
Shapovalov & Taft, 1954
Smith, 1900
Stone, 1874b, 1884a
Withler, et al., 1949

POST-SPAWNING BEHAVIOR

Papers containing data on the activity of salmon after spawning, even if the statements only indicated that the fish were observed dying, are included in the following list:

Bean, 1891, 1894
Brice, et al., 1898
Briggs, 1953
Curtis & Fraser, 1948
Dunn, 1880
Evermann, 1897
Evermann & Meek, 1898
Gilbert, 1914a
Greene, 1911b
Green, 1887
Hobbs, 1937
Hoover, 1936
Howard, 1948
Hume, 1893
Jordan, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Killick, 1955
Kimsey, 1955
Locke, 1929
Ohno, 1934
Oshima, 1934
Parker & Hanson, 1944
Rathbun, 1900
Rutter, 1902, 1904b
Schultz, 1935
Stone, 1874b, 1878c, 1897
Willis, 1954

DATE EGGS HATCH

Data in this category include both those papers recording the date of egg hatching and those noting the date salmon fry emerge from the gravel and are first visible on the stream bottom. Hatchery observations are not included. To facilitate analysis of regional trends, the references are arranged geographically.

Japan

Kobayashi & Yuki, 1954a
Ohno, 1934

Siberia

International North Pacific Fisheries Commission, 1955

Alaska

Davidson, 1940a
Davidson & Vaughan, 1939b
Hanavan & Skud, 1954
Marsh & Cobb, 1910
Vaughan, 1947

British Columbia

Carl & Clemens, 1948
Clemens, 1935a
Foerster, 1937, 1938b, 1944b
Foerster & Pritchard, 1935
Fraser, 1917a
Mottley, 1929
Pritchard, 1944a
Wickett, 1951
Williamson, 1927
Withler, et al., 1949

Washington

Crawford, 1908
Evermann & Meek, 1898
Gangmark & Fulton, 1952
Rich, 1922, 1948
Smith, 1915

Oregon

Rivers, 1947

California

Anon., 1916b
Kimsey, 1951
Moffett & Smith, 1950
Redding, et al., 1933
Rich, 1922
Rutter, 1902
Scofield, 1898a, 1898b
Shapovalov & Berrian, 1940
Shaw & Maga, 1943
Stone, 1874b
Van Cleve, 1945

Pacific Coast

Leach, 1922
Jordan, 1896c
Jordan & Evermann, 1896
Smith, 1898a
U.S. Fish and Wildlife Service, 1945

Idaho

Evermann, 1897
Evermann & Meek, 1898

Montana

Beal, 1955

France

De Bellesme, 1896

BEHAVIOR OF FRY AND FINGERLINGS

Behavioral observations, other than the mere mention of time of seaward migration, of fry or fingerlings from the time the fry emerge from the gravel to the time the fingerlings or smolts leave freshwater are included in the following references:

Anon., 1953c, 1954
Babcock, 1904a, 1904b
Black, 1951b
California, State of, 1900
Chamberlain, 1907
Clemens, 1951, 1953
Davidson & Vaughan, 1941
Foerster, 1925, 1929c, 1955
Foerster & Ricker, 1953
Fraser, 1917a, 1919
Hallock, et al., 1952
Hatton, 1940
Hatton & Clark, 1942
Hoar, 1951a, 1953, 1954
Kerr, 1953
Kimsey, 1951
Kobayashi, 1953
Kubo, 1955

MacKimon & Brett, 1955
Moffett & Smith, 1950
Moser, 1899
Murphy & Shapovalov, 1951
Neave, 1955
Pritchard, 1940b, 1955a
Rich, 1948
Ricker, 1940
Robertson, 1920
Rutter, 1902, 1904b
Scofield, 1898b, 1900
Shapovalov & Berrian, 1940
Shapovalov & Taft, 1954
Smith, 1893a, 1899, 1900
Stone, 1884a, 1897
U.S. Fish and Wildlife Service, 1935
Wales & Coots, 1955a
Withler, et al., 1949

TIME YOUNG SPEND IN FRESHWATER

Information on the length of time young spend in freshwater, whether from scale readings of young or adults, or from direct observation, is contained in the following references. To facilitate detection of trends, the references are arranged geographically.

Japan

Aoki, 1934
Handa, 1934
Kobayashi & Yuki, 1954a
Ohno, 1934
Oshima, 1934

Alaska

Anon., 1955e
Barnaby, 1944
Bower, 1934
Davidson & Vaughan, 1939b
Gilbert, 1924c
Gilbert & Rich, 1929
Holmes, 1934
Juday, 1935
Parker & Kirkness, 1951

British Columbia

Anon., 1951c, 1952
Babcock, 1904a, 1908, 1931
Bowser, 1913
Brett & McConnell, 1950
Carl & Clemens, 1948
Clemens, 1935a, 1935b, 1938a, 1939a, 1940a, 1946a, 1946b, 1947, 1948, 1950, 1951, 1952
Clemens & Clemens, 1926, 1927, 1928, 1929, 1930, 1931, 1932a, 1933, 1934, 1935, 1936, 1937

British Columbia (cont.)

Clemens, et al., 1938
Foerster, 1925, 1929c, 1934, 1936a, 1936b, 1937, 1938b, 1944b, 1954b,
Foerster & Pritchard, 1935
Foerster & Ricker, 1953
Foskett, 1951a, 1952a, 1954, 1955a, 1955b
Fraser, 1916, 1917a
Gilbert, 1913a, 1913b, 1914b, 1915, 1919, 1920, 1922, 1923, 1924a, 1925
Hourston, et al., 1955
Hunter, 1949a
MacKimon & Brett, 1955
Milne, 1917
Mottley, 1929
Neave, 1949, 1951
Neave & Pritchard, 1942
Neave & Wickett, 1953
Pritchard, 1936b, 1939a, 1940b, 1943a
Robertson, 1921
Withler, et al., 1949

Washington

Earp, et al., 1953
Evermann & Meek, 1898
McDonald, 1894c, 1895
Rich, 1922, 1926, 1948
Smoker, 1953, 1954

Oregon

Cleaver, 1951
Craig & Townsend, 1946
Henry, 1953
McKernan, et al., 1950

California

Babcock, 1931a
Curtis, 1945
California, State of, 1900
Clark, 1929a, 1929b
Curtis & Fraser, 1948
Hallock, et al., 1952
Hubbs, 1946
Kerr, 1953
Moffett & Smith, 1950
Murphy, 1952
Murphy & Shapovalov, 1951
Needham, et al., 1941
Redding, et al., 1933
Rich, 1922, 1926
Rutter, 1904b, 1908
Scofield, 1898a, 1898b
Shapovalov & Taft, 1954
Snyder, 1922, 1924b
Van Cleve, 1945
Wales & Coots

Pacific Coast

Higgins, 1932
Hume, 1893
Smith, 1898a

Idaho

Evermann, 1897
Evermann & Meek, 1898

Intermountain States

Locke, 1929

DATE OF SEAWARD MIGRATION

Statements of the date the young migrate downstream anywhere along the migratory course are contained in the following references, which are arranged geographically.

Japan

Kobayashi & Yuki, 1954a
Oshima, 1934
Sano & Kobayashi, 1952, 1953a

Siberia

International North Pacific Fisheries Commission, 1955

Alaska

Barnaby, 1944
Bower, 1921, 1925b, 1938a
Bower & Fassett, 1914
Chamberlain, 1907
Davidson, 1940b
Davidson & Vaughan, 1941

Alaska (cont.)

Davidson & Hutchinson, 1942
Gilbert & Rich, 1929
Holmes, 1934
Parker, et al., 1953
Skud, 1955
Vaughan, 1947

British Columbia

Babcock, 1904a, 1904b, 1905
Brett & Mackinnon, 1953
Brett & McConnell, 1950
Brett & Pritchard, 1946a
Clemens, 1951
Clemens, et al., 1938
Foerster, 1929c, 1936a, 1952
Foerster & Pritchard, 1935

British Columbia (cont.)

Foerster & Ricker, 1953
Fraser, 1917a
MacKimon & Brett, 1955
Neave, 1947, 1953
Pritchard, 1931a, 1936b, 1936c, 1937a, 1940b, 1944a, 1944c
Robertson, 1921
Rounsefell & Kelez, 1940
Withler, et al., 1949

Washington

Davidson, 1940b
Fish, 1948
Greene, 1911b
Hamilton & Andrew, 1954
Johnson, et al., 1948
Marr, 1944
Rich, 1922, 1948

Oregon

Gharrett & Hodges, 1950
Newcomb, 1948
Rivers, 1947
Sumner, 1953

California

California Fish and Game, 1932
Clark, 1930
Cramer & Mammack, 1952
Erkkila, et al., 1950
Hallock, et al., 1952
Hanson, et al., 1940
Hatton, 1940
Hatton & Clark, 1942
Hubbs, 1946
Moffett, 1949
Moffett & Smith, 1950
Murphy, 1952
Murphy & Shapovalov, 1951
Needham, et al., 1943
Needham, et al., 1941
Rich, 1922
Rutter, 1902, 1904b
Scofield, 1898a, 1898b, 1900
Shapovalov & Taft, 1954
Snyder, 1922, 1931
Stone, 1874b
Van Cleve, 1945
Wales & Coots, 1955a

Pacific Coast

Smith, 1899, 1900

Idaho

Evermann, 1897

SIZE AT TIME OF SEAWARD MIGRATION

Data on the size of young salmon at the time of seaward migration, taken at any place along the migratory route, are contained in the following references:

Anon., 1915c, 1955e
Babcock, 1903, 1904a, 1904b
Barnaby, 1944
Brett & McConnell, 1950
Chamberlain, 1907
Chamberlain & Bower, 1913
Craig & Townsend, 1946
Curtis, 1945
Davidson & Vaughan, 1941
Davison, et al., 1954
Erkkila, et al., 1950
Foerster, 1929c, 1934, 1936a, 1938b, 1944b
Foerster & Pritchard, 1935
Fraser, 1919
Gharrett & Hodges, 1950
Gilbert, 1913b, 1915, 1916, 1920
Gilbert & Evermann, 1895
Hallock, et al., 1952
Hanson, et al., 1940
Hatton, 1940
Hatton & Clark, 1942
Hourston, et al., 1955
McDonald, 1894c, 1895
Milne, 1913
Moffett, 1949

Moffett & Smith, 1950
Moser, 1902
Needham, et al., 1943
Pritchard, 1936a, 1936c, 1943a, 1948b
Rich, 1948
Robertson, 1921
Rounsefell & Kelez, 1940
Scofield, 1898a,
Snyder, 1922
Van Cleve, 1945

MOVEMENTS IN THE OCEAN

This category contains references having any mention of salmon movements in the ocean, whether near the shore or on the high seas.

Anon., 1904c, 1909, 1924, 1953b
Babcock, 1903, 1914, 1931a
Barnaby, 1952
Bean, 1891, 1894
Byers, 1942
California Fish and Game, 1932
Chamberlain, 1907
Clemens, 1935b
Clark & Hatton, 1942
Cobb, 1917, 1921
Davidson, 1940c
Davidson & Hutchinson, 1940
Davidson & Vaughan, 1941
Fraser, 1917a
Fry & Hughes, 1951
Gilbert, 1895, 1914b, 1924b
Hallock, et al., 1952
Hanson, et al., 1940
Higgins, 1931
Hikita, 1955
Hoar, 1953
Hubbs, 1946
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904a, 1904b
Jordan & Evermann, 1896
Manzer, 1946
Mathisen, 1950
Mihara, et al., 1951
Mottley, 1929
Murphy, 1952
Murphy & Shapovalov, 1951
Neave, 1953
Neave & Pritchard, 1942
Powers, 1941
Pritchard, 1944c, 1948a
Rathbun, 1900
Rich, 1925a, 1935c, 1939
Rich & Holmes, 1928
Rounsefell & Kelez, 1940
Rutter, 1904b
Sano & Kobayashi, 1952
Scheer, 1939
Scofield, 1922
Shapovalov & Taft, 1954
Snyder, 1931
Stone, 1874b
Sugano, 1936
Taft, 1937a
Townsend, 1904
Verhoeven, 1952
Williamson, 1927

MARKING OR TAGGING AND RECAPTURE DATA

Study of the marking or tagging and recapture data in this section should provide material to aid in racial analyses, determination of migration rates and distances, as well as homing behavior.

Anon., 1903b, 1904c, 1916b, 1924, 1929b, 1937, 1951c, 1952, 1953c, 1954, 1955b, 1955d
Aro, 1951
Babcock, 1914
Barnaby, 1944
Bolton, 1930
Bowser, 1913
Brett, 1952a
Brett & Pritchard, 1946b
British Columbia, 1941
California, State of , 1904, 1950-52, 1952-54
Chamberlain, 1907
Chatwin, 1953b
Clark & Hatton, 1942
Curtis, 1945
Clemens, 1928, 1929, 1930, 1932, 1937, 1939c
Clemens, et al., 1939
Coker, 1922
Craigie, 1926
Davidson, 1940b
Davidson & Christey, 1940
Davidson & Vaughan, 1939c
DeLacy & Neave, 1947
Elling & Macy, 1955
Erkkila, et al., 1950
Fish, 1948
Foerster, 1929e, 1930b, 1934, 1936a, 1936b, 1941, 1942, 1943, 1944a, 1945, 1946a, 1946b, 1947a, 1947b, 1948, 1949, 1954b
Fry & Hughes, 1951
Gilbert, 1924b
Gilbert & Rich, 1927
Godfrey,et al., 1954
Greene, 1911b
Hefford, 1931, 1934b, 1936
Higgins, 1928, 1929, 1930, 1940
Holmes, 1928
Hunter, 1951
International North Pacific Fisheries Commission,1955
Jensen, 1953
Jordan, 1892, 1896c, 1904b
Kauffman, 1951
Kelez, 1937
Killick, 1955
Kirkness, et al., 1952, 1953
Marsh & Cobb, 1907, 1908, 1911
McKernan, et al., 1950
Milne, 1949, 1952, 1955
Milne, 1917
Morgon & Cleaver, 1954
Neave, 1941a, 1941b, 1951
Neave, et al., 1953
Newcomb & Mathesin, 1946
O'Malley, 1924
O'Malley & Rich, 1911, 1920
Oregon Fish Commission, 1931
Parker & Hanson, 1944
Parker & Kirkness, 1951
Parker, et al., 1952
Powers, 1939
Pritchard, 1930, 1931b, 1931c, 1931d, 1932a, 1932b, 1932d, 1934b, 1934c, 1934d, 1934e, 1937b, 1938b, 1939a, 1940b, 1941, 1943b, 1944a, 1944c, 1944d, 1945c, 1947, 1948c
Pritchard & Brett, 1945
Pritchard & DeLacy, 1944a, 1944b
Pritchard & Neave, 1942
Rich, 1924, 1925a, 1927, 1935a, 1935c,1939, 1941,
Rich & Holmes, 1928
Rich & Morton, 1930
Rich & Suomela, 1929a
Ricker & Robertson, 1935
Robertson, 1921
Rounsefell & Kelez, 1940
Royal, 1951
Rutter, 1902, 1904b, 1907
Sano, 1951, 1954
Sano & Kobayashi, 1953a, 1953b
Scheer, 1939
Scofield, 1920a
Silliman, 1948a, 1948b
Snyder, 1921b, 1922, 1923, 1928, 1931
Sumner, 1953
Taft, 1937a
Taft & Shapovalov, 1938a

Thompson, 1938, 1939, 1940, 1941, 1942, 1945a, 1945b
U.S. Fish and Wildlife Service, 1939d
Van Cleve, 1942-1944
Van Hyning, 1951
Ward, 1939
Williamson, 1927, 1929
Williamson & Clemens, 1932
Withler, 1952a
Withler, et al., 1949

HOMING INSTINCT

All discussion and data concerning homing instinct in salmon are included in this category.

Anon., 1903b, 1937
Aro, 1951
Babcock, 1931a
Brett & MacKinnon, 1954
Chamberlain, 1907
Clemens, 1935a, 1937, 1938b, 1939c, 1951, 1953
Craigie, 1926
Crawford, 1907
Davidson, 1940b
Davidson & Vaughan, 1939b, 1941
Foerster, 1941, 1946b
Fraser, 1919
Gilbert, 1914b, 1915, 1916, 1918, 1919
Gilbert & Rich, 1927
Hasler & Wisby, 1951
Higgins, 1928
Holmes, 1928
Hume, 1893
Huntsman, 1937a, 1937b
International North Pacific Fisheries Commission, 1955
Jordan, 1892, 1896c, 1904b
Jordan & Gilbert, 1887
Kelez, 1937
Marsh & Cobb, 1911
Mihara, et al., 1951
Milne, 1917
Neave, 1941b
Oregon Fish Commission, 1931
Powers, 1939, 1941
Pritchard, 1932d, 1934a, 1937b, 1939a, 1940b, 1941, 1943b, 1944c, 1948a
Rich, 1937, 1939, 1948
Rich & Ball, 1931
Rich & Holmes, 1928
Ricker, 1940
Ricker & Robertson, 1935
Rounsefell & Kelez, 1940
Rutter, 1902, 1904b, 1907
Sano, 1951
Scheer, 1939
Shapovalov, 1940
Shapovalov & Taft, 1954
Snyder & Scofield, 1924a
Taft & Shapovalov, 1938a
U.S. Fish and Wildlife Service, 1945
Verhoeven, 1952
Ward, 1939
White & Huntsman, 1938
Wisby & Hasler, 1954

The following references include both ocean and stream growth data. As a rule, hatchery growth records are not included. References are arranged geographically.

Japan

Honma & Murakawa, 1955
Kobayashi & Yuki, 1954a
Kobayashi, 1955
Sano & Kobayashi, 1952, 1953a

Siberia

Berg, 1948
International North Pacific Fisheries Commission, 1955

Alaska

Chamberlain, 1907
Davidson & Vaughan, 1941
Koo, 1955
Parker & Kirkness, 1951

British Columbia

Clemens, 1930
Dunlop, 1924
Foerster, 1929a, 1929c, 1936a, 1947b
Foerster & Ricker, 1953
Fraser, 1916, 1917a, 1917b, 1918, 1919, 1921
Gilbert, 1914b, 1916, 1918, 1921
Ricker, 1938a, 1938b
Robertson, 1921
Rounsefell & Kelez, 1940

Washington

Marr, 1944
Rich, 1922, 1926

Oregon

Hasler, 1938
Hasler & Farner, 1942
Henry, 1954
Van Hyning, 1951

California

Curtis, & Fraser, 1948
Hatton, 1940
Hatton & Clark, 1942
Hubbs, 1946
Rich, 1922, 1926
Rutter, 1902
Scofield, 1898a, 1898b, 1900
Shapovalov & Taft, 1954
Snyder, 1921b, 1922, 1923

New Zealand

Hefford, 1934b, 1936
Hobbs, 1937

France

De Bellesme, 1896

Italy

Besana, 1910

FOOD AND FEEDING HABITS

The following references contain data on the food and/or feeding habits of salmon. Hatchery studies are not included.

Anon., 1952, 1953b, 1953c, 1955c
Babcock, 1931a
Barnaby, 1952,
Bean. 1891, 1894
Bowser, 1913
Carl & Clemens, 1948
Chamberlain, 1907
Chapman, 1936
Chapman & Quistorff, 1938
Clemens, 1935a, 1935b, 1939b, 1940b, 1951, 1953
Clemens, et al., 1938
Cobb, 1910, 1917, 1921
Curtis & Fraser, 1940
Davidson & Vaughan, 1941
Dymond, 1936
Einarsen, 1927
Fish, 1939
Foerster, 1925, 1937, 1941, 1942, 1944b, 1955
Foskett, 1951b
Fraser, 1916, 1917a, 1919, 1923
Fraser & Pollitt, 1951
Gilbert, 1913b, 1914a
Greene, 1911b, 1915c
Hasler, 1938
Heg & Hyning, 1951
Holmes, 1928
Hoover, 1936
International North Pacific Fisheries Commission, 1955
Jordan, 1894
Juday, 1935
Kendall, 1913
Konstantinov, 1951
Lowe, 1936
Locke, 1929
Maeda, 1955
Marsh & Cobb, 1908
Munro & Clemens, 1937
Nakai & Honjo, 1954
Oregon Fish Commission, 1949b
Pritchard, 1936c
Pritchard & Tester, 1939, 1941, 1942, 1943, 1944
Rich, 1921a, 1948
Ricker, 1934, 1937, 1938b, 1940, 1954
Robertson, 1921
Rounsefell & Kelez, 1940
Rutter, 1902, 1904b
Scofield, 1898b, 1900
Senter, 1940
Shapovalov & Taft, 1954
Silliman, 1941
Smith,,1895b
Snyder, 1922, 1924b, 1934
Snyder & Scofield, 1924a
Stone, 1874b, 1878c, 1884a, 1897
Sumner & Smith, 1940
Thompson, 1931
U.S. Fish and Wildlife Service, 1945
Williamson, 1927, 1930
Withler, 1948
Withler, et al., 1949

PARASITES AND DISEASES

A wide variety of parasites and diseases are known to attack salmon. It would appear that the life histories of those species affecting salmon under hatchery conditions are better known. The references are arranged according to the classification of the parasite.

General and Inclusive Accounts

Clemens, 1939c
Gilbert, 1918
Jordan, 1892, 1896c, 1904
Ricker, 1938, 1940
Rutter, 1902
Sano, 1951
Shapovalov & Taft, 1954
Stone, 1874
Ward, 1908

Protozoa

Bangham & Adams, 1954
Davis, 1927a, 1927b
Davison, et al., 1954
Fish, 1939
Guberlet, 1926
Smith & Quistorff, 1940
Wales & Wolf, 1955b

Platyhelminthes

(cestodes)

Bangham & Adams, 1954
Canavan, 1938
Dombroski, 1955
Eguchi, 1934
Kobayashi, 1934
Kuitunen-Ekbaum, 1933b
Lawler & Scott, 1954
Wardle, 1932, 1933

(trematodes)

Bangham & Adams, 1954
Guberlet, 1936
Haderlie, 1953
Linton, 1941

Nemathelminthes

Bangham & Adams, 1954
Ekbaum, 1936
Haderlie, 1953
Kuitunen-Ekbaum, 1933a
Smedley, 1933

Annelida

Earp & Schwab, 1954

Crustacean Arthropoda

Bangham & Adams, 1954
Bean, 1891
Foerster, 1929
Foerster & Ricker, 1953
Meehean, 1941
Wilson, 1912, 1916

Mollusca

Davis, 1953

Bacterial and Virus Diseases

Carl, 1939
Duff, 1932a, 1932b
Earp, et al., 1953
Fallera, 1926
Johnson & Bruce, 1952
Nishino, 1953
Rucker, et al., 1953

The analysis and comparison of waters in which salmon have been successfully established, as well as those waters where their introduction failed, may aid in the understanding of the ecological requirements and consequently the natural distribution of salmon. The references are arranged only by locality and not by species.

North America

Anon., 1910b, 1915a, 1921a, 1923, 1929a, 1951b, 1953c
Baird, 1874, 1876, 1878
Beal, 1955
Bean, 1882a, 1882b
Bigelow & Welsh, 1925
Bowers, 1907, 1912
Breder, 1924
Chamberlain, 1907
Cheney, 1887
Clemens, 1953
Cobb, 1911, 1917, 1921
Curtis, 1948
Davidson & Hutchinson, 1937, 1940
Fraser & Pollitt, 1951
Gilbert, 1914a
Huntsman, 1922
Johnson, 1914, 1915
Kendall, 1913
Leach, 1922, 1923, 1924, 1925, 1927, 1928, 1931, 1932
Leach & James, 1937, 1939
Leach, et al., 1939, 1941
Locke, 1929
Loomis, 1884
McDonald, 1893, 1894b
Moser, 1902
O'Malley, 1917, 1919, 1920a, 1920b, 1922, 1924
Radcliffe, 1921
Ravenel, 1896a, 1896b, 1898, 1899, 1900, 1901, 1902
Rich, 1925b
Robinson, 1884
Rockwood, 1876
Rutter, 1904b
Scattergood, 1949
Scofield, 1900
Slack, 1876
Smith, 1895a, 1898a, 1898b, 1917, 1919, 1929
Smiley, 1884a, 1884c
Snyder, 1918, 1934, 1936a
Stone, 1874b, 1876a, 1876b, 1878a, 1898b, 1879b, 1880, 1882, 1883a, 1883b, 1884b, 1885, 1897
Thomson, 1882
Titcomb, 1904, 1905a, 1905b
U.S. Fish and Wildlife Service, 1880c, 1882, 1909, 1910, 1911, 1913, 1940b
Wallis & Bond, 1950
Ward, 1939
Wilmot, 1882a, 1882b

Europe

Behr, 1883
Borne, 1885
Bottemanne, 1882, 1884
Brice, et al., 1898
Chamberlain, 1907
Clemens, 1953
Davison & Hutchinson, 1937
De Bellesme, 1896
Eigenmann, 1890
Maslicurat-Lagemard, 1884
McDonald, 1893
O'Malley, 1924
Ravenel, 1896a, 1896b, 1898, 1899, 1900, 1901
Raveret-Wattel, 1885a, 1885b
Raveret-Wattel & Barrett, 1883
Smith, 1907
Stone, 1876b, 1878a, 1878b, 1879b, 1880, 1892
Titcomb, 1905b
U.S. Fish and Wildlife Service, 1878, 1880, 1887
Young, 1948, 1949

Australia and Tasmania

Anon., 1949b

Australia and Tasmania (cont.)

Brice, et al., 1898
Clemens, 1953
Davidson & Hutchinson, 1937, 1940
Eigenmann, 1890
Smiley, 1884b, 1885, 1887a
Stone, 1879b, 1882, 1897
Titcomb, 1905a
U.S. Fish and Wildlife Service, 1880a
Wilson, 1878

EGG COUNTS

The following references contain data on the number of eggs produced by salmon. The references are arranged geographically.

Siberia

Kuznetzov, 1928

Alaska,

Bower, 1938a
Gilbert & Rich, 1929
Higgins, 1940
Holmes, 1934
Moser, 1902

British Columbia

Aro, 1952
Aro & Broadhead, 1950
Brett & McConnell, 1950
Foerster, 1929a, 1932, 1936a, 1938a, 1955
Foerster & Pritchard, 1936, 1941
Hunter, 1948, 1949b
Neave, 1947, 1950
Pritchard, 1931a, 1939b, 1948b
Scattergood, 1949
Wickett, 1951
Withler, 1950

Washington

Rich, 1926, 1940b
Scattergood, 1949

California

Bean, 1892
Bryant, 1923
Hanson, 1940
Hanson, et al., 1940
McGregor, 1922b, 1923a, 1923b
Moffett & Smith, 1950
Rich, 1926, 1940b
Smiley, 1887a
Snyder, 1921a

To aid in ascertaining the relative abundance of the various species of salmon, with respect to region, time, and to each other, data on this topic are arranged both by species and geographically. Examination of the annotated bibliography will indicated whether the data are in the form of catch records, or as counts of migrant adults. It is to be emphasized that the many statistical journals and records have not been abstracted and consequently, the references below form only a portion of the data available on this topic.

Japan

International North Pacific Fisheries Commission, 1955
Sano & Kobayashi, 1953b
U.S. Foreign Economic Administration, 1945

Siberia

International North Pacific Fisheries Commission, 1955
Kuznetzov, 1928

Alaska

Anon., 1915b, 1931a
Atkinson, 1955
Edson, et al., 1955
Hutchinson, 1944
Hutchinson & Shuman, 1942
Moser, 1899, 1902
Parker, et al., 1952, 1953
Rich, 1935c
Rich & Ball, 1929b, 1931, 1935
U.S. Fish and Wildlife Service, 1931-1940
Vaughan, 1942

British Columbia

Andrekson, 1950b
Anon., 1942a, 1949a, 1949c, 1952, 1953a, 1953c, 1954, 1955c
Aro, 1952
Babcock, 1910

British Columbia (cont.)

Carl, 1939
Foerster, 1929a, 1941, 1942, 1943, 1944a, 1945, 1947a, 1948, 1950, 1952b
Foerster & Ricker, 1953
Godfrey, et al., 1954
Hunter, 1948, 1949a, 1951
Milne, 1952
Milne & Pritchard, 1948
Neave, 1939, 1947, 1951
Pritchard, 1940c, 1943c, 1949
Robertson, 1949
Rounsefell & Kelez, 1940
Royal, 1951
Rickett, 1951
Withler, 1950, 1952b

Washington

Anon., 1903b, 1938a
Bryant & Parkhurst, 1950
Chapman, 1940b
Ellis, et al., 1937
Gangmark & Fulton, 1952
Holmes, 1940
Johnson, et al., 1948
Kauffman, 1951
Newcomb & Mathesin, 1946
Pressey, 1953
Rich, 1940b, 1941, 1942, 1943
Rounsefell & Kelez, 1940
Silliman, 1948a
Smoker, 1953, 1954

Washington (cont.)

U.S. Fish and Wildlife Service, 1924, 1938-1940
Washington, State of, 1935-1945

Oregon

Gharrett & Hodges, 1950
Henry, 1953
Oregon Fish Commission, 1941, 1943, 1949
Mathisen, 1950
McKernan, et al., 1950
Morgon & Cleaver, 1954
Schoning, et al., 1951
Van Hyning, 1951

California

Anon., 1879, 1880
California Bureau of Marine Fisheries, 1929-1952
California, State of, 1874-1875, 1876-1877, 1900, 1902-1952, 1952-1954
Fry & Hughes, 1951
Hanson, 1940
Hanson, et al, 1940
Marine Fisheries Branch (Staff), 1954
Needham, et al., 1943
Needham, et al., 1941

California (cont.)

Smiley, 1884d
Snyder, 1931
Van Cleve, 1942-1944

Pacific Coast

Milne, 1913
Smith, 1895b
Wilcox, 1898

New Zealand

Hefford, 1929, 1930, 1931, 1932, 1934a, 1934b, 1935, 1936, 1938, 1940, 1941, 1946
Hobbs, 1937

Oncorhynchus gorbuscha (Walbaum), commonly called the pink or humpback salmon, is distributed throughout the North Pacific Ocean from Japan to California. It enters the Arctic Ocean along both the Siberian and American Coasts. Of the references abstracted, "pink" is by far the more common vernacular applied to this species.

DESCRIPTION - COUNTS AND MEASUREMENTS

The following papers present descriptive matter on the pink salmon and/or counts and measurements of any of its sytematic characteristics.

Bean, 1887b
Berg, 1948
Bigelow & Welsh, 1925
Brice, et al., 1898
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1935b, 1946b
Crawford, 1925
Davidson, 1935
Davidson & Shostrom, 1936
Eigenmann, 1890
Evermann, 1905
Foerster, 1935
Foerster & Pritchard, 1935
Gilbert, 1895
Hikita, 1953
Hubbs, 1946
Jordan, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1882
Lockington, 1880
O'Malley, 1920a
Oshima, 1934
Pritchard, 1944a, 1945a
Shapovalov, 1947
Snyder, 1931
Stone, 1897
Suckley, 1862, 1874
Taft, 1938b
Tchernavin, 1938-
Williamson, 1927

FIGURES AND ILLUSTRATIONS

The following references contain drawings and/or illustrations of the pink salmon, showing enough detail so as to be useful in systematic analysis.

Bean, 1891
Berg, 1948
Bigelow & Welsh, 1925
Brice, et al., 1898
California, State of, 1904
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1946b
Cobb, 1917
Collins, 1892
Crawford, 1925
Davidson, 1935
Davidson & Shostrom, 1936
Earp & Schwab, 1954
Evermann & Goldsborough, 1907b
Foerster & Pritchard, 1935
Hikita, 1953
Jones, 1915
Jordan, 1884, 1896c
Jordan & Evermann, 1896
Marr, 1944
Milne, 1913
Moser, 1899
Nomura, 1953

O'Malley, 1920a
Oshima, 1934
Roedel, 1948
San & Kobayashi, 1953b
Shapovalov, 1947
Smedley, 1952
Stone, 1897
Williamson, 1927

LIFE COLORS

Often natural populations of fishes have distinctive color patterns. To aid in racial analysis, an attempt was made to isolate data on life colors. The following references contain statements referring to the color of the pink salmon:

Babcock, 1931a
Bean, 1891, 1894
Berg, 1948
Brice, et al., 1898
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1935b, 1946b
Cobb, 1911, 1917, 1921
Crawford, 1925
Eigenmann, 1890
Evermann, 1905
Foerster, 1935
Foerster & Pritchard, 1935
Gilbert & O'Malley, 1921
Jordan, 1892, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1882, 1887
Lockington, 1880
Marsh & Cobb, 1908
O'Malley, 1920a
Oshima, 1934
Pritchard, 1944a
Roedel, 1948, 1953
Rutter, 1904b
Shapovalov, 1947
Snyder, 1931
Suckley, 1874
Taft, 1938b
Williamson, 1927

RELATIONSHIPS

The following references contain data on the relationships of pink salmon to other species. Distinctions employed in keys are included in this category.

Babcock, 1931a
Berg, 1948
Chamberlain, 1907
Clemens, 1935b, 1946b
Foerster & Pritchard, 1935
Girard, 1857
Hoar, 1951a
Jordan & Evermann, 1896
Jordan & Gilbert, 1882
Kobayasi, 1955
Nomura, 1953
Schultz, 1934
Shapovalov, 1947
Snyder, 1931
Tchernavin, 1938-

RACIAL ANALYSIS

The following papers contain comments or data upon the races or populations of the pink salmon:

Babcock, 1931a
Bower, 1933, 1934
Chamberlain, 1907
Chamberlain & Bower, 1913
Clemens, 1952
Davidson & Shostrom, 1936

Evermann & Goldsborough, 1907b
Fraser, 1921
Gilbert, 1913b, 1924c
Gilbert & Rich, 1929
Higgins, 1932
International North Pacific Fisheries Commission, 1955
Jensen, 1953
Jordan, 1904b
Kirkness, et al., 1953
Marr, 1944
McConnell & Brett, 1946
Milne, 1955
Moser, 1899
Parker & Kirkness, 1951
Pritchard, 1945a
Rathbun, 1900
Rich, 1925a
Rich & Ball, 1929b
Scheer, 1939
Verhoeven, 1952
Williamson, 1927

ANATOMY AND PHYSIOLOGY

Included within this category are references concerning the anatomy, histology, osteology (including sub-fossil finds) and physiology of the pink salmon.

Black, 1951b
Brett, 1952b
Cobb, 1921
Coker, 1922
Davidson & Shostrom, 1936
Hoar, 1951c, 1953
Jordan, 1904a
Kendall, 1922
Nomura, 1953 Powers, 1939
Reagan, 1917
Smith, 1916
Tchernavin, 1938

BIOCHEMISTRY

Data on the biochemistry of the pink salmon are presented in the following papers:

Bailey, 1952
Brocklesby, 1933, 1940
Brocklesby & Denstedt, 1933
Fallera, 1926
Jarvis, et al., 1926
Ney, et al., 1950
Pugsley, 1942
Riddell, 1936b

SEX RATIOS

Data on the sex ratios of pink salmon are presented in the following papers:

Chamberlain, 1907
Gibson, 1930, 1931
Gilbert, 1914a, 1924c
Marr, 1944
Snyder, 1931
Stone, 1929a

TIME OF SPAWNING MIGRATION

Data on the time of return of pink salmon from the ocean to the stream mouths are contained in the following references:

Atkinson, 1955
Babcock, 1916, 1931a
Brice, 1898
Briggs, 1953
Chamberlain, 1907
Cobb & Kutchin, 1907
Davidson & Hutchinson, 1942
Davidson & Vaughan, 1941
Davidson, et al., 1943
Gilbert, 1895, 1924
Hanavan & Skud, 1954
Hutchinson, 1944
Jordan & Starks, 1896
McHugh, 1915
Neave, 1949
Pritchard, 1932, 1936, 1941, 1944
Rounsefell & Kelez, 1940
Stone, 1878
Thompson, 1931

Data on the time fish are observed migrating upstream at any point in its course are contained in the following references:

Anon., 1938c, 1942b
Aro, 1952
Babcock, 1903, 1910, 1914, 1916
Bean, 1887b, 1891, 1894
Berg, 1948
Bigelow & Welsh, 1925
Bower, 1922, 1923, 1925b, 1927, 1929a, 1930, 1932, 1933, 1934, 1935, 1936, 1938a, 1940
Bower & Aller, 1915, 1917a, 1917b
Bower & Fassett, 1914
Bowers, 1899
Bowser, 1909
Brett & Pritchard, 1946
Brice, et al., 1898
California, State of, 1952-1954
Carl & Clemens, 1948
Chamberlain, 1907
Chamberlain & Bower, 1913
Clemens, 1946b
Cobb, 1911, 1917, 1921
Coker, 1922
Collins, 1892
Crawford, 1908
Davidson, 1940a, 1940b
Davidson & Christey, 1940
Davidson & Vaughan, 1939a, 1941
Davidson, et al., 1943
Dymond, 1940
Evermann, 1905
Evermann & Goldsborough, 1907b
Foerster, 1935, 1955
Foerster & Pritchard, 1935
Foskett, 1947
Fraser, 1919
Gibson, 1923
Godfrey, et al., 1954
Handa, 1934
Hunter, 1948, 1949a
Hutchinson, 1944
International North Pacific Fisheries Commission, 1955
Jordan, 1884, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Jordan & Starks, 1896b
Kirkness, et al., 1952, 1953
Leach, 1926, 1932
Marr, 1944
Marsh & Cobb, 1908, 1910
McDonald, 1894a
Milne, 1950b, 1955
Milne, 1913
Moser, 1899
Neave, 1953
Novisoff, 1912
O'Malley, 1920a
Parker & Kirkness, 1951
Popov, 1933
Pritchard, 1931a, 1937a, 1940b
Radcliffe, 1920
Rathbun, 1894, 1900
Rich & Ball, 1929b
Rutter, 1904b, 1908
Shapovalov & Taft, 1954
Smedley, 1952

Smith, 1895b
Smoker, 1954
Snyder, 1931
Stone, 1878c, 1897
Suckley, 1874
Tokahisa & Takeshi, 1934
U.S. Fish and Wildlife Service, 1945
U.S. Foreign Economic Administration, 1945
Vaughan, 1947
Wilcox, 1898
Williamson, 1927
Wynne-Edwards, 1947a

SIZE AT TIME OF RETURN

Data on the size of pink salmon at time of return are contained in the following references:

Anon., 1928
Aro, 1952
Baievsky, 1926
Bean, 1887b. 1894
Brice, et al., 1898
Briggs, 1953
Clemens, 1935b, 1946b
Cobb, 1911, 1917
Coker, 1922
Collins, 1892
Davidson & Vaughan, 1941
Evermann, 1905
Evermann & Goldsborough, 1907b
Foerster, 1955
Foerster & Pritchard, 1941
Fraser, 1919, 1921
Gilbert, 1913b, 1914a, 1924c
Godfrey, et al., 1954
Jordan, 1884, 1892,
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Jordan & Starks, 1896b
Kirkness, et al., 1952, 1953
Marsh & Cobb, 1910
Moser, 1899
Neave, 1949
Novisoff, 1912
O'Malley, 1920a
Parker & Kirkness, 1951
Pressey, 1953
Pritchard, 1932a, 1937c
Radcliffe, 1920
Rathbun, 1900
Rutter, 1904b
Scheer, 1939
Scofield, 1916
Shapovalov & Taft, 1954
Smedley, 1952
Smith, 1895b, 1920
Snyder, 1931
Stone, 1878c, 1897
Suckley, 1874
Taft, 1838b
Tanner, et al., 1890
U.S. Fish and Wildlife Service, 1945
Wales & Coots, 1955
Williamson, 1927

AGE AT TIME OF RETURN

Data on the age of pink salmon at time of return are contained in the following references:

Anon., 1937, 1951c, 1953c, 1954, 1955c
Babcock, 1908, 1931a
Bean, 1891
Berg, 1948
Bower, 1933
Bower & Aller, 1917a
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1935b, 1938b, 1946b, 1952
Cobb, 1917
Davidson, 1940a, 1940b
Davidson & Hutchinson, 1942
Davidson & Shostrom, 1936
Davidson & Vaughan, 1939b, 1941
Davidson, et al., 1943
Eigenmann, 1890
Foerster, 1935, 1943, 1949, 1955
Foerster & Pritchard, 1935
Fraser, 1919, 1921
Gilbert, 1913b, 1914a1924c
Gilbert & Rich, 1929
Godfrey, et al., 1954
Higgins, 1932
Hoar, 1951
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904a
Kirkness, et al, 1952, 1953
Milne, 1955
Milne, 1913
Neave, 1948, 1949, 1953
O'Malley, 1920a
Oshima, 1934
Parker & Kirkness, 1951
Pressey, 1953
Pritchard, 1932a, 1932d, 1937b, 1937c, 1938a, 1939a, 1940b, 1943b, 1948a
Rich, 1948
Ricker, 1954
Rounsefell & Kelez, 1940
Rutter, 1904b
Scheer, 1939
Shapovalov & Taft, 1954
Smedley, 1952
Smoker, 1954
Snyder, 1931
U.S. Fish and Wildlife Service, 1945
Vaughan, 1947

TYPE OF SPAWNING STREAM

Data on the nature of the spawning stream chosen by the pink salmon are contained in the following references:

Anon., 1904a, 1937,
Babcock, 1931a
Bean, 1891, 1894
Brice, et al., 1898
Chamberlain, 1907
Clemens, 1946b, 1951, 1953
Davidson & Hutchinson, 1942
Davidson & Vaughan, 1941
Davidson, et al., 1943
Evermann, 1905
Foerster, 1935
Foerster & Pritchard, 1935
Hanavan & Skud, 1954
Hutchinson & Shuman, 1942
Jordan, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kirkness, et al., 1952
McDonald, 1894a
Neave, 1949
Neave & Wickett, 1953
O'Malley, 1920a
Pritchard, 1934e, 1940b, 1949
Rathbun, 1900
Rich, 1948
Rutter, 1904b
Scheer, 1939
Wynne-Edwards, 1947a

DISTANCE TRAVELED UPSTREAM

The following references mention the distance traveled upstream by pink salmon:

Babcock, 1931a
Bean, 1887b, 1891, 1894
Brice, et al., 1898
Carl & Clemens, 1948
Clemens, 1935b, 1953
Davidson & Christey, 1940
Davidson & Hutchinson, 1942
Davidson, et al., 1943
Evermann, 1905
Evermann & Goldsborough, 1907b
Foerster & Pritchard, 1935
Gilbert, 1924c
Gilbert & O'Malley, 1921
International North Pacific Fisheries Commission, 1955
Jordan, 1884, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Neave, 1953
O'Malley, 1920a
Pritchard, 1936a
Scheer, 1939
Smith, 1895b
Stone, 1878c
Suckley, 1874
Wynne-Edwards, 1947a, 1952

NATURE OF SPAWNING SITE

Notes regarding the nature of the spawning site of pink salmon are contained in the following references:

Anon., 1954
Bower, 1925b
Briggs, 1953
Chamberlain, 1907
Crawford, 1908
Davidson & Hutchinson, 1942
Davidson, et al., 1943
Evermann, 1905
Foerster, 1935
Fokkett, 1947a
Gilbert, 1929
Hanavan & Skud, 1954
Jordan, 1896c, 1904a, 1892
Jordan & Evermann, 1896
Moser, 1899
O'Malley, 1920a
Pritchard, 1940b
Rich, 1948
Rounsefell & Kelez, 1940
Stone, 1878c
Taft, 1938b
U.S. Fish and Wildlife Service, 1945

SPAWNING PERIOD

Data on the spawning period of the pink salmon are contained in the following references:

Andriashev, 1955
Anon., 1953c
Babcock, 1914, 1916
Berg, 1948
Birchall & Hickman, 1914
Bower, 1923, 1927, 1929a
Brett & Pritchard, 1946a
Brice, et al., 1898
Chamberlain, 1907
Clemens, 1946b
Davidson, 1940a, 1940b
Davidson & Vaughan, 1939c, 1941

Davidson, et al., 1943
Gibson, 1922, 1923, 1924, 1925, 1927, 1929, 1930, 1931
Gilbert & O'Malley, 1921
Gilbert & Rich, 1929
Hanavan & Skud, 1954
Hickman & Collison, 1920
Hubbs, 1946
Jordan & Evermann, 1896
Leach, 1923, 1924, 1928, 1930, 1931, 1932
Lockington, 1880
Marsh & Cobb, 1907, 1908, 1911
McConnel & Brett, 1946
Moser, 1899
Motherwell, 1934
Neave, 1949, 1953
O'Malley, 1920a
Rathbun, 1900
Rounsefell & Kelez, 1940
Rutter, 1904b, 1908
Stone, 1919, 1920b, 1927b, 1929a, 1929b, 1931b
Stone, 1878c, 1897
Taft, 1938b
Wisley, 1920
Wynne-Edwards, 1947a
Yenatina, 1954

SEXUAL DIMORPHISM

Data on sexual dimorphism in pink salmon are mentioned in the following references:

Babcock, 1931a
Bean, 1891, 1894
Brett & Pritchard, 1946a, 1946b
Brice, et al., 1898
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1946b
Davidson, 1935
Davidson & Vaughan, 1941
Davidson, et al., 1943
Evermann & Goldsborough, 1907b
Gilbert, 1924c
Gilbert & O'Malley, 1921
Jordan, 1892, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Lockington, 1880
Marr, 1944
O'Malley, 1920a
Pritchard, 1937a
Rutter, 1904b
Shapovalov, 1947
Shapovalov & Taft, 1954
Stone, 1878c, 1897
Suckley, 1874
Taft, 1938b

SPAWNING BEHAVIOR

Data on the spawning behavior of pink salmon are contained in the following references:

Anon., 1953c
Babcock, 1931a
Bean, 1894
Berg, 1948
Bower, 1923
Brice, et al., 1898
Briggs, 1953
Chamberlain, 1907
Crawford, 1908
Evermann, 1905
Foerster, 1935
Jordan, 1892, 1896c
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Moser, 1899
Rutter, 1904b
Shapovalov & Taft, 1954

POST-SPAWNING BEHAVIOR

Data on the post-spawning behavior of pink salmon are noted in the following references:

Bean, 1891, 1894
Brice, et al.,
Briggs, 1953
Gilbert, 1914a
Jordan, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Oshima, 1934
Rathbun, 1900
Rutter, 1904b
Stone, 1878c, 1897

DATE EGGS HATCH

Data on the time of hatching of the pink salmon are included in the following references:

Carl & Clemens, 1948
Crawford, 1908
Davidson, 1940a
Davidson & Vaughan, 1939b
Foerster & Pritchard, 1935
Hanavan & Skud, 1954
International North Pacific Fisheries Commission, 1955
Jordan, 1896c
Jordan & Evermann, 1896
Marsh & Cobb, 1910
Pritchard, 1944a
Rich, 1948
U.S. Fish and Wildlife Service, 1945
Vaughan, 1947
Williamson, 1927

BEHAVIOR OF FRY AND FINGERLINGS

Data on the behavior of the fry and fingerlings of pink salmon are included in the following references:

Anon., 1953c, 1954
Black, 1951b
Chamberlain, 1907
Clemens, 1951, 1953
Davidson & Vaughan, 1941
Foerster, 1955
Fraser, 1919
Hoar, 1951a, 1953, 1954
MacKimon & Brett, 1955
Moser, 1899
Neave, 1955
Pritchard, 1940b, 1944a
Rich, 1948
Rutter, 1904b
Shapovalov & Taft, 1954
Stone, 1897
Wales & Coot, 1955a

TIME YOUNG SPEND IN FRESHWATER

Data on the time spent in freshwater by the young pink salmon are contained in the following references:

Anon., 1948, 1951c, 1952
Babcock, 1908, 1931a
Bean, 1894
Bower, 1934
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1935b, 1946b, 1951, 1952, 1953
Cobb, 1921
Davidson & Vaughan, 1939b, 1941
Davis, 1953
Earp, et al., 1953
Foerster & Pritchard, 1935
Fraser, 1919
Gilbert, 1913b, 1914a, 1924c
Gilbert & Rich, 1929
Handa, 1934
Higgins, 1932
Hoar, 1951a
Hourston, et al., 1955
Hunter, 1949a
Hubbs, 1946
MacKimon & Brett, 1955
Milne, 1913
Neave, 1948, 1949
Neave & Wickett, 1953
O'Malley, 1920a
Oshima, 1934
Parker & Kirkness, 1951
Pritchard, 1939a, 1940b
Rich, 1948
Ricker, 1954
Rutter, 1904b, 1905
Scheer, 1939
Shapovalov & Taft, 1954
Smoker, 1954
U S. Fish and Wildlife Service, 1945
Wales & Coots, 1955a

DATE OF SEAWARD MIGRATION

Statements on the date of seaward migration of young pink salmon are contained in the following references:

Bean, 1894
Bower, 1925b, 1938a
Bower & Fassett, 1914
Brett & Mackinnon, 1953
Brett & Pritchard, 1946
Chamberlain, 1907
Clemens, 1951
Davidson, 1940b
Davidson & Hutchinson, 1942
Davidson & Vaughan, 1941
Foerster & Pritchard, 1935
Fraser, 1919
Gilbert, 1914a
Gilbert & Rich, 1929
Hoar, 1951a
Hubbs, 1946
International North Pacific Fisheries Commission, 1955
MacKimon & Brett, 1955
Marr, 1944
Neave, 1947, 1948, 1953
Oshima, 1934
Parker, et al., 1953
Pritchard, 1931a, 1936c, 1937a, 1940b, 1944a, 1944c
Rich, 1948
Rounsefell & Kelez, 1940
Rutter, 1904b
Shapovalov & Taft, 1954
Snyder, 1931
Vaughan, 1947
Wales & Coots, 1955a

SIZE AT TIME OF SEAWARD MIGRATION

Data on the size of young pink salmon at the time of seaward migration are contained in the following references:

Babcock, 1903
Chamberlain, 1907
Chamberlain & Bower, 1913
Davidson & Vaughan, 1941
Foerster & Pritchard, 1935
Fraser, 1919
Gilbert, 1913b
Hourston, et al., 1955
Milne, 1913
Pritchard, 1936a, 1936c, 1948b
Rich, 1948
Rounsefell & Kelez, 1940

MOVEMENTS IN THE OCEAN

Data on the movements in the ocean of the pink salmon are contained in the following references:

Anon., 1953b
Babcock, 1903, 1914, 1931a
Barnaby, 1952
Bean, 1891, 1894
Chamberlain, 1907
Clemens, 1935b
Cobb, 1917, 1921
Davidson, 1940c
Davidson & Hutchinson, 1940
Davidson & Vaughan, 1941
Gilbert, 1895
Hoar, 1953
Hubbs, 1946
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904a, 1904b
Jordan & Evermann, 1896
Neave, 1953
Pritchard, 1944c, 1948a
Rathbun, 1900
Rich, 1925a, 1935c, 1939
Rounsefell & Kelez, 1940
Rutter, 1904b
Scheer, 1939
Shapovalov & Taft, 1954
Snyder, 1931
Verhoeven, 1952
Williamson, 1927

MARKING OR TAGGING AND RECAPTURE DATA

Data on marking or tagging and recapture of pink salmon are contained in the following references:

Anon., 1929b, 1937, 1951c, 1952, 1953c, 1954
Babcock, 1914
Brett & Pritchard, 1946b
California, State of, 1904, 1952-1954
Chamberlain, 1907
Clemens, 1937, 1939c
Clemens, et al., 1939
Coker, 1922
Davidson, 1940b
Davidson & Christey, 1940
Davidson & Vaughan, 1939c
DeLacy & Neave, 1947
Elling & Macy, 1955
Foerster, 1941, 1942, 1943, 1944a, 1945, 1946a, 1947a, 1948, 1949
Godfrey, et al., 1954
Higgins, 1929
Hunter, 1951
International North Pacific Fisheries Commission, 1955
Jensen, 1953

Jordan, 1892, 1896c, 1904b
Kirkness, et al., 1952, 1953
Marsh & Cobb, 1907, 1908, 1911
Milne, 1955
Parker & Kirkness, 1951
Powers, 1939
Pritchard, 1930, 1931d, 1932a, 1932b, 1932d, 1934d, 1934e, 1937b, 1938b, 1939a, 1940b, 1941, 1943b, 1944a, 1944c
Pritchard & DeLacy, 1944b
Rich, 1925a, 1927, 1935a, 1935c, 1939
Rich & Morton, 1930
Rich & Suomela, 1929a
Rounsefell & Kelez, 1940
Rutter, 1904b
Sano & Kobayashi, 1953b
Scheer, 1939
Snyder, 1931
Williamson, 1927

HOMING INSTINCT

Discussions or data concerning the homing instinct in pink salmon are contained in the following references:

Anon., 1937
Babcock, 1931a
Chamberlain, 1907
Clemens, 1937, 1938b, 1939c, 1951, 1953
Davidson, 1940b
Davidson & Vaughan, 1939b, 1941
Foerster, 1941
Fraser, 1919
International North Pacific Fisheries Commission, 1955
Jordan, 1892, 1896c, 1904b
Jordan & Gilbert, 1887
Marsh & Cobb, 1911
Powers, 1939
Pritchard, 1932d, 1934a, 1937b, 1939a, 1940b, 1941, 1943b, 1944c, 1948a
Rich, 1939, 1948
Rich & Ball, 1931
Rounsefell & Kelez, 1940
Rutter, 1904b
Scheer, 1939
Shapovalov, 1940
Shapovalov & Taft, 1954
U.S. Fish and Wildlife Service, 1945
Verhoeven, 1952

GROWTH RATES

Remarks on the growth rates of pink salmon are included in the following references:

Berg, 1948
Chamberlain, 1907
Davidson & Vaughan, 1941
Fraser, 1919, 1921
Hubbs, 1946
International North Pacific Fisheries Commission, 1955
Marr, 1944
Parker & Kirkness, 1951
Rounsefell & Kelez, 1940

FOOD AND FEEDING HABITS

Data concerning the food and/or feeding habits of pink salmon are contained in the following references:

Anon., 1952, 1953b, 1953c, 1955c
Babcock, 1931a
Barnaby, 1952
Bean, 1891, 1894
Carl & Clemens, 1948
Clemens, 1935b, 1940b, 1951, 1953
Cobb, 1917, 1921
Davidson & Vaughan, 1941
Einarsen, 1927
Fish, 1939
Foerster, 1941, 1942, 1955
Foskett, 1951b
Fraser, 1919
Gilbert, 1913b, 1914a
International North Pacific Fisheries Commission, 1955
Maeda, 1955
Marsh & Cobb, 1908
Nakai & Honjo, 1954
Pritchard, 1936c
Rich, 1948
Ricker, 1954
Rounsefell & Kelez, 1940
Senter, 1940
Smith, 1895b
Stone, 1878c, 1897
Thompson, 1931
U.S. Fish and Wildlife Service, 1945
Williamson, 1927
Withler, 1948

PARASITES AND DISEASES

Parasites and diseases infecting the pink salmon are reported by:

Bean, 1891
Clemens, 1939
Davis, 1953
Earp & Schwab, 1954
Earp, et al., 1953
Eguchi, 1934
Fallera, 1926
Fish, 1939
Guberlet, 1936
Jordan, 1892, 1896c, 1904
Kobayashi, 1934
Nishino, 1953
Shapovalov & Taft, 1954
Ward, 1908

INTRODUCTIONS AND ACCLIMATIZATION

For data on the introduction and acclimatization of pink salmon into various exotic waters, see subject section under this category.

EGG COUNTS

The following references contain data on the number of eggs produced by pink salmon:

Aro, 1952
Bower, 1938a
Foerster, 1955
Foerster & Pritchard, 1936, 1941
Hunter, 1948
Neave, 1953
Pritchard, 1931a, 1939b, 1948b

RELATIVE ABUNDANCE

Material on the relative abundance of pink salmon is contained in the following references. Examination of the specific entries will indicate whether the data are in the form of catch records or as counts of migrant adults.

Anon., 1915b, 1931a, 1949a, 1954, 1952, 1942a, 1942c, 1955c
Aro, 1952
Atkinson, 1955
Babcock, 1910
California, State of, 1902-1952, 1952-1954
Ellis, et al., 1937
Foerster, 1941, 1942, 1943, 1944a, 1945, 1947a, 1948, 1950
Godfrey, et al., 1954
Hunter, 1948, 1949a, 1951
Hutchinson, 1944
Hutchinson & Shuman, 1942
International North Pacific Fisheries Commission, 1955
Milne, 1913
Moser, 1899
Neave, 1947
Parker, et al., 1953
Pressey, 1953
Pritchard, 1940c, 1949
Rich, 1935c
Rich & Ball, 1929b, 1931, 1935
Robertson, 1949
Rounsefell & Kelez, 1940
Sano & Kobayashi, 1953b
Smith, 1895b
Smoker, 1954
Snyder, 1931
U.S. Fish and Wildlife Service, 1931-1940
U.S. Foreign Economic Administration, 1945
Vaughan, 1942
Washington, State of, 1935-1945
Wilcox, 1898

Oncorhynchus keta (Walbaum), commonly called the chum or dog salmon, is distributed throughout the North Pacific Ocean from Japan to California. It enters the Arctic Ocean along both the Siberian and American Coasts. Of the references abstracted, the vernaculars "chum" and "dog" appear to be about equally employed.

DESCRIPTION - COUNTS AND MEASUREMENTS

The following papers present descriptive matter on the chum salmon and/or counts and measurements of any of its systematic characteristics.

Bean, 1887b
Berg, 1948
Brice, et al., 1898
Carl & Clemens, 1948
Chamberlain, 1907
Crawford, 1925
Davidson & Shostrom, 1936
Eigenmann, 1890
Evermann, 1905
Foerster, 1935
Foerster & Pritchard, 1935
Gilbert & Evermann, 1895
Grigo, 1953
Hikita, 1953, 1955
Honma & Murakawa, 1955
Hubbs, 1946
Hunter, 1949b
Jordan, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1882
Kubo, 1947, 1949, 1950
Kubo & Kobayashi, 1953
Lockington, 1880
Milne, 1913
O'Malley, 1920a
Oshima, 1934
Rathbun, 1900
Sano, 1951
Shapovalov, 1947
Snyder, 1931
Stone, 1897
Suckley, 1874
Tchernavin, 1938-1940.

FIGURES AND ILLUSTRATIONS

The following references contain drawings and/or illustrations of the chum salmon:

Bean, 1891
Berg, 1948
Brice, et al., 1898
California, State of, 1904
Carl & Clemens, 1948
Chamberlain, 1907
Cobb, 1917
Collins, 1892
Crawford, 1925
Davidson & Shostrom, 1936
Earp & Schwab, 1954
Evermann & Goldsborough, 1907b
Foerster & Pritchard, 1935
Hikita, 1953, 1955
Honma & Murakawa, 1955
Jordan, 1884, 1896c
Jordan & Evermann, 1896
Jones, 1915
Marr, 1944
Milne, 1913
Moser, 1899
Nomura, 1953
O'Malley, 1920a
Oshima, 1934
Roedel, 1948
Scofield, 1900
Shapovalov, 1947
Stone, 1897
Wilcox, 1902

LIFE COLORS

Often natural populations of fishes have distinctive color patterns To aid in racial analysis, an attempt was made to isolate data on life colors. The following references contain statements referrring to the color of the chum salmon:

Babcock, 1931a
Bean, 1891, 1894
Berg, 1948
Brice, et al., 1898
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Cobb, 1911, 1917, 1921
Crawford, 1925
Eigenmann, 1890
Evermann, 1905
Foerster, 1935
Foerster & Pritchard, 1935
Gilbert & O'Malley, 1921
Hikita, 1955
Hunter, 1949b
Jordan, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1882, 1887
Locke, 1929
Lockington, 1880
Marsh & Cobb, 1908
O'Malley, 1920a
Oshima, 1934
Ricker, 1940
Roedel, 1949, 1953a
Rutter, 1904b
Shapovalov, 1947
Snyder, 1931
Suckley, 1874

RELATIONSHIPS

The following references contain data on the relationships of chum salmon to other species. Distinctions employed in keys are included in this category.

Babcock, 1931a
Berg, 1948
Burner, 1951
Chamberlain, 1907
Foerster & Pritchard, 1935
Hoar, 1951a
Jordan & Evermann, 1896
Jordan & Gilbert, 1882
Kobayasi, 1955
Locke, 1929
Nomura, 1953
Schultz, 1934
Shapovalov, 1947
Snyder, 1931
Suckley, 1874
Tchernavin, 1938

RACIAL ANALYSIS

The following papers contain comments or data upon the races or populations of the chum salmon:

Babcock, 1931a
Bower, 1933, 1934
Chamberlain, 1907
Chamberlain & Bower, 1913
Davidson & Shostrom, 1936
Evermann & Goldsborough, 1907b
Fraser, 1921
Gharrett & Hodges, 1950
Gilbert, 1924c
Gilbert & Rich, 1927
Grigo, 1953
International North Pacific Fisheries Commission, 1955
Jordan, 1904b
Kirkness, et al., 1953
Kubo, 1950,
Kubo & Kobayashi, 1953
Marr, 1944

Milne, 1955
Moser, 1899
Parker & Kirkness, 1951
Powers, 1941
Rathbun, 1900
Rich, 1925a
Rich & Ball, 1929b
Sano, 1951
Scheer, 1939
Verhoeven, 1952
Watanabe, 1955

ANATOMY AND PHYSIOLOGY

Included within this category are references concerning the anatomy, histology, osteology (including sub-fossil finds) and physiology of the chum salmon.

Anon., 1955a
Black, 1951a, 1951b
Brett, 1952b
Cobb, 1921
Coker, 1922
Davidson & Shostrom, 1936
Hoar, 1951c, 1953
Honma & Murakawa, 1955
Igarashi & Zama
Jordan, 1904a
Kobayashi & Yuki, 1954b
Nishida, 1953b, 1954, 1955
Nomura, 1953
Okada, 1954
Palmer, et al., 1954
Pentegov, et al., 1928
Potter & Hoar, 1954
Saito, 1940
Tchernavin, 1938
Tuge, 1937
Yamamoto, 1955

BIOCHEMISTRY

Data on the biochemistry of the chum salmon are presented in the following papers:

Bailey, 1952
Brocklesby, 1940
Brocklesby & Denstedt, 1933
Fallera, 1926
Jarvis, 1926
Ney, et al., 1950
Pottinger & Baldwin, 1950
Pugsley, 1942

SEX RATIOS

Data on the sex ratios of the chum salmon are presented in the following papers:

Chamberlain, 1907
Gilbert, 1914b, 1924c
Henry, 1954
Marr, 1944
Snyder, 1931
Stone, 1929a

TIME OF SPAWNING MIGRATION

Data on the time of return of chum salmon from the ocean to the stream mouths are contained in the following references:

Atkinson, 1955
Babcock, 1931a
Brice, 1898
Briggs, 1953
Chamberlain, 1907
Cobb & Kutchin, 1907
Davidson, et al., 1943
Gilbert, 1924
Henry, 1953
Jordan & Starks, 1896
McHugh, 1915
Neave, 1949
Pritchard, 1932
Rounsefell & Kelez, 1940
Thompson, 1931

Data on the time fish are observed migrating upstream at any point in its course are contained in the following references:

Aro, 1952
Babcock, 1903, 1910
Barin, 1887
Bean, 1887b, 1891, 1894
Berg, 1948
Bower, 1923, 1925b, 1927, 1929a 1930, 1932, 1933, 1934, 1935, 1936, 1938a, 1940, 1941, 1931
Bower & Aller, 1915
Brice, et al., 1898
Bryant, 1949
Burner, 1951
Carl & Clemens, 1948
Chamberlain, 1907
Chamberlain & Bower, 1913
Cleaver, 1951
Cobb, 1911, 1917, 1921
Coker, 1922
Collins, 1892
Crawford, 1908
Davidson, et al., 1943
Dymond, 1940
Evermann, 1905
Evermann & Goldsborough, 1907b
Evermann & Meek, 1898
Foerster, 1929a, 1935, 1955
Foerster & Pritchard, 1935
Fraser, 1919
Gilbert & Evermann, 1895
Godfrey, et al., 1954
Handa, 1934
Hunter, 1948, 1949a
International North Pacific Fisheries Commission, 1955
Jordan, 1884, 1896c, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Jordan & Starks, 1896b
Kirkness, et al., 1952, 1953
Kuznetzov, 1928
Leach, 1926, 1927, 1932
Marr, 1944
Marsh & Cobb, 1908, 1910
McDonald, 1894a
Milne, 1955
Milne, 1913
Moser, 1899
Neave, 1953
O'Malley, 1920a
Parker & Kirkness, 1951
Parkhurst, et al., 1950
Popov, 1933
Pritchard, 1940b
Radcliffe, 1920
Rathbun, 1894, 1900
Rich, 1942
Rich & Ball, 1929b
Rutter, 1904b, 1908
Sano, 1955
Shapovalov & Taft, 1954
Smoker, 1954
Snyder, 1931
Stone, 1897
Suckley, 1874
Tokahisa & Takeshi, 1934
U.S. Fish and Wildlife Service, 1945
Wilcox, 1898
Wynne-Edwards, 1947a

SIZE AT TIME OF RETURN

Data on the size of chum salmon at time of return are contained in the following references:

Aro, 1952
Baievsky, 1926,
Bean, 1887b, 1894
Brice, et al., 1898
Briggs, 1953
Burner, 1951
Chapman, 1940a
Cobb, 1911, 1917
Coker, 1922
Collins, 1892
Evermann, 1905
Evermann & Goldsborough, 1907b
Evermann & Meek, 1898
Foerster, 1929a, 1955
Fraser, 1919, 1921
Gilbert, 1914b, 1924c
Godfrey, et al., 1954
Henry, 1954
Hunter, 1949b
Jordan, 1884
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Jordan & Starks, 1896b
Kirkness, et al., 1952, 1953
Kuznetzov, 1928
Locke, 1929
Marsh & Cobb, 1910
Moser, 1899
Neave, 1949
Neave, et al., 1953
O'Malley, 1920a
Parker & Kirkness, 1951
Pressey, 1953
Pritchard, 1932a
Radcliffe, 1920
Rathbun, 1900
Ricker, 1940
Rutter, 1904b
Scheer, 1939
Scofield, 1916
Shapovalov & Taft, 1954
Snyder, 1931
Stone, 1897
Suckley, 1874
Tanner, et al., 1890
US Fish and Wildlife Service, 1945
Wales & Coots, 1955

AGE AT TIME OF RETURN

Data on the age of chum salmon at time of return are contained in the following references:

Anon., 1951c, 1953c, 1954, 1955c
Babcock, 1931a
Bean, 1891
Berg, 1948
Bower, 1933
Bowser, 1913
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Cleaver, 1951
Clemens, 1938b
Cobb, 1917
Davidson & Shostrom, 1936
Davidson, et al., 1943
Eigenmann, 1890
Foerster, 1935, 1943, 1949, 1955
Foerster & Pritchard, 1935
Fraser, 1919, 1921
Gilbert, 1914b, 1924c
Godfrey, et al., 1954
Henry, 1953, 1954
Hoar, 1951b
Hunter, 1949b
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904a
Kirkness, et al., 1952, 1953
Kuznetzov, 1928

Milne, 1955
Milne, 1913
Neave, 1949, 1953
Neave, et al., 1953
O'Malley, 1920a
Oshima, 1934
Parker & Kirkness, 1951
Pressey, 1953
Pritchard, 1932a, 1940b, 1943a
Rich, 1948
Ricker, 1940, 1954
Rounsefell & Kelez, 1940
Rutter, 1904b
Scheer, 1939
Shapovalov & Taft, 1954
Smoker, 1954
Snyder, 1931
U.S. Fish and Wildlife Service, 1945

TYPE OF SPAWNING STREAM

Data on the nature of the spawning stream chosen by the chum salmon are contained in the following references:

Anon., 1904a
Babcock, 1931a
Bean, 1891, 1894
Brice, et al., 1898
Bryant, 1949
Burner, 1951
Chamberlain, 1907
Clemens, 1951, 1953
Davidson, et al., 1943
Evermann, 1905
Foerster, 1935
Foerster & Pritchard, 1935
Gilbert, 1914b
Jordan, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kirkness, et al., 1952
Kuznetzov, 1928
McDonald, 1894a
Neave, 1949
Neave & Wickett, 1953
O'Malley, 1920a
Powers, 1941
Pritchard, 1934e, 1940b, 1949
Rathbun, 1900
Rich, 1948
Rutter, 1904b
Scheer, 1939
Wynne-Edwards, 1947a

DISTANCE TRAVELED UPSTREAM

The following references mention the distance traveled upstream by the chum salmon:

Babcock, 1931a
Bean, 1887b, 1891, 1894
Brice, et al., 1898
Bryant, 1949
Burner, 1951
Carl & Clemens, 1948
Clemens, 1953
Davidson, et al., 1943
Evermann, 1905
Evermann & Goldsborough, 1907b
Foerster & Pritchard, 1935
Gilbert, 1924c
Gilbert & Evermann, 1895
Gilbert & O'Malley, 1921
International North Pacific Fisheries Commission, 1955
Jordan, 1884, 1896c, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kuznetzov, 1928

Locke, 1929
Neave, 1953
O'Malley, 1920a
Scheer, 1939
Suckley, 1874
Wynne-Edwards, 1947a, 1952

NATURE OF SPAWNING SITE

Notes regarding the nature of the spawning site of chum salmon are contained in the following references:

Anon., 1954
Bower, 1925b
Briggs, 1953
Burner, 1951
Chamberlain, 1907
Crawford, 1908
Davidson, et al., 1943
Evermann, 1905
Foerster, 1929a, 1935
Jordan, 1896c, 1904a
Jordan & Evermann, 1896
Leach, 1922
Moser, 1899
O'Malley, 1920a
Pritchard, 1940b
Rich, 1948
Robertson, 1920
Rounsefell & Kelez, 1940
Sano, 1955
U.S. Fish and Wildlife Service, 1945

SPAWNING PERIOD

Data on the spawning period of the chum salmon are contained in the following references:

Andriashev, 1955
Anon., 1953c
Barin, 1887
Berg, 1948
Bower, 1923, 1927, 1929a
Brice, et al., 1898
Bryant, 1949
Chamberlain, 1907
Craig & Hacker, 1940
Davidson, et al., 1943
Evermann & Meek, 1898
Gilbert & O'Malley, 1921
Hickman & Collison, 1920
Hubbs, 1946
Jordan & Evermann, 1896
Kuznetzov, 1928
Leach, 1922, 1924, 1928, 1931, 1932
Locke, 1929
Lockington, 1880
Marsh & Cobb, 1907, 1908, 1911
Moser, 1899
Motherwell, 1934
Neave, 1949, 1953
O'Malley, 1920a
Rathbun, 1900
Ricker, 1940
Rounsefell & Kelez, 1940
Rutter, 1904b, 1908
Stone, 1920b, 1921a, 1922b, 1925a, 1927a, 1927b, 1929a, 1931b, 1932a
Stone, 1897
Sumner, 1953
Wynne-Edwards, 1947a

SEXUAL DIMORPHISM

Data on sexual dimorphism in chum salmon are mentioned in the following references:

Babcock, 1931a
Bean, 1891, 1894
Brice, et al., 1898
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Davidson, et al., 1943
Evermann & Goldsborough, 1907b
Gilbert, 1924c
Gilbert & O'Malley, 1921
Jordan, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kuznetzov, 1928
Locke, 1929
Lockington, 1880
Marr, 1944
O'Malley, 1920a
Ricker, 1940
Rutter, 1904b
Shapovalov, 1947
Shapovalov & Taft
Stone, 1897
Suckley, 1874

SPAWNING BEHAVIOR

Data on the spawning behavior of chum salmon are contained in the following references:

Anon., 1953c
Babcock, 1931a
Bean, 1894
Berg, 1948
Bower, 1923
Brice, et al., 1898
Briggs, 1953
Burner, 1951
Chamberlain, 1907
Crawford, 1908
Evermann, 1905
Foerster, 1935
Jordan, 1896c
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Moser, 1899
Rutter, 1904b
Shapovalov & Taft, 1954

POST-SPAWNING BEHAVIOR

Data on the post-spawning behavior of chum salmon are noted in the following references:

Bean, 1891, 1894
Brice, et al., 1898
Briggs, 1953
Evermann & Meek, 1898
Jordan, 1896c, 1904a
Jordan & Evermann, 1896
Locke, 1929
Oshima, 1934
Rathbun, 1900
Rutter, 1904b
Stone, 1897

DATE EGGS HATCH

Data on the time of hatching of the chum salmon are included in the following references:

Carl & Clemens, 1948
Crawford, 1908
Evermann & Meek, 1898
Foerster & Pritchard, 1935
International North Pacific Fisheries Commission, 1955
Jordan, 1896c
Jordan & Evermann, 1896
Leach, 1924
Marsh & Cobb, 1910
Rich, 1948
Scofield, 1898b
U.S. Fish and Wildlife Service, 1945

BEHAVIOR OF FRY AND FINGERLINGS

Data on the behavior of the fry and fingerlings of chum salmon are included in the following references:

Anon., 1953c, 1954
Black, 1951b
Chamberlain, 1907
Clemens, 1951, 1953
Foerster, 1955
Fraser, 1919
Hoar, 1951a, 1953, 1954
Kobayashi, 1953
MacKimon & Brett, 1955
Moser, 1899
Neave, 1955
Pritchard, 1940b
Rich, 1948
Ricker, 1940
Robertson, 1920
Rutter, 1904b
Scofield, 1898b, 1900
Shapovalov & Taft, 1954
Stone, 1897
Wales & Coots, 1955a

TIME YOUNG SPEND IN FRESHWATER

Data on the time spent in freshwater by the young chum salmon are contained in the following references:

Anon., 1948, 1951c, 1952
Babcock, 1931a
Bean, 1894
Bower, 1934
Bowser, 1913
Carl & Clemens, 1948
Chamberlain, 1907
Cleaver, 1951
Clemens, 1951, 1953
Cobb, 1921
Davis, 1953
Earp, et al., 1953
Evermann & Meek, 1898
Foerster & Pritchard, 1935
Fraser, 1919
Gilbert, 1914b, 1924c
Handa, 1934
Henry, 1953
Hoar, 1951a
Hourston, et al., 1955
Hubbs, 1946
Hunter, 1949a
Locke, 1929
MacKimon & Brett, 1955
Milne, 1913
Neave, 1949
Neave & Wickett, 1953
O'Malley, 1920a

Oshima, 1934
Parker & Kirkness, 1951
Pritchard, 1940b, 1943a
Rich, 1948
Ricker, 1940, 1954
Rutter, 1904b, 1908
Scheer, 1939
Scofield, 1898b
Shapovalov & Taft, 1954
Smoker, 1954
U.S. Fish and Wildlife Service, 1945
Wales & Coots, 1955a

DATE OF SEAWARD MIGRATION

Statements on the date of seaward migration of young chum salmon are contained in the following references:

Bean, 1894
Bower, 1925b, 1938a
Brett & Mackinnon, 1953
Chamberlain, 1907
Clemens, 1951
Foerster & Pritchard, 1935
Fraser, 1919
Gharrett & Hodges, 1950
Hoar, 1951a
Hubbs, 1946
International North Pacific Fisheries Commission, 1955
Johnson, et al., 1948
MacKimon & Brett, 1955
Marr, 1944
Neave, 1953
Oshima, 1934
Parker, et al., 1953
Pritchard, 1940b
Rich, 1948
Rounsefell & Kelez, 1940
Rutter, 1904b
Sano & Kobayashi, 1952, 1953a
Scofield, 1898b, 1900
Shapovalov & Taft, 1954
Snyder, 1931
Sumner, 1953
Wales & Coots, 1955a

SIZE AT TIME OF SEAWARD MIGRATION

Data on the size of young chum salmon at the time of seaward migration are contained in the following references:

Babcock, 1903
Chamberlain, 1907
Chamberlain & Bower, 1913
Foerster & Pritchard, 1935
Fraser, 1919
Gharrett & Hodges, 1950
Gilbert & Evermann, 1895
Hourston, et al., 1955
Milne, 1913
Pritchard, 1943a
Rich, 1948
Rounsefell & Kelez, 1940

MOVEMENTS IN THE OCEAN

Data on the movements in the ocean of the chum salmon are contained in the following references:

Anon., 1953b
Babcock, 1903, 1931a
Bean, 1891, 1894
Chamberlain, 1907
Cobb, 1917, 1921
Davidson, 1940c
Davidson & Hutchinson, 1940
Gilbert, 1914b
Hikita, 1955
Hoar, 1953
Hubbs, 1946
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904a, 1904b
Jordan & Evermann, 1896
Neave, 1953
Powers, 1941
Rathbun, 1900
Rich, 1925a, 1935c
Rounsefell & Kelez, 1940
Rutter, 1904b
Sano & Kobayashi, 1952
Scheer, 1939
Shapovalov & Taft, 1954
Snyder, 1931
Verhoeven, 1952

MARKING OR TAGGING AND RECAPTURE DATA

Data on marking or tagging and recapture of chum salmon are contained in the following references:

Anon., 1951c, 1952, 1953c, 1954
Bowser, 1913
California, State of, 1904
Chamberlain, 1907
Chatwin, 1953b
Clemens, 1939c
Coker, 1922
Foerster, 1943, 1946a, 1947a, 1948, 1949
Gilbert & Rich, 1927
Godfrey, et al., 1954
Hunter, 1951
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904b
Kirkness, et al., 1952, 1953
Marsh & Cobb, 1907, 1908, 1911
Milne, 1955
Neave, et al., 1953
Parker & Kirkness, 1951
Pritchard, 1930, 1932a, 1932b, 1934e, 1940b
Rich, 1925a, 1927, 1935a, 1935c, 1941
Rich & Morton, 1930
Rich & Suomela, 1929a
Rounsefell & Kelez, 1940
Rutter, 1904b
Sano, 1951
Sano & Kobayashi, 1953a
Scheer, 1939
Snyder, 1931
Sumner, 1953

HOMING INSTINCT

Discussions or data concerning the homing instinct in chum salmon are contained in the following references:

Babcock, 1931a
Chamberlain, 1907
Clemens, 1938b, 1939c, 1951, 1953
Fraser, 1919
Gilbert, 1914b
Gilbert & Rich, 1927
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904b
Jordan & Gilbert, 1887
Marsh & Cobb, 1911
Prigchard, 1940b
Rich, 1948
Ricker, 1940
Rounsefell & Kelez, 1940
Rutter, 1904b
Sano, 1951
Scheer, 1939
Shapovalov& Taft, 1954
U.S. Fish and Wildlife Service, 1945
Verhoeven, 1952

GROWTH RATES

Remarks on the growth rates of chum salmon are included in the following references:

Berg, , 1948
Chamberlain, 1907
Foerster, 1929a
Fraser, 1919, 1921
Gilbert, 1914b
Henry, 1954
Honma & Murakawa, 1955
International North Pacific Fisheries Commission, 1955
Kobayashi, 1955
Marr, 1944
Parker & Kirkness, 1951
Rounsefell & Kelez, 1940
Sano & Kobayashi, 1952, 1953
Scofield, 1898b, 1900

FOOD AND FEEDING HABITS

Comments on the food and/or feeding habits of chum salmon are included in the following references:

Anon., 1952, 1953b, 1953c, 1955c
Babcock, 1931a
Bean, 1891, 1894
Bowser, 1913
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1940b, 1951, 1953
Cobb, 1917, 1921
Einarsen, 1927
Fish, 1939
Foerster, 1955
Foskett, 1951b
Fraser, 1919
International North Pacific Fisheries Commission, 1955
Konstantinov, 1951
Locke, 1929
Lowe, 1936
Maeda, 1955
Marsh & Cobb, 1908
Nakai & Honjo, 1954
Rich, 1948
Ricker, 1954
Rounsefell & Kelez, 1940
Senter, 1940
Stone, 1897
Thompson, 1931
U.S. Fish & Wildlife Service, 1945

PARASITES AND DISEASES

Parasites and diseases infecting the chum salmon are reported by:

Bean, 1891
Canavan, 1928
Clemens, 1939
Davis, 1953
Earp & Schwab, 1954
Earp, et al., 1953
Eguchi, 1934
Fallera, 1926
Fish, 1939
Jordan, 1896c,1904
Kobayashi, 1934
Nishino, 1953
Ricker, 1940
Sano, 1951
Shapovalov & Taft, 1954
Ward, 1908

INTRODUCTIONS AND ACCLIMATIZATION

For data on the introduction and acclimatization of chum salmon into various exotic waters, see subject section under this category.

EGG COUNTS

The following references contain data on the number of eggs produced by chum salmon:

Aro, 1952
Bower, 1938a
Foerster, 1955
Foerster & Pritchard, 1936
Hunter, 1948, 1949b
Kuznetzov, 1928
Neave, 1947, 1953
Rich, 1940b

RELATIVE ABUNDANCE

Material on the relative abundance of chum salmon is contained in the following references. Examination of the specific entires will indicate whether the data are in the form of catch records or as counts of migrant adults.

Anon., 1931a, 1949a, 1952, 1953c, 1954, 1955c
Aro, 1952
Atkinson, 1955
Babcock, 1910
Ellis, et al., 1937
Foerster, 1929a, 1943, 1947a, 1948, 1950
Gharrett & Hodges, 1950
Godfrey, et al., 1954
Henry, 1953
Hunter, 1948, 1949a, 1951
International North Pacific Fisheries Commission, 1955
Johnson, et al., 1948
Kuznetzov, 1928
Milne, 1913
Moser, 1899
Neave, 1947
Oregon Fish Commission, 1941,1943, 1949
Parker, et al., 1953
Pressey, 1953
Pritchard, 1949
Rich, 1935c, 1940b, 1941, 1942
Rich & Ball, 1929b, 1935
Robertson, 1949
Rounsefell & Kelez, 1940
Smoker, 1954
Snyder, 1931
U.S. Fish and Wildlife Service, 1931-1940
Washington, State of, 1935-1945
Wilcox, 1898

Oncorhynchus kisutch (Walbaum), commonly called the silver, coho, or jack salmon, is distributed throughout the North Pacific Ocean from Japan to California. It is not known to enter the Arctic Ocean. In addition to the common names cited above, several other vernaculars have been employed in the literature. However, the names "silver" and "coho" are by far the most frequently employed.

DESCRIPTION - COUNTS AND MEASUREMENTS

The following papers present descriptive matter on the silver salmon and/or counts and measurements of any of its systematic characteristics.

Babcock, 1905
Bean, 1887b
Berg, 1948
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1935b, 1946b
Crawford, 1925
Eigenmann, 1890
Evermann, 1905
Foerster, 1935
Foerster & Pritchard, 1935
Gilbert, 1895
Hagerman, 1951
Hikita, 1953
Hubbs, 1946
Hunter, 1949b
Jordan, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1882
Kendall, 1913
Lockington, 1880
O'Malley, 1920a, 1933
Oshima, 1934
Rathbun, 1900
Shapovalov, 1947
Smith, 1915
Snyder, 1931
Stone, 1897
Walford, 1931
Williamson, 1927

FIGURES AND ILLUSTRATIONS

The following references contain drawings and/or illustrations of the silver salmon:

Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1946b
Cobb, 1917
Collins, 1892
Crawford, 1925
Bean, 1891
Berg, 1948
Earp & Schwab, 1954
Evermann & Goldsborough, 1907b
Hikita, 1953
Foerster & Pritchard, 1935
Jones, 1915
Jordan, 1884, 1896c
Jordan & Evermann, 1896
Kendall, 1913
Marr, 1944
Milne, 1913
Moser, 1899
O'Malley, 1920a, 1933
Oshima, 1934
Pritchard & Tester, 1944
Roedel, 1928
Shapovalov, 1947

Stone, 1897
Walford, 1931
Williamson, 1927
Wisby & Hasler, 1954

LIFE COLORS

Often natural populations of fishes have distinctive color patterns. To aid in racial analysis, an attempt was made to isolate data on life colors. The following references contain statements referring to the color of the silver salmon:

Babcock, 1931a
Bean, 1891, 1894
Berg, 1948
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1935b, 1946b
Cobb, 1917
Cobb, 1921
Crawford, 1925
Eigenmann, 1890
Evermann, 1905
Foerster, 1935
Foerster & Pritchard, 1935
Gilbert & O'Malley, 1921
Hunter, 1949b
Jordan, 1892, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1882, 1887
Kendall, 1913
Locke, 1929
Lockington, 1880
Marsh & Cobb, 1908
O'Malley, 1920a, 1933
Oshima, 1934
Roedel, 1948, 1953
Shapovalov, 1947
Smith, 1915
Snyder, 1931
Walford, 1931
Williamson, 1927

RELATIONSHIPS

The following references contain data on the relationships of silver salmon to other species. Distinctions employed in keys are included in this category.

Babcock, 1931a
Berg, 1948
Burner, 1951
Chamberlain, 1907
Clemens, 1935b, 1946b
Foerster & Pritchard, 1935
Hagerman, 1951
Hallock, et al., 1952
Hoar, 1951a
Jordan & Evermann, 1896
Jordan & Gilbert, 1882
Kobayasi, 1955
Locke, 1929
Murphy & Shapovalov, 1951
Schultz, 1934
Shapovalov, 1947
Snyder, 1931
Walford, 1931

RACIAL ANALYSIS

The following papers contain comments or data upon the races or populations of the silver salmon:

Babcock, 1905, 1931a
Bower, 1933, 1934
Chamberlain, 1907
Chamberlain & Bower, 1913
Clemens, 1952
Craigie, 1926
Evermann & Goldsborough, 1907b
Fraser, 1921
Gilbert, 1913b, 1924c
Gilbert & Rich, 1927
Gharrett & Hodges, 1950
International North Pacific Fisheries Commission, 1955
Jensen, 1953
Jordan, 1904b
Kirkness, et al., 1953
Marr, 1944
McConnell & Brett, 1946
Milne, 1955
Moser, 1899
Parker & Kirkness, 1951
Powers, 1941
Pritchard, 1936b
Rathbun, 1900
Rich, 1925a
Rich & Ball, 1929b
Scheer, 1939
Smith, 1899
Verhoeven, 1952
Williamson, 1927

ANATOMY AND PHYSIOLOGY

Included within this category are references concerning the anatomy, histology, osteology (including sub-fossil finds) and physiology of the silver salmon.

Black, 1951a, 1951b
Brett, 1952b
Brett & MacKinnon, 1952, 1954
Cobb, 1921
Coker, 1922
Davidson & Shostrom, 1936
Greene, 1911b
Hoar, 1951c, 1953
Jordan, 1904a
Katz, 1950, 1951
Katz & Southward, 1950
Kendall, 1922
Lowman, 1953
Lowman & Jensen, 1955
Potter, & Hoar, 1954
Reagan, 1917

BIOCHEMISTRY

Data on the biochemistry of silver salmon are presented in the following papers:

Bailey, 1952
Brocklesby, 1933
Brocklesby & Denstedt, 1933
Dyer, 1952
Fallera, 1926
Jarvis, et al., 1926
Pottinger & Baldwin, 1940
Riddell, 1936b

SEX RATIOS

Data on the sex ratios of silver salmon are presented in the following papers. Crawford, 1927, notes hermaphroditism in the silver salmon.

Chamberlain, 1907
Gilbert, 1914a, 1924c
Marr, 1944
Snyder, 1931
Stone, 1928a, 1928b, 1929a, 1930b

TIME OF SPAWNING MIGRATION

Data on the time of return of silver salmon from the ocean to the stream mouths are contained in the following references:

Atkinson, 1955
Babcock, 1916, 1931a
Chamberlain, 1907
Cobb & Kutchin, 1907
Davidson & Vaughan, 1941
Davidson, et al., 1943
Ekbaum, 1936
Fraser, 1917a
Fry & Hughes, 1954
Gilbert, 1895, 1924
Henry, 1953
Jordan & Starks, 1896
McHugh, 1915
Neave, 1949
Pritchard, 1932
Rivers, 1947
Rounsefell & Kelez, 1940
Scofield, 1920
Thompson, 1931
Williamson, 1929
Williamson & Clemens, 1932

Data on the time fish are observed migrating upstream at any point in its course are contained in the following references:

Anon, 1916a, 1938a
Abernathy, 1887
Aro, 1952
Babcock, 1903, 1907, 1910, 1916
Barin, 1887
Bean, 1887b, 1891, 1894
Berg, 1948
Bower, 1922, 1923, 1925b, 1926, 1927, 1929a, 1929b, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1938a, 1938b, 1940 1941
Bower & Aller, 1915, 1917a, 1917b
Bower & Fassett, 1914
Bowers, 1899
Bowser, 1909
Brett & Pritchard, 1946a
Bryant, 1949
Burner, 1951
California, State of, 1952-1954
Carl & Clemens, 1948
Chamberlain, 1907
Chamberlain & Bower, 1913
Cleaver, 1951
Clemens, 1946b
Clemens, et al., 1938
Cobb, 1917, 1921
Coker, 1922
Collins, 1892
Craigie, 1926
Davidson, et al., 1943
Davidson, et al., 1941
Davison, 1954
Evermann, 1905
Evermann & Goldsborough, 1907b
Evermann & Meek, 1898
Fish, 1948
Foerster, 1929a, 1935, 1955
Foerster & Pritchard, 1935
Foskett, 1947a
Fraser, 1917a, 1919
Gibson, 1923
Godfrey, et al., 1954
Greene, 1911b
Handa, 1934
Hume, 1893
Hunter, 1948, 1949a
International North Pacific Fisheries Commission, 1955
Jordan, 1884, 1892, 1896c, 1907a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Jordan & Starks, 1896b
Kirkness, et al., 1952, 1953
Kuznetzov, 1928
Leach, 1926, 1927
Marr, 1944
Marsh & Cobb, 1908, 1910
McDonald, 1894a
McKernan, et al., 1950
Milne, 1950b, 1955
Milne, 1913
Moffett & Smith, 1950
Moser, 1899, 1902
Murphy, 1952
Murphy & Shapovalov, 1951
Neave, 1943
Novisoff, 1912
O'Malley, 1920a

Parker & Kirkness, 1951
Parkhurst, et al., 1950
Popov, 1933
Pritchard, 1940b, 1943c, 1945b
Radcliffe, 1920
Rathbun, 1894, 1900
Rich, 1942
Rich & Ball, 1929b
Rutter, 1904b, 1908
Shapovalov & Taft, 1954
Smith, 1895b
Smoker, 1954
Snyder, 1931
Stone, 1897
U.S. Fish and Wildlife Service, 1924, 1945
U.S. Foreign Economic Administration, 1945
Van Cleve, 1945
Van Hyning, 1951
Wilcox, 1898
Williamson, 1927
Wynne-Edwards, 1947a

SIZE AT TIME OF RETURN

Data on the size of silver salmon at time of return are contained in the following references:

Aro, 1952
Baievsky, 1926
Beal, 1955
Bean, 1887b, 1894
Burner, 1951
Carl, 1939
Chapman, 1940a
Clemens, 1930, 1935b, 1939b, 1946b,
Cobb, 1917
Coker, 1922
Collins, 1892
Davidson & Vaughan, 1941
Dymond, 1932
Evermann, 1905
Evermann & Goldsborough, 1907b
Evermann & Meek, 1898
Foerster, 1929a, 1955
Fraser, 1917a, 1919, 1921
Gilbert, 1913b, 1914a, 1924c
Godfrey, et al., 1954
Greene, 1911b
Hunter, 1949b
Hume, 1893
Jordan, 1884, 1892
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Jordan & Starks, 1896b
Kirkness, et al., 1952, 1953
Kuznetzov, 1928
Locke, 1929
Marsh & Cobb, 1910
McDonald, 1895
Moser, 1899
Neave, 1939, 1949
Novisoff, 1912
O'Malley, 1920a
Parker & Kirkness, 1951
Pressey, 1953
Radcliffe, 1920
Rathbun, 1900
Rutter, 1904b
Scheer, 1939
Scofield, 1920b
Shapovalov & Taft, 1954
Smith, 1895b
Snyder, 1931
Stone, 1928a, 1928b, 1930b
Stone, 1897
Tanner, et al., 1890
U.S. Fish & Wildlife Service, 1945
Van Hyning, 1951
Wales & Coots, 1955a
Williamson, 1927
Williamson & Clemens, 1932

AGE AT TIME OF RETURN

Data on the age of silver salmon at time of return are contained in the following references:

Anon., 1937, 1953c, 1954, 1955c
Babcock, 1907, 1931a
Bean, 1891
Berg, 1948
Bower, 1933
Bower & Aller, 1917a
Bowser, 1913
Carl & Clemens, 1948
Chamberlain, 1907
Cleaver, 1951
Clemens, 1930, 1935b, 1938b, 1939b, 1946b, 1952
Cobb, 1917
Davidson & Shostrom, 1936
Davidson & Vaughan, 1939b, 1941,
Davidson, et al., 1943
Dymond, 1932
Eigenmann, 1890
Fish, 1948
Foerster, 1935, 1943, 1949, 1955
Foerster & Pritchard, 1935
Fraser, 1919, 1921
Fry & Hughes, 1954
Gilbert, 1913b, 1914a, 1924c
Godfrey, et al., 1954
Henry, 1953
Hoar, 1951b
Hunter, 1949b
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904a
Kelez, 1937
Kirkness, et al., 1952, 1953
Kuznetzov, 1928
Milne, 1955
Milne, 1913
Murphy, 1952
Neave, 1948, 1949, 1951
Neave & Pritchard, 1942
O'Malley, 1920a
Oshima, 1934
Parker & Kirkness, 1951
Pressey, 1953
Pritchard, 1940b
Rich, 1948
Ricker, 1954
Rounsefell & Kelez, 1940
Rutter, 1904b
Scheer, 1939
Shapovalov & Taft, 1954
Smoker, 1954
Snyder, 1931
U.S. Fish and Wildlife Service, 1945
Williamson & Clemens, 1932

TYPE OF SPAWNING STREAM

Data on the nature of the spawning stream chosen by the silver salmon are contained in the following references:

Anon., 1904a, 1937
Babcock, 1931a
Bean, 1891, 1894
Bryant, 1949
Burner, 1951
Chamberlain, 1907
Clemens, 1946b, 1953
Davidson & Vaughan, 1941
Davidson, et al., 1943
Evermann, 1905
Fish, 1948
Foerster, 1935
Foerster & Pritchard, 1935
Greene, 1911b
Hume, 1893
Jordan, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kirkness, et al., 1952
Kuznetzov, 1928
McDonald, 1894a
Murphy & Shapovalov, 1951
Neave, 1949
Neave & Nickett, 1953

O'Malley, 1920a
Powers, 1941
Pritchard, 1934e, 1940b, 1949
Rathbun, 1900
Rich, 1948
Rutter, 1904b
Scheer, 1939
Van Cleve, 1945
Wynne-Edwards, 1947a

DISTANCE TRAVELED UPSTREAM

The following references mention the distance traveled upstream by the silver salmon:

Babcock, 1931a
Bean, 1887b, 1891, 1894
Bryant, 1949
Burner, 1951
Carl & Clemens, 1948
Clemens, 1935b, 1953
Davidson, et al., 1943
Evermann, 1905
Evermann & Goldsborough, 1907b
Foerster & Pritchard, 1935
Fraser, 1917a
Gilbert, 1924c
Gilbert & O'Malley, 1921
Greene, 1911b
Hallock, et al., 1952
International North Pacific Fisheries Commission, 1955
Jordan, 1884, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kuznetzov, 1928
Locke, 1929
McDonald, 1895
Murphy, 1952
O'Malley, 1920a
Scheer, 1939
Smith, 1895b
Van Cleve, 1945
Wynne-Edwards, 1947a, 1952

NATURE OF SPAWNING SITE

Notes regarding the nature of the spawning site of silver salmon are contained in the following references:

Anon., 1954
Bower, 1925b
Burner, 1951
Chamberlain, 1907
Davidson, et al., 1943
Evermann, 1905
Foerster, 1929a, 1935
Foskett, 1947a, 1947b
Hallock, et al., 1952
Hasler & Farner, 1942
Hickman, 1932
Mac Day, 1931
Jordan, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Moser, 1899
O'Malley, 1920a
Pritchard, 1940b
Rich, 1948
Rounsefell & Kelez, 1940
U.S. Fish and Wildlife Service, 1945
Van Cleve, 1945

SPAWNING PERIOD

Data on the spawning period of the silver salmon are contained in the following references:

Andriashev, 1955
Anon., 1953c
Babcock, 1916
Barin, 1887
Berg, 1948
Bower, 1923, 1927, 1929a
Brett & Fritchard, 1946a
Bryant, 1949
Chamberlain, 1907
Clemens, 1939b, 1946b
Craig & Hacker, 1940
Davidson & Vaughan, 1941
Davidson, et al., 1943
Dymond, 1932
Evermann & Meek, 1898
Fish, 1948
Foskett, 1947b
Gibson, 1922, 1923, 1929
Gilbert & O'Malley, 1921
Hickman, 1918, 1921, 1922, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932
Hickman & Collison, 1920
Hubbs, 1946
Hume, 1893
Jordan & Evermann, 1896
Kuznetzov, 1928
Leach, 1924, 1928, 1930
Locke, 1929
Lockington, 1880
Marsh & Cobb, 1907, 1908, 1911
McConnell & Brett, 1946
Moffett & Smith, 1950
Moser, 1899
Motherwell, 1934
Murphy, 1952
Neave, 1943, 1949
O'Malley, 1920a
Pritchard & Neave, 1942
Rathbun, 1900
Ravenel, 1902
Rounsefell & Kelez, 1940
Rutter, 1904b, 1908
Shaw & Maga, 1943
Smith, 1899
Stone, 1914, 1915a, 1915b, 1916a, 1917a, 191 b, 1919, 1920b, 1921a, 1921b, 1922b, 1923b, 1924a, 1924b, 1925a, 1925b, 1926a, 1927a, 1927b, 192 a, 192 b, 1929a, 1929b, 1930b, 1931b, 1932b
Stone, 1897
Sumner, 1953
Van Cleve, 1945
Wynne-Edwards, 1947a

SEXUAL DIMORPHISM

Data on sexual dimorphism in silver salmon are mentioned in the following references:

Babcock, 1931a
Bean, 1891, 1894
Brett & Pritchard, 1946a, 1946b
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1946b
Davidson & Vaughan, 1941
Davidson, et al., 1943
Evermann & Goldsborough, 1907b
Gilbert, 1924c
Gilbert & O'Malley, 1921
Jordan, 1892, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kuznetzov, 1928
Locke, 1929
Lockington, 1880
Marr, 1944
O'Malley, 1920a
Rutter, 1904b
Shapovalov, 1947
Shapovalov & Taft, 1954
Stone, 1897

SPAWNING BEHAVIOR

Data on the spawning behavior of silver salmon are contained in the following references:

Anon., 1953c
Babcock, 1931a
Bean, 1894
Berg, 1948
Bower, 1923
Burner, 1951
Chamberlain, 1907
Evermann, 1905
Foerster, 1935
Jordan, 1892, 1896c
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Moser, 1899
Rutter, 1904b
Shapovalov & Taft, 1954

POST-SPAWNING BEHAVIOR

Data on the post-spawning behavior of silver salmon are noted in the following references:

Bean, 1891, 1894
Evermann & Meek, 1898
Greene, 1911b
Gilbert, 1914a
Hume, 1893
Jordan, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Locke, 1929
Oshima, 1934
Rathbun, 1900
Rutter, 1904b
Stone, 1897
Willis, 1954

DATE EGGS HATCH

Data on the time of hatching of the silversalmon are included in the following references:

Beal, 1955
Carl & Clemens, 1948
Davidson & Vaughan, 1939b
Evermann & Meek, 1898
Foerster & Pritchard, 1935
Fraser, 1917a
International North Pacific Fisheries Commission, 1955
Jordan, 1896c
Jordan & Evermann, 1896
Marsh & Cobb, 1910
Moffett & Smith, 1950
Rich, 1948
Rivers, 1947
Shapovalov & Berrian, 1940
Shaw & Maga, 1943
Smith, 1915
U.S. Fish and Wildlife Service, 1945
Van Cleve, 1945
Wickett, 1951
Williamson, 1927

BEHAVIOR OF FRY AND FINGERLINGS

Data on the behavior of the fry and fingerlings of silver salmon are included in the following references:

Anon., 1953c, 1954
Black, 1951b
Chamberlain, 1907
Clemens, 1953
Davidson & Vaughan, 1941
Foerster, 1955
Fraser, 1917a, 1919
Hallock, et al., 1952
Hoar, 1951a, 1953, 1954
MacKimon & Brett, 1955
Moffett & Smith, 1950
Moser, 1899
Murphy & Shapovalov, 1951
Pritchard, 1940b
Rich, 1948
Rutter, 1904b
Shapovalov & Berrian, 1940
Shapovalov & Taft, 1954
Smith, 1899
Stone, 1897
U.S. Fish and Wildlife Service, 1935
Wales & Coots, 1955a

TIME YOUNG SPEND IN FRESHWATER

Data on the time spent in freshwater by the young silver salmon are contained in the following references:

Anon., 1948, 1952
Babcock, 1931a
Bean, 1894
Bower, 1934
Bowser, 1913
Carl & Clemens, 1948
Chamberlain, 1907
Cleaver, 1951
Clemens, 1935b, 1946b, 1952, 1953
Clemens, et al., 1938
Cobb, 1921
Davidson & Vaughan, 1939b, 1941
Davis, 1953
Earp, et al., 1953
Evermann & Meek, 1898
Foerster & Pritchard, 1935
Fraser, 1917a, 1919
Gilbert, 1913b, 1917a, 1924c
Hallock, et al., 1952
Honda, 1934

Henry, 1953
Hoar, 1951a
Hourston, et al., 1955
Hubbs, 1946
Hume, 1893
Hunter, 1949a
Locke, 1929
MacKimon & Brett, 1955
McDonald, 1894c, 1895
McKernan, et al., 1950
Milne, 1913
Moffett & Smith, 1950
Murphy, 1952
Murphy & Shapovalov, 1951
Neave, 1948, 1949, 1951
Neave & Pritchard, 1942
Neave & Wickett, 1953
O'Malley, 1920a
Oshima, 1934
Parker & Kirkness, 1951
Pritchard, 1936b, 1940b
Rich, 1948
Ricker, 1954
Rutter, 1904b, 1908
Scheer, 1939
Shapovalov & Taft, 1954
Smoker, 1953, 1954
U.S. Fish and Wildlife Service, 1945
Van Cleve, 1945
Wales and Coots, 1955a

DATE OF SEAWARD MIGRATION

Statements on the date of seaward migration of young silver salmon are contained in the following references:

Babcock, 1905
Bean, 1894
Bower, 1925b, 1938a
Bower & Fassett, 1914
Brett & Mackinnon, 1953
Brett & Pritchard, 1946a
Chamberlain, 1907
Clemens, et al., 1938
Davidson & Vaughan, 1941
Davison, et al., 1954
Fish, 1948
Foerster, 1952
Foerster & Pritchard, 1935
Fraser, 1917a, 1919
Gharrett & Hodges, 1950
Gilbert, 1914a
Greene, 1911b
Hallock, et al., 1952
Hamilton & Andrew, 1954
Hoar, 1951a
Hubbs, 1946
International North Pacific Fisheries Commission, 1955
Johnson, et al., 1948
MacKimon & Brett, 1955
Marr, 1944
Moffett, & Smith, 1950
Murphy, 1952
Murphy & Shapovalov, 1951
Neave, 1947, 1948
Newcomb, 1948
Oshima, 1934
Parker, et al., 1953
Pritchard, 1936c, 1936b, 1940b
Rich, 1948
Rivers, 1947
Rounsefell & Kelez, 1940
Rutter, 1904b
Shapovalov & Taft, 1954
Smith, 1899
Snyder, 1931
Sumner, 1953
Van Cleve, 1945
Wales & Coots, 1955a

SIZE AT TIME OF SEAWARD MIGRATION

Data on the size of young silver salmon at the time of seaward migration are contained in the following references:

Babcock, 1903
Chamberlain, 1907
Chamberlain & Bower, 1913
Davidson & Vaughan, 1941
Davison, 1954
Foerster & Pritchard, 1935
Fraser, 1919
Gharrett & Hodges, 1950
Gilbert, 1913b
Hallock, et al., 1952
Hourston, et al., 1955
McDonald, 1895, 1894c
Milne, 1913
Moffett & Smith, 1950
Moser, 1902
Pritchard, 1936c
Rich, 1948
Rounsefell & Kelez, 1940
Van Cleve, 1945

MOVEMENTS IN THE OCEAN

Data on the movements in the ocean of the silver salmon are contained in the following references:

Babcock, 1903, 1931a
Barnaby, 1952
Bean, 1891, 1894
Byers, 1942
Chamberlain, 1907
Clark & Ross, 1942
Clemens, 1935b
Cobb, 1917, 1921
Davidson, 1940c
Davidson & Hutchinson, 1940
Davidson & Vaughan, 1941
Fraser, 1917a
Gilbert, 1895
Hallock, et al., 1952
Hoar, 1953
Hubbs, 1946
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904a, 1904b
Jordan & Evermann, 1896
Mathisen, 1950
Murphy, 1952
Murphy & Shapovalov, 1951
Neave & Pritchard, 1942
Powers, 1941
Rathbun, 1900
Rich, 1925a, 1935c
Rounsefell & Kelez, 1940
Rutter, 1904b
Scheer, 1939
Shapovalov & Taft, 1954
Snyder, 1931
Taft, 1937a
Verhoeven, 1952
Williamson, 1927

MARKING OR TAGGING AND RECAPTURE DATA

Data on marking or tagging and recapture of silver salmon are contained in the following references:

Anon., 1937, 1952, 1953c, 1954, 1955b, 1955d
Bowser, 1913
Brett & Pritchard, 1946b
California, State of, 1952-1954
Chamberlain, 1908
Clark & Hatton, 1942
Clemens, 1930, 1939c
Clemens, et al., 1939
Coker, 1922
Craigie, 1926
Fish, 1948
Foerster, 1929e, 1941, 1942, 1943, 1944a, 1945, 1946a, 1947a, 1948, 1949
Gilbert & Rich, 1927
Godfrey, et al., 1954
Greene, 1911b
Higgins, 1929
International North Pacific Fisheries Commission, 1955
Jensen, 1953
Jordan, 1892, 1896c, 1904b
Kauffman, 1951
Kelez, 1937
Kirkness, et al., 1952, 1953
Marsh & Cobb, 1907, 1908, 1911
McKernan, et al., 1950
Milne, 1952, 1955
Morgon & Cleaver, 1954
Neave, 1941a, 1941b, 1951
Parker & Kirkness, 1951
Pritchard, 1930, 1931c, 1932b, 1934b, 1934e, 1940b, 1945c
Pritchard & Neave, 1942
Rich, 1925a, 1927, 1935a, 1935c, 1941
Rich & Morton, 1930
Rich & Suomela, 1929a
Rounsefell & Kelez, 1940
Rutter, 1904b
Scheer, 1939
Silliman, 1948b
Snyder, 1931
Sumner, 1953
Taft, 1937a
Taft & Shapovalov, 1938a
Van Hyning, 1951
Williamson, 1927, 1929,
Williamson & Clemens, 1932

HOMING INSTINCT

Discussions or data concerning the homing instinct in silver salmon are contained in the following references:

Anon., 1937
Babcock, 1931a
Brett & MacKinnon, 1954
Chamberlain, 1907
Clemens, 1938b, 1939c, 1953
Craigie, 1926
Davidson & Vaughan, 1939b, 1941
Foerster, 1941
Fraser, 1919
Gilbert & Rich, 1927
Hume, 1893
International North Pacific Fisheries Commission, 1955
Jordan, 1892, 1896c, 1904b
Jordan & Gilbert, 1887
Kelez, 1937
Marsh & Cobb, 1911
Neave, 1941b
Powers, 1941
Pritchard, 1940b
Rich, 1948
Rich & Ball, 1931
Rounsefell & Kelez, 1940
Rutter, 1904b
Scheer, 1939
Shapovalov, 1940
Shapovalov & Taft, 1954
Taft & Shapovalov, 1938a
U.S Fish and Wildlife Service, 1945
Verhoeven, 1952
Visby & Hasler, 1954

GROWTH RATES

Remarks on the growth rates of silver salmon are included in the following references:

Berg, 1948
Chamberlain, 1907
Clemens, 1930
Fraser, 1917a, 1919, 1921
Hasler, 1938
Hasler & Farner, 1942
International North Pacific Fisheries Commission, 1955
Marr, 1944
Parker & Kirkness, 1951
Rounsefell & Kelez, 1940
Shapovalov & Taft, 1954
Van Hyning, 1951

FOOD AND FEEDING HABITS

Comments on the food and/or feeding habits of silver salmon are contained in the following references:

Anon., 1952, 1953c, 1955c
Babcock, 1931a
Bean, 1891, 1894
Barnaby, 1952
Bowser, 1913
Carl & Clemens, 1948
Chapman, 1936
Clemens, 1935b, 1939b, 1940b, 1953
Clemens, et al., 1938
Cobb, 1917, 1921
Fish, 1939
Foerster, 1941, 1942, 1955
Foskett, 1951b
Fraser, 1917a, 1919, 1923
Gilbert, 1913b, 1914a
Greene, 1911b
Hasler, 1938
Heg & Van Hyning, 1951
International North Pacific Fisheries Commission, 1955
Kendall, 1913
Locke, 1929
Maeda, 1955
Marsh & Cobb, 1908
Oregon Fish Commission, 1949b
Pritchard, 1936c
Pritchard & Tester, 1943, 1944
Rich, 1948
Ricker, 1937, 1954
Rounsefell & Kelez, 1940
Rutter, 1904b
Senter, 1940
Shapovalov & Taft, 1954
Silliman, 1941
Smith, 1895b, 1897
Thompson, 1931
U.S. Fish and Wildlife Service, 1945
Williamson, 1927,
Withler, 1948

PARASITES AND DISEASES

Parasites and diseases infecting the silver salmon are reported by:

Bangham & Adams, 1954
Bean, 1891
Carl, 1939
Clemens, 1939
Davis, 1927a, 1927b, 1953
Davison, et al., 1954
Earp & Schwab, 1954
Earp, et al., 1953
Ekbaum, 1936
Fallera, 1926
Fish, 1939
Guberlet, 1926
Haderlie, 1953
Johnson & Bruce, 1952
Jordan, 1892, 1896c, 1904
Shapovalov & Taft, 1954
Smith & Quistorff, 1940
Wales & Wolf, 1955b
Ward, 1908
Wardle, 1932
Wilson, 1912

INTRODUCTIONS AND ACCLIMATIZATION

For data on the introduction and acclimatization of silver salmon into various exotic waters, see subject section under this category.

EGG COUNTS

The following references contain data on the number of eggs produced by the silver salmon:

Aro, 1952
Bower, 1938a
Bryant, 1923
Foerster, 1955
Foerster & Pritchard, 1936
Hunter, 1948, 1949b
Kuznetzov, 1928
Moffett & Smith, 1950
Moser, 1902
Neave, 1947
Rich, 1940b
Wickett, 1951

RELATIVE ABUNDANCE

Material on the relative abundance of silver salmon is contained in the following references. Examination of the specific entries will indicate whether the data are in the form of catch records or as counts of migrant adults.

Anon., 1931a, 1938a, 1949a, 1952, 1953c, 1954, 1955c
Aro, 1952
Atkinson, 1955
Babcock, 1910
California, State of, 1902-1952, 1952-1954
California Bureau of Marine Fisheries, 1929-1952
Carl, 1939
Chapman, 1940b
Ellis, et al., 1937
Foerster, 1929a, 1941, 1942, 1943, 1944a, 1945, 1947a, 1948, 1950
Foerster & Ricker, 1953
Gharrett & Hodges, 1950
Godfrey, et al., 1954
Henry, 1953
Holmes, 1940
Hunter, 1948, 1949a
International North Pacific Fisheries Commission, 1955
Johnson, et al., 1948
Kauffman, 1951
Kuznetzov, 1928
Marine Fisheries Branch (Staff), 1954
Mathisen, 1950
McKernan, et al., 1950
Milne, 1952
Milne, 1953
Morgon & Cleaver, 1954
Moser, 1899, 1902
Neave, 1939, 1947, 1951
Oregon Fish Commission, 1943
Parker, et al., 1953
Pressey, 1953
Pritchard, 1943c, 1949
Rich, 1935c, 1940b, 1941, 1942
Rich & Ball, 1929b, 1931, 1935
Robertson, 1949
Rounsefell & Kelez, 1940
Schoning, et al., 1951
Smith, 1895b
Smoker, 1953, 1954
Snyder, 1931
U.S. Fish and Wildlife Service, 1924, 1931-1940, 1938-1940
Van Hyning, 1951
Washington, State of, 1935-1945
Wilcox, 1893
Wickett, 1951

KING SALMON

Oncorhynchus tshawytscha (Walbaum), commonly called the king, chinook, spring, or quinnat salmon, is distributed throughout the North Pacific Ocean, from Japan to California. There are doubtful records for the Arctic American Coast. Many different common names have been employed for this species. In the literature abstracted by us, it would appear that "king," "spring," and "chinook" are respectively the most commonly employed.

DESCRIPTION - COUNTS AND MEASUREMENTS

The following papers present descriptive matter on the king salmon and/or counts and measurements of any of its systematic characteristics.

Babcock, 1905
Bean, 1887b
Berg, 1948
Bonham & Seymour, 1949
Brice, et al., 1898
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1935b, 1946b
Clothier, 1950
Crawford, 1925
Davidson & Shostrom, 1936
Eigenmann, 1890
Evermann, 1897, 1905
Farr, 1883
Foerster, 1935
Foerster & Pritchard, 1935
Gilbert, 1895
Gilbert & Evermann, 1895
Hagerman, 1951
Hikita, 1953
Hobbs, 1937
Hoover, 1936
Hubbs, 1946
Jordan, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1882
Kendall, 1913
Lockington, 1880
McGregor, 1922b, 1923b
O'Malley, 1920a, 1933
Oshima, 1934
Parker, et al., 1952
Pritchard, 1945a
Rathbun, 1900
Rich, 1921b
Riddle, 1917
Shapovalov, 1947
Smith, 1915
Snyder, 1921b, 1922, 1931
Stone, 1897, 1884a
Suckley, 1874
Tchernavin, 1938
Walford, 1931
Williamson, 1927

FIGURES AND ILLUSTRATIONS

The following references contain drawings and/or illustrations of the king salmon:

Bean, 1891
Berg, 1948
Brice, et al., 1898
California, State of, 1904, 1910
Carl & Clemens, 1948
Chamberlain, 1907

Clemens, 1946b
Cobb, 1917
Collins, 1892
Crawford, 1925
Davidson & Shostrom, 1936
Evermann, 1897
Evermann & Goldsborough, 1907b
Foerster & Pritchard, 1935
Hikita, 1953
Hoover, 1936
Jones, 1915
Jordan, 1894, 1896c
Jordan & Evermann, 1896
Kendall, 1913
Marr, 1944
Moser, 1899
O'Malley, 1920a, 1933
Oshima, 1934
Pritchard & Tester, 1944
Roedel, 1948
Rutter, 1902, 1904a
Scofield, 1900
Shapovalov, 1947
Smith, 1895a, 1898b
Snyder, 1921b
Stone, 1884a, 1897
Walford, 1931
Wilcox, 1902
Williamson, 1927

LIFE COLORS

Often natural populations of fishes have distinctive color patterns. To aid in racial analysis, an attempt was made to isolate data on life colors. The following references contain statements referring to the color of the king salmon:

Babcock, 1927, 1931a
Bean, 1891, 1894
Berg, 1948
Bonham & Seymour, 1949
Brice, et al., 1898
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1935b, 1946b
Cobb, 1911, 1917, 1921
Crawford, 1925
Eigenmann, 1890
Evermann, 1896, 1897, 1905
Foerster, 1935
Foerster & Pritchard, 1935
Gilbert & O'Malley, 1921
Hoover, 1936
Jordan, 1892, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1882, 1887
Kendall, 1913
Locke, 1929
Lockington, 1880
Marsh & Cobb, 1908
O'Malley, 1904, 1920a, 1933
Oshima, 1934
Roedel, 1948, 1953a
Rutter, 1904b
Shapovalov, 1947
Smith, 1915
Snyder, 1924b, 1931
Snyder & Scofield, 1924a
Stone, 1874b, 1883a
Suckley, 1874
Walford, 1931
Williamson, 1927

RELATIONSHIPS

The following references contain data on the relationships of king salmon to other species. Distinctions employed in keys are included in this category.

Babcock, 1931a
Berg, 1948
Burner, 1951
Chamberlain, 1907

Clemens, 1935b, 1946b
Clothier, 1950
Eigenmann, 1895
Evermann, 1897
Foerster & Pritchard, 1935
Girard, 1857
Hagerman, 1951
Hallock, et al., 1952
Jordan & Evermann, 1896
Jordan & Gilbert, 1882
Kobayasi, 1955
Locke, 1929
Murphy & Shapovalov, 1951
Rich, 1921b
Schultz, 1934
Shapovalov, 1947
Smith, 1895a, 1898b
Snyder, 1931
Tchernavin, 1938
Walford, 1931

RACIAL ANALYSIS

The following papers contain comments or data upon the races or populations of the king salmon:

Babcock, 1905, 1927, 1931a
Bower, 1933, 1934
Bowers. 1912
Chamberlain, 1907
Chamberlain & Bower, 1913
Chapman & Quistorff, 1938
Craig & Townsend, 1946
Davidson & Shostrom, 1936
Evermann & Goldsborough, 1907b
Fraser, 1916, 1921
Gharrett & Hodges, 1950
Gilbert, 1913b, 1924c
Gilbert & Rich, 1927
Hanson, et al., 1940
Holmes, 1928
International North Pacific Fisheries Commission, 1955
Jordan, 1904b
Kirkness, et al., 1953
Little, 1898
Marr, 1944
McGregor, 1923b
Milne, 1955
Moser, 1899
Mottley, 1929
Needham, et al., 1941
Parker, 1943
Parker & Kirkness, 1951
Parker, et al., 1952
Pritchard, 1934c, 1945a
Rathbun, 1900
Rich, 1921b, 1926
Rich & Ball, 1929b
Rich & Holmes, 1928
Scheer, 1939
Smith, 1899
Townsend, 1944
Verhoeven, 1952
Williamson, 1927

ANATOMY AND PHYSIOLOGY

Included within this category are references concerning the anatomy, histology, osteology (including sub-fossil finds) and physiology of the king salmon.

Black, 1951b
Brett, 1952b
Brett & MacKinnon, 1952, 1954
Chapman, 1938
Cobb, 1921
Coker, 1922
Davidson & Shostrom, 1936
Greene, 1905, 1911a, 1911b, 1912, 1913, 1914, 1915a, 1919, 1921a, 1921b
Greene & Greene, 1915
Holmes, 1928
Jordan, 1904a
Kendall, 1922
Palmer, et al., 1954 Powers, 1939
Reagan, 1917
Smith, 1916
Sumner, 1906
Tchernavin, 1938

BIOCHEMISTRY

Data on the biochemistry of king salmon are presented in the following papers:

Atwater, 1892
Bailey, 1952
Beveridge, 1947
Brocklesby, 1933, 1940
Brocklesby & Denstedt, 1933
Dyer, 1952
Fallera, 1926
Jampolsky & Hoar, 1954
Jarvis, et al., 1926
Pottinger & Baldwin, 1940
Pugsley, 1942

SEX RATIOS

Data on the sex ratios of king salmon are presented in the following papers. Rutter, 1904b, notes hermaphroditism in the king salmon.

Chamberlain, 1907
Gilbert, 1914a, 1924c
Marr, 1944
Rich, 1922
Snyder, 1931
Stone, 1928a, 1928b, 1929a, 1930b, 1931a

TIME OF SPAWNING MIGRATION

Data on the time of return of king salmon from the ocean to the stream mouths are contained in the following references:

Anon., 1903b
Alexander, 1905
Atkinson, 1955
Babcock, 1916, 1931a
Brice, 1898
Briggs, 1953
Chamberlain, 1907
Clark, 1939
Cobb & Kutchin, 1907
Davidson & Vaughan, 1941
Dunn, 1880
Fry & Hughes, 1954
Gilbert, 1895, 1924
Green, 1887
Hefford, 1929
Henry, 1953
Jordan & Starks, 1896
McHugh, 1915
Neave, 1949
Redding, et al., 1933
Rich & Holmes, 1929
Rivers, 1947
Rounsefell & Kelez, 1940
Scofield, 1920
Stone, 1874
Snyder, 1922
Thompson, 1931
Williamson, 1929
Williamson & Clemens, 1932

Data on the time fish are observed migrating upstream at any point in its course are contained in the following references:

Anon., 1904b, 1914c, 1916a, 1917, 1931b, 1938a, 1938b, 1939
Abernathy, 1887
Aro, 1952
Babcock, 1903, 1906, 1907, 1910, 1914, 1916
Baird, 1876
Barin, 1887
Bryant, 1949
Bean, 1887b, 1891, 1892, 1894
Berg, 1948
Bigelow & Welsh, 1925
Bower, 1922, 1925b, 1926, 1927, 1929a, 1930, 1931, 1932, 1933, 1934, 1936, 1938a, 1938b, 1940, 1941
Bower & Aller, 1915, 1917b
Bowers, 1899
Bowser, 1909
Brice, et al., 1898
Burner, 1951
Carl & Clemens, 1948
California, State of, 1874-1875, 1876-1877, 1886, 1898, 1900, 1952-1954.
Chamberlain, 1907
Chamberlain & Bower, 1913
Chapman, 1941
Clark, 1939, 1943
Cleaver, 1951
Clemens, 1946b
Clemens, et al., 1938
Cobb, 1910, 1911, 1917, 1921
Coker, 1922
Collins, 1892
Crawford, 1908
Curtis, 1945
Davidson & Vaughan, 1941
Davison, et al., 1954
Edson, et al., 1955
Erkkila, et al., 1950
Evermann, 1897, 1905
Evermann & Goldsborough, 1907b
Evermann & Meek, 1898
Fish, 1948
Foerster, 1935, 1955
Foerster & Pritchard, 1935
Foskett, 1947a
Fraser, 1919
Hanson, et al., 1940a
Gibson, 1923
Gilbert & Evermann, 1895
Godfrey, et al., 1954
Greene, 1911
Hatton & Clark, 1942
Hefford, 1930, 1931, 1932, 1934a, 1934b, 1935, 1936, 1938, 1940, 1941
Hobbs, 1937
Hoover, 1936
Hume, 1893
International North Pacific Fisheries Commission, 1955
Jordan, 1892, 1896c, 1904a

Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Jordan & Starks, 1896b
Kerr, 1953
Kirkness, et al., 1952, 1953
Kuznetzov, 1928
Leach, 1925, 1926, 1927, 1932
Little, 1898
Novisoff, 1912
Marr, 1944
Marsh & Cobb, 1908, 1910
McDonald, 1894a
McKernan, et al., 1950
McLean, 1945
Milne, 1950b, 1955
Milne, 1913
Moffett, 1949
Moffett & Smith, 1950
Moser, 1899
Murphy & Shapovalov, 1951
Neave, 1943
Needham, et al., 1943
Needham, et al., 1941
O'Malley, 1904, 1920a
Parker & Hanson, 1944
Parker & Kirkness, 1951
Parkhurst, 1950b
Parkhurst, et al., 1950
Popov, 1933
Pritchard, 1940b, 1943c
Radcliffe, 1920
Rathbun, 1894, 1900
Ravenel, 1896a
Rich, 1922, 1942
Rich & Ball, 1929b
Rich & Holmes, 1928
Rutter, 1904b, 1908
Scofield, 1919a, 1919b, 1929
Shebley, 1921
Silliman, 1950
Smith, 1895b, 1898b, 1917
Smoker, 1954
Snyder, 1923, 1931, 1936a
Stone, 1874a, 1874b, 1883a, 1884a
1897
Suckley, 1874
Sumner & Smith, 1940
Tokahisa & Takeshi, 1934
Townsend, 1899, 1904
U.S. Fish and Wildlife Service, 1945
U.S. Foreign Economic Administration, 1945
Van Cleve, 1945
Van Hyning, 1951
Wilcox, 1898
Williamson, 1927
Worth, 1895
Wynne-Edwards, 1947a
Young, 1949

SIZE AT TIME OF RETURN

Data on the size of king salmon at time of return are contained in the following references:

Anon., 1903, 1918a, 1921a, 1923
Aro, 1952
Baievsky, 1926
Bean, 1887a, 1887b, 1894
Brice, et al, 1898
Briggs, 1953
Burner, 1951
California, State of, 1894
Carl, 1939
Chapman, 1940a
Clemens, 1932, 1935b, 1939b, 1946b
Cobb, 1910, 1911, 1917
Coker, 1922
Collins, 1892
Davidson & Vaughan, 1941
Dymond, 1932
Evermann, 1896, 1905
Evermann & Goldsborough, 1907b
Evermann & Meek, 1898
Foerster, 1955
Fraser, 1919, 1921
Gilbert, 1913b, 1914a, 1924c
Godfrey, et al., 1954
Greene, 1911b
Hanson, et al., 1940a
Hefford, 1929, 1932, 1934a, 1934b, 1935, 1936, 1938, 1940, 1941, 1946
Hoover, 1936
Hume, 1893
Jordan, 1892
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Jordan & Starks, 1896b
Kirkness, et al., 1952, 1953
Kuznetzov, 1928
Locke, 1929
Marsh & Cobb, 1910
McDonald, 1895
McLean, 1945
Moser, 1899
Neave, 1939, 1949
Needham, et al., 1941
Novisoff, 1912
O'Malley, 1920a
Parker & Kirkness, 1951
Parker, et al., 1952
Pressey, 1953
Radcliffe, 1920
Rathbun, 1900
Rich, 1940a.
Rich & Holmes, 1928
Rutter, 1904b
Scheer, 1939
Scofield, 1920b
Silliman, et al., 1947
Smiley, 1887a
Smith, 1895b
Snyder, 1921a, 1921b, 1922, 1923, 1924b, 1931
Stone, 1928a, 1928b, 1930b
Stone, 1874b, 1876a, 1880, 1883a, 1884a, 1884c, 1897
Suckley, 1874
Tanner, et al., 1890
Townsend, 1899
U.S. Fish and Wildlife Service, 1887, 1940b, 1945
Van Hyning, 1951
Vales & Coots, 1955a
Williamson, 1927
Williamson & Clemens, 1932

AGE AT TIME OF RETURN

Data on the age of king salmon at time of return are contained in the following references:

Anon., 1937, 1953c, 1955c
Babcock, 1907, 1908, 1931a
Bean, 1891
Berg, 1948
Bower, 1933
Bowser, 1913
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Cleaver, 1951
Clemens, 1935b, 1938b, 1939b, 1946b
Cobb, 1917
Davidson & Shostrom, 1936
Davidson & Vaughan, 1939b, 1941
Dymond, 1932
Edson, et al., 1955
Eigenmann, 1890
Evermann, 1897
Fish, 1948
Foerster, 1935, 1943, 1955
Foerster & Pritchard, 1935
Fraser, 1919, 1921
Fry & Hughes, 1954
Gilbert, 1913a, 1913b, 1914a, 1924c
Godfrey, et al., 1954
Hefford, 1929, 1931
Henry, 1953
Hoar, 1951b
Hobbs, 1937
Hoover, 1936
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904a
Kirkness, et al., 1952, 1953
Kuznetzov, 1928
Milne, 1955
Milne, 1913
Mottley, 1929
Neave, 1948, 1949, 1951
O'Malley, 1920a
Oregon Fish Commission 1931
Oshima, 1934
Parker & Kirkness, 1951
Pressey, 1953
Pritchard, 1940a, 1940b
Rich, 1921b, 1922, 1926, 1948
Rich & Holmes, 1929
Ricker, 1954
Rounsefell & Kelez, 1940
Rutter, 1902, 1904b
Scheer, 1939
Scofield, 1922
Smoker, 1954
Snyder, 1921a, 1921b, 1922, 1924b, 1931, 1936b,
Snyder & Scofield, 1924a
Stone, 1874b
U.S. Fish and Wildlife Service, 1940b, 1945
Williamson & Clemens, 1932

TYPE OF SPAWNING STREAM

Data on the nature of the spawning stream chosen by the king salmon are contained in the following references:

Anon., 1904a, 1937
Babcock, 1931a
Bean, 1891, 1894
Brice, et al., 1898
Bryant, 1949
Burner, 1951
Chamberlain, 1907
Clemens, 1946b, 1951, 1953
Clark, 1943
Curtis, 1945
Davidson & Vaughan, 1941
Evermann, 1905
Fish, 1948
Foerster, 1935
Foerster & Pritchard, 1935
Greene, 1911b
Hatton & Clark, 1942
Hobbs, 1937
Hume, 1893
Jordan, 1904a
Jordan & Evermann, 1896

Jordan & Gilbert, 1887
Kirkness, et al., 1952
Kuznetzov, 1928
McDonald, 1894a
Moffett, 1949
Murphy & Shapovalov, 1951
Neave, 1949
Neave & Wickett, 1953
O'Malley, 1904, 1920a
Parker & Hanson, 1944
Pritchard, 1934e, 1940b, 1949
Rathbun, 1900
Rich, 1948
Rutter, 1904b
Scheer, 1939
Stone, 1884a
Sumner & Smith, 1940
U.S. Fish and Wildlife Service, 1940b
Van Cleve, 1945
Wynne-Edwards, 1947a

DISTANCE TRAVELED UPSTREAM

The following references mention the distance traveled upstream by the king salmon:

Anon., 1903b
Babcock, 1931a
Baird, 1876
Bean, 1887b, 1891, 1894
Brice, et al., 1898
Bryant, 1949
Burner, 1951
California, State of, 1870-1871
Carl & Clemens, 1948
Clemens, 1935b, 1953
Evermann, 1905
Evermann & Goldsborough, 1907b
Foerster & Pritchard, 1935
Gilbert, 1924c
Gilbert & Evermann, 1895
Gilbert & O'Malley, 1921
Green, 1887
Greene, 1911b
Hallock, et al., 1952
Hoover, 1936
International North Pacific Fisheries Commission, 1955
Jordan, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kuznetzov, 1928
Locke, 1929
McDonald, 1895
O'Malley, 1920a
Redding, et al., 1933
Scheer, 1939
Smith, 1895b, 1898b
Suckley, 1874
Stone, 1874b, 1884a
Sumner & Smith, 1940
Townsend, 1899
Van Cleve, 1945
Wynne-Edwards, 1946, 1947a, 1952

NATURE OF SPAWNING SITE

Notes regarding the nature of the spawning site of king salmon are contained in the following references:

Briggs, 1953
Bower, 1925b
Burner, 1951
Chamberlain, 1907
Crawford, 1908
Curtis, 1945
De Bellesme, 1896
Evermann, 1896, 1905
Foerster, 1935
Foskett, 1947a
Hallock, et al., 1952
Hanson, 1940

Hickman, 1932
Hobbs, 1937
Hoover, 1936
Jordan, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Leach, 1922
Moser, 1899
O'Malley, 1920a
Parker, et al., 1952
Pritchard, 1940b
Redding, et al., 1933
Rich, 1948
Rounsefell & Kelez, 1940
Rutter, 1902
Sumner & Smith, 1940
U.S. Fish and Wildlife Service, 1945
Van Cleve, 1945
Worth, 1895

SPAWNING PERIOD

Data on the spawning period of the king salmon are contained in the following references:

Anon., 1903b, 1949b, 1953c,
Ayson, 1910
Babcock, 1914, 1915, 1916, 1927
Barin, 1887
Berg, 1948
Birchall & Hickman, 1914
Bower, 1927, 1929a
Brice, et al., 1898
Bryant, 1949
Chamberlain, 1907
Chapman, 1943
Clark, 1943
Clemens, 1939b, 1946b
Craig & Hacker, 1940
Craig & Townsend, 1946
Davidson & Vaughan, 1941
De Bellesme, 1896
Dymond, 1932
Evermann, 1896, 1897
Evermann & Meek, 1898
Fish, 1948
Gibson, 1923, 1922, 1925
Gilbert & O'Malley, 1921
Hanson, et al., 1940
Hickman, 1921, 1922, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932
Hickman & Collison, 1920
Hobbs, 1937
Hoover, 1936
Hubbs, 1946,
Hume, 1893
Jordan & Evermann, 1896
Kuznetzov, 1928
Leach, 1922, 1923, 1924, 1928, 1930, 1931, 1932
Locke, 1929
Lockington, 1880
Marsh & Cobb, 1907, 1908, 1911
McLean, 1945
Milner, 1874
Moffett, 1949
Moffett & Smith, 1950
Moser, 1899
Motherwell, 1934
Neave, 1943, 1949
Needham , et al., 1941
O'Malley, 1904, 1920a
Parker & Hanson, 1944
Parker,et al., 1952
Rathbun, 1900
Ravenel, 1896a, 1898, 1899, 1900, 1901, 1902
Redding, 1876,
Redding, et al., 1933
Rich,&Holmes, 1928
Rounsefell & Kelez, 1940
Rutter, 1904b, 1908
Smith, 1899
Stone, 1914, 1915a, 1915b, 1916b, 1917a, 1917b, 1918a, 1919, 1921a, 1922b, 1923a, 1924a, 1924b, 1925a, 1925b, 1927a, 1928a, 1928b, 1929a, 1929b, 1930a, 1930b, 1931a, 1931b, 1932a, 1932b
Stone, 1897, 1874b, 1876a, 1876b, 1878b, 1879a, 1880, 1883a, 1884a
Sumner & Smith, 1940
Van Cleve, 1945
Worth, 1895
Wynne-Edwards, 1947a

SEXUAL DIMORPHISM

Data on sexual dimorphism in king salmon are mentioned in the following references:

Babcock, 1931a
Bean, 1891, 1894
Brett & Fritchard, 1946b
Brice, et al., 1898
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1946b
Davidson & Vaughan, 1941
Evermann & Goldsborough, 1907b
Gilbert, 1924c
Gilbert & O'Malley, 1921
Hoover, 1936
Jordan, 1892, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kuznetzov, 1938
Locke, 1929
Lockington, 1880
Marr, 1944
O'Malley, 1904, 1920a
Rutter, 1902, 1904b
Shapovalov, 1947
Stone, 1874b, 1884a, 1897
Suckley, 1874

SPAWNING BEHAVIOR

Data on the spawning behavior of king salmon are contained in the following references:

Anon., 1953c
Babcock, 1931a
Bean, 1894
Berg, 1948
Brice, et al., 1898
Briggs, 1953
Burner, 1951
Chamberlain, 1907
Crawford, 1908
Evermann, 1896, 1897, 1905
Foerster, 1935
Hobbs, 1937
Hoover, 1936
Jordan, 1892, 1896c
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
McLean, 1945
Moser, 1899
Rutter, 1902, 1904b
Stone, 1874b, 1884a

POST-SPAWNING BEHAVIOR

Data on the post-spawning behavior of king salmon are noted in the following references:

Bean, 1891, 1894
Brice, et al., 1898
Briggs, 1953
Dunn, 1880
Evermann, 1897
Evermann & Meek, 1898
Green, 1887
Greene, 1911b
Gilbert, 1914a
Hobbs, 1937
Hoover, 1936
Hume, 1893
Jordan, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Locke, 1929
Oshima, 1934
Parker & Hanson, 1944
Rathbun, 1900
Rutter, 1902, 1904b
Stone, 1874b, 1897

DATE EGGS HATCH

Data on the time of hatching of king salmon are included in the following references:

Anon., 1916b
Carl & Clemens, 1948
Crawford, 1908
Davidson & Vaughan, 1939b
De Bellesme, 1896
Evermann, 1897
Evermann & Meek, 1898
Foerster & Pritchard, 1935
International North Pacific Fisheries Commission, 1955
Jordan, 1896c
Jordan & Evermann, 1896
Leach, 1922
Marsh & Cobb, 1910
Moffett & Smith, 1950
Mottley, 1929
Redding, et al., 1933
Rich, 1922, 1948
Rivers, 1947
Rutter, 1902
Scofield, 1898a, 1898b
Smith, 1898a
Smith, 1915
Stone, 1874b
U.S. Fish and Wildlife Service, 1945
Van Cleve, 1945
Williamson, 1927

BEHAVIOR OF FRY AND FINGERLINGS

Data on the behavior of the fry and fingerlings of king salmon are included in the following references:

Anon., 1953c
Babcock, 1904a, 1904b
Black, 1951b
California, State of, 1900
Chamberlain, 1907
Clemens, 1951, 1953
Davidson & Vaughan, 1941
Foerster, 1955
Fraser, 1919
Hallock, et al., 1952
Hatton & Clark, 1942
Kerr, 1953
MacKimon & Brett, 1955
Moffett & Smith, 1950
Moser, 1899
Murphy & Shapovalov, 1951
Pritchard, 1940b
Rich, 1948
Rutter, 1902, 1904b
Scofield, 1898b, 1900
Smith, 1898a, 1899.
Stone, 1884a, 1897
Wales & Coots, 1955a

TIME YOUNG SPEND IN FRESHWATER

Data on the time spent in freshwater by the silver salmon are contained in the following references:

Anon., 1948, 1952
Babcock, 1904a, 1908, 1931a
Bean, 1894
Bower, 1934
Bowser, 1913
California, State of, 1900
Carl & Clemens, 1948
Chamberlain, 1907
Cleaver, 1951
Clemens, 1935b, 1946b, 1951, 1953
Clemens, et al., 1938
Cobb, 1921

Craig & Townsend, 1946
Curtis, 1945
Davidson & Vaughan, 1939b, 1941
Davis, 1953
Earp, et al., 1953
Evermann, 1897
Evermann & Meek, 1898
Foerster & Pritchard, 1935
Fraser, 1916, 1919
Gilbert, 1913a, 1913b, 1914a, 1924c
Hallock, et al., 1952
Henry, 1953
Hourston, et al., 1955
Hubbs, 1946
Hume, 1893
Kerr, 1953
Locke, 1929
MacKimon & Brett, 1955
McDonald, 1894c, 1895
McKernan, et al., 1950
Milne, 1913
Moffett & Smith, 1950
Mottley, 1929
Murphy & Shapovalov, 1951
Neave, 1948, 1949, 1951
Neave & Wickett, 1953
Needham, et al., 1941
O'Malley, 1920a
Oshima, 1934
Parker & Kirkness, 1951
Pritchard, 1940b
Redding, et al., 1933
Rich, 1922, 1926, 1948,
Ricker, 1954
Rutter, 1904b, 1908
Scheer, 1939
Scofield, 1898a, 1898b
Smith, 1898a
Smoker, 1954
Snyder, 1922, 1924b
U.S. Fish and Wildlife Service, 1945
Van Cleve, 1945
Wales & Coots, 1955a

DATE OF SEAWARD MIGRATION

Statements on the date of seaward migration of young king salmon are contained in the following references:

Babcock, 1904a, 1904b, 1905
Bean, 1894
Bower, 1925b, 1938a
California Fish and Game, 1932
Chamberlain, 1907
Clemens, 1951
Clemens, et al., 1938
Davidson & Vaughan, 1941
Davison, et al., 1954
Erkkila, et al., 1950
Evermann, 1897
Fish, 1948
Foerster & Pritchard, 1935
Fraser, 1919
Gharrett & Hodges, 1950
Gilbert, 1914a
Greene, 1911b
Hallock, et al., 1952
Hanson, et al., 1940
Hatton & Clark, 1942
Hubbs, 1946
International North Pacific Fisheries Commission, 1955
Johnson, et al., 1948
MacKimon & Brett, 1955
Marr, 1944
Moffett, 1949
Moffett & Smith, 1950
Murphy & Shapovalov, 1951
Neave, 1948
Needham, et al., 1943
Needham, et al., 1941
Newcomb, 1948
Oshima, 1934
Parker, et al., 1953
Pritchard, 1940b
Rich, 1922, 1948
Rivers, 1947
Rounsefell & Kelez, 1940
Rutter, 1902, 1904b
Scofield, 1898a, 1898b, 1900
Smith, 1899
Snyder, 1922, 1931
Stone, 1874b
Van Cleve, 1945
Wales & Coots, 1955a

SIZE AT TIME OF SEAWARD MIGRATION

Data on the size of young king salmon at the time of seaward migration are contained in the following references:

Anon., 1915c
Babcock, 1903, 1904a, 1904b
Chamberlain, 1907
Chamberlain & Bower, 1913
Craig & Townsend, 1946
Curtis, 1945
Davidson & Vaughan, 1941
Davison, et al., 1954
Erkkila, et al., 1950
Foerster & pritchard, 1935
Fraser, 1919
Gharrett, & Hodges, 1950
Gilbert, 1913b
Gilbert & Evermann, 1895
Hallock, et al., 1952
Hanson, et al., 1940
Hatton & Clark, 1942
Hourston, et al., 1955
McDonald, 1894c, 1895
Milne, 1913
Moffett, 1949
Moffett & Smith, 1950
Needham, et al., 1943
Rich, 1948
Rounsefell & Kelez, 1940
Scofield, 1898a
Snyder, 1922
Van Cleve, 1945

MOVEMENTS IN THE OCEAN

Data on the movements in the ocean of the king salmon are contained in the following references:

Anon., 1904c, 1924
Babcock, 1903, 1914, 1931a
Barnaby, 1952
Bean, 1891, 1894
California Fish and Game, 1932
Chamberlain, 1907
Clemens, 1935b
Clark & Hatton, 1942
Cobb, 1917, 1921
Davidson, 1940c
Davidson & Hutchinson, 1940
Davidson & Vaughan, 1941
Fry & Hughes, 1951
Gilbert, 1895
Hallock, et al., 1952
Hanson, et al., 1940
Hubbs, 1946
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904a, 1904b
Jordan & Evermann, 1896
Manzer, 1946
Mathisen, 1950
Mottley, 1929
Murphy & Shapovalov, 1951
Rathbun, 1900
Rich, 1935c, 1939
Rich & Holmes, 1928
Rounsefell & Kelez, 1940
Rutter, 1904b
Scheer, 1939
Scofield, 1922
Snyder, 1931
Stone, 1874b
Townsend, 1904
Verhoeven, 1952
Williamson, 1927

MARKING OR TAGGING AND RECAPTURE DATA

Data on marking or tagging and recapture of king salmon are contained in the following references:

Anon., 1903b, 1904c, 1916b, 1924, 1937, 1952, 1953c
Babcock, 1914
Bowser, 1913
Brett & pritchard, 1946b
California, State of, 1904, 1950-1952, 1952-1954
Chamberlain, 1907
Clark & Hatton, 1942
Curtis, 1945
Clemens, 1928, 1929, 1932, 1939c
Clemens, et al., 1939
Coker, 1922
Erkkila, et al., 1950
Fish, 1948
Foerster, 1941, 1942, 1943, 1946a, 1947a
Fry & Hughes, 1951
Gilbert & Rich, 1927
Godfrey, et al., 1954
Greene, 1911b
Hefford, 1931, 1934b, 1936
Higgins, 1928, 1929
Holmes, 1928
International North Pacific Fisheries Commission, 1955
Jordan, 1892, 1896c, 1904b
Kauffman, 1951
Kirkness, et al., 1952, 1953
Marsh & Cobb, 1907, 1908, 1911
McKernan, et al., 1950
Milne, 1955
Neave, 1951
Newcomb & Mathesin, 1946
O'Malley, 1924
Oregon Fish Commission, 1931
Parker & Hanson, 1944
Parker & Kirkness, 1951
Parker, et al., 1952
Powers, 1939
Pritchard, 1931b, 1932b, 1934c, 1934e, 1940b, 1945c
Rich, 1935a, 1935c, 1939, 1941
Rich & Holmes, 1928
Rich & Morton, 1930
Rounsefell & Kelez, 1940
Rutter, 1902, 1904b
Scheer, 1939
Silliman, 1948a, 1948b
Snyder, 1921b, 1922, 1923, 1928, 1931
U.S. Fish and Wildlife Service, 1939d
Van Cleve, 1942-1944
Van Hyning, 1951
Williamson, 1927, 1929
Williamson & Clemens, 1932

HOMING INSTINCT

Discussions or data concerning the homing instinct in king salmon are contained in the following references:

Anon., 1903b, 1937
Babcock, 1931a
Brett & MacKinnon, 1954
Chamberlain, 1907
Clemens, 1938b, 1939c, 1951, 1953
Crawford, 1907
Davidson & Vaughan, 1939b, 1941
Foerster, 1941
Fraser, 1919
Gilbert & Rich, 1927
Higgins, 1928
Holmes, 1928
Hume, 1893
International North Pacific Fisheries Commission, 1955
Jordan, 1892, 1896c, 1904b
Jordan & Gilbert, 1887
Marsh & Cobb, 1911
Oregon Fish Commission, 1931
Pritchard, 1940b
Powers, 1939
Rich, 1939, 1948

Rich & Ball, 1931
Rich & Holmes, 1928
Rounsefell & Kelez, 1940
Rutter, 1902, 1904b
Scheer, 1939
Snyder & Scofield, 1924a
U.S. Fish and Wildlife Service, 1945
Verhoeven, 1952
White & Huntsman, 1938

GROWTH RATES

Remarks on growth rates of the king salmon are included in the following references:

Berg, 1948
Besana, 1910
Chamberlain, 1907
De Bellesme, 1896
Fraser, 1916, 1917b, 1919, 1921
Hatton & Clark, 1942
Hefford, 1934b, 1936
Hobbs, 1937
International North Pacific Fisheries Commission, 1955
Marr, 1944
Parker & Kirkness, 1951
Rich, 1922, 1926
Rounsefell & Kelez, 1940
Rutter, 1902
Scofield, 1898a, 1898b, 1900
Snyder, 1921b, 1922, 1923
Van Hyning, 1951

FOOD AND FEEDING HABITS

Comments on the food and/or feeding habits of king salmon are included in the following references:

Anon., 1952, 1953c, 1955c
Babcock, 1931a
Barnaby, 1952
Bean, 1891, 1894
Bowser, 1913
Carl & Clemens, 1948
Chamberlain, 1907
Chapman, 1936
Chapman & Quistorff, 1938
Clemens, 1935b, 1939b, 1951, 1953
Clemens, et al., 1938
Cobb, 1910, 1917, 1921
Fish, 1939
Foerster, 1941, 1942, 1955
Foskett, 1951b
Fraser, 1916, 1919, 1923
Gilbert, 1913b, 1914a
Greene, 1911b, 1915c
Heg, & Van Hyning, 1951
Holmes, 1928
Hoover, 1936
International North Pacific Fisheries Commission, 1955
Jordan, 1894
Kendall, 1913
Locke, 1929
Lowe, 1936
Maeda, 1955
Marsh & Cobb, 1908
Pritchard & Tester, 1939, 1941, 1942, 1944
Rich, 1921a, 1948
Ricker, 1954
Rounsefell & Kelez, 1940
Rutter, 1902, 1904b
Scofield, 1898b, 1900
Senter, 1940
Silliman, 1941
Smith, 1895b
Snyder, 1922, 1924b
Snyder & Scofield, 1924a
Stone, 1874b, 1884a, 1897
Sumner & Smith, 1940
Thompson, 1931
U.S. Fish and Wildlife Service, 1945
Williamson, 1927, 1930
Withler, 1948

PARASITES AND DISEASES

Parasites and diseases infecting the king salmon are reported by:

Bean, 1891
Carl, 1939
Clemens, 1939
Davis, 1927a, 1927b, 1953
Davison, et al., 1954
Earp, et al., 1953
Eguchi, 1934
Fallera, 1926
Fish, 1939
Guberlet, 1926
Haderlie, 1953
Johnson & Bruce, 1952
Jordan, 1892, 1896c, 1904
Linton, 1941
Rutter, 1902
Smith & Quistorff, 1940
Stone, 1874
Wales & Wolf, 1955b
Ward, 1908
Wardle, 1932
Wilson, 1916

INTRODUCTIONS AND ACCLIMATIZATION

For data on the introduction and acclimatization of king salmon into various exotic waters, see subject section under this category.

EGG COUNTS

The following references contain data on the number of eggs produced by king salmon:

Aro, 1952
Bean, 1892
Bower, 1938a
Bryant, 1923
Foerster, 1955
Foerster & Pritchard, 1936
Hanson, 1940
Hanson, et al., 1940
Kuznetzov, 1928
McGregor, 1922b, 1923a, 1923b
Moffett & Smith, 1950
Rich, 1926, 1940b
Smiley, 1887a
Snyder, 1921a
Stone, 1897

RELATIVE ABUNDANCE

Material on the relative abundance of king salmon is contained in the following references. Examination of the specific entries will indicate whether the data are in the form of catch records or as counts of migrant adults.

Anon., 1903b, 1915b, 1931a, 1938a, 1952, 1953c, 1955c, 1879, 1880
Aro, 1952
Atkinson, 1955
Babcock, 1910
Bryant & Parkhurst, 1950
California, State of, 1874-1875, 1877, 1900, 1902-1952, 1929-1952, 1952-1954
Carl, 1939
Chapman, 1940b
Edson, et al., 1955
Ellis, et al., 1937
Foerster, 1941, 1942, 1943, 1947a
Fry & Hughes, 1951
Gharrett & Hodges, 1950
Godfrey, et al., 1954
Hanson, 1940
Hanson, et al., 1940
Hefford, 1929, 1930, 1931, 1932, 1934a, 1934b, 1935, 1936, 1938, 1940, 1941, 1946
Henry, 1953
Holmes, 1940
Hobbs, 1937
International North Pacific Fisheries Commission, 1955
Johnson, et al., 1948
Kauffman, 1951
Kuznetzov, 1928
Marine Fisheries Branch (Staff), 1954
Mathisen, 1950
McKernan, et al., 1950
Milne, 1913
Moser, 1899
Neave, 1939, 1951
Needham, et al., 1943
Needham, et al.,1941
Newcomb & Mathesin, 1946
Oregon Fish Commission, 1941, 1943, 1949
Parker, et al., 1952, 1953
Pressey, 1953
Pritchard, 1943c, 1949
Rich, 1935c, 1941, 1942, 1943, 1940b
Rich & Ball, 1929b, 1931, 1935
Rounsefell & Kelez, 1940
Schoning, et al., 1951
Silliman, 1948a
Smiley, 1884d
Smith, 1895b
Smoker, 1954
Snyder, 1931
U.S. Fish and Wildlife Service, 1931-1940, 1938-1940
Van Cleve, 1942-1944
Van Hyning, 1951
Washington, State of, 1935-1945
Wilcox, 1898

Oncorhynchus nerka (Walbaum), commonly called the sockeye, red, blueback salmon, or redfish, is distributed throughout the North Pacific Ocean from Japan to California. It is not known to enter the Arctic Ocean. A land-locked form occurs throughout the range of this species. Subspecific rank is usually assigned to the land-locked forms, the most common of which is Oncorhynchus nerka kennerlyi (Suckley). In the North American literature, this land-locked subspecies is commonly called the kokanee or little redfish, the former name being by far the more popular.

DESCRIPTION - COUNTS AND MEASUREMENTS

The following papers present descriptive matter on the sockeye salmon (including the kokanee) and/or counts and measurements of any of its systematic characteristics:

Babcock, 1905
Bean, 1887b
Berg, 1948
Brice, et al., 1898
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1935b, 1946b
Crawford, 1925
Curtis & Fraser, 1948
Dymond, 1936
Evermann, 1897, 1905
Foerster, 1929a, 1935
Foerster & Pritchard, 1935
Gilbert, 1895
Hikita, 1953
Jordan, 1896c, 1904a, 1907, 1923
Jordan & Gilbert, 1882
Jordan & Evermann, 1896
Kimsey, 1951
Lockington, 1880
O'Malley, 1920a
Parker, et al., 1952
Pritchard & Cameron, 1940
Rathbun, 1900
Shapovalov, 1947
Snyder, 1931
Stone, 1897
Suckley, 1874
Taft, 1937b
Taguchi, 1948
Taliev, 1932
Williamson, 1927

FIGURES AND ILLUSTRATIONS

The following references contain drawings and/or illustrations of the sockeye salmon (including the kokanee):

Bean, 1891
Berg, 1948
Brice, et al., 1898
California, State of, 1904
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1946b
Cobb, 1917
Crawford, 1925
Curtis & Fraser, 1948
Evermann, 1897
Evermann & Goldsborough, 1907b
Foerster & Pritchard, 1935
Hikita, 1953
Hudson, 1917

Jones, 1915
Jordan, 1884, 1896c
Jordan & Evermann, 1896
Kimsey, 1951
Marr, 1944
Moser, 1899
Nelson & Abegglen, 1955
Nomura, 1953
O'Malley, 1920a
Roedel, 1948
Shapovalov, 1947
Stone, 1897
Wilcox, 1902
Williamson, 1927

LIFE COLORS

Often natural populations of fishes have distinctive color patterns. To aid in racial analysis, an attempt was made to isolate data on life colors. The following references contain statements referring to the color of the sockeye salmon (including the kokanee):

Babcock, 1917, 1925, 1926, 1927, 1931a
Bean, 1891, 1894
Berg, 1948
Brice, et al., 1898
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1935b, 1946b
Cobb, 1911, 1917, 1921
Crawford, 1925
Evermann, 1896, 1897, 1905
Foerster, 1935
Foerster & Pritchard, 1935
Gilbert & O'Malley, 1921
Jordan, 1892, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1882, 1887
Locke, 1929
Lockington, 1880
Marsh & Cobb, 1908
O'Malley, 1904, 1920a
Ricker, 1938b, 1940
Roedel, 1948, 1953a
Rutter, 1904b
Schultz, 1935
Shapovalov, 1947
Snyder, 1931
Suckley, 1874
Taft, 1937b
Williamson, 1927

RELATIONSHIPS

The following references contain data on the relationships of sockeye salmon (including the kokanee) to other species. Distinctions employed in keys are included in this category.

Babcock, 1931a
Berg, 1948
Burner, 1951
Chamberlain, 1907
Clemens, 1935b, 1946b
Evermann, 1897
Foerster, 1947b
Foerster & Pritchard, 1935
Gill, 1862
Jordan, 1916, 1923
Jordan & Evermann, 1896
Jordan & Gilbert, 1882
Kobayasi, 1955
Locke, 1929
Nomura, 1953
Ricker, 1938b
Schultz, 1934
Shapovalov, 1947
Snyder, 1931
Suckley, 1874
Taft, 1937b

RACIAL ANALYSIS

The following papers contain comments or data upon the races or populations of the sockeye salmon (including the kokanee):

Andrekson & Foskett, 1950a
Babcock, 1905, 1925, 1927, 1931a
Bower, 1933, 1934
Chamberlain, 1907
Chamberlain & Bower, 1913
Chapman & Quistorff, 1938
Clemens, 1938a, 1939a, 1940a, 1941, 1943, 1944, 1946a, 1947, 1948, 1952
Clemens & Clemens, 1926, 1927, 1928, 1929, 1930, 1931, 1932a, 1933, 1934, 1935, 1936, 1937
Craigie, 1926
Dunlop, 1924
Evermann & Goldsborough, 1907b
Foerster, 1929a, 1946b
Foskett, 1951a, 1952a, 1954, 1955b
Fraser, 1916, 1921
Gilbert, 1913b, 1914b, 1915, 1916, 1918, 1919, 1920, 1922, 1923, 1924a, 1924c, 1925
Gilbert & Rich, 1927, 1929
Higgins, Elmer, 1932
Holmes, 1928, 1934
International North Pacific Fisheries Commission, 1955
Jensen, 1953
Jordan, 1904b
Killick, 1955
Kirkness, et al., 1953
Marr, 1944
McConnell & Brett, 1946
Milne, 1955
Milne, 1917
Moser, 1899
O'Malley & Rich, 1920
Parker & Kirkness, 1951
Parker, et al., 1952
Powers, 1941
Radcliffe, 1928
Rathbun, 1900
Rich, 1925a
Rich & Ball, 1929b
Ricker, 1940
Royal, 1951
Schaefer, 1951
Scheer, 1939
Smith, 1899
Taguchi, 1948
Taliev, 1932
Thompson, 1945b
Verhoeven, 1952
Williamson, 1927

ANATOMY AND PHYSIOLOGY

Included within this category are references concerning the anatomy, histology, osteology (including sub-fossil finds) and physiology of the sockeye salmon and the kokanee.

Bailey, 1937
Black, 1953
Brett, 1952b
Brett & MacKinnon, 1952
Chapman, 1938
Coker, 1922
Davidson & Snostrom, 1936
Foerster, 1929d
Greene, 1911b
Hoar, 1953
Holmes, 1928
Jordan, 1904a
Kendall, 1922
Kobayashi & Yuki, 1954b
Nomura, 1953
Palmer, et al., 1954 Powers, 1939
Reagan, 1917
Weisel, 1947

BIOCHEMISTRY

Data on the biochemistry of sockeye salmon are presented in the following papers:

Bailey, 1952
Brocklesby, 1940
Brocklesby & Denstedt, 1933
Fallera, 1926
Jarvis, et al., 1926
Pottinger & Baldwin, 1940
Pugsley, 1942
Riddell, 1936b

SEX RATIOS

Data on the sex ratios of sockeye salmon (including the kokanee) are presented in the following papers:

Chamberlain, 1907
Gibson, 1930, 1931
Gilbert, 1914a, 1914b, 1915, 1916, 1920, 1922, 1923, 1924a, 1924c, 1925
Marr, 1944
Robertson, 1948
Snyder, 1931
Stone, 1928a, 1928b, 1929a, 1930b, 1931a

TIME OF SPAWNING MIGRATION

Data on the time of return of sockeye salmon from the ocean to the stream mouths are contained in the following references:

Atkinson, 1955
Babcock, 1918, 1931a
Bolton, 1930
Brice, 1898
Briggs, 1953
Chamberlain, 1907
Cobb & Kutchin, 1907
Gilbert, 1895, 1924
Jordan & Starks, 1896
McHugh, 1915
Neave, 1949
Rounsefell & Kelez, 1940
Royal, 1951
Thompson, 1931

Data on the time fish are observed migrating upstream at any point in its course are contained in the following references:

Anon., 1931b, 1938a
Aro, 1952
Babcock, 1903, 1906, 1907, 1910, 1914, 1918, 1921, 1922, 1923, 1929, 1930, 1931
Barin, 1887
Barnaby, 1944
Bean, 1887b, 1891, 1894
Berg, 1948
Bower, 1920a, 1920b, 1922, 1923, 1925a, 1925b, 1926, 1927, 1929a, 1929b, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1938a, 1938b, 1940
Bower & Aller, 1915, 1917a, 1917b, 1919
Bower & Fassett, 1914
Bowers, 1899.
Bowser, 1909
Brett & McConnell, 1950
Brett & Pritchard, 1946a
Brice, et al., 1898
British Columbia, 1941
Burner, 1951
Carl & Clemens, 1948
Chamberlain, 1907
Chamberlain & Bower, 1913
Chapman, 1941
Cleaver, 1951
Clemens, 1946
Clemens, et al., 1938
Cobb, 1911, 1917, 1921
Coker, 1922
Craigie, 1926
Crawford, 1908
Davidson, 1940a
Dombroski, 1952
Evermann, 1897
Evermann & Goldsborough, 1907b
Evermann & Meek, 1898
Fish, 1948
Foerster, 1929a, 1935, 1955
Foerster & Pritchard, 1935
Foskett, 1947a
Fraser, 1919
Gibson, 1923
Gilbert, 1922, 1923, 1924a
Godfrey, et al., 1954
Greene, 1911b
Handa, 1934
Higgins, 1940
Hobbs, 1937
Hume, 1893
Hunter, 1948, 1949a
International North Pacific Fisheries Commission, 1955
Jordan, 1884, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Jordan & Starks, 1896b
Killick, 1955
Kirkness, et al., 1952, 1953
Kuznetzov, 1928
Leach, 1927, 1932
Marr, 1944
Marsh & Cobb, 1908, 1910
McDonald, 1894a
Milne, 1950b, 1955
Milne, 1913, 1917
Moser, 1899, 1902
Novisoff, 1912
O'Malley, 1904, 1920a
Parker & Kirkness, 1951
Parkhurst, 1950b
Popov, 1933

Pritchard & Cameron, 1940
Radcliffe, 1920
Rathbun, 1894, 1900
Rich, 1942
Rich & Ball, 1929b
Ricker, 1947
Ricker & Robertson, 1935
Royal, 1951
Rutter, 1904b
Shapovalov & Taft, 1954
Smith, 1917, 1900
Smoker, 1954
Snyder, 1931
Stone, 1897
Thompson, 1942
Tokahisa & Takeshi, 1934
U.S. Fish and Wildlife Service, 1924, 1945
U.S. Foreign Economic Administration, 1945
Ward, 1920a, 1920b
Wilcox, 1898
Williamson, 1927
Wynne-Edwards, 1947a

Entries specifically concerned with the kokannee, or land-locked sockeye, are as follows:

Babcock, 1903
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1946b
Clemens, et al., 1938
Curtis & Fraser, 1948
Evermann, 1897
Evermann & Meek, 1898
Foerster & Pritchard, 1935
Foskett, 1947a
Jordan, 1884, 1892, 1896c, 1904a
Kinsey, 1951
Parkhurst, 1950b
Wynne-Edwards, 1947a

SIZE AT TIME OF RETURN

Data on the size of sockeye salmon at time of return are contained in the following references:

Andrekson, 1950b
Andrekson & Foskett, 1950a
Aro, 1952
Babcock, 1918
Baievsky, 1926
Bean, 1887b, 1894, 1898
Briggs, 1953
Burner, 1951
Chapman, 1940a
Clemens, 1935b, 1938a, 1940a, 1941, 1942, 1943, 1944, 1946a, 1946b, 1947, 1948, 1950
Clemens & Clemens, 1926, 1927, 1928, 1929, 1930, 1931, 1932a, 1933, 1934, 1935, 1936, 1937
Cobb, 1911, 1917
Coker, 1922
Dombroski, 1952, 1954
Evermann & Goldsborough, 1907b
Foerster, 1929a, 1929b, 1955
Foerster & Pritchard, 1941
Foskett, 1951a, 1952a, 1953, 1954, 1955b
Fraser, 1919, 1921
Gilbert, 1913b, 1914a, 1914b, 1915, 1916, 1918, 1919, 1920, 1922, 1923, 1924a, 1924c, 1925
Godfrey, et al., 1954
Greene, 1911b
Holmes, 1934
Hume, 1893
Jordan, 1884, 1892
Jordan & Evermann, 1896,
Jordan & Gilbert, 1887
Jordan & Starks, 1896b
Kirkness, et al., 1952, 1953
Kuznetzov, 1928
Marsh & Cobb, 1910
McDonald, 1895
Moser, 1899
Novisoff, 1912
O'Malley, 1920a
Parker & Kirkness, 1951
Parker, et al., 1952
Pritchard, 1937c
Radcliffe, 1920
Rathbun, 1900
Robertson, 1948
Rutter, 1904b

Scheer, 1939
Shapovalov & Taft, 1954
Snyder, 1931
Stone, 1928a, 1928b, 1930b,
Stone, 1897
Tanner, et al., 1890
U.S. Fish and Wildlife Service, 1945
Wales & Coot, 1955a
Williamson, 1927

Entries concerning the kokanee, or land-locked sockeye, mentioning size at time of return are as follows:

Clemens, 1939b, 1946b
Curtis & Fraser, 1948
Dymond, 1932, 1936
Evermann, 1896
Evermann & Meek, 1898
Foerster, 1947b
Fraser & Pollitt, 1951
Gilbert, 1914b
Jordan, 1884, 1892
Kimsey, 1951
Locke, 1929
Neave, 1949
Ricker, 1938b, 1940
Scattergood, 1949

AGE AT TIME OF RETURN

Data on the age of sockeye salmon at time of return are contained in the following references:

Andrekson, 1950b
Anon., 1914a, 1951c, 1953c, 1954, 1955c
Babcock, 1907, 1908, 1931a
Barnaby, 1944
Bean, 1891
Berg, 1948
Bower, 1933
Bower & Aller, 1917a
Bowser, 1913
Briggs, 1953
Carl & Clemens, 1948
Clemens, 1935a, 1935b, 1938a, 1938b, 1940a, 1941, 1942, 1943, 1944, 1946a, 1946b, 1947, 1948, 1950, 1952
Clemens & Clemens, 1926, 1927, 1928, 1929, 1930, 1931, 1932a, 1932b, 1933, 1934, 1935, 1936, 1937.
Chamberlain, 1907
Cleaver, 1951
Cobb, 1917
Davidson, 1940a
Davidson & Shostrom, 1936
Dombroski, 1952, 1954
Fish, 1948
Foerster, 1929b, 1934, 1935, 1936a, 1954b, 1955
Foerster & Pritchard, 1935
Foskett, 1951a, 1953, 1954, 1955a, 1955b
Fraser, 1921, 1919
Gilbert, 1913a, 1913b, 1914a, 1914b, 1916, 1918, 1919, 1922, 1923, 1924a, 1924c, 1925
Gilbert & Rich, 1929
Godfrey, et al., 1954
Hasler & Wisby, 1951
Higgins, 1932
Hoar, 1951b
Hobbs, 1937
Holmes, 1934
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904a
Juday, 1935
Kirkness, et al., 1952, 1953
Koo, 1955
Kuznetzov, 1938
Milne, 1955
Milne, 1913
Neave, 1948, 1949
O'Malley, 1920a
Parker & Kirkness, 1951
Pritchard, 1937c
Ricker, 1938b
Rich, 1948
Ricker, 1954
Robertson, 1948
Rounsefell & Kelez, 1940

Rutter, 1904b
Scheer, 1939
Shapovalov & Taft, 1954
Smith, 1900
Smoker, 1954
Snyder, 1931
Thompson, 1942, 1945b
U.S. Fish & Wildlife Service, 1945

Entries primarily concerned with the age at time of return of the kokanee are as follows:

Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1935a, 1939b, 1946b
Curtis & Fraser, 1948
Dymond, 1932
Evermann, 1897
Foerster, 1947b
Foerster & Pritchard, 1935
Neave, 1949
Ricker, 1938b, 1940

TYPE OF SPAWNING STREAM

Data on the nature of the spawning stream chosen by the sockeye salmon are contained in the following references:

Anon., 1904a
Babcock, 1931a
Bean, 1891, 1894
Brice, et al., 1898
Burner, 1951
Chamberlain, 1907
Clemens, 1935a, 1946b, 1951, 1953
Fish, 1948
Foerster, 1935, 1936c
Foerster & Pritchard, 1935
Gilbert, 1914b
Greene, 1911b
Hobbs, 1937
Hume, 1893
Jordan, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kirkness, et al., 1952
Kuznetzov, 1928
McDonald, 1894a
Neave, 1949
Neave & Wickett, 1953
O'Malley, 1904, 1920a
Powers, 1941
Pritchard, 1949
Radcliffe, 1928
Rathbun, 1900
Rich, 1948
Rutter, 1904b
Scheer, 1939
Thompson, 1945b
Ward, 1920a
Wynne-Edwards, 1947

Material on this topic relating to the kokanee is included in the following papers:

Chamberlain, 1907
Clemens, 1953
Curtis & Fraser, 1948
Fraser & Pollitt, 1951
Gilbert, 1914b
Kimsey, 1951
Wynne-Edwards, 1947a

DISTANCE TRAVELED UPSTREAM

The following references mention the distance traveled upstream by the sockeye salmon:

Babcock, 1931a
Bean, 1887b, 1891, 1894
Brice, et al., 1898
Burner, 1951
Carl & Clemens, 1948
Clemens, 1935b, 1953
Evermann & Goldsborough, 1907b
Foerster & Pritchard, 1935
Gilbert, 1924c
Gilbert & O'Malley, 1921
Greene, 1911b
International North Pacific Fisheries Commission, 1955
Jordan, 1884, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Killick, 1955
Kuznetzov, 1928
Locke, 1929
McDonald, 1895
O'Malley, 1920a
Radcliffe, 1928
Scheer, 1939
Ward, 1920a
Wynne-Edwards, 1947a, 1952, 1946

NATURE OF SPAWNING SITE

Notes regarding the nature of the spawning site of sockeye salmon are contained in the following references:

Anon., 1954
Brett, 1952a
Bower, 1925b
Briggs, 1953
Burner, 1951
Chamberlain, 1907
Crawford, 1908
Foerster, 1929a, 1935, 1936c
Foskett, 1947a, 1947b
Gangmark & Fulton, 1952
Gilbert & Rich, 1929
Hickman, 1932
Hobbs, 1937
Jordan, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Leach, 1922
Mac Day, 1931
Moser, 1899
O'Malley, 1920a
Parker, et al., 1952
Rich, 1948
Rounsefell & Kelez, 1940
Schultz, 1935
Smith, 1900
U.S. Fish and Wildlife Service, 1945

The following references are primarily concerned with the kokanee:

Chamberlain, 1907
Curtis & Fraser, 1948
Evermann, 1896
Foskett, 1947a, 1947b
Fraser & Pollitt, 1951
Gangmark & Fulton, 1952
Kimsey, 1951

SPAWNING PERIOD

Data on the spawning period of the sockeye are contained in the following references:

Andriashev, 1955
Anon., 1949b, 1953c
Ayson, 1910
Babcock, 1914, 1915, 1917, 1920, 1921, 1923, 1927, 1928, 1930, 1931b
Barin, 1887
Berg, 1948
Birchall, 1915
Birchall & Hickman, 1914
Bower, 1923, 1927, 1929a
Brett & Pritchard, 1946a
Brice, et al., 1898
Chamberlain, 1907
Chapman, 1943
Clemens, 1935a, 1946b
Collison & Hickman, 1917
Craig & Hacker, 1940
Davidson, 1940a
Evermann, 1896, 1897
Evermann & Meek, 1898
Fish, 1948
Foerster, 1929b, 1936a, 1937, 1944b
Foskett, 1947b
Fraser, 1918
Gangmark & Fulton, 1952
Gibson, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1929, 1930, 1931, 1932, 1916
Gilbert & O'Malley, 1921
Gilbert & Rich, 1929
Hickman, 1914, 1915, 1918, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932
Hickman & Collison, 1920
Hobbs, 1937.
Hume, 1893
Jordan & Evermann, 1896
Killick, 1955
Kuznetzov, 1928
Leach, 1922, 1923, 1927, 1928, 1930, 1931, 1932
Lockington, 1880
Marsh & Cobb, 1907, 1908, 1911
McConnell & Brett, 1946
Moser, 1899
Motherwell, 1934
Neave, 1949
O'Malley, 1904, 1920a
Parker, et al., 1952
Pritchard & Cameron, 1940
Rathbun, 1900
Ravenel, 1901, 1902
Rounsefell & Kelez, 1940
Rutter, 1904b
Schaefer, 1951
Schultz, 1935
Smith, 1899, 1900
Stone, 1914, 1915a, 1915b, 1916a, 1916b, 1917a, 1917b, 1918a, 1918b, 1919, 1920a, 1920b, 1921a, 1921b, 1922a, 1922b, 1923a, 1923b, 1924a, 1924b, 1925a, 1925b, 1926a, 1927a, 1927b, 1928a, 1928b, 1929a, 1929b, 1930a, 1930b,, 1931a, 1931b, 1932a, 1932b
Stone, 1897
Ward, 1920b
Wisley, 1920
Withler, et al., 1949
Wynne-Edwards, 1947a

References particularly concerned with the spawning period of the kokanee are as follows:

Chamberlain, 1907
Clemens, 1935a, 1939b
Curtis & Fraser, 1948
Dymond, 1932
Evermann, 1896, 1897
Evermann & Meek, 1898
Foskett, 1947b
Gangmark & Fulton, 1952
Kimsey, 1951, 1955
Locke, 1929
Milner, 1874
Neave, 1949
Ricker, 1938b, 1940
Wynne-Edwards, 1947a

SEXUAL DIMORPHISM

Data on sexual dimorphism in sockeye salmon are mentioned in the following references:

Babcock, 1931a
Bean, 1891, 1894
Brett & Fritchard, 1946a, 1946b
Brice, et al., 1898
Briggs, 1953
Carl & Clemens, 1948
Chamberlain, 1907
Clemens, 1946b
Gilbert, 1924c
Gilbert & O'Malley, 1921
Evermann & Goldsborough, 1907b
Foerster, 1954b
Jordan, 1892, 1896c, 1904a, 1907
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Kuznetzov, 1928
Locke, 1929
Lockington, 1880
Marr, 1944
O'Malley, 1904, 1920a
Rutter, 1904b
Schultz, 1935
Shapovalov, 1947
Shapovalov & Taft, 1954
Stone, 1897

The following entries mention sexual dimorphism in the kokanee:

Chamberlain, 1907
Kimsey, 1951
Locke, 1929
Ricker, 1940
Scattergood, 1949

SPAWNING BEHAVIOR

Data on the spawning behavior of sockeye salmon are contained in the following references:

Anon., 1953c
Babcock, 1931a
Bean, 1894
Berg, 1948
Bower, 1923
Brice, et al., 1898
Briggs, 1953
Burner, 1951
Chamberlain, 1907
Crawford, 1908
Foerster, 1935
Hobbs, 1937
Jordan, 1892, 1896c
Jordan & Evermann, 1896
Jordan & Gilbert, 1887
Moser, 1899

Rutter, 1904b
Schultz, 1935
Shapovalov & Taft, 1954
Smith, 1900
Withler, et al., 1949

Spawning behavior in the kokanee are recorded by the following workers:

Chamberlain, 1907
Curtis & Fraser, 1948
Evermann, 1896, 1897
Kimsey, 1951, 1955
Ricker, 1938b

POST-SPAWNING BEHAVIOR

Data on the post-spawning behavior of sockeye salmon are noted in the following references:

Bean, 1891, 1894
Brice, et al., 1893
Briggs, 1953
Gilbert, 1914a
Greene, 1911b
Hobbs, 1937
Howard, 1948
Hume, 1893
Jordan, 1892, 1896c, 1904a
Jordan & Evermann, 1896
Killick, 1955
Rathbun, 1900
Rutter, 1904b
Stone, 1897

Data on the post-spawning behavior of the kokanee are included in the following papers:

Curtis & Fraser, 1948
Evermann, 1897
Evermann & Meek, 1893
Kimsey, 1955
Locke, 1929
Schultz, 1935

DATE EGGS HATCH

Data on the time of hatching of sockeye salmon are included in the following references:

Carl & Clemens, 1948
Clemens, 1935a
Crawford, 1908
Davidson, 1940a
Foerster, 1937, 1938b, 1944b
Foerster & Pritchard, 1935
Gangmark & Fulton, 1952
International North Pacific Fisheries Commission, 1955
Jordan, 1896c
Jordan & Evermann, 1896
Leach, 1923
Marsh & Cobb, 1910
Rich, 1948
Smith, 1895a
U.S. Fish and Wildlife Service, 1945
Williamson, 1927
Withler, et al., 1949

DATE EGGS HATCH

Information specifically referring to the time of hatching of the kokanee are contained in the following papers:

Carl & Clemens, 1948
Clemens, 1935a
Evermann, 1897
Evermann & Meek, 1898
Foerster, 1938b
Foerster & Pritchard, 1935
Gangmark & Fulton, 1952
Kimsey, 1951

BEHAVIOR OF FRY AND FINGERLINGS

Data on the behavior of the fry and fingerlings of sockeye salmon are included in the following references:

Anon., 1953c, 1957
Babcock, 1904a, 1904b
Chamberlain, 1907
Clemens, 1951, 1953
Foerster, 1925, 1955
Fraser, 1919
Hoar, 1953, 1957
MacKimon & Brett, 1955
Moser, 1899
Rich, 1918
Rutter, 1904b
Shapovalov & Taft, 1954
Smith, 1898a, 1899, 1900
Stone, 1897
Wales & Coots, 1955a
Withler, et al., 1949

Information specifically referring to the behavior of the fry and fingerlings of the kokanee are contained in the following papers:

Chamberlain, 1907
Kimsey, 1951
Ricker, 1940
U.S. Fish and Wildlife Service, 1935

TIME YOUNG SPEND IN FRESHWATER

Data on the time spent in freshwater by the young sockeye are contained in the following references:

Anon., 1948, 1951c, 1952, 1955e
Babcock, 1904a, 1908, 1931a
Barnaby, 1944
Bean, 1894
Bower, 1934
Bowser, 1913
Brett & McConnell, 1950
Carl & Clemens, 1948
Chamberlain, 1907
Cleaver, 1951
Clemens, 1935a, 1935b, 1938a, 1940a, 1946a, 1946b, 1947, 1948, 1950, 1951, 1952, 1953
Clemens & Clemens, 1926, 1927, 1928, 1929, 1930, 1931, 1932a, 1933, 1934, 1935, 1936, 1937
Cobb, 1921
Carp, et al., 1953
Foerster, 1925, 1934, 1936a, 1937, 1938b, 1944b, 1954b,
Foerster & Pritchard, 1935
Foskett, 1951a, 1952a, 1954, 1955a, 1955b
Fraser, 1916, 1919
Gilbert, 1913a, 1913b, 1914a, 1914b, 1924c, 1915, 1919, 1920, 1922,

Gilbert (cont.), 1923, 1924a, 1925
Gilbert & Rich, 1929
Handa, 1934
Higgins, 1932
Holmes, 1934
Hunter, 1949a
Hume, 1893
Juday, 1935
Locke, 1929
MacKimon & Brett, 1955
McDonald, 1894c, 1895
Milne, 1913, 1917
Neave, 1948, 1949
Neave & Wickett, 1953
O'Malley, 1920a
Parker & Kirkness, 1951
Rich, 1948
Ricker, 1954
Robertson, 1921
Rutter, 1904b
Scheer, 1939
Shapovalov & Taft, 1954
Smith, 1898a
Smoker, 1954
U.S. Fish and Wildlife Service, 1945
Wales & Coots, 1955a
Withler, et al., 1949

DATE OF SEAWARD MIGRATION

Statements on the date of seaward migration of young sockeye salmon are contained in the following references:

Babcock, 1904a, 1904b, 1905
Barnaby, 1944
Bean, 1894
Bower, 1925b, 1938a
Bower & Fassett, 1914
Brett & McConnell, 1950
Brett & Pritchard, 1946a
Chamberlain, 1907
Clemens, 1951
Clemens, et al., 1938
Evermann, 1897
Fish, 1948
Foerster, 1936a, 1952
Foerster & Pritchard, 1935
Fraser, 1919
Gilbert, 1914a
Gilbert & Rich, 1929
Greene, 1911b
Hamilton & Andrew, 1954
Higgins, 1931
Holmes, 1934
International North Pacific Fisheries Commission, 1955
Johnson, et al., 1948
MacKimon & Brett, 1955
Marr, 1944
Neave, 1948
Parker, et al., 1953
Rich, 1948
Robertson, 1921
Rounsefell & Kelez, 1940
Rutter, 1904b
Shapovalov & Taft, 1954
Smith, 1899, 1900
Snyder, 1931
Wales & Coots, 1955a
Withler, et al., 1949

SIZE AT TIME OF SEAWARD MIGRATION

Data on the size of the young sockeye salmon at time of seaward migration are contained in the following references:

Anon., 1955e
Babcock, 1903, 1904a, 1904b
Barnaby, 1944
Brett & McConnell, 1950
Chamberlain, 1907
Chamberlain & Bower, 1913
Foerster, 1934, 1935, 1936a, 1938b, 1944b
Fraser, 1919
Gilbert, 1913b, 1915, 1916, 1920
McDonald, 1894c, 1895
Milne, 1913
Moser, 1902
Rich, 1948
Robertson, 1921
Rounsefell & Kelez, 1940

MOVEMENTS IN THE OCEAN

Data on the movements in the ocean of the sockeye salmon are contained in the following references:

Anon., 1909, 1953b
Babcock, 1903, 1914, 1931a
Barnaby, 1952
Bean, 1891, 1894
Chamberlain, 1907
Clemens, 1935b
Cobb, 1917, 1921
Davidson, 1940c
Davidson & Hutchinson, 1940
Gilbert, 1895, 1914b, 1924b
Higgins, 1931
Hoar, 1953
International North Pacific Fisheries Commission, 1955
Jordan, 1896c, 1904a, 1904b
Jordan & Evermann, 1896
Powers, 1941
Rathbun, 1900
Rich, 1925a, 1935c, 1939
Rounsefell & Kelez, 1940
Rutter, 1904b
Scheer, 1939
Shapovalov & Taft, 1954
Snyder, 1931
Verhoeven, 1952
Williamson, 1927

MARKING OR TAGGING AND RECAPTURE DATA

Data on marking or tagging and recapture of sockeye salmon are contained in the following references:

Anon., 1951c, 1952, 1953c, 1954
Aro, 1951
Babcock, 1914
Barnaby, 1944
Bolton, 1930
Bowser, 1913
Brett, 1952a
Brett & Pritchard, 1946b
British Columbia, 1941
California, State of, 1904
Chamberlain, 1908
Clemens, 1937, 1939c
Clemens, et al., 1939
Coker, 1922
Craigie, 1926
Fish, 1948
Foerster, 1929e, 1930b, 1934, 1936a, 1941, 1945, 1946a, 1946b, 1947a, 1948, 1954b
Gilbert, 1924b
Gilbert & Rich, 1927
Godfrey, et al., 1954
Greene, 1911b
Higgins, 1928, 1929, 1940
Holmes, 1928
International North Pacific Fisheries Commission, 1955
Jensen, 1953
Jordan, 1892, 1896c, 1904b
Killick, 1955
Kirkness, et al., 1952, 1953
Marsh & Cobb, 1907, 1908, 1911
Milne, 1949, 1955
Milne, 1917
O'Malley, 1924
O'Malley & Rich, 1911, 1920
Parker & Kirkness, 1951
Parker, et al., 1952
Powers, 1939
Pritchard, 1932b, 1944d, 1945c, 1947, 1948c
Pritchard & Brett, 1945
Rich, 1924, 1925a, 1927, 1935a, 1935c, 1939, 1941
Rich & Morton, 1930
Rich & Suomela, 1929a
Ricker & Robertson, 1935
Robertson, 1921
Rounsefell & Kelez, 1940
Royal, 1951

Rutter, 1904b
Sano, 1951
Scheer, 1939
Scofield, 1920a
Snyder, 1931
Thompson, 1938, 1940, 1942, 1945a, 1945b
Ward, 1939
Williamson, 1927
Withler, 1952a
Withler, et al., 1949

Data on marking or tagging and recapture of the kokanee are contained in the following two references: Foerster, 1947b; Higgins, 1930

HOMING INSTINCT

Discussions or data concerning the homing instinct in sockeye salmon are contained in the following references:

Aro, 1951
Babcock, 1931a
Chamberlain, 1907
Clemens, 1935a, 1937, 1938b, 1939c, 1951, 1953
Craigie, 1926
Crawford, 1907
Foerster, 1941, 1946b
Fraser, 1919
Gilbert, 1914b, 1915, 1916, 1918, 1919
Gilbert & Rich, 1927
Hasler & Wisby, 1951
Higgins, 1928
Holmes, 1928
Hume, 1893
International North Pacific Fisheries Commission, 1955
Jordan, 1892, 1896c, 1904b
Jordan & Gilbert, 1887
Marsh & Cobb, 1911
Milne, 1917
Powers, 1939, 1941
Rich, 1939, 1948
Rich & Ball, 1931
Ricker, 1940
Ricker & Robertson, 1935
Rounsefell & Kelez, 1940
Rutter, 1904b
Sano, 1951
Scheer, 1939
Shapovalov & Taft, 1954
U.S Fish and Wildlife Service, 1945
Verhoeven, 1952
Ward, 1939

GROWTH RATES

Remarks on the growth rates of sockeye salmon are included in the following references:

Berg, 1948
Chamberlain, 1907
Dunlop, 1924
Foerster, 1929a, 1936a
Fraser, 1916, 1918, 1919, 1921
Gilbert, 1914b, 1916, 1918, 1921
International North Pacific Fisheries Commission, 1955
Koo, 1955
Marr, 1944
Parker & Kirkness, 1951
Ricker, 1938a
Robertson, 1921
Rounsefell & Kelez, 1940

Remarks on growth rates of the kokanee are contained in the following references:

Curtis & Fraser, 1948
Foerster, 1947b
Ricker, 1938b

FOOD AND FEEDING HABITS

Comments on the food and/or feeding habits of sockeye salmon are included in the following references:

Anon., 1952, 1953b, 1953c, 1955c
Babcock, 1931a
Barnaby, 1952
Bean, 1891, 1894
Bowser, 1913
Carl & Clemens, 1948
Chamberlain, 1907
Chapman & Quistorff, 1938
Clemens, 1935a, 1935b, 1940b, 1951, 1953
Cobb, 1917, 1921
Fish, 1939
Foerster, 1925, 1937, 1941, 1944b, 1955
Fraser, 1916, 1919, 1923
Gilbert, 1913b, 1914a
Greene, 1911b
Holmes, 1928
International North Pacific Fisheries Commission, 1955
Juday, 1935
Maeda, 1955
Marsh & Cobb, 1908
Rich, 1948
Ricker, 1934, 1937, 1954
Robertson, 1921
Rounsefell & Kelez, 1940
Rutter, 1904b
Senter, 1940
Stone, 1897
Thompson, 1931
U.S. Fish and Wildlife Service, 1945
Williamson, 1927
Withler, 1948
Withler, et al., 1949

Comments on the food and/or feeding habits of the kokanee are contained in the following references:

Carl & Clemens, 1948
Clemens, 1939b
Clemens, et al., 1938
Curtis & Fraser, 1948
Dymond, 1936
Fraser & Pollitt, 1951
Locke, 1929
Munro & Clemens, 1937
Ricker, 1938b, 1940

PARASITES AND DISEASES

Parasites and diseases infecting the sockeye salmon are reported by:

Bangham & Adams, 1954
Bean, 1891
Clemens, 1939
Dombroski, 1955
Duff, 1932b
Earp, et al., 1953
Eguchi, 1934
Fallera, 1926
Fish, 1939
Gilbert, 1918
Guberlet, 1936
Jordan, 1892, 1896c, 1904
Kuitunen-Ekbaum, 1933a
Kobayashi, 1934
Lawler & Scott, 1954
Ricker, 1938

Sano, 1951
Shapovalov & Taft, 1954
Smedley, 1933
Ward, 1908
Wardle, 1933
Wilson, 1916

Investigators reporting specifically on the kokanee are:

Bangham & Adams, 1954
Haderlie, 1953
Jordan, 1892, 1896c, 1904
Kuitunen-Ekbaum, 1933b
Ricker, 1938, 1940
Rucker, et al., 1953
Wales & Wolf, 1955b
Wardle, 1932

INTRODUCTIONS AND ACCLIMATIZATION

For data on the introduction and acclimatization of sockeye salmon and the kokanee into various exotic waters, see subject section under this category.

EGG COUNTS

The following references contain data on the number of eggs produced by the sockeye salmon (including the kokanee):

Aro, 1952
Aro & Broadhead, 1950
Bower, 1938a
Brett & McConnell, 1950
Foerster, 1929a, 1932, 1936a, 1936a, 1955
Foerster & Pritchard, 1936, 1941
Gilbert & Rich, 1929
Higgins, 1940
Holmes, 1934
Hunter, 1948
Kuznetzov, 1928
Moser, 1902
Rich, 1940b
Scattergood, 1949
Stone, 1897
Withler, 1950

RELATIVE ABUNDANCE

Material on the relative abundance of sockeye salmon (including the kokanee) is contained in the following references. Examination of the specific entries will indicate whether the data are in the form of catch records or as counts of migrant adults.

Anarekson, 1950b
Anon., 1915b, 1931a, 1938a, 1949a, 1949c, 1952, 1953a, 1953c, 1954, 1955c
Aro, 1952
Atkinson, 1955
Babcock, 1910
Bryant & Parkhurst, 1950
Chapman, 1940b
Ellis, et al., 1937
Foerster, 1929a, 1941, 1945, 1947a, 1948, 1950, 1954b
Gangmark & Fulton, 1952
Godfrey, et al., 1954
Holmes, 1940

Hunter, 1948, 1949a
International North Pacific Fisheries Commission, 1955
Johnson, et al., 1948
Kuznetzov, 1928
Milne & Pritchard, 1948
Milne, 1913
Moser, 1899, 1902
Oregon Fish Commission, 1941, 1949
Parker, et al., 1952, 1953
Pritchard, 1949
Rich, 1935c, 1940b, 1941, 1942
Rich & Ball, 1929b, 1931, 1935
Robertson, 1949
Rounsefell & Kelez, 1940
Royal, 1951
Schoning, et al., 1951
Smoker, 1954
Snyder, 1931
U.S. Fish and Wildlife Service, 1924, 1931-1940, 1938-1940
Washington, State of, 1935-1945
Wilcox, 1898
Withler, 1950, 1952b

Oncorhynchus masou (Brevoort), commonly called the masu or sima salmon, is distributed in the Western Pacific from the Okhotsk Sea south to Formosa. Both sea-run and land-locked forms are known and the species breaks up into a number of morphological forms, many of which have been named. In this bibliography, the data for Oncorhynchus masou and related forms are combined.

DESCRIPTION - COUNTS AND MEASUREMENTS

The following papers present descriptive matter on the masu salmon (including related forms) and /or counts and measurements of any of its systematic characteristics:

Aoki, 1934
Berg, 1948
Foerster, 1935
Hikita, 1953, 1955
Oshima, 1934
Tchernavin, 1938

FIGURES AND ILLUSTRATIONS

The following references contain drawings and/or illustrations of the masu salmon (including related forms):

Berg, 1948
Hikita, 1953
Nomura, 1953
Oshima, 1934
Regan, 1920

LIFE COLORS

Often natural populations of fishes have distinctive color patterns. To aid in racial analysis, an attempt was made to isolate data on life colors. The following references contain statements referring to the color of the masu salmon (including related forms):

Aoki, 1934
Berg, 1948
Ohno, 1934
Oshima, 1934

RELATIONSHIPS

The following references contain data on the relationships of masu salmon (including related forms) to other species. Distinctions employed in keys are included in this category.

Berg, 1948
Kobayasi, 1951, 1953, 1955
Nomura, 1953
Tchernavin, 1938

ANATOMY AND PHYSIOLOGY

Included within this category are references concerning the anatomy, histology, osteology (including sub-fossil finds) and physiology of Oncorhynchus masou and related forms.

Kobayashi, 1955
Kobayashi & Yuki, 1954a, 1954b
Kubo, 1954, 1955
Nishida, 1953a
Nomura, 1953
Tchernavin, 1938

TIME OF SPAWNING MIGRATION

Data on the time that Oncorhynchus masou or one of its nominal forms have been observed migrating upstream at any point in its course are contained in the following references:

Berg, 1948
Cobb, 1917, 1921
Handa, 1934
Foerster, 1935
International North Pacific Fisheries Commission, 1955
Milne, 1913
Ohno, 1934
Tokahisa & Takeshi, 1934
U.S. Fish and Wildlife Service, 1945

AGE AT TIME OF RETURN

Data on the age at time of return of Oncorhynchus masou or one of its nominal forms are contained in the following references:

Berg, 1948
International North Pacific Fisheries Commission, 1955
Oshima, 1934

SPAWNING PERIOD

Data on the spawning period of Oncorhynchus masou are presented in the following papers: Ohno, 1934: Berg, 194

POST-SPAWNING BEHAVIOR

Data on the post-spawning behavior of Oncorhynchus masou or its relatives are noted in the following references: Ohno, 1934; Oshima, 1934

BEHAVIOR OF FRY AND FINGERLINGS

Data on the behavior of the fry and fingerlings of Oncorhynchus masou are noted in the following paper: Kubo, 1955

TIME YOUNG SPEND IN FRESHWATER

Data on the time spent in freshwater by the young Oncorhynchus masou or its relatives are contained in the following references:

Aoki, 1934
Handa, 1934
Kobayashi & Yuki, 1954a
Ohno, 1934
Oshima, 1934

DATE OF SEAWARD MIGRATION

Statements on the date of seaward migration of young Oncorhynchus masou or related forms are contained in the following references:

International North Pacific Fisheries Commission, 1955
Kobayashi & Yuki, 1954a
Oshima, 1934
Sano & Kobayashi, 1952, 1953

MOVEMENTS IN THE OCEAN

Data on the movements in the ocean of Oncorhynchus masou or related forms are contained in the following references:

Hikiga, 1955
International North Pacific Fisheries Commission, 1955
Sano & Kobayashi, 1952

MARKING OR TAGGING AND RECAPTURE DATA

Data on the marking or tagging and recapture of Oncorhynchus masou are contained in the following reference: International North Pacific Fisheries Commission, 1955

GROWTH RATES

Remarks on the growth rates of Oncorhynchus masou or its related forms are contained in the following references:

Berg, 1948
International North Pacific Fisheries Commission, 1955
Kobayashi & Yuki, 1954a

PARASITES AND DISEASES

The occurrence of parasites and diseases in Oncorhynchus masou or related forms have been reported by:

Eguchi, 1934
Kobayashi, 1934
Nishino, 1953

Abernathy, A. S. 1887

Salmon in the Clackamas River. Bull. U. S. Fish Comm., 6: 332.

Chinook; silver; time species migrates upstream.

Alexander, A. B. 1905

Report on statistics and methods of the fisheries. Rept. U. S. Bur. Fish. (1904), 121-162.

Chinook; Columbia R.; time species returns from ocean to stream mouth.

Andreksen, A. 1950

The 1949 sockeye salmon runs to Rivers and Smith Inlets, British Columbia. Prog. Rept. Pacific Coast Stat., Fish. Res. Bd. Canada, 82: 9-10.

Sockeye; Rivers, Smith Inlets, B. C.; age at time of return (age groups); weight at time of return; catch records.

Andreksen, A., and Foskett, D. R. 1950

Contributions to the life history of the sockeye salmon. (No. 35) Rept. Provincial Fish Dept., (1949) Prov. Brit. Col., 26-40, 18 tables.

Sockeye; Skeena, Nass R., Rivers Inlet; age at time of return (age groups); size of species at time of return; sex ratios; racial analysis-detailed data but no discussion.

Andriashev, Anatoly P. 1955

A contribution to the knowledge of the fishes from the Bering and Chukchi seas. Spec. Sci. Rept., Fish., U. S. Fish & Wildlife Service, 1-81, 27 figs.

O. keta; O. gorbuscha; O. nerka; O. kisutch; Bering, Chukchi seas; distribution; spawning period.

Anon. 1879

Report of Commission Fisheries of California for the years 1878-1879, 1-16.

O. quinnat; Calif.; catch records.

Anon. 1880

Report of Commission Fisheries of California, year 1880, 1-15.

O. quinnat; Sacremento R. and tributaries; catch records.

Anon. 1903a

Pacific Fisheries. Pacific Fisherman, 1: 9-10.

Chinook; sockeye; development (figured, chinook); figured (sockeye, on cover).

Anon. 1903b

Runs of the chinook salmon in the Columbia. Pacific Fisherman, 1: 9-10.

Chinook, quinnat; Columbia, Sacremento, Fraser R.; time species returns from ocean to stream mouth; spawning period; segregation of populations in Columbia R.; size of species at time of return; distance traveled upstream; home stream theory; catch records.

Anon. 1904a

Alaska Salmon Commission, the salmon streams of Alaska. Pacific Fisherman, 2 : 21.

King; red; humpback; dog; silver; Alaska rivers; type of stream chosen.

Anon. 1904b

First spring salmon on the Fraser. Pacific Fisherman, 12: 13.

Spring; Fraser R.; time species migrates upstream.

Anon. 1904c

Salmon-marking experiments on the Pacific coast. Pacific Fisherman, 2: 25.

Quinnat; Pacific coast waters; marking and recapture data, on migration routes; movements in ocean.

Anon. 1905

Some interesting facts about Pacific coast salmon. Pacific Fisherman, 3: 22-23.

Quinnat, chinook, tyee, king; red, blueback, sockeye;cohoe; silverside; humpback, pink; chum, dog; Pacific coast waters; distribution; description.

Anon. 1909

The Whilom haunt of the sockeye. Pacific Fisherman, 7: 12.

Sockeye; Fraser R.; movements in ocean.

Anon. 1910a

Chinook salmon on east coast. Pacific Fisherman, 8: 15.

Chinook; intro. & acclim.: Lake Sunapee, N. H. and Lake Champlain, N. Y., Argentina, Japan, France.

Anon. 1910b.

Chinook salmon in New Zealand, Report of the Committee on Foreign Relations. Trans. Amer. Fish. Soc., 39th Ann. Meet. (1909), 181-182.

Chinook; New Zealand; intro. & acclim.

Anon. 1914a

Life history of the sockeye salmon (summary of work of C. H. Gilbert). Pacific Fisherman, 12: 13.

Sockeye; Fraser R.; age at time of return; racial analysis, comments only.

Anon. 1914b

The salmon canning industry of Siberia. Pacific Fisherman Yearbook, 50e-50d.

Dog; humpback; red; king; silver; Siberia; distribution.

Anon. 1914c

Spring salmon running near Ketchikan. Pacific Fisherman, 12: 13.

Spring; Ketchikan, Alaska: time species migrates upstream.

Anon. 1915a

Acclimatization of humpback salmon in Maine waters. Pacific Fisherman, 13; 17.

Humpback; Me.; intro. & acclim.

Anon. 1915b

Census of red salmon in Wood River, Alaska. Pacific Fisherman, 13: 11.

Humpback; dog; red; king; Wood R., Alaska; counts of migrant adults;

Anon. 1915c

Hatchery and fishery notes, output of the fish hatcheries in 1915. Cal. Fish & Game, 1: 187-188.

Quinnat; distribution; Mill, Battle Cr., Tehama County, Price Cr., Eel, Sacremento, Klamath, McCloud R., Calif; size at time of seaward migration.

Anon. 1915d

Quiniault salmon running. Pacific Fisherman, 18: 15.

Quiniault; Quiniault R., Wash.; time species migrates upstream.

Anon. 1916a

The fall run of salmon. Cal. Fish & Game, 2: 41-42.

Quinnat, silver; Sacramento, Eel, Klamath, Smith R., Monterey Bay; time species migrates upstream.

Anon. 1916b

Marked salmon liberated. Cal. Fish & Game, 2: 209.

Quinnat; Klamath R., Calif.; time eggs hatch; marking & recapture data.

Anon. 1917

Commercial fisheries on the Mendocino coast. Cal. Fish & Game, 3: 180-181.

Salmon; Noyo R., Calif.; time species migrates upstream.

Anon. 1918a.

Facts of current interest. Cal. Fish & Game, 4: 146.

Salmon; Pittsburg, Calif.; size at time of return (67 lbs.).

Anon. 1918b.

Successful introduction of salmon in New Zealand. Cal. Fish & Game, 4: 48.

Quinnat; distribution; Waitaki R., New Zealand; intro. & acclim.

Anon. 1921a.

Chinook salmon in Lake Ontario. Cal. Fish & Game, 7: 163.

Chinook; Lake Ontario; intro. & acclim.; length at time of return.

Anon. 1921b.

Fort Seaward hatchery, hatchery notes. Cal. Fish & Game, 7: 170-171.

Chinook; Mad R., Humboldt Bay, Eel R., Calif.; distribution.

Anon. 1923

Quinnat salmon taken in Lake Ontario. Cal. Fish & Game, 9: 59-60.

Quinnat; Lake Ontario, Can.; intro. & acclim.; weight at time of return.

Anon. 1924

Tagged salmon recovered in Siberia. Pacific Fisherman, 22: 11.

O. keta; Siberia; marking & recapture data; movements in ocean.

Anon. 1928

Life history notes. Humpback salmon taken off Santa Monica coast. Cal. Fish & Game, 14: 90-91.

Humpback; range; Santa Monica, Calif.; size at time of return.

Anon. 1929a

Sockeye salmon successfully introduced. Cal. Fish & Game, 15: 256.

O. nerka, sockeye; Montana; intro. & acclim.

Anon. 1929b-

The tagging of pink salmon, 1928. Prog. Rept. Biol. Stat. Nanaimo & Prince Rupert, Biol. Bd. Can., 8-9.

Pink; chum; B. C.; tagging & recapture data: migration routes, segregation of populations.

Anon. 1931a

Counts of salmon at weirs in Alaska. U. S. Dept. Commerce, Fish. Serv. Bull., 4-5.

Pink; coho; red; king; chum; Alaska; weir counts.

Anon. 1931b

Sockeyes early in south sound traps. Pacific Fisherman, 29: 47.

King; sockeye; West Pass, Tacoma, Wash.; time species migrates upstream.

Anon. 1932

Pink and chum investigations. Ann. Rept. Biol. Bd. Can. (1931), 62.

Pink; chum; Massett inlet, Can.; time of seaward migration.

Anon. 1937

Return of Pacific salmon to their home streams. Pacific Fisherman, 35: 38-40.

King, spring, chinook; coho, silver; pink; Pacific coast waters (specific localities mentioned); figured; tagging & recapture data: migration routes; home stream theory; segregation of populations; age at time of return; type of stream chosen.

Anon. 1938a

Bonneville fishways handles peak of Columbia run. Pacific Fisherman, 36: 15-16.

Chinook; blueback; silver; Bonneville Dam; time species migrates upstream; counts of migrant adults.

Anon. 1938b

First spring chinook is taken December 1. Pacific Fisherman, 36: 55.

Chinook; Columbia R.; time species migrates upstream.

Anon. 1938c

Pink runs coming later in Southeast Alaska. Pacific Fisherman, 36: 22-23, 1 table.

Pink; SE Alaska; time species migrates upstream.

Anon. 1939

Spring chinooks taken in Columbia. Pacific Fisherman, 37: 43.

Chinook; Columbia R.; time species migrates upstream.

Anon. 1942a

Pink salmon studies. Prog. Rept. Pac. Coast Stat., Fish. Res. Bd. Can., 20.

Pink; McClinton creek, Massett inlet, B. C.; counts of migrant adults.

Anon. 1942b

Uganik pinks late. Pacific Fisherman, 40: 19.

Pink; Kodiak Is.; time species migrates upstream.

Anon. 1948

Salmon fisheries. Pac. Mar. Fish. Comm. (Bull. 1), 13-23, 7 tables.

O. tschawytscha (sic), chinook, king; O. kisutch, silver, coho; O. nerka, sockeye, blueback; O. gorbuscha, pink, humpback; O. keta, chum, dog; time young spend in freshwater.

Anon. 1949a

General salmon investigation operations. Prog. Rept. Pac. Coast Stat., Fish. Res. Bd. Can., 10.

Pink; chum; coho; sockeye; B. C.; counts of migrant adults.

Anon. 1949b

Quinnat salmon in Australia. Salm. Trout Mag., 1-11.

Quinnat; sockeye; S. Australia; intro. & acclim.; spawning behavior.

Anon. 1949c

Rich run of early sockeye proves benefit of Fraser fishways. Pacific Fisherman, 47: 22.

Sockeye; Stuert Lake system; counts of migrant adults; segregation of populations.

Anon. 1951a

Drought brings death to salmon. Fish. Res. Bd. Can., Prog. Repts. Pac. Coast Stat., 72.

Pink; Tsolum R., Vancouver, B. C.; distribution.

Anon. 1951b

Landlocked silver salmon for Montana waters. Prog. Fish Cult., 13: 192.

O. kisutch, silver; Anaconda, Montana; intro. & acclim.

Anon. 1951c

Salmon, Pacific Biological Station, Nanaimo, British Columbia. Ann. Rept., Fish. Res. Bd. Can. (1950), 39-42.

Sockeye; pink; chum; B. C.; marking & recapture data; age at time of return; time young spend in freshwater.

Anon. 1952

Salmon investigations. Ann. Rept. Fish. Res. Bd. Can. (1951), 66-79.

Spring; coho; blueback; sockeye; pink; chum; B. C.; tagging & recapture data, migration routes; time young spend in freshwater; counts of migrant adults; counts & measurements; food & feeding habits.

Anon. 1953a

Basic data bearing on sockeye run of 1953. Pacific Fisherman, 51: 55-56.

Sockeye; Fraser R.; racial analysis, comments; counts of migrant adults.

Anon. 1953b

Japanese high-seas gillnets fish mingled stocks of feeding salmon. Pacific Fisherman, 51: 61, 68.

Red; pink; chum; N. Pacific south to westward of the Aleutian Chain; movements in ocean; food & feeding habits; description; behavior in ocean.

Anon. 1953c

Pacific Biological Station, Nanaimo, British Columbia. Ann. Rept. Fish. Res. Bd. Can. (1952), 83-127.

Sockeye; pink; chum; spring; coho; B. C.; counts of migrant adults; counts & measurements; age at time of return; food & feeding habits; intro. & acclim.:(odd-yr. pink into Nile Cr.); spawning behavior; spawning period; behavior of fry & fingerlings; tagging & recapture data, migration routes; catch records.

Anon. 1954

Pacific Biological Station, Nanaimo, British Columbia. Ann. Rept. Fish. Res. Bd. Can. (1953), 75-99.

Sockeye; pink; chum; silver, coho; B. C.; counts of migrant adults (weir); counts & measurements; nature of spawning site; behavior of fry; tagging & recapture data, migration routes; age at time of return; migration behavior.

Anon. 1955a

Fingerlings from early spawning salmon. Prog. Fish Cult., 17: 133.

Chum; Washington; biochemistry.

Anon. 1955b

Ocean troll salmon. (7th) Ann. Rept. Pac. Mar. Fish. Comm. (1954), 7-8.

O. tschawytscha (sic), chinook, king; O. kisutch, silver, coho; tagging & marking, recapture data: migration routes.

Anon. 1955c

Pacific Biological Station, Nanaimo, British Columbia. Ann. Rept. Fish. Res. Bd. Can. (1954), 75-105.

Sockeye; pink; chum; spring; coho; B. C.; counts of migrant adults (weir); age at time of return; food & feeding habits.

Anon. 1955d

Research. (3rd) Ann. Rept. Pac. Mar. Fish. Comm. (1950), 11-14.

O. tschewytscha (sic), chinook; O. kisutch, silver; Monterey Bay, Calif., Cape Fairweather, Alaska; tagging & recapture data, migration routes.

Anon. 1955e

Size of salmon migrants from Bare Lake, Kodiak Island. Prog. Fish Cult., 17: 122.

Blueback; Kodiak Is., Alaska; time young spend in freshwater; size at time of seaward migration.

Aoki, Mitsuo 1934

On the landlocked salmon found in the mountain streams of Japan. Proc. (5th) Pac. Sci. Cong. (1933), 5: 3783-3784.

O. formosanus, Biwa; O. masou, cherry; Japan; time young spend in freshwater; color; counts & measurements.

Aro, K. V., and Broadhead, G. C. 1950

Differences between egg counts of sockeye salmon at Lakelse and Babine Lakes. Prog. Rept. Pac. Coast Stat., Fish. Res. Bd. Can., 17-19.

O. nerka, sockeye; Lakelse & Babine Lakes, Skeena R. system, B. C.; egg counts.

Aro, K. V. 1951a

The return of sockeye salmon marked at Babine and Lakelse Lakes. Prog. Rept. Pac. Coast Stat., Fish. Res. Bd. Can., 37-38.

Sockeye; Babine & Lakelse Lakes, B. C.; marking & recapture data, migration route; home stream theory; time species migrates upstream.

Aro, K. V. 1951b

The Babine River salmon escapement in 1951. Prog. Rept. Pac. Coast Stat., Fish. Res. Bd. Can., 37-38.

Sockeye; pink; spring; coho; chum; Babine R., B. C.; counts of migrant adults; time species migrates upstream; sex ratios; egg count; size at time of return.

Atkinson, C. E. 1955

A brief review of the salmon fishery in the Aleutian Islands area. Bull. Internat'l N. Pac. Fish. Comm., 93-104, 1 fig., 4 tables.

Red; pink; chum; coho; king; Unalaska, Shumagin, Bristol Bay, Kodiak, Unga; time species returns from ocean to stream mouth; catch records.

Atwater, W. O. 1892

The chemical composition and nutritive values of food fishes and aquatic invertebrates. Rept. Comm. (1888), U. S. Comm. Fish & Fish., 679-868, 19 tables, 1 plate.

O. chouicha, Calif. salmon, king, Columbia, Sacramento, chinook, tyee, fall, spring, saw-kwey, winter, chouicha; biochemistry.

Ayson, L. 1910

Introduction of American fishes into New Zealand. Bull. U. S. Bur. Fish., 28: 968-975.

O. tschawytscha (sic), chinook; O. nerka, sockeye; New Zealand; intro. & acclim.; spawning period.

Babcock, John Pease 1903

Fisheries Commissioner's report for 1902. Rept. Fish. Comm'er. B. C. (1902), 1-38, figs. & tables.

Sockeye; spring, quinnat; humpback; cohoe, silver; dog; Fraser R.; movements in ocean; time species migrates upstream; distribution; permanently small form of sockeye in Seton & Anderson Lakes; length at time of seaward migration.

Babcock, John Pease 1904a

Fisheries Commissioner's report for 1903. Rept. Fish. Comm'er. for B. C. (1903), 1-15, figs. & tables.

O. tschawytscha (sic), quinnat, spring; O. nerka, sockeye; B. C.; time of seaward migration; length at time of seaward migration; age of seaward migrants; behavior of fingerlings.

Babcock, John Pease 1904b

Investigations in British Columbia. Pacific Fisherman, 2: 21-23.

O. tschawytscha (sic), quinnat, spring; O. nerka, sockeye; B. C. waters; behavior of fry & fingerlings; time of seaward migration; size at time of seaward migration.

Babcock, John Pease 1905

Fisheries Commissioner's report for 1904. Rept. Fish Comm'er. B. C. (1904), 1-9.

Sockeye; spring; coho; B. C.; racial analysis; time of seaward migration; measurements.

Babcock, John Pease 1906

Fisheries Commissioner's report for 1905. Rept. Fish Comm'er. B. C. (1905), 1-9.

Sockeye; O. tschawytscha (sic), spring; B. C.; time species migrates upstream.

Babcock, John Pease 1907

Fisheries Commissioner's report for 1906. Rept. Fish. Comm'er B. C. (1906), 1-10.

Sockeye; spring; coho; B. C.; age at time of return; time species migrates upstream; distribution.

Babcock, John Pease 1908

Fisheries Commissioner's report for 1907. Rept. Fish Comm'er B. C. (1907), 1-18.

O. nerka, sockeye, redfish; spring, quinnat; kokanee; pink, humpback; B. C.; distribution; time young spend in freshwater; age at time of return; counts & measurements.

Babcock, John Pease 1910

Fisheries Commissioner's report for 1909. Rept. Fish. Comm'er B. C. (1909), 1-31, tables.

Sockeye; spring; coho; dog; pink; time species migrates upstream; counts of migrant adults; Fraser R.; B. C.;

Babcock, John Pease 1914

The spawning beds of the Fraser. Rept. Fish. Comm'er Prov. B. C. (1913), 17-38, 20 figs., 10 plates.

Sockeye; humpback; spring; Fraser R.; movements in saltwater; migration route; time species migrates upstream; spawning period; distribution.

Babcock, John Pease 1915

The spawning beds of the Fraser. Rept. Comm'er Fish. Prov. B. C. (1914), 16-20.

Sockeye; spring; Fraser R.; spawning period; distribution.

Babcock, John P. 1916

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1915), 16-21.

O. gorbuscha; spring; coho; Fraser R.; time species returns from ocean to stream; spawning period; time species migrates upstream; distribution.

Babcock, John Pease 1917

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1916), 18-21.

Sockeye; Fraser R., B. C.; spawning period; color; distribution.

Babcock, John Pease 1918

The fish grounds and the spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1917), 20-25.

Sockeye; Fraser R.; time species returns from ocean to stream mouth; size of species at time of return; time species migrates upstream.

Babcock, John Pease 1920

The spawning beds of the Fraser River. Rept. Comm'er Fish. (1919), 21-23.

Sockeye; Fraser R.; spawning period; distribution.

Babcock, John Pease 1921

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1920), 12-14.

Sockeye; time species migrates upstream; spawning period; distribution.

Babcock, John Pease 1922

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1921), 65-67.

Sockeye; Fraser R.; time species migrates upstream; distribution.

Babcock, John Pease 1923

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1922), 50-52.

Sockeye; spring; Fraser R.; time species migrates upstream; spawning period; distribution.

Babcock, John Pease 1925

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1924), 40-42.

Sockeye; Fraser R.; color; racial analysis, comment only; distribution.

Babcock, John Pease 1926

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1925), 40-43.

Sockeye; Fraser R., B. C.; color; distribution.

Babcock, John Pease 1927

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1926), 58-61.

Sockeye; spring; Fraser R.; spawning period; racial analysis, comments; color; distribution.

Babcock, John Pease 1928

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1927), 39-41.

Sockeye; Fraser R.; spawning period; distribution.

Babcock, John Pease 1929

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1928), 44-45.

Sockeye; Fraser R.; time species migrates upstream; distribution.

Babcock, John Pease 1930

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1929), 44-48.

Sockeye; Fraser R.; time species migrates upstream; s pawning period; distribution.

Babcock, John Pease 1931

The Pacific salmon. Rept. Comm'er Fish. Prov. B. C. (1930), 56-61.

O. tschawytscha (sic), spring, quinnat, chinook, tyee, Sacramento, king; O. nerka, sockeye, Alaska red, blueback; O. kisutch, cohoe, silver; O. gorbuscha, pink, humpback; O. keta, chum, dog; B. C.; Calif.; Alaska; key; general life history; spawning behavior; type of stream chosen; time young spend in fresh-water; movements in ocean; food & feeding habits; age at time of return; time species returns from ocean to stream mouth; distance travelled upstream; color; sexual dimorphism; racial analysis, comments; home stream theory.

Babcock, John Pease 1931

The spawning beds of the Fraser River. Rept. Comm'er Fish. Prov. B. C. (1930), 42-45.

Sockeye; Fraser R., B. C.; time species migrates upstream; distribution; spawning period.

Baievsky, Boris 1926

Fisheries of Siberia. Rept. Comm'er Fish. U. S. Bur. Fish. (1926), 37-64, 2 figs. (maps).

O. keta, dog, chum; O. gorbuscha, humpback, gorbuscha, pink; O. nerka, red, sockeye; O. tschawytscha (sic), king, chavycha, king; O. kisutch, kizhuch, silver; Siberia; weight of species at time of return; distribution.

Bailey, Basil E. 1936

The nutritive value of marine products (7), the vitamin A and D potency of the oils from British Columbia canned salmon. J. Biol. Bd. Can., 2: 431-455, 8 tables.

O. nerka; O. gorbuscha; sockeye; B. C.; biochemistry.

Bailey, Basil E. 1937

The pigments of salmon. J. Biol. Bd. Can., 3: 469-472.

O. nerka, sockeye; biochemistry: 2 red pigments similar to astacin in O. nerka & Salmo gairdneri.

Bailey, B. E. 1952

Marine oils, with particular reference to those of Canada. Bull. Fish Res. Bd. Can., 413, 45 figs., 98 tables.

Spring; coho; chum; sockeye; pink; biochemistry.

Baird, Spencer F. 1874

Report of the Commissioner. Rept. Comm'er (1872-1873), U. S. Comm. Fish & Fish., i-xcii.

Salmo quinnat, Calif. salmon; McCloud R., Calif., Charlestown, N. H.; intro. & acclim.

Baird, Spencer F. 1876

Report of the Commissioner. Rept. Comm'er U. S. Comm. Fish & Fish. (1873-74), v-li.

Salmo quinnat, Calif. salmon, king; chowichee, hoikoh; intro. & acclim.: N. J., Pa., N. Y., Conn., N. H., Mass., Me., Mich., Utah; time species migrates upstream; distance travelled; distribution.

Baird, Spencer F. 1878

Report of the Commissioner. Rept. Comm'er U. S. Comm. Fish & Fish. (1875-76), i-l, 18 tables.

Salmo quinnat, Calif. salmon; intro. & acclim.: Lake Geneva, Wisc., New Zealand, Mich., Can., Sandwich Is., Ala., Col., Conn., Del., Ga., Ill., Ind., Iowa, Ky., La., Me., Md., Mass., Mich., Minn., Miss., Mo., N. J., N. Y., N. C., Ohio, Penn., R. I., S. C., Tenn., Tex., Utah, Vt., Va., W. Va.

Baldwin, Wayne J. 1954

Notes--underwater explosions not harmful to salmon. Cal. Fish & Game, 40: 77.

O. tschawytscha (sic), king; O. kisutch, silver; distribution.

Bangham, Ralph V., and Adams, James R. 1954

A survey of the parasites of freshwater fishes from the mainland of British Columbia. J. Fish. Res. Bd. Can., 11: 673-708.

O. kisutch, coho; O. nerka, sockeye; O. nerka kennerlyi, kokanee; B. C.; parasites, internal.

Barin, L. T. 1887

Salmon in the Clackamas River. Bull. U. S. Fish Comm., 6: 111-112.

O. chouicha, chinook, quinnat; silver; dog; blueback; time species migrates upstream; spawning period.

Barnaby, Joseph T. 1944

Fluctuations in abundance of red salmon Oncorhynchus nerka (Walbaum) of the Karluk River, Alaska. Fish. Bull. U. S. Fish & Wildlife Serv., 50: 237-295.

O. nerka, red; Karluk R., Alaska; age at time of return; time species migrates upstream; time of seaward migration; sex ratios; time young spend in freshwater; size of seaward migrants; marking & recapture data.

Barnaby, Joseph T. 1952

Offshore fishing in Bristol Bay and Bering Sea. Spec. Sci. Rept. Fish. U. S. Fish & Wildlife Serv., 1-30, 6 figs., 19 tables.

O. nerka, red, sockeye; O. gorbuscha, pink; O. kisutch, coho, silver; O. keta, chum; O. tschawytscha (sic), king, chinook; Bristol Bay, Bering Sea; brief life history; movements in ocean; feeding habits, ocean

Beal, Fred R. 1955

Silver salmon (O. kisutch) reproduction in Montan. Prog. Fish Cult., 17: 79-81.

O. kisutch, silver (landlocked); Georgetown, Crystal Lakes, Mont., intro. & acclim.; distribution; time eggs hatch.

Bean, Tarleton H. 1882a

Account of a shipment by the United States Fish Commission of California salmon-fry (Oncorhynchus chouicha) to southern Louisiana with a note on some collections made at Tickfaw. Bull. U. S. Fish. Comm., 1: 205-206.

O. chouicha; intro. & acclim.: Tangipahoa, Notalbany R., La.

Bean, Tarleton H. 1882b

Notes on a shipment by the United States Fish Commission of California salmon (Oncorhynchus chouicha) to Tanner's Creek, Indiana in 1876. Bull. U. S. Fish. Comm., 1: 204-205.

O. chouicha; intro. & acclim.: Ind.

Bean, Tarleton H. 1884

List of the fishes distributed by the U. S. Fish Commission. Rept. Comm'er U. S. Fish & Fish. Comm. (1882), 1039-1044.

O. chouicha, quinnat; synonomy.

Bean, T. H. 1885

The distribution of the salmonidae in Alaska. Proc. Biol. Soc. Wash., 2: LXI-LXIII.

O. chouicha; O. keta; O. nerka; O. kisutch; O. gorbuscha; Alaska; distribution.

Bean, Tarleton H. 1887a

The cod fishery of Alaska. Fish. & Fish. Industries U. S., 1: 198-226.

O. chouicha, silver; Korovin Is., Alaska; size at time of return.

Bean, Tarleton H. 1887b

The fishery resources and fishing grounds of Alaska. Fish. & Fish. Industries U. S., 81-115.

O. chouicha, king, chowichee, quinnat, keezitch; O. gorbuscha, humpback, dogfish; O. keta, hoikoh; O. nerka, redfish, krasnoi riba; O. kisutch; Alaska; description; range; size at time of return; distance travelled upstream; time species migrates upstream; distribution.

Bean, Tarleton H. 1889

Hybrids in Salmonidae. Trans. Amer. Fish. Soc., (1889), 18: 12-18, 18-20.

Not abstracted.

Bean, Tarleton H. 1890

The Alaskan salmon and their allies. Trans. Amer. Fish. Soc. (1890), 19: 49-66, 7 plates (also privately published).

King, chowichee, Takou, Columbia R., chinnook, quinnat; dog, hyko; humpback; silver; red, redfish, blueback, sawqui, krasnya ruba; weight at time of return; sexual dimorphism, color & body changes; time species migrates upstream; distribution; time spent in freshwater; food, ocean; distance travelled upstream; spawning behavior nature of spawning site; figured.

Bean, Tarleton H. 1891

Report of the salmon and salmon rivers of Alaska, with notes on the conditions methods, and needs of the salmon fisheries. Bull. U. S. Fish Comm., 9: 165-208, 45-87 tables & plates.

O. nerka, red, blueback, sawqui, sukkegh, krashnaya ruba, redfish; O. chouicha, king, chowichee, takou, Columbia R., chinook, quinnat; O. kisutch, silver; O. gorbuscha, humpback; O. keta, dog, hyko; Columbia R., Fraser R.; time spawning runs begin; type of stream chosen; distance travelled upstream; figured; size at time of return; color; food habits; egg size; parasites; post-spawning behavior; movements in ocean; sexual dimorphism.

Bean, Tarleton H. (ed.) 1892

Observations upon fishes and fish culture. Bull. U. S. Fish Comm., 10: 49-61.

O. chouicha, Calif. salmon; McCloud R.; time species migrates upstream; egg counts.

Bean, Tarleton H. 1894

Life history of the salmon. Bull. U. S. Fish Comm., 12: 21-38.

O. chouicha, king, chowichee, takou, Columbia R., chinook, quinnat; O. keta, dog, hyko; O. kisutch, silver; O. gorbuscha, humpback; O. nerka, blueback, sawqui, sukkegh, krasnaya ryba; Columbia, Fraser R.; figured; distribution; range; type of stream chosen; distance travelled upstream; size at time of return; time of runs; food habits; leaping habits over stream obstacles; post-spawning behavior; time young spend in freshwater; sexual dimorphism; time of seaward migration; spawning behavior; color; O. nerka schools observed close to shore.

Behr, von 1883

Five American Salmonidae in Germany. Bull. U. S. Fish. Comm., 2: 237-246.

Salmo quinnat, Calif. salmon; Germany, etc., intro. & acclim.

Berg, L. S. 1948

Ryby Presnykh Vod SSSR i sopredl'nykh stran. Akad. nauk., fauna SSSR, No. 27, 1: 466 pp.

O. masu; kisutch; keta; nerka; tschawytscha (sic); nerka adonis; nerka asabatsch; nerka ovetsch; masu formosanus; description; counts & measurements; synonomy; range; summary of life history; comparisons (key); time species migrates upstream; figured; distribution; growth rates; spawning period; age at time of return; spawning behavior; color.

Besana, Giuseppe 1910

American fishes in Italy. Bull. U. S. Bur. Fish., 28: 949-954.

O. tschawytscha (sic), quinnat; intro. & acclim.: Italy; growth.

Beveridge, J. M. R. 1947

Sulphur distribution in fish flesh proteins. J. Fish. Res. Bd. Can., 7: 51-54, 3 tables.

O. tschawytscha (sic), white spring; biochemistry: nitrogen, sulphur, ash.

Bigelow, Henry B., and Welsh, William W. 1925

Fishes of the Gulf of Maine. Bull. U. S. Bur. Fish., 40: 1-567, 278 figs.

O. gorbuscha, humpback; O. tschawytscha (sic), chinook; figured; Gulf of Me.; description; color; range; size at time of return; time species migrates upstream; intro. & acclim.

Birchall, K. F., and Hickman, C. P. 1914

The spawning beds of the Skeena River, Rept. Comm'er. Fish. Prov. B. C. (1913), 43-45.

Sockeye; humpback; spring; Skeena R., B. C.; distribution; spawning period.

Birchall, Kenneth F. 1915

The spawning grounds of the Skeena. Rept. Comm'er. Fish. Prov. B. C. (1914), 37-40.

Sockeye; Skeena R., B. C.; spawning period; distribution.

Black, Edgar C. 1953

Upper lethal temperatures of some Brietish Columbia freshwater fishes. J. Fish. Res. Bd. Can., 10: 196-210, 14 figs., 3 tables.

O. nerka kennerlyi; upper lethal temperature.

Black, Virginia Safford 1951a

Changes in body choride, density, and water contnt of chum (Oncorhynchus keta) and coho (O. kisutch) salmon fry when transferred from freshwater to sea water. J. Fish. Res. Bd. Can., 8: 164-177, 4 figs., 2 tables.

O. keta, chum; O. kisutch, silver; Cowichan R., Vancouver Is.; physiological differences between chum & coho shown in adjustment to different salinities.

Black, Virginia Safford 1951b

Osmotic regulations in teleost fishes (in) Some aspects of the physiology of fish. Univ. Toronto studies, 53-89.

O. keta, chum; O. gorbuscha, pink; O. tschawytscha (sic), quinnat, spring; O. kisutch, coho; behavior of fry; biochemistry (physiology).

Bolton, Lloyd L. 1930

Sockeye tagging on the Fraser River, 1928. Bull. Biol. Bd. Can., 1-8, 1 fig., 6 tables.

Sockeye; Fraser R., Gulf of Georgia; time species returns from ocean to stream mouth; tagging & recapture data.

Bonham, K., and Seymour, A. H. 1949

Hybrid of chinook and silver salmon from Puget Sound. Copeia, 69.

O. kisutch, silver; O. tschawytscha (sic), chinook; Wash.; counts & measurements; hybridization.

Borne, Max von dem 1885

Distribution of American fish and fish eggs by the German Fishery Association. Bull. U. S. Fish Comm., 5: 261-263.

Calif. salmon; France, Aude R., Narbonne; Prussia, Kurzig Lake; Waag R.; intro. & acclim.

Bottemanne, C. J. 1882

California salmon in the Netherlands. Rept. Comm'er. U. S. Comm. Fish & Fish. (1879), 709-713.

Salmo quinnat, Calif. salmon; intro. & acclim.; Netherlands; distribution.

Bottemanne, C. J. 1884

Penning of salmon in order to secure their eggs. Bull. U. S. Fish Comm., 4: 169.

Salmo quinnat; Holland; Ourthe R., Liege, Belgium; intro. & acclim.

Boulenger, G. A. 1895

Remarks on some cranial characters of the Salmonoids. Proc. Zool. Soc., London, 299–302.

Discussion of familial limits.

Boulenger, G. A. 1910

On the distinctive characters between salmon and trout. J. Salmon & Trout Assoc. London, 14–16, 2 figs.

Description; figured; counts & measurements.

Bower, Ward T. 1920a

Alaska fisheries and fur industries in 1918. Rept. Comm. Fish. U. S. Bur. Fish. (1918), 128 pp.

Red; Alaska; Wood R.; time species migrates upstream.

Bower, Ward T. 1920b

Alaska fisheries and fur industries in 1919. Rept. Comm'er Fish. U. S. Bur. Fish. (1919), 117 pp., 4 plts.

Red; Alaska, Wood R.; time species migrates upstream.

Bower, Ward T. 1921

Alaska fishery and fur seal industries in 1920. Rept. Comm'er Fish. U. S. Bur. Fish. (1921), 1–128.

Salmon (no other names); Alaska, Wood R., Naknek, Kuichak, Iliamna; spawning period; time of seaward migration.

Bower, Ward T. 1922

Alaska fishery and fur-seal industries in 1921. Rept. Comm'er Fish. U. S. Bur. Fish. (1922), 85 pp.

Red; silver; king; humpback; Bristol Bay, Alaska; time species migrates upstream.

Bower, Ward T. 1923

Alaska fishery and fur-seal industries in 1922. Rept. Comm'er Fish. for 1923, U. S. Bur. Fish., 118 pp., 16 figs.

Red; humpback; chum; coho; Wood R., Kuskokwim, Bristol Bay, etc., Alaska; time species migrates upstream; spawning period; distribution; spawning behavior (salmon, species not designated, pg. 46).

Bower, Ward T. 1925a

Alaska fishery and fur-seal industries in 1923. Rept. Comm. Fish. U. S. Bur. Fish. (1924), 47–140, 11 figs.

Sockeye, red; Bristol Bay, Kuskokwim R., etc.; time species migrates upstream.

Bower, Ward T. 1925b

Alaska fishery and fur-seal industries in 1924. Rept. Comm'er Fish. U. S. Bur. Fish. (1925), 65–169, 12 figs.

Red; silver, coho; chum; humpback; king; Bristol Bay, etc., Alaska; time species migrates upstream; nature of spawning site; distribution; time of seaward migration.

Bower, Ward T. 1926

Alaska fishery and fur-seal industries in 1925. Rept. Comm'er Fish. U. S. Bur. Fish. (1926), 65-160, 15 figs.

Red; coho, silver; king; Bristol Bay, Wood R., etc., Alaska; time species migrates upstream.

Bower, Ward T. 1927

Alaska fishery and fur-seal industries in 1926. Rept. Comm'er Fish. U. S. Bur. Fish. (1927), 225-336, 11 figs.

Red; coho; humpback; chum; king; Bristol Bay area, etc., Alaska; distribution; time species migrates upstream; spawning period.

Bower, Ward T. 1929a

Alaska fishery and fur-seal industries in 1927. Rept. Comm'er Fish. U. S. Bur. Fish. (1928), 61-171, 17 figs.

Red; coho; chum; humpback; king; Alaska; time species migrates upstream; spawning period.

Bower, Ward T. 1929b

Alaska fishery and fur-seal industries in 1928. Rept. Comm'er Fish. for 1929, U. S. Bur. Fish., 191- 332.

Red; coho; Bristol Bay, etc., Alaska; time species migrates upstream.

Bower, Ward T. 1930

Alaska fishery and fur-seal industries in 1929. Rept. Comm'er Fish. U. S. Bur. Fish. (1930), 205-339, 14 figs.

Red; chum; pink; coho; king; Bristol Bay, etc., Alaska; time species migrates upstream.

Bower, Ward T. 1931

Alaska fishery and fur-seal industries in 1930. Rept. U. S. Comm'er Fish. (1931), 1-108, 8 figs.

Red; coho; chum; king; Bristol Bay, etc., Alaska; distribution; time-species migrates, upstream.

Bower, Ward T. 1932

Alaska fishery and fur-seal industries in 1931. Rept. U. S. Comm'er Fish. (1932), 1-96.

King; chum; red; coho; pink; Bristol Bay, etc., Alaska; time species migrates upstream; distribution.

Bower, Ward T. 1933

Alaska fishery and fur-seal industries in 1932. Rept. U. S. Comm'er Fish. (1933), 1-78.

Red; coho; pink; chum; king; Alaska; time species migrates upstream ; racial analysis: Chignik, Copper R., Snake, Anan Cr.; age at time of return. (pp. 106, 108)

Bower, Ward T. 1934

Alaska fishery and fur-seal industries in 1933. Rept. U. S. Comm'er Fish. (1934), 239-312.

Chum; king; pink; coho; red; Alaska; time species migrates upstream; time young spend in freshwater; racial analysis, comments, (pg. 345).

Bower, Ward T. 1935

Alaska fishery and fur-seal industries in 1934. Rept. U. S. Comm'er Fish. (1935), 1-73.

Red; pink; chum; coho; Alaska; time species migrates upstream.

Bower, Ward T. 1936

Alaska fishery and fur-seal industries in 1935. Administrative Rept., & Rept. U. S. Comm'er Fish. (1936), 111-71.

King; red; pink; chum; coho; Alaska; time species migrates upstream.

Bower, Ward T. 1938a

Alaska fishery and fur-seal industries in 1936. Administrative Rept., & Rept. U. S. Comm'er Fish. (1937), 277-347.

Red; chum; coho; king; pink; Alaska; time species migrates upstream; time of seaward migration; egg counts (pg. 27).

Bower, Ward T. 1938b

Alaska fishery and fur-seal industries in 1937. Administrative Rept., & Rept. U. S. Comm'er Fish. (1938), 71-150.

King; red; coho; Alaska; time species migrates upstream.

Bower, Ward T. 1940

Alaska fishery and fur-seal industries in 1938. Administrative Rept., & Rept. U. S. Comm'er Fish. (1939), 83-168, 5 figs.

King; chum; red; pink; coho; Alaska; time species migrates upstream.

Bower, Ward T. 1941

Alaska fishery and fur-seal industries in 1939. Administrative Rept., & Rept. U. S. Comm'er Fish. (1939), 97-184, 8 figs.

King; chum; silver; Alaska; time species migrates upstream.

Bower, Ward T., and Aller, Henry D. 1915

Alaska fisheries and fur industries in 1914. Rept. Comm. Fish. U. S. Bur. Fish. (1914), 89 pp.

Chinook; sockeye; humpback; coho; chum; Alaska; Afognak, Yukon; time species migrates upstream (pg. 17, 48).

Bower, Ward T., and Aller, Henry D. 1917a

Alaska fisheries and fur industries in 1915. Rept. Comm. Fish. U. S. Bur. Fish. (1915), 140 pp.

Red; humpback; coho; Alaska, Wood R.; time species migrates upstream; age at time of return (pg. 25).

Bower, Ward T., and Aller, Henry D. 1917b

Alaska fisheries and fur industries in 1916. Rept. Comm. Fish. U. S. Bur. Fish. (1916), 118 pp.

King; coho; red; humpback; Alaska, Copper R., Yes Bay, Afognak; etc.; time species migrates upstream.

Bower, Ward T., and Aller, Henry D. 1919

Alaska fisheries and fur industries in 1917. Rept. Comm. Fish. U. S. Bur. Fish. (1917), 123 pp.

Red; Alaska, Wood R.; time species migrates upstream.

Bower, Ward T., and Fassett, Harry Clifford 1914

Fishery industries in Alaska fisheries and fur industries in 1913, by Barton Warren Evermann. Rept. Comm. Fish. U. S. Bur. Fish. (1913), 37-172.

Red, sockeye; humpback; coho; Alaska; Nashagak, Wood R., Afognak; Yukon; time species migrates upstream; pg. 2116; time of seaward migration.

Bowers, George M. 1899

Report of the U. S. Commissioner of Fish and Fisheries. Rept. Comm'er U. S. Comm. Fish & Fish. (1898), vii-xxix.

O. nerka, redfish, blueback, sockeye; O. gorbuscha, humpback; O. kisutch, coho; O. tschawytscha (sic), king, quinnat, chinook; dog; Alaska; time species migrates upstream.

Bowers, Geo. M. 1907

The distribution of food fishes during the fiscal year 1906. Rept. U. S. Bur. Fish., Bur. Fish., 78 pp.

Chinook; silver; blueback; humpback; intro. & acclim.: Mich., N. H., Argentina, Me.

Bowers, Geo. M. 1912

Report of the Commissioner of Fisheries, 1911. Ann. Rept. Comm'er U. S. Bur. Fish. (1911), 69 pp.

Chinook; Calif.; intro. & acclim.: San Lorenzo R., 1912; racial analysis, comments, only; pg. 22.

Bowser, W. J. 1909

Report of the Fisheries Commissioner for British Columbia for 1908, 1-14.

Sockeye; coho; humpback; spring; B. C.; time species migrates upstream; distribution.

Bowser, W. J. 1913

Report of the Fisheries Commissioner for British Columbia for 1912, 1-13.

Sockeye; spring; cohoe; dog; B. C.; age at time of return; time young spend in freshwater; distribution; food and feeding habits; migration routes.

Breder, C. M., Jr. 1924

The little redfish (Oncorhynchus nerka) at Scranton, Pennsylvania. Copeia (1924), 97-99.

O. nerka, Lake Winola, Scranton, Pa.; intro. & acclim.

Brett, J. R. 1952a

Skeena River sockeye escapment and distribution. J. Fish. Res. Bd. Can., 8: 453-468, 5 figs., 4 tables.

O. nerka, sockeye; Skeena R., B. C.; distribution in Skeena R.; nature of spawning site; tagging & recapture data.

Brett, J. R. 1952b

Temperature tolerance in young Pacific salmon, genus Oncorhynchus. J. Fish. Res. Bd. Can., 9: 265-323, 26 figs.

O. tschawytscha (sic), spring; O. gorbuscha, pink; O. nerka, sockeye; O. keta, chum; O. kisutch, coho; lethal maximum & minimum temp.; acclim.

Brett, J. R., and MacKinnon, D. 1952

Some observations on olfactory perception in migrating adult coho and spring salmon. Prog. Rept. Pac. Coast Stat. Fish. Res. Bd. Can., 21-23.

O. nerka, sockeye; O. kisutch, coho; O. tschawytscha (sic), spring; Stamp R., Vancouver Is., B. C.; olfactory perception in salmon.

Brett, J. R., and MacKinnon, D. 1953

Preliminary experiments using lights and bubbles to deflect migration young spring salmon. J. Fish. Res. Bd. Can., 10: 548-559, 5 figs., 4 tables.

O. tschawytscha (sic), spring; O. kisutch, coho; O. keta, chum; O. gorbuscha, pink; Pantledge R., Vancouver Is.; time of seaward migration.

Brett, J. R., and MacKinnon, D. 1954

Some aspects of olfactory perception in migrating adult coho and spring salmon. J. Fish. Res. Bd. Can., 11: 310-318, 3 figs.

O. kisutch, coho; O. tschawytscha (sic), spring; Stamp Falls, B. C.; parent stream theory; biochemistry.

Brett, J. R., and McConnell, J. A. 1950 1950

Lakelse Lake sockeye survival. J. Fish. Res. Bd. Can., 8: 103-110, 2 figs., 3 tables.

O. nerka, sockeye; brief life history; egg count; time species migrates upstream; time of seaward migration; age at time of seaward migration; size at time of downstream migration.

Brett, J. R., and Pritchard, A. L. 1946a

Lakes of the Skeena River Drainage. I. Lakelse Lake. Prog. Rept. Pac. Coast Stat. Fish. Res. Bd. Can., 12-15.

Sockeye, coho, pink; Lakelse Lake, B. C.; time of seaward migration; time of migration upstream; sexual dimorphism; spawning period.

Brett, J. R., and Pritchard, A. L. 1946b

Lakes of the Skeena River Drainage. II. Morice Lake. Prog. Rept. Pac. Coast Stat. Fish. Res. Bd. Can., 23-26.

O. gorbuscha, pink; O. kisutch, coho; O. tschawytscha, spring; O. nerka, sockeye; Morice Lake, B. C.; sexual dimorphism; time species migrates upstream.

Brice, John J., and others 1898

A manual of fish culture. Rept. Comm'er U. S. Comm. Fish & Fish., (1897), 1-340.

O. tschawytscha (sic), quinnat, chinook, king, Columbia salmon, Sacramento salmon, tyee, saw-qui; O. nerka, blueback, redfish, red, Fraser R., sockeye, saw-qui; O. gorbuscha, silver, silversides, skowitz, hoopid, coho; O. keta, dog; Pac. Coast; counts & measurements; color; approx. weight at time of return; range; type of stream chosen; distance travelled upstream; sexual dimorphism; time speces returns from ocean to stream mouth; time species migrates upstream; post-spawning behavior; spawning period; spawning behavior; figured; intro. & acclim.: Australia, New Zealand, France.

Briggs, John C. 1953

The behavior and reproduction of Salmonid fishes in a small coastal stream. Cal. Fish & Game, Fish Bull. (94), 62 pp., 5 figs.

O. kisutch, silver; O. tschawytscha (sic), king; O. nerka, red; O. keta, chum; O. gorbuscha, pink; Prairie Cr. drainage, Orick, Humboldt County, Calif.; range; time species returns; migration rate; sexual dimorphism: body &color changes; sex ratio; nature of spawning site; characteristics of redds; spawning behavior; post-spawning behavior; age at time of return; size at time of return.

British Columbia 1936

Condition of salmon spawning grounds, 1935. Rept. Comm. Fish. Prov. B. C. (1935), 45-49.

Sockeye; spring; cohoe; pink; chum; B. C.; distribution.

British Columbia 1944-1955

Catch of fish taken from the following non-tidal waters during the 1943-1954 seasons. Rept. Provincial Fish. Dept. Prov. B. C.

Kokanee; B. C.; distribution (various pagination).

British Columbia 1954

Salmon spawning report, British Columbia, 1953. Rept. Provincial Fish. Dept. Prov. B. C. (1953), 91-102.

Sockeye; spring; cohoe; pink; chum; B. C.; distribution.

British Columbia 1955

Salmon spawning report, British Columbia, 1954. Rept. Provincial Fish. Dept. Prov. B. C. (1954), 82-93.

Sockeye; spring; cohoe; pink; chum; B. C.; distribution.

Brocklesby, H. N. 1933

The hydrolysis of the body oil of the salmon. Contrib. Can. Biol. Fish N. S. 7: 505-519, 2 figs., 3 tables.

O. kisutch, coho; O. gorbuscha, pink; O. tschawytscha, red spring; oil content of flesh: biochemical.

Brocklesby, H. N. 1940

The chemistry of marine mammal, fish and fish-liver oils as related to other utilization in world commerce. Proc. (6th) Pac. Sci. Cong. (1939), 3: 291-308, 2 figs., 4 tables.

Sockeye; chum; pink; spring; vit. A & D: biochemical.

Brocklesby, H. N., and Denstedt, O. F. 1933

The industrial chemistry of fish oils with particular reference to those of British Columbia. Bull. Biol. Bd. Can. (37): 150 pp.

Sockeye; spring; coho; pink; chum; biochemistry.

Brown, Merrill 1937

The salmon migration in the Shasta River (1930-1934). Cal. Fish & Game, 24(1): 60-65, figs. 17-22, 1 tbl.

O. tschawytscha (sic), king; Shasta R.; time species migrates upstream; type of stream chosen; nature of spawning site; age at time of return.

Bryant, Floyd G. 1949

A survey of the Columbia River and its tributaries with special reference to its fishery resources. (2). Washington streams from the mouth of the Columbia River to and including the Klickitat River (area 1). Spec. Sci. Rept. U. S. Fish & Wildlife Serv. (62): 1-110, 7 figs., tables.

Chum; chinook; silver; time species migrates upstream; type of stream chosen; distance travelled upstream; spawning period.

Bryant, Floyd G., and Parkhurst, Zell E. 1950

Survey of the Columbia River and its tributaries (4). Spec. Sci. Repts., Fish. U. S. Fish & Wildlife Serv. (37): 1-108, 9 figs., tables.

O. nerka kennerlyi, kokanee, silver; chinook; blueback; silver; Columbia R.; distribution; counts of migrating adults.

Bryant, Harold C. 1923

Salmon fishcultural operations on the Klamath River. Cal. Fish & Game, 9(1): 19-23, 5 photos.

King; silver; Klamath, Sacramento R.; egg counts.

Bryant, Harold C., and Evermann, Barton Warren 1919

California Trout. Cal. Fish & Game, 5(3): 105-111.

Salmon; comparisons.

Burner, Clifford J. 1951

Characteristics of spawning nests of Columbia River salmon. Fish. Bull. U. S. Fish & Wildlife Serv. 52: 97-110, 7 figs.

O. tschawytscha (sic), chinook; O. kisutch, silver; O. keta, chum; O. nerka, blueback; Columbia R.: Wenatchee, Entiat, Mehtow, Okanogan R.; general life history; range; number of spawning runs; time of runs; spawning behavior; pre & post spawning behavior; nature of spawning site; description of redd; comparisons, between species, of redds; distance travelled upstream; size at time of return; type of stream chosen.

Byers, Robert D. 1942

Salmon caught in Mexican waters. Cal. Fish & Game, 28(4): 217.

Salmon, silver; range; movements in ocean.

--C--

Calhoun, A. J. 1950

California angling catch records from postal card surveys: 1936-1948; with an evaluation of postal card non-response. Cal. Fish & Game, 36(3): 177-234, 1 fig., 1 tables.

Salmon; distribution.

California Bureau of Marine Fisheries 1929-1952

The commercial fish catch of California. Fish Bull. Cal. Fish & Game.

O. tshawytscha, king, quinnat; O. kisutch (milktschitch), silver, coho; Calif.; catch records (by region & month). (various paginations).

California Fish and Game 1932

Bureau of Commercial Fisheries. Cal. Fish & Game, 18(1): 266.

Salmon; time of seaward migration; movements in ocean.

California, State of 1870-1871

Report California Fish Commission, (1870-71), 1-24.

Calif.; (1853-64); distance travelled upstream (pg. 9).

California, State of 1874-1875

Report California Fish Commission (1874-75), 1-36.

Salmo quinnat; Calif.; time species migrates upstream; catch records.

California, State of 1877

Report California Fish Commission (1876-1877), 1-30.

Salmo quinnat; Sacramento, San Joaquin R.; home stream theory; time species migrates upstream; catch records; landlocked quinnat, San Andreas, San Leandro & Pilarcitos Reservoirs.

California, State of 1886

Biennial Rept. Comm. Fish. State of Calif. (1885-86), 1-31.

Quinnat; Calif.; time species migrates upstream.

California, State of 1894

Thirteenth Biennial Rept. State Bd. Fish Comm. State of Calif. (1893-1894), appendix, 37-143.

Calif.; size at time of return (57 lbs, pg. 54).

California, State of 1898

Fifteenth Biennial Rept. State Bd. Fish Comm. State of Calif. (1897-1898), 1-45.

Calif.; movements in San Joaquin R.; time species migratesupstream (pg. 24).

California, State of 1900

16th Biennial Rept. State Bd. Fish Comm. State of Calif. (1899-1900), 1-45.

Calif.; catch records; behavior of fry; time fry spend in freshwater; time species migrates upstream.

California, State of 1902-1952

Biennial Report, Dept. Fish and Game.

King; silver; pink; Calif.; catch records by region. 1902, 1921, 1924, 1927, 1929, 1931, 1930-1932, 1934, 1937, 1936-1938, 1938-1940, 1940-1942, 1942-1944, 1944-1946, 1946-1948, 1948-1950, 1950-1952 (various paginations).

California, State of 1904

18th Biennial Rept. State Bd. Fish Comm. State of Calif. (1903-1904), 1-71.

O. chouicha, quinnat; humpback; dog; blueback, red; Sacramento R.; Calif; figured; tagging & recapture data. length of life of fall salmon after reaching spawning grounds.

California, State of 1910

21st Biennial Rept. Calif. Bd. Fish. & Game Comm'ers (1909-10), 1-72.

O. chouicha, quinnat; figured (color).

California, State of 1950-1952

Report of Bureau of Marine Fisheries. 42nd Biennial Rept. Dept. Fish & Game, Sate of Calif., 55-90, 3 tables.

O. tschawytscha (sic), king; Calif.; tagging & recapture data, migration routes.

California, State of 1952-1954

43rd Biennial Rept. Calif. Dept. Fish & Game, 1-96, 52 tables.

King; pink, humpback; silver; Calif.; catch records (1916-1953); marking and recapture data, migration routes (appendix tables 40); size at time of return.

Canavan, William P. 1928

A new species of Phyllobothrium van Ben., from an Alaska dog salmon, with a note on the occurrence of Crossobothrium angustum Linton in the thresher shark. J. Helminth., 6(1): 51-55. (Biol. Abst. #3456, 3(1-3), 1929.)

A new species, Phyllobothrium keta, found in pyloric caeca of Oncorhynchus keta at Excursion Inlet (S. eastern Alaska.)

Carl, G Clifford 1939a

Furunculosis and another case of ichthyophthiriasis. Prog. Fish Cult., (45): 47-50.

Spring, king; cohoe, silver; Lake Cowichan, B. C.; parasites (internal); bacterium.

Carl, G. C. 1939b

Salmon angling in Cowichan Bay. Prog. Rept. Biol. Stat. Nanaimo & Prince Rupert, Fish. Res. Bd. Can., (39): 9-12.

Spring, coho; Cowichan Bay, B. C.; catch records; size at time of return.

Carl, G. Clifford, and Clemens, W. A. 1948

The fresh-water fishes of British Columbia. Handbook (5) B. C. Prov. Mus. Dept. of Education, 1-132.

O. gorbuscha, pink, humpback; O. kisutch, coho, silver; O. tshawytscha, spring, king, tyee, chinook; O. keta, chum, dog; O. nerka, sockeye, red, blueback; O. nerka kennerlyi, kokanee, silver trout, kickinniee, little redfish; description; color; figured; counts & measurements; distribution; range; time eggs hatch; time young spend in freshwater; age at time of return; sexual dimorphism; time species migrates upstream; distance travelled upstream; food & feeding habits.

Chamberlain, F. M. 1907

Some observations on salmon and trout in Alaska. Rept. U. S. Bur. Fish. Bur. Fish. Doc. (627), 5-112, 5 pls.

O. gorbuscha, humpback; O. keta, dog; O. nerka, sockeye, blueback; O. nerka kennerlyi; O. tschawytscha (sic), king, quinnat, chinook; O. kisutch, coho; Naha, Karluk R., Alaska; description; comparisons (key); figured, young; counts & measurements; color; time of seaward migration; time young spend in freshwater; food and feeding habits; young, fresh & salt water; behavior of fry & fingerlings; growth rates, fresh-water; sex ratios; size at time of seaward migration; distribution; time species migrates upstream; spawning period; movements (of young) in salt water; leaping habit described for each species; age at time of return; marking & recapture data; intro. & acclim.: France, New Zealand, U.S.; time species returns from ocean to stream mouth; type of stream chosen; homing instinct; size at time of return; racial analysis-detailed analysis; nature of spawning site; spawning behavior - brief; sexual dimorphism; color & body changes.

Chamberlain, Fred M., and Bower, Ward T. 1913

Fishery industries, (in) Fishery and fur industries of Alaska in 1912, by Barton Warren Evermann. Rept. U. S. Comm'er Fish. Bur. Fish. (1912), (780): 18-73.

Red; king; coho; pink; dog; Alaska; distribution; size of fingerlings at time of migration; racial analysis, comments only; time species migrates upstream.

Chapman, W. M. 1936

The pilchard fishery of the state of Washington in 1936 with notes on the food of the silver and chinook salmon off the Washington coast. Dept. Fish., State of Wash., Bull. (36C): 1-20, 5 figs., 5 tables.

O. kisutch, silver; O. tschawytscha (sic), chinook; Westport, Neah Bay, Wash.; food & feeding habits.

Chapman, Wilbert McLeod 1938

The oxygen consuption of salmon and steelhead trout. Bull. Dept. Fish. State of Wash., (37A): 1-22, 2 figs., 9 tables.

O. tschawytscha (sic), chinook; O. nerka, blueback, sockeye; Wash.; rate of oxygen consuption by fry of each species; physiology.

Chapman, Wilbert M. 1940a

The average weight of food fish taken by the commercial fishery in the Columbia River. Bull. Dept. Fish. State of Wash., Bull. (39A): 1-31, 7 figs., 12 tables.

O. tschawytscha (sic), chinook, king, spring, tyee, quinnat; O. nerka, blueback, sockeye, red; O. kisutch, silver, coho; O. keta, chum, dog; weight of species at time of return.

Chapman, Wilbert McLeod 1940b

Fish problems connected with Grand Coulee Dam. Contib. Fish Comm. State of Oreg., (2): 193-198, 1 tables.

Chinook; blueback; silver; Grand Coulee Dam, Wash.; counts of migrant adults.

Chapman, Wilbert McLeod 1941

Observations on the migration of salmonoid fishes in the Upper Columbia River. Copeia, (4): 240-242.

O. nerka, sockeye; chinook; Upper Columbia R.; time species migrates upstream;home stream theory.

Chapman, Wilbert McLeod 1943

The spawning of chinook salmon in the Main Columbia River. Copeia, (3): 168-170.

O. tschawytscha (sic), chinook; O. nerka, sockeye, blueback, redfish; spawning period.

Chapman, Wilbert McLeod, and Quistorff, Elmer 1938

The food of certain fishes of North Central Columbia River Drainage, in particular, young chinook salmon and steelhead trout. Bull. Dept. Fish. State of Wash., Bull. (37A): 1-14, 3 tables.

O. tschawytscha (sic), chinook; O. nerka, sockeye, blueback; Wash.; food & feeding habits; racial analysis; counts.

Chatwin. B. M. 1953a

Age and size of chum salmon from the Johnstone Strait area. Prog. Rept. Pac. Coast Stat., Fish. Res. Bd. Can., (97): 1-10.

O. keta, chum; Johnstone Strait, B. C.; age at time of return, determined by scale studies; distribution; length of species at time of return.

Chatwin, B. M. 1953b

Tagging of chum salmon in Johnstone Strait 1949 and 1950. Bull. Fish. Res. Bd. Can., (96): 33 pp., 7 figs., 18 tables.

O. keta, chum; Johnstone Strait, B. C.; tagging & recapture data; migration routes; rate of travel.

Chen, Johnson T. F. 1951

Checklist of the species of fishes known from Taiwan (Formosa). Quart. J. Taiwan Mus., 4(3, 4): 181-210.

O. masou; Tai-chia, Nant'ou; listed.

Cheney, A. N. 1887

Salmon in the Hudson River. Bull. U. S. Fish Comm., 6:351-352.

Salmo quinnat; Calif. salmon; Hudson R., N. Y.; intro. & acclim.

Cheney, E. S. 1931

Salmon...caught in San Joaquin R. (photo). Cal. Fish & Game, 17: 95.

San Joaquin R., Calif. salmon; figured; weight at time of return (59 lbs.).

Clark, G. H. 1929a

Sacramento River salmon fishery. Cal. Fish & Game, 15: 1-10, 4 figs.

Sacramento, San Joaquin R.; time young spend in freshwater; distribution; age at time of return.

Clark, G. H. 1929b

Sacramento-San Joaquin salmon (Oncorhynchus tschawytscha) fishery of California. Fish Bull. Cal. Fish & Game, Bull. (17): 1-73, 30 figs.

O. tschawytscha (sic), Sacramento-San Joaquin salmon, chinook; distribution; age at time of return; time young spend in freshwater; length of species at time of return; time species migrates upstream.

Clark, G. H. 1930

Salmon spawning in drainage canals in San Joaquin Valley. Cal. Fish & Game, 16: 270.

San Joaquin Valley, Calif.; nature of spawning site; time of seaward migration; length of species at time of return; spawning period.

Clark, G. H. 1939

The 1938 salmon catch. Cal. Fish & Game, 25: 43-45.

Salmon; Calif.; distribution; time the species returns from ocean to stream mouth; time the species migrates upstream.

Clark, G. H., and Hatton, S. Ross 1942

Progress report on adult salmon tagging in 1939-1941. Cal. Fish & Game, 28:111-115, 2 figs., 3 tables.

King; silver; N. & S. of Pt. Arena, Calif.; movements in ocean; tagging & recapture data, segregations of populations.

Clark, G. H. 1943

Salmon at Friant Dam--1942. Cal. Fish & Game, 29: 89-91, 1 fig.

King, chinook; distribution; Friant Dam, San Joaquin R., Calif.; time species migrates upstream; type of stream chosen; spawning period.

Cleaver, F. C. 1951

Fisheries statistics of Oregon. Fish Comm. State of Oreg., Contrib. (16): 3-175, 108 tables, 41 figs.

O. nerka, blueback, red, sockeye; O. tschawytscha (sic), chinook, king, tyee; O. keta, chum, dog; O. kisutch, silver, silversides; Columbia R., Oreg. coast; time species migrates upstream; distribution of spawning areas; age at time of return; time young spend in freshwater; catch records.

Clemens, Wilbert A. 1928

Investigations on the Pacific salmon. Proc. (3rd) Pan-Pac. Sci. Cong., (1926), 2: 2250-2252.

O. tschawytscha (sic), king; B. C. to Sac. R., Calif.; tagging & recapture data.

Clemens, Wilbert A. 1929

Summary of results of tagging of spring salmon along West Coast Vancouver Island and Queen Charlotte Islands in 1925, 1926, 1927. Prog. Rept. Biol. Stat. Nanaimo & Prince Rupert. Biol. Bd. Can., (4): 11-13.

Spring; West Coast Vancouver, Queen Charlotte Is., B. C.; tagging & recapture data, migration routes.

Clemens, Wilbert A. 1930

Pacific salmon migration: the tagging of the coho salmon on the East Coast of Vancouver Island in 1927 and 1928. Bull. Biol. Bd. Can., (15): 1-19, 4 figs., 9 tables.

Coho; Strait of Georgia, B. C.; tagging & recapture data; distribution; age at time of return; weight at time of return; growth rates

Clemens, W. A. 1932

Pacific salmon migration: the tagging of the spring salmon on the East Coast of Vancouver Island in 1927 and 1928 with notes on incidental tagging of other fish. Bull. Biol. Bd. Can. (27): 1-10, 4 figs., 5 tables.

Spring; East Coast Vancouver Is.; tagging & recapture data; weight at time of return; migration routes.

Clemens, W. A. 1935a

On the ages of maturity and the sex proportions of sockeye salmon in British Columbia waters. Trans. Roy. Soc. Can., 29(ser. 3); 161-174, 4 figs., 4 tables.

O. nerka, sockeye; O. nerka kennerlyi, landlocked salmon, kennerlyi's salmon, kokanee, little redfish; distribution; type of stream chosen; spawning behavior; time eggs hatch; time young spend in freshwater; age at time of return; behavior in ocean; food & feeding habits; home stream theory; age groups.

Clemens, W. A. 1935b

The Pacific salmon in British Columbia waters. Rept. Comm. Fish. Prov. B. C. (1934), 103-105. (reprinted Rept. 1943, 83-85).

O. gorbuscha, pink, humpback; O. tschawytscha, spring, tyee, king, chinook, jacks; O. kisutch, cohoe, silver, bluebacks (immature specimens, esp. Strait of Georgia); O. nerka, sockeye, red (Alaska), blueback (Columbia R.), landlocked form: kokanee, little redfish, kennerlyi's salmon; age at time of return; time young spend in freshwater; distance travelled upstream; movements in ocean; weight of species at time of return; food & feeding habits; color; key; counts & measurements.

Clemens, W. A. 1937

Investigations: Appendix 4, Report of Pacific Biological Station, Nanaimo, British Columbia for 1936. Ann. Rept. Biol. Bd. Can. (1936), 28-35.

Sockeye; pink; B. C.; marking & recapture data; home stream theory.

Clemens, Wilbert A. 1938a

Contributions to the life history of the sockeye salmon. Rept. Provincial Fish. Dept. Prov. B. C. (1937), 32-49, 26 tables.

Sockeye; Fraser R., Rivers Inlet, Skeena, Nass R.; age at time of return (age groups); size of species at time of return; time young spend in freshwater; sex ratios; racial analysis, detailed data, no discussion.

Clemens, W. A. 1938b

Investigations: Appendix 4, Report of Pacific Biological Station Nanaimo, British Columbia for 1937. Ann. Rept. Biol. Bd. Can. (now the Fish. Res. Bd. Can.) (1937), 48-53.

Spring; coho; chum; sockeye; pink; B. C.; counts; marking & recapture data; home stream theory; age at time of return.

Clemens, Wilbert A. 1939a

Contributions to the life history of the sockeye salmon. (No. 24) Rept. Provincial Fish. Dept. Prov. B. C. (1938), 29-41, 18 tables.

Sockeye; Rivers Inlet, Skeena, Nass R.; age at time of return (age groups); size of species at time of return; time young spend in freshwater; sex ratios; racial analysis, detailed data, no discussion.

Clemens, W. A. 1939b

The fishes of Okanegan Lake and nearby waters. Bull. Fish. Res. Bd. Can. (56): 27-38, 3 figs.

O. nerka kennerlyi, kokanee; Okanagan Lake, B. C.; time of spawning age & size at maturity; sexual dimophism; food & feeding habits; (O. tschawytscha (sic), spring; O. kisutch, coho)

Clemens, W. A. 1939c

Investigations: Appendix 4, Report of Pacific Biological Station, Nanaimo, British Columbia for 1938. Ann. Rept. Fish. Res. Bd. Can. (formerly Biol. Bd. Can.) (1938), 36-45.

Sockeye; pink; spring; coho; chum; B. C.; counts of migrant adults; marking & recapture data; home stream theory; parasites.

Clemens, W. A. 1940a

Contributions to the life history of the sockeye salmon. (No. 25) Rept. Provincial Fish. Dept. Prov. B. C. (1939), 26-38, 18 tables.

Sockeye; Rivers Inlet, Skeena, Nass R., B. C.; age at time of return (age groups); size of species at time of return; time young spend in freshwater; sex ratios; racial analysis, detailed data, no discussion.

Clemens, W. A. 1940b

Investigations: Appendix 4, Report of Pacific Biological Station Nanaimo, British Columbia for 1939. Ann. Rept. Fish. Res. Bd. Can. (formerly Biol. Bd. Can.), (1939), 22-30.

Sockeye; pink; chum; silver, coho; B. C.; counts of migrant adults; food & feeding habits.

Clemens, W. A. 1941

Contributions to the life history of the sockeye salmon. (No. 26) Rept. Provincial Fish. Dept. Prov. B. C. (1940), 26-42, 18 tables.

Sockeye; Rivers Inlet, Skeena, Nass R.; age at time of return; size of species at time of return; sex ratios; racial analysis, detailed data, no discussion.

Clemens, W. A. 1942

Contributions to the life history of the sockeye salmon. (No. 27) Rept. Provincial Fish. Dept. Prov. B. C. (1941), 27-44.

Sockeye; Rivers Inlet, Skeena, Nass R,, B. C.; age at time of return (age groups); size of species at time of return; sex ratios.

Clemens, Wilbert A. 1943

Contributions to the life history of the sockeye salmon. (No. 28) Rept. Provincial Fish. Dept. Prov. B. C. (1942), 31-42, 18 tables.

Sockeye; Rivers Inlet, Skeena, Nass R., B. C.; age at time of return (age groups); size of species at time of return; sex ratios; racial analysis, detailed data, no discussion.

Clemens, W. A. 1944

Contributions to the life history of the sockeye salmon. (No. 29) Rept. Provincial Fish. Dept. Prov. B. C. (1943), 31-42, 18 tables.

Sockeye; Rivers Inlet, Skeena, Nass R., B. C.; age at time of return (age groups); size of species at time of return; sex ratios; racial analysis, detailed data, no discussion.

Clemens, W. A. 1946a

Contributions to the life history of the sockeye salmon. (No. 31) Rept. Provincial Fish. Dept. Prov. B. C. (1945), 31-42, 18tables.

Sockeye; Rivers Inlet, Skeena, Nass R., B. C.; age at time of return (age groups); size of species at time of return; sex ratios; time young spend in freshwater; racial analysis, detailed data, no discussion.

Clemens, W. A., and G. V. Wilby 1946

Fishes of the Pacific Coast of Canada. Bull. Fish. Res. Bd. Can. (68): 368 pp., 253 figs., 1 plate.

O. gorbuscha, pink; O. kisutch, coho; O. tschawytscha (sic), spring; O. keta, chum; O. nerka, sockeye; kokanee, kickaninny, kennerlyi's salmon, little redfish; figured; description; counts & measurements; color; key; range; copied; general life history; size at maturity; sexual dimorphism; time species migrates upstream; type of stream chosen; spawning period; time young spend in freshwater; age at maturity; food habits.

Clemens, W. A. 1947

Contributions to the life history of the sockeye salmon. (No. 32) Rept. Provincial Dept. Fish. Prov. B. C. (1946), 29-41, 18 tables.

Sockeye; Rivers Inlet, Skeena, Nass R.; age at time of return (age groups); size of species at time of return; time young spend in freshwater; sex ratios; racial analysis, detailed data, no discussion.

Clemens, W. A. 1948

Contibutions to the life history of the sockeye salmon. (No. 33) Rept. Provincial Fish. Dept. Prov. B. C. (1947), 29-40, 18 tables.

Sockeye; Rivers Inlet, Skeena, Nass R.; age at time of return (age goups); size at time of return; time young spend in freshwater; sex ratios; racial analysis, detailed data, no discussion.

Clemens, W. A. 1950

Contibutions to the life history of the sockeye salmon. (No. 34) Rept. Provincial Fish. Dept. Prov. B. C. (1948), 525-536, 18 tables.

Sockeye; Rivers Inlet; Skeena, Nass R., B. C.; age at time of return; size at time of return; time young spend in freshwater.

Clemens, W. A. 1951

On the migration of Pacific salmon (Oncorhynchus). Trans. Roy. Soc. Can., 45(ser. 3): 9-17.

O. keta, chum; O. tschawytscha (sic), spring; O. nerka, sockeye; O. gorbuscha, pink; coho; Fraser R., B. C.; time of seaward migration; time young spend in freshwater; type of stream chosen; migration routes; behavior of fry & fingerlings; food & feeding habits; home stream theory.

Clemens, W. A. 1952

On the cyclic abundance of animal populations. Canadian Field Naturalist, 66(5): 121-123.

O. gorbuscha, pink; O. kisutch, coho; O. nerka, sockeye; distribution, (McClinton Cr., Queen Charlotte Is.); age at time of return; racial analysis, comments only; time young spend in freshwater.

Clemens, W. A. 1953

On some fundamental problems in the biology of Pacific salmon. Trans. Roy. Soc. Can., 47(ser. 3): 1-13.

O. tschawytscha (sic), spring, king, chinook; O. kisutch, coho, silver; O. gorbuscha, pink, humpback; O. keta, chum, dog; O. nerka, sockeye, red, blueback; O. nerka kennerlyi, kokanee, landlocked, lakelocked; hybridization; chromosome studies; fossil; behavior of fry & fingerlings; type of stream chosen; time young spend in freshwater; distribution; physiology; home stream theory; intro. & acclim.: east coast of N. Amer., S. Amer., Europe, Australia, New Zealand; food & feeding habits; distance travelled upstream; migration routes.

Clemens, Wilbert A., and Clemens, Lucy S. 1926

Contributions to the life history of the sockeye salmon (No. 11). Rept. Comm. Fish. Prov. B. C. (1925), 18-39.

Sockeye; Fraser R., Rivers Inlet, Skeena, Nass R.; size of species at time of return; age at time of return (age groups); sex ratios; time young spend in freshwater; racial analysis, detailed data.

Clemens, Wilbert A., and Clemens, Lucy S. 1927

Contributions to the life history of the sockeye salmon (No. 12). Rept. Comm. Fish. Prov. B. C. (1926), 29-57, 43 tables.

Sockeye; Fraser R., Rivers Inlet, Skeena, Nass R.; time young spend in freshwater; age at time of return; size of species at time of return; sex ratios; racial analysis, detailed data.

Clemens, Wilbert A., and Clemens, Lucy S. 1928

Contributions to the life history of the sockeye salmon (No. 13). Rept. Comm. Fish. Prov. B. C. (1927), 16-38, 31 tables.

Sockeye; Fraser R., Rivers Inlet, Skeena, Nass R.; age at time of return; size of species at time of return; sex ratios; time young spend in freshwater; racial analysis, detailed data.

Clemens, Wilbert A., and Clemens, Lucy S. 1929

Contributions to the life history of the sockeye salmon (No. 14). Rept. Comm. Fish. Prov. B. C. (1927), 19-43, 31 tables.

Sockeye; Fraser R., Rivers Inlet, Skeena, Nass R.; age at time of return; time young spend in freshwater; size of species at time of return; sex ratios; racial analysis, detailed data.

Clemens, Wilbert A., and Clemens, Lucy S. 1930

Contributions to the life history of the sockeye salmon (No. 15). Rept. Comm. Fish. Prov. B. C. (1929), 17-43, 33 tables.

Sockeye; Fraser R., Rivers Inlet, Skeena, Nass R.; age at time of return; time young spend in freshwater; size of species at time of return; sex ratios; racial analysis, detailed data.

Clemens, Wilbert A., and Clemens, Lucy S. 1931

Contributions to the life history of the sockeye salmon (No. 16). Rept. Comm. Fish. Prov. B. C. (1930), 14-41, 34 tables.

Sockeye; Fraser R., Rivers Inlet, Skeena, Nass R.; age at time of return (age groups); time young spend in freshwater; sex ratios; size of species at time of return; racial analysis, detailed data.

Clemens, Wilbert A., and Clemens, Lucy S. 1932a

Contributions to the life history of the sockeye salmon (No. 17). Rept. Comm. Fish. Prov. B. C. (1931), 13-37.

Sockeye; Fraser R., Rivers Inlet, Skeena, Nass R.; age at time of return; time young spend in freshwater; size of species at time of return; sex ratios; racial analysis, detailed data.

Clemens, W. A., and Clemens, L. S. 1932b

Statistical study of sockeye salmon runs. Ann. Rept., Biol. Bd. Can. (1931), 70.

Sockeye; Fraser, Skeena, Nass R., Rivers Inlet, Can.; age at time of return.

Clemens, Wilbert A., and Clemens, Lucy S. 1933

Contributions to the life history of the sockeye salmon (No. 18). Rept. Comm. Fish. Prov. B. C., 13-49, 37 tables.

Sockeye; Fraser, Skeena, Nass R., Rivers Inlet; size of species at time of return; age at time of return (age groups); sex ratios; time young spend in freshwater; racial analysis, detailed data.

Clemens, Wilbert A., and Clemens, Lucy S. 1934

Contributions to the life history of the sockeye salmon. Rept. Comm. Fish. (No. 19) Prov. B. C. (1933), 12-47, 34 tables.

Sockeye; Fraser, Skeena, Nass R., Rivers Inlet; age at time of return (age groups); time young spend in freshwater; size of species at time of return; racial analysis, detailed data; sex ratios.

Clemens, Wilbert A., and Clemens, Lucy S. 1935

Contributions to the life history of the sockeye salmon (No. 20). Rept. Comm. Fish. Prov. B. C. (1934), 20-58, 4 figs., 31 tables.

Sockeye; Fraser, Skeena, Nass R., Rivers Inlet; age at time of return (age groups); size of species at time of return; sex ratios; time young spend in freshwater; racial analysis, detailed data.

Clemens, Wilbert A., and Clemens, Lucy S. 1936

Contributions to the life history of the sockeye salmon (No. 21). Rept. Comm. Fish. Prov. B. C. (1935), 21-44, 29 tables.

Sockeye; Fraser, Skeena, Nass R., Rivers Inlet; age at time of return; size at time of return; sex ratios; time young spend in freshwater; racial analysis, detailed data.

Clemens, Wilbert A., and Clemens, Lucy S. 1937

Contributions to the life history of the sockeye salmon (No. 22). Rept. Provincial Fish. Dept. Prov. B. C. (1936), 26-44, 26 tables.

Sockeye; Fraser, Skeena, Nass R., Rivers Inlet; age at time of return (age groups); size at time of return; sex ratios; time young spend in freshwater; racial analysis, detailed data.

Clemens, W. A., Foerster, R. E., Carter, N. M., Rawson, D. S. 1938

A contribution to the limnology of Shuswap Lake, British Columbia. Rept. Provincial Fish. Dept. Prov. B. C. (1937), 91-97, 3 figs., 2 tables.

O. tshawytscha, spring; O. kisutch, cohoe; O. nerka, sockeye; O. nerka kennerlyi, kokanee; Shuswap Lake, B. C.; food & feeding habits; time of seaward migration; time young spend in freshwater; time species migrates upstream.

Clemens, W. A., Foerster, R. E., Pritchard, A. L. 1939

The migration of Pacific salmon in British Columbia waters, (in) The migration and conservation of salmon. Amer. Assoc. for Advancement Sci. (No. 8): 51-59.

Spring; sockeye; pink; coho; B. C.; tagging & recapture data, migration routes; racial analysis, comments only; measurements.

Clothier, Charles R. 1950

A key to some Southern California fishes based on vertebral characters. Cal. Fish & Game, Fish. Bull. (79): 83 pp., 22 figs., 23 plates.

O. tschawytscha (sic), king; vertebral counts; comparisons (key); between Pt. Conception & San Diego.

Cobb, John N., and Kutchin, Howard M. 1907

The fisheries of Alaska in 1906. Rept. U. S. Fur. Fish., Bur. Fish. (618): 3-70.

Humpback; king; sockeye; coho; dog; Alaska; time species returns from ocean to stream mouth; distribution.

Cobb, John N. 1909

The king salmon of Alaska. Trans. Amer. Fish. Soc., 38: 124-128.

O. tschawytscha (sic), king; color (flesh); range, Alaska; food;

Cobb, John N. 1910

The king salmon of Alaska. Trans. Amer. Fish. Soc., (39th) Ann. Meet. (1909), 124-129.

(sic)
O. tschawytscha, king, chinook, quinnat; Alaska; distribution; food; time species migrates upstream; measurements; size of species at time of return.

Cobb, John N. 1911

The salmon fisheries of the Pacific Coast. Rept. U. S. Bur. Fish. (1910), Bur. Fish. (751), 179 pp., tables.

O. tschawytscha (sic), quinnat, tyee, chinook, spring, king; O. nerka, blueback, red, sukkegh, sockeye; O. kisutch, silver, coho, white; O. keta; dog, chum; O. gorbuscha, humpback; Pac. coast; range; color; weight at time of return; time species migrates upstream; distribution; intro. & acclim.: Klamath R., Redwood Cr., Mad R. & N. Fork, Eel R., Russian R., Skaggs Springs, Marin County, Truckee R., etc., Calif., Oreg., Wash.

Cobb, John N. 1917

Pacific salmon fisheries. Rept. Comm. Fish. U. S. Bur. Fish. (1916), (839): 255 pp., 29 plates.

O. masou, masu; O. tschawytscha (sic), quinnat, tyee, chinook, spring, king; O. nerka, blueback, red, sukkegh, quinault, sockeye; O. kisutch, silver, coho, white; O. keta, dog, keta, chum, O. gorbuscha, humpback, pink; Pac. coast, U. S., Siberia; range; weight at time of return; color; time species migrates upstream; distribution; food & feeding habits, ocean; figured; age at time of return; movements in ocean; intro. & acclim.: Marin Co. creeks, Pescadero Cr., San Gregorio & Truckee R.

Cobb, John N. 1921

Pacific salmon fisheries (3rd ed.). Rept. Comm'er Fish. U. S. Bur. Fish. (1921), (902): 268 pp., 48 figs.

O. masou, masu; O. tschawytscha, chinook, chavitch, quinnat, king, tyee; O. nerka, blueback, red, sukkegh, krasnaia, sockeye; O. kisutch, silver, kishutch, coho, white; O. keta, dog, keta, sake, chum; O. gorbuscha, humpback, pink; figured; range; color; size of species at time of return; food & feeding habits, ocean; time species migrates upstream; distribution; age at time of return; time young spend in freshwater, movements in ocean; biochemistry; intro. & acclim; distributional data: kamchatka, okhotsk; landlocked O. nerka, hime masu, in Lake Akan, Hokuchu Is.

Cobb, John N. 1931

Pacific salmon fisheries. Rept. Comm'er Fish. U. S. Bur. Fish. (1930), (1092), 409-704, 48 figs., 4th ed.

O. tschawytscha (sic), quinnat, tyee, chinook, spring, king; O. nerka, blueback, red, sukkegh, sockeye; O. kisutch, silver, silverside, coho, white; O. keta, chum, keta; O. gorbuscha, humpback, pink; O. masou, masu, Pac. coast, Siberia, Japan; range; color; size of species at time of return; time species migrates upstream; food & feeding habits, ocean; distribution; figured; age at time of return; movements in ocean; biochemistry; intro. & acclim.; landlocked O. nerka (himemasu), in Japan.

Cohen, Daniel M. 1954

Age and growth studies on two species of white fishes from Point Barrow, Alaska. Stanford Ichthyological Bull., 4(3): 167-187.

O. keta; Pt. Barrow, Alaska; distribution.

Coker, R. E. 1922

Progress in biological inquiries, 1921. Rept. Comm'er Fish. U. S. Bur. Fish. (1921), (911): 38.

King; chum; coho; humpback; sockeye; Pac. coast; marking & recapture data; age at time of return; age groups; time species migrates upstream; biochemistry.

Collins, J. A. 1892

Report on fisheries of the Pacific Coast of the United States. Rept. Comm'er U. S. Comm. Fish & Fish. (1888), 3-269, 39 plates.

O. gorbuscha, humpback; O. keta, dog; O. kisutch, silver; O. nerka, blueback, red; O. chouicha, king, chinook; (footnote: Salmo truncatus, steelhead; Salmo tsuppitch, white; leather salmon; Salmo argyreus, silversides; large white salmon; Salmo canis, dog; Salmo paucidens, weak-toothed; hybrid, not classified; Salmo proteus, humpback); quinnat; Sacramento, San Joaquin R.; figured; time species migrates upstream; size at time of return (approx.); distribution; synonomy.

Collison, J. M., and Hickman, C. P. 1917

The spawning beds of Nass River. Rept. Comm. Fish. Prov. B. C. (1916), 26-27.

Sockeye; Nass R., B. C.; spawning period; distribution.

Craig, Joseph A. and Hacker, Robert L. 1940

The history and development of the fisheries of the Columbia River. Bull. U. S. Bur. Fish., 49: 133-216, 16 figs., 27 tbl.

O. tschawytscha (sic), chinook; O. kisutch, silver; O. nerka, blueback, sockeye, red; O. keta, chum; spawning behavior; Wash.

Craig, Joseph A., and Townsend, Lawrence E. 1946

An investigation of fish-maintenance problems in relation to the Willamette valley project. Spec. Sci. Rept. U. S. Fish & Wildlife Serv. (33): 1-78, 10 figs., 27 tables.

Chinook; Willamette valley, Oreg.; general life history; racial analysis, comments; time species migrates upstream; spawning period; size at time of seaward migration; time young spend in freshwater; distribution.

Craigie, E. Horne 1926

A preliminary experiment upon the relationship of the olfactory sense to the migration of the sockeye salmon (Oncorhynchus nerka Walbaum). Trans. Roy. Soc. Can., 20(ser. 3): 215-224.

O. nerka, sockeye; O. kisutch, coho; Fraser R., B. C.; age at time of return; home stream theory; racial analysis, comments only; marking & recapture data, migration routes; distribution.

Cramer, Frederick K., and Hammack, David F. 1952

Salmon research at Deer Creek, California. Spec. Sci. Rept. Fish. U. S. Fish & Wildlife Serv. (67), 1-16, 7 tables.

Salmon; spawning period; sex ratios; time of seaward migration,

Crawford, D. R. 1925

Field characters identifying young Salmonoid fishes in fresh waters of Washington. Fish. Univ. Wash. Publications, 1(2): 64-76, 13 figs., 1 plate.

O tschawytscha (sic), chinook, spring, king, tyee; O. kisutch, coho, silver, pink, blackmouth; O. keta, chum; dog, black, calicoe; O. gorbuscha; humpback, pink; O. nerka, sockeye, red, blueback; O. nerka kennerlyi, little redfish, silver trout; Wash. state; description; color; figured; measurements.

Crawford, D. R. 1927

Notice of Hermaphroditism in silver salmon, Oncorhynchus kisutch. Copeia (1927), (163): 34.

O. kisutch, silver salmon, Chehalis R., Wash.; hermaphroditism.

Crawford, John M. 1907

Some plain truths relative to propagation. Pacific Fisherman, 5(3): 9-11.

O. nerka, blueback sockeye, Baker R., quinalt, red; chinook, quinnat; west coast waters; home stream theory; distribution.

Crawford, John M. 1908

To preserve the salmon of the Columbia. Pacific Fisherman, 6(2): 14-16.

Chinook; blueback, silversides; dog; humpback; Columbia R.; time species migrates upstream; nature of spawning site; spawning behavior; time eggs hatch;

Croker, Richard S. 1936

King salmon in Southern California, 1936. Cal. Fish & Game, 22:323.

O. tschawytscha (sic), king; distribution; Santa Monica Bay, La Jolla, San Clemente, Calif.

Curtis, Brian 1945

Fisheries and theCentral Valkys project. Cal. Fish & Game, 31: 102-113.

Calif.; distribution; time species migrates upstream; type of stream chosen; nature of spawning site; time of seaward migration; length at time of seaward migration; marking (tagging) & recapture data, segregation of population.

Curtis, Brian 1946

Twenty-five years ago in California Fish and Game. Cal. Fish & Game, 32: 29-30.

Salmon; distribution.

Curtis, Brian, and Fraser, J.C. 1948

Kokanee in California. Cal. Fish & Game, 34: 111-114, 1 fig.

O. nerka kennerlyi, kokanee, sockeye, red, little redfish, silver trout; counts & measurements; distribution; time species migrates upstream (landlocked fish); length of species at time of return; age at time of return; type of stream chosen; spawning period; nature of spawning site; spawning behavior; post-spawning behavior; time young spendin freshwater; growth rates, determined by direct measurement; feeding habits, lakes; intro. & acclim.; figured.

—D—

Davidson, Frederick A. 1935

The development of the secondary characters in the pink salmon (O. gorbuscha). Amer. Jr. Anat., 57: 169-183, 6 figs., 2 tables.

O. gorbuscha, pink, humpback; S. E. Alaska; sexual dimorphism, body changes; measurements; figured.

Davidson, F. A. 1940a

Age, growth, and seasonal time of migration of the Pacific salmon as an indication of environmental conditions in the sea. Proc. (6th) Pac. Sci. Cong. (1939), 3: 533.

Pink; red, sockeye; Alaska; spawning period; time eggs hatch; time species migrates upstream; age at time of return.

Davidson, Frederick A. 1940b

The homing instinct and age at maturity of the pink salmon (Oncorhynchus gorbuscha). Bull. U. S. Bur. Fish., 48: 27-39, 10 figs., 1 plate.

O. gorbuscha, pink; Duckabush R., Wash., & Snake Cr., Olive Cove, Alas.; time of spawning; time young migrate seaward; marking & recapture data; home stream theory; age at maturity in New Eng.; age at time of return; time species migrates upstream.

Davidson, F. A. 1940c

Marine ecology of the Pacific salmon. Proc. (6th) Pac. Sci. Cong. (1939), 3: 263-264.

O. tschawytscha (sic), king; O. nerka, sockeye; O. kisutch, coho; O. gorbuscha, pink; O. keta, chum; ocean; movements in ocean; distribution.

Davidson, Frederick A., and Christey, Leroy S. 1940

The migrations of pink salmon (Oncorhynchus gorbuscha) in the Clarence and Summer Straits regios of southeastern Alaska. Bull. U. S. Bur. Fish., 48: 643-666, 5 figs., 8 tables.

O. gorbuscha, pink; Clarence, Summer Straits, S. E. Alaska; time species migrates upstream; tagging & recapture data; migration routes; distance travelled upstream.

Davidson, F. A., and Hutchinson, S. J. 1937

The influence of natural conditions on the geographic distribution of the Pacific salmon. Prog. Fish Cult., (30): 24-34.

O. tschawytscha (sic), chinook; O. gorbuscha, pink; O. kisutch, cohoe; O. nerka, sockeye; range; intro. & acclim.: Finland, N. European countries, S. coastal regions, U. S.: Me., Lake Ontario, Can., tributaries, New Brunswick, Can., New Zealand, New Brunswick area lakes, Tasmania, Chile, Argentia, Hawaii, Australia, Tasmania.

Davidson, Frederick A., and Hutchinson, Samuel J. 1940

The geographic distribution and environmental limitations of the Pacific salmon (genus Oncorhynchus). Bull. U.S. Bur. Fish., 38: 667-692, 9 figs., 2 tables.

O. tschawytscha (sic), chinook, king; O. nerka, sockeye, red; O. kisutch, coho, silver; O. gorbuscha, pink, humpback; O. keta, chum, dog; general life history; range; tolerable temp. range for spawning & developing; limiting factors in marine habitat; movements in ocean; distribution; intro. & acclim.: Maine, Ontario, N. Brunswick, Tasmania, Chile, N. Zealand.

Davidson, F.A., and Hutchinson, S.J. 1942

Natural reproduction of pink salmon studied at Little Port Walter, Alaska. Ecology, 23: 284-285.

pink; distribution; Little Port Walter, Alaska; time species returns from ocean to stream mouth; age at time of return; type of stream chosen; distance travelled upstream; nature of spawning site; time of seaward migration.

Davidson, Frederick A., and Shostrom, O. Eugene 1936

Physical and chemical changes in the pink salmon during the spawning migration. U.S. Bur. Fisheries, Investigational Rept. No. 33, 2: 1-37, 15 figs, 9 tables.

sockeye; coho; king, chinook; chum; O. gorbuscha, pink, humpback; Alaska esp. Olive Cove; range; counts & measurements; sexual dimorphism; figured; description; anatomy; histological; biochemistry; racial analysis - comments only; age at time of return.

Davidson, F.A., and Vaughan, A.E. 1939a

Cyclic changes in time of Southeast Alaska pink salmon runs. Pacific Fisherman, 37 (2): 22-24, 2 charts.

pink; Alaska; time species migrates upstream.

Davidson, F.A., and Vaughan, A.E. 1939b

Cyclic change in time of Southeast Alaska pink salmon runs. Part 2. Pacific Fisherman, 37 (3): 40-42, 2 charts.

king; coho; pink; Southeast Alaska; time eggs hatch; time young spend in freshwater; home stream theory; age at time of return.

Davidson, F.A., and Vaughan, A.E. 1939c

Cyclic changes in time of Southeast Alaska pink salmon runs. Part 3. Pacific Fisherman, 37 (4): 39.

pink; Southeast Alaska; segregation of populations; spawning period.

Davidson, F.A., Vaughan, Elizabeth 1941

Relation of population size to marine growth and time of spawning migration in the pink salmon (O. gorbuscha) of Southeastern Alaska. J. Mar. Res., Sears Foundation for Mar. Res., 4: 231-246, 1 fig., 1 table.

O. gorbuscha, pink; king; coho; distribution; Clarence Strait, S.E. Alaska; time the species returns from ocean to stream mouth; time species migrates upstream; length of species at time of return; age at time of return; type of stream chosen; spawning period; sexual dimorphism; body changes; behavior of fry & fingerlings; time of seaward migration; time young spend in freshwater; movements in ocean; growth rates, determined by direct measurement; food & feeding habits, ocean; home stream theory.

Davidson, F.A., Vaughan, Elizabeth, and Hutchinson, S.J. 1943

Factors influencing the upstream migration of the pink salmon (O. gorbuscha) Ecology, 24(2): 149-168.

pink; coho; chum; range; distribution; Sashin Creek, Snake Creek, S.E. Alaska, McClinton Creek, B.C.; time species returns from ocean to stream mouth; time species migrates upstream; age at time of return; type of stream chosen; distance travelled upstream; spawning period; nature of spawning site; sexual dimorphism, body changes, time of first appearance.

Davis, H.S. 1927a

Schizamoeba salmonis, a new ameba parasitic in Salmonid fishes. Bull. U.S. Bur. Fish, 42: 1-8, 40 figs.

O. tschawytscha (sic), chinook; O. kisutch, silver; internal parasite, stomach: Schizamoeba salmonis, Davis.

Davis, H.S. 1927b

Octomitus salmonis, a parasitic flagellate of trout Bull. U.S. Bur. Fish, 42: 9-26, 57 figs.

O. tschawytscha, chinook; O. kisutch, silver; internal parasite of intestine of fingerlings (Octomitus salmonis).

Davis, H.S. 1953

Culture and diseases of game fishes. Univ. Calif. Press, Berkeley & Los Angeles, 332 pages.

O. keta, chum; O. gorbuscha, pink; O. kisutch, silver; O. nerka, blueback, red; O. tschawytscha (sic), chinook, king; time young spend in freshwater (p. 90); external parasites, glochidia of Margaratifera margaratifera falacata (on chinook but not on O. nerka).

Davison, Robert C., 1954
Breese, Wilber, and Katz, Max

The haemoflagellate, Cryptobia salmositica, in Oregon salmon. J. of Par., 40: 703-704.

O. kisutch, silver; O. tschawytscha (sic), king; distribution; time of seaward migration; time species migrates upstream; parasites, internal.

DeLacy, Allen C., and 1947
Neave, Ferris

Migration of pink salmon in southern British Columbia and Washington in 1945. Bull. Fish. Res. Bd. Can., No. 74, 1-11, 2 figs., 4 tables.

O. gorbuscha, pink; southern Brit. Col.; tagging & recapture data; rate of travel; migration routes.

DeBellesme, Jousset 1896

New method of pond culture. Trans. Amer. Fish. Soc., 25: 69-87. (Translated by Dr. Tarleton H. Bean, by permission of the author).

Salmo quinnat, California salmon; intro. & acclim.: France; landlocked; nature of spawning site: landlocked; spawning period; time eggs hatch; growth rates.

DeWitt, John W., Jr. 1954

A survey of the coast cutthroat trout, Salmo clarki clarki, Richardson, in California. Cal. Fish & Game, 40: 329-335.

O. kisutch, silver; O. tshawytscha, king; Prairie Creek, Calif.; distribution.

Dill, William A. 1946

A preliminary report on the fishery of Millerton Lake, California. Cal. Fish & Game, 32: 49-69.

O. tschawytscha (sic) king; distribution; Millerton Lake, Calif.

Dombroski, E. 1952

Sockeye smolts from Babine Lake in 1951. Progr. Rept. Pac. Coast Stas. Fish. Res. Bd. Can., No. 91, 21-26, 10 figs., 2 tables.

O. nerka, sockeye; Babine Lake, B.C.; size at time of return; age at time of return.

Dombroski, E. 1954

The sizes of Babine Lake sockeye salmon smolt emigrants, 1950-1953. Progr. Rept. Pac. Coast Stas. Fish. Res. Bd. Can., No. 99 (1954), 3-34, 5 figs., 3 tables.

sockeye; Lakelse Lake, Babine Lake, B.C.; age at time of return; size at time of return.

Dombroski, E. 1955

Cestode and nematode infection of sockeye smolts from Babine Lake, British Columbia. J. Fish. Res. Bd. Can., 12: 93-96, 1 table.

O. nerka, sockeye; Babine Lake, B.C.; smolts with parasites of cestode Eubothrium salvelini (Schrans. 1790) & nematode (Philonema oncorhynchi - Kuitunin-Ekbaum), 1933.

Duff, D.C.B. 1932a

Furunculosis on the Pacific Coast. Trans. Amer. Fish. Soc., 62: 249-255.

O. nerka, sockeye; O. keta, chum; hybridization: O. nerka x O. keta; parasite, internal: Bacillus salmonicida, furunculosis, Brit. Col.; bacterium.

Duff, D.C.B. 1932b

Investigations on causes of disease in salmonida. Ann. Rept. Biol. Bd. Can. (1931), 70.

sockeye; Cultus Lake, Canada; parasites; costia necatrix, bacterium.

Dunn, Horace D. (with notes by Stone, Livingston) 1880

Do the spawning salmon ascending the Sacramento River all die without re-returning to the sea? Rept. Comm'er for 1878, U.S. Comm. Fish & Fish., 815.

Salmo quinnat, California salmon; Sacramento R., San Joaquin R., Calif.; post spawning behavior; time species returns from ocean to stream mouth.

Dunlop, H.A. 1924

The growth-rate of the scales in the sockeye salmon, Oncorhynchus nerka. Contrib. Can. Biol., N.S., 2: 151-159, 2 figs.

O. nerka, sockeye; racial analysis; growth rates from scales.

Dyer, W.J. 1952

Amines in fish muscle. VI. Trimethylamine oxide content of fish and marine invertebrates. J. Fish. Res. Bd. Can., 8: 314-324, 3 tables.

Dyer, W.J. (cont.) 1952

O. tschawytscha (sic), king, spring; O. kisutch, silver; biochemical; trimethylamine oxide for O. tschawytscha, O. kisutch, also for Salmo salar, which has very similar oxide content.

Dymond, J.R. 1932

The trout and other game fishes of British Columbia. Dept. Fisheries, 1-51, 3 figs., 7 colored plates; 2 drawings.

O. tschawaytscha (sic), chinook, tyee, king; O. kisutch, coho; O. nerka kennerlyi, kokanee, kikanniny, silver, little redfish, Kennerly's salmon, Kennerly's trout; distribution; size at time of return; spawning period; probable age at maturity.

Dymond, J.R. 1934

The distribution and relationship of the salmonid fishes of North America and North Asia. Proc. Fifth Sci. Cong. (1933), 5: 3741-3750.

Oncorhynchus; humpback; keta; North Amer. & North Asia; distribution; (Formosa trout, Jordan & Oshima, 1919, belongs to Oncorhynchus; no ref. given).

Dymond, J.R. 1936

Some freshwater fishes of British Columbia. Rept. Comm. Fish., 1935, Prov. Brit. Col., 60-73.

O. nerka kennerlyi, kokanee; Brit. Col.; distribution; weight at time of spawning; food & feeding habits; counts & measurements.

Dymond, J.R. 1940

O. keta, dog; O. gorbuscha, humpback; MacKenzie R., Can.; Lena R., Siberia; distribution; time species migrates upstream.

Earp, B.J , Ellis, C.H., and Ordal, E.J. 1953

Kidney disease in young salmon. State Wash. Dept. Fish. Special Rept. Series No. 1, 1-74, 9 figs., 28 tables.

O. tschawytscha (sic), chinook; O. kisutch, silver; O. keta, chum; O. nerka, blueback, sockeye; O. gorbuscha, pink; Washington; parasites; bacteria; time young spend in freshwater.

Earp, B.J., and Schwab, R.L. 1954

An infestation of leeches on salmon fry and eggs. Prog. Fish Cult., 16: 122-123.

O. gorbuscha, pink; O. kisutch, silver; O. keta, chum; Hood Canal State Salmon Hatchery, Washington; parasites; fry figured.

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O. nerka, sockeye; O. kisutch, coho, silver; O. keta, chum, dog; time species migrates upstream; counts & measurements; racial analysis: comments & preliminary data; nature of spawning site; sex ratios; size at time of return; distribution; egg counts; growth rates.

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O. nerka, sockeye; behavior of downstream migrants, fry & fingerlings; time of seaward migration; time young spend in freshwater; size at time of seaward migration; Cultus Lake, B.C.; growth rates (of migrants determined from scales); external parasite, copepod Salmincola gibber.

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sockeye; coho; chum; spring; pink; Cultus Lake, B.C.; hybridization of salmon.

Foerster, R.E. 1930b

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sockeye; Cultus Lake area, B.C.; marking & recapture data.

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Experimental tests of the methods used in the artificial spawning and fertilization of sockeye salmon eggs. Progr. Rept Biol. Stas. Nanaimo & Prince Rupert. Biol. Bd. of Can., No. 14, 5-11, 3 tables.

sockeye; Cultus Lake, B.C.; egg counts.

Foerster, R.E. 1934

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O. nerka, sockeye; Cultus Lake, B.C.; time young spend in freshwater; age at time of return; marking & recapture data; size at time of seaward migration.

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O. nerka, sockeye, red; O. kisutch, coho; O. keta, chum; O. tschawytcha (sic), spring, king; O. gorbuscha, pink, humpback; O. masou, cherry; O. formosanus, amago; Cultus Lake, B.C.; time species migrates upstream; type of stream chosen; spawning behavior; distribution; hybrids; description; nature of spawning site; age at time of return; color.

Foerster, R.E. 1936a

An investigation of the life history and propagation of the sockeye salmon (Oncorhynchus nerka) at Cultus Lake, British Columbia. No. 5. The life history cycle of the 1926 year class with artificial propagation involving the liberation of free-swimming fry. J. Biol. Bd. of Can. 2: 311-333. 2 figs., 8 tables.

O. nerka, sockeye; spawning period; egg counts; growth rates; age at time of return; marking & recapture data; time of seaware migration; time young spend in freshwater; size at time of seaward migration.

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O. nerka, sockeye; marking & recapture data; sex ratios; time young spend in freshwater; age at time of return.

Foerster, R.E. 1936c

A study of sockeye salmon propagation methods in British Columbia. Prog. Fish Cult., No. 25, Dec., 4-5.

sockeye; Cultus Lake, B.C.; type of stream chosen; nature of spawning site.

Foerster, R.E. 1937

The relation of temperature to the seaward migration of young sockeye salmon (Oncorhynchus nerka). J. Biol. Bd. Can., 3: 421-438, 3 figs., 3 tables.

O. nerka, sockeye; Cultus Lake; spawning period; time eggs hatch; time young spend in freshwater; food & feeding habits; theories on landlocked origin.

Foerster, R.E. 1938a

An investigation of the relative efficiencies of natural and artificial propagation of sockeye salmon (Oncorhynchus nerka) at Cultus Lake, British Columbia. J. Fish. Res. Bd. Can., 4: 151-161, 3 tables.

O. nerka, sockeye; Cultus Lake, B.C.; age at time of return; egg counts.

Foerster, R.E. 1938b

Mortality trend among young sockeye salmon (Oncorhynchus nerka) during various stages of lake residence. J. Fish. Res. Bd. Can., 4: 184-191, 2 figs.

O. nerka, sockeye; size at time of seaward migration; time young spend in freshwater; residual lake sockeye; time of first appearance of free swimming fry.

Foerster, R.E. 1941

Salmon investigations, Appendix IV, Report of Pac. Biol. Sta. Nanaimo, B.C. for 1940. Ann. Rept. Fish. Res. Bd. Can. for 1940, 25-27.

pink; spring; coho; sockeye; Brit. Col.; counts of migrant adults; marking & recapture data; home stream theory; food & feeding habits; catch records.

Foerster, R.E. 1942

Salmon investigations, Appendix IV, Rept. Pac. Biol. Sta. Nanaimo, B.C. for 1941, Ann. Rept. Fish. Res. Bd. Can. for 1941, 24-25.

pink; coho; spring; Brit. Col; marking & recapture data on migration routes; food & feeding habits; catch records.

Foerster, R.E. 1943

Appendix IV . Rept. for 1942, Pac. Biol. Sta., Nanaimo, B.C. Ann. Rept. Fish. Res. Bd. Can. for 1942, 20-24.

pink; chum; coho; spring; Brit. Col.; counts of migrant adults; age at time of return; catch records; marking & recapture data on migration routes.

Foerster, R.E. 1944a

Appendix IV. Rept. for 1943, Pac. Biol. Sta., Nanaimo, B.C. Ann. Rept. Fish. Res. Bd. Can. for 1943, 22-26.

pink; coho; Brit. Col; counts of migrant adults; catch records; marking & recapture data on migration routes; spawning period.

Foerster, R.E. 1944b

The relation of lake population density to size of young sockeye salmon (Oncorhynchus nerka). J. Fish. Res. Bd. Can. 6: 267-280, 6 figs., 4 tables.

O. nerka, sockeye; Cultus Lake, B.C.; spawning period; time fry emerge; food & feeding habits of fry in lake; time young spend in freshwater; age groups; size at time of seaward migration.

Foerster, R.E. 1945

Appendix VII. Rept. for 1944, Pac. Biol. Sta., Nanaimo, B.C., Ann. Rept. Fish. Res. Bd. Can. for 1944, 44-48.

pink; coho; sockeye; Brit. Col.; tagging & recapture data on migration routes; counts of migrant adults.

Foerster, R.E. 1946a

Appendix VII. Rept. for 1945, Pac. Biol. Sta , Nanaimo, B.C Ann. Rept. Fish. Res. Bd. Can. for 1945, 47-51.

sockeye; pink; chum; coho; Brit. Col.; tagging & recapture data on migration routes.

Foerster, R.E. 1946b

Restocking depleted sockeye salmon areas by transfer of eggs. J. Fish. Res. Bd. Can., 6: 488-490, 1 fig., 2 tables.

sockeye; S.W. Brit. Col.; racial analysis - comments; marking & recapture data; home stream theory.

Foerster, R.E 1947a

Appendix VII, Rept. for 1946, Pac. Biol. Sta., Nanaimo, B.C. Ann. Rept. Fish. Res. Bd. Can. for 1946, 44-49.

sockeye; coho; spring; pink; chum; Brit. Col.; marking & recapture data on migration routes; counts of migrant adults; catch records.

Foerster, R.E. 1947b

Experiment to develop sea-run from landlocked sockeye salmon (Oncorhynchus nerka kennerlyi). J. Fish. Res. Bd. Can., 7: 88-93.

O. nerka, sockeye; O. nerka kennerlyi; Kootnay & Cultus lakes, B.C.; marking & recapture data; age at time of return; size at time of return; comparisons - habit & growth rates of anadromous & kokanee type salmon.

Foerster, R.E. 1948

Appendix III. Rept. for 1947, Pac. Biol. Sta., Nanaimo, B.C., Ann. Rept. Fish. Res. Bd. Can. for 1947, 54-62.

sockeye; pink; chum; coho; Brit. Col.; marking & recapture data on migration routes; catch records; counts of adult migrants.

Foerster, R E. 1949

Appendix VIII., Rept. for 1948, Pac. Biol. Sta., Nanaimo, B.C.; Ann. Rept. Fish. Res. Bd. Can. for 1948, 67-78.

pink; chum; coho; Brit. Col; behavior; tagging & recapture data on migration routes; age at time of return.

Foerster, R.E. 1950

Appendix IX. Rept. for 1949, Pac. Biol. Sta., Nanaimo, B C. Ann. Rept. Fish. Res. Bd. Can. for 1949, 71-79

sockeye; coho; pink; chum; Brit. Col.; counts of migrant adults.

Foerster, R.E 1952

The seaward-migrating sockeye and coho salmon from Lakelse Lake, 1952. Progr. Rept Pac. Coast Stas.; Fish. Res. Bd. Can., No. 93, 30-32.

sockeye; coho; Lakelse, B.C.; time of seaward migration.

Foerster, R.E. 1954a

On the relation of adult sockeye salmon (Oncorhynchus nerka). Returns to known smolt seaward migrations. J. Fish. Res. Bd. Can., 11: 339-350; 5 figs., 2 tables.

O. nerka, sockeye; pink; Cultus Lake, B.C.; counts of migrant adults; counts & measurements.

Foerster, R.E. 1954b

Sex ratios in sockeye salmon (O. nerka) J. Fish. Res. Bd. Can., 11: 988-997, 3 tables.

O. nerka, sockeye, red; Cultus Lake, B.C.; counts of migrant adults; age at time of return; time young spend in freshwater; marking & recapture data; sexual dimorphism.

Foerster, R.E. 1955

The Pacific salmon (genus Oncorhynchus) of the Canadian Pacific coast, with particular reference to their occurrence in or near fresh water. Bull. Internat'l North Pac. Fish. Comm., Bull. No. 1, 1-56, 4 figs.

O. nerka, sockeye; O. gorbuscha, pink; O. keta, chum; O. tschawytscha (sic), spring; O. kisutch, coho; racial analysis; age groups; sex ratios; egg counts; food & feeding habits - lake fry; migration routes; time species migrates upstream; movements in ocean; white & red springs, p. 35; upper & lower lethal temp. per species, p. 38; behavior of fry & fingerlings; hybridization, p. 39; size at time of return.

Foerster, R.E., and Pritchard, A.L. 1935

The identification of the young of the five species of Pacific salmon, with notes on the freshwater phase of their life history. Rep. Comm. Fish, 1934, Prov. Brit. Col., 106-116, 1 fig., 2 tables. (Reprinted in report for 1943, pp. 86-97.)

O. gorbuscha, pink, humpback; O. keta, chum, dog; O. nerka, sockeye, landlocked form called kokanee or kickininee; O. tschawytscha (sic), spring; O. kisutch, cohoe; counts & measurements; color; distance travelled upstream; time eggs hatch; time young spend in freshwater; time of seaward migration; age at time of return; length at time of seaward migration; comparisons (keys); time species migrates upstream; type of stream chosen; figured.

Foerster, R.E., and Pritchard, A.L. 1936

The egg content of Pacific salmon. Progr. Rept. Biol. Stas., Nanaimo, & Prince Rupert, B.C. Biol. Bd. Can., No. 28, 3-5.

sockeye; pink; chym; coho; spring; Brit. Col.; egg counts.

Foerster, R.E., and Pritchard, A.L. 1941

Observations on the relation of egg content to total length and weight in the sockeye salmon (O. nerka) and the pink salmon (O. gorbuscha). Trans. Roy. Soc. Can., Ser. 3, Sect. 5, 35: 51-60, 4 figs., 4 tables.

O. nerka, sockeye; O. gorbuscha, pink, red; Cultus Lake, B.C., McClinton Cr., Masset Inlet, Queen Charlotte Is., B.C.; size at time of return; egg counts.

Foerster, R.E., and Ricker, W.E. 1953

The coho salmon of Cultus Lake and Sweltzer Creek. J. Fish. Res. Bd. Can., 10: 293-319, 6 figs., 10 tables.

O. kisutch, coho; age at time of return; spawning period; time eggs hatch; time young spend in freshwater; age at time of return; size at time of return; sexual dimorphism; residual lake coho; parasites: Salminicola on residuals; growth rates; comparison of residual & anadromous coho & sockeye; behavior of fry & fingerlings; time species migrates upstream; counts of migrant adults; time of seaward migration.

Foskett, D.R. 1947a

Lakes of the Skeena River drainage. V. Bear Lake. Progr. Rep. Pac. Coast Stas. Fish. Res. Bd. Can., No.70, 10-12.

Foskett, D.R. (cont.) 1947a

O. nerka kennerlyi, kokanee; O. nerka, sockeye; O. kisutch, coho; O. tschawytscha (sic), spring; O. gorbuscha, pink; Bear Lake, B.C.; time species migrates upstream; nature of spawning area.

Foskett, D R. 1947b

Lakes of the Skeena River drainage. VI. The lakes of the upper Sustut River. Progr. Rept. Pac. Coast Stas.; Fish. Res. Bd. Can., No. 72, 28-32.

O. kisutch, coho; O. nerka, sockeye; O. nerka kennerlyi; Skeena R., B C.; distribution; nature of spawning site; spawning period.

Foskett, D.R. 1951a

Contributions to the life history of the sockeye salmon (No. 66). Rept. Provincial Fish Dept., 1950, Prov. Brit. Col., 31-50, 24 tables.

sockeye; Rivers Inlet, Skeena R., Nass R., Smith Inlet, B.C.; age at time of return (age groups); size at time of return; sex ratios; racial analysis-detailed data but no discussion; time young spend in freshwater.

Foskett, D.R 1951b

Young salmon in the Nanaimo area. Progr. Rept. Pac. Coast Stas.; Fish. Res. Bd. Can., No. 86, 18-19.

O. keta, chum; O. tschawytscha (sic), spring; O. kisutch, coho; O. gorbuscha, pink; Nanaimo, B.C.; food & feeding habits.

Foskett, D.R. 1952a

Contributions to the life history of the sockeye salmon. No. 67. Rept. Provincial Fish Dept., 1951, Prov. Brit. Col., 33-36, 25 tables.

sockeye; Nass R., Rivers Inlet, Smith Inlet; age at time of return (age groups); size at time of return; sex ratios; time young spend in freshwater; racial analysis - detailed data but no discussion.

Foskett, D.R. (cont.) 1952a

Foskett, D.R. 1952b

The effect of the Babine slide on the 1951 sockeye run. Progr. Rept. Pac. Coast Stas.; Fish. Res. Bd. Can., No. 90, 9.

sockeye; Babine R., B.C.; leaping habit.

Foskett, D.R. 1953

Contributions to the life history of the sockeye salmon (No. 38). Rept. Provincial Fish. Dept., 1952, Prov. Brit. Col., 35-56, 4 figs., 25 tables.

sockeye; Nass R., Rivers Inlet, Smith Inlet, B.C.; age at time of return (age groups); size at time of return; sex ratios.

Foskett, D.R. 1954

Contributions to the life history of the sockeye salmon (No. 39). Rept. Provincial Fish. Dept., 1953, Prov. Brit. Col., 35-51, 24 tables.

sockeye; Nass R., Rivers Inlet, Smith Inlet, B.C.; age at time of return (age groups); size at time of return; sex ratios; time young spend in freshwater; racial analysis - detailed data but no discussion.

Foskett, D.R. 1955a

Age and size of Bella Coola sockeye salmon. Progr. Rept. Pac. Coast Stas. No. 102. Fish. Res. Bd. Can., 16-19, 3 tables.

sockeye; Bella Coola, B.C.; age at time of return; time young spend in freshwater; counts & measurements.

Foskett, D.R. 1955b

Contributions to the life history of the sockeye salmon (No. 40). Rept. Provincial Fish. Dept., 1954, Prov. Brit. Col., 32-50.

sockeye; Nass R., Skeena R., Rivers Inlet, Smith Inlet, B.C.; age at time of return; size at time of return; sex ratios; time young spend in freshwater; racial analysis - detailed data but no discussion.

Fowler, Henry W. 1911

Notes on salmonoid and related fishes. Proc. Phila. Acad. Nat. Sci., 63: 551-571.

O. kisutch; O. tschawytscha (sic); O. nerka; distribution.

Fraser, C. McLean 1916

Growth of the spring salmon. Trans. Pac. Fish. Soc. for 1915, 29-39.

spring; sockeye; Brit. Col.; time young spend in freshwater; food & feeding habits; growth rates from scale studies; racial analysis from scale studies.

Fraser, C. McLean 1917a

On the life-history of the coho. Contrib. Can. Biol. for 1915-1916, 39-46, 13 figs., plates 5-7.

coho, silver; Departure Bay (creek), Strait of Georgia, B.C.; time species returns from ocean to stream mouth; time species migrates upstream; distance travelled upstream; time eggs hatch; behavior of fry & fingerlings; time young spend in freshwater; size at time of seaward migration; movements in ocean; food & feeding habits; growth rates; saltwater & freshwater.

Fraser, C. McLean 1917b

On the scales of the spring salmon. Contrib. Can. Biol. for 1915-1916, 21-32, 15 figs., 4 plates.

O. tschawytscha (sic), spring, king, tyee, chinook, quinnat; growth rates; saltwater & freshwater, determined by scale studies & direct measurement.

Fraser, C. McLean 1918

Rearing sockeye salmon in freshwater. Contrib. Can. Biol. for 1917-1918, 105-109, 1 fig.

O. nerka, sockeye; Harrison Lake, B.C.; spawning period; growth rates: freshwater, determined from scales.

Fraser, C. McLean 1919

Growth rate in the Pacific salmon. Trans. Roy. Soc. Can., Ser. 3, 13 (sect. 5): 163-226, 22 figs.

O. tschawytscha (sic), spring, king, quinnat, chinook, tyee, Columbia R., Sacramento, spring-jack, grilse, sea-trout; O. nerka, sockeye, red, redfish, blueback, quinault; O. kisutch, coho, silver, silverside, medium red, blueback, grilse; O. gorbuscha, humpback, pink; O. keta, dog, keta, chum; distribution; growth rates: freshwater, determined by scale studies; time young spend in freshwater; home stream theory; age at time of return; length at time of seaward migration; food & feeding habits; sexual dimorphism; color; time of seaward migration; behavior of fry.

Fraser, C. McLean 1921

Further studies on the growth rate in Pacific salmon. Contrib. Can. Biol. for 1918-1920, 7-27, tables.

spring; sockeye; coho; humpback; dog; Georgia Strait, Fraser R., B.C.; length at time of return; growth rates; migration routes; racial analysis; age at time of return.

Fraser, C. McLean 1923

Ichthyological notes. Contrib. Can. Biol., N.S., 1923, 1: 285-294, 5 figs.

O. tschawytscha (sic), spring; O. nerka, sockeye; O. kisutch, coho; food & feeding habits.

Fraser, J.C., and Pollitt, A.F. 1951

The introduction of kokanee red salmon (O. nerka kennerlyi) into Lake Tahoe, California and Nevada. Cal. Fish & Game, 37: 125-127, fig. 63.

O. nerka kennerlyi, kokanee; distribution; length at time of return; type of stream chosen; nature of spawning site; food & feeding habits, lakes; intro. & acclim.: Lake Tahoe, Calif. & Nev.

Fry, Donald H., Jr., and Hughes, Eldon P. 1951

The California salmon troll fishery. Bull. 2, Pac. Marine Fish. Comm., 7-42, 18 figs., 9 tables.

king; silver; Calif.; catch records; tagging & recapture data on migration routes; movements in ocean; counts & measurements; distribution.

Fry, Donald H., Jr., and Hughes, Eldon P. 1954

Proportion of king and silver salmon in California's 1952 landings. Cal. Fish & Game. Fish Bull. No. 95 for 1952, 7-13.

O. tschawytscha (sic), king; O. kisutch, silver; Calif.; distribution; age at time of return; range; time species returns from ocean to stream mouth; size at time of return.

--G--

Gangmark, Harold A., and Fulton, Leonard A. 1941

Preliminary surveys of Roosevelt Lake in relation to game fishes. Special Scientific Rept. - Fisheries - U.S. Fish & Wildlife Service, No. 5, 1-29, 4 figs., 10 tables. Processed.

O. nerka kennerlyi, kokanee, landlocked sockeye; Roosevelt Lake, Grand Coulee Dam, ash.; spawning period; distance travelled upstream

Gangmark, Harold A., and Fulton, Leonard A. 1952

Status of Columbia River blueback salmon runs, 1951. Special Scientific Rept. - Fisheries - U.S. Fish & Wildlife Service, No. 74, 1-29, 9 figs., 8 tables.

O. nerka, blueback; kokanee; Columbia R.; counts at Rock Island & Bonneville Dams; nature of spawning site; migration routes; freshwater; spawning period; distribution; time eggs hatch.

Gaylord, Harvey R., and Marsh, Millard C. 1914

Carcinoma of the thyroid in the salmonid fishes. Bull. U.S. Bur. Fish., 32: 567-624, 95 text figs., 14 tables, plates 56-110.

O. gorbuscha, humpback; hybridization: female silver x male humpback; female silver x male chinook; female blueback x male humpback; female humpback x male blueback; thyroid disease.

Gharrett, John T., and Hodges, John I. 1950

Salmon fisheries of the coastal rivers of Oregon south of the Columbia. Contrib. Fish. Comm., State of Ore. Contrib. No. 13, 1-20, 16 figs., 4 tables.

O. tschawytscha (sic), chinook; O. kisutch, silver, silverside; O. keta, chum; Oregon Rivers below the Columbia; racial analysis; distribution; time of seaward migration; size at time of seaward migration; catch records.

Gibson, R. 1921

The spawning beds of the Skeena River. Rept. Comm. Fish. for 1920. Prov. Brit. Col., 2-23.

sockeye; Skeena R., B.C.; spawning period; distribution.

Gibson, Robert 1922

The spawning beds of the Skeena River. Rept. Comm. Fish., 1921. Prov. Brit. Col., 68-70.

sockeye; humpback; coho; spring; Skeena R., B.C.; spawning period; distribution.

Gibson, Robert 1923

The spawning beds of the Skeena River. Rept. Comm. Fish., 1922. Prov. Brit. Col., 53-55.

sockeye; humpback; spring; coho; Skeena R., B.C.; spawning period; distribution; time species migrates upstream.

Gibson, Robert (cont.) 1923

Gibson, Robert 1924

The spawning beds of the Skeena River. Rept. Comm. Fish., 1923. Prov. Brit. Col., 43-45.

sockeye; humpback; Skeena R., B.C.; spawning period; distribution.

Gibson, Robert 1925

The spawning beds of the Skeena River. Rept. Comm. Fish., 1924. Prov. Brit. Col., 43-45.

sockeye; humpback; spring; Skeena R., B.C.; spawning period; distribution.

Gibson, Robert 1926

The spawning beds of the Skeena River. Rept. Comm. Fish., 1925. Prov. Brit. Col., 44-46.

sockeye; Skeena R., B.C.; spawning period; distribution.

Gibson, Robert 1927

The spawning beds of the Skeena River. Rept. Comm. Fish., 1926. Prov. Brit. Col., 62-64.

sockeye; humpback; Skeena R., B.C.; spawning period; distribution.

Gibson, R. 1928

The spawning beds of the Skeena River. Rept. Comm. Fish., 1927. Prov. Brit. Col., 42.

sockeye; pink; cohoe; Skeena R., B.C.; spawning period; distribution.

Gibson, Robert 1929

The spawning beds of the Skeena River. Rept. Comm. Fish., 1928, Prov. Brit. Col., 50-52.

sockeye; pink; cohoe; Skeena R.; hybridization: pink female crossed with male sockeye, observed; spawning period; distribution.

Gibson, Robert 1930

The spawning beds of the Skeena River. Rept. Comm. Fish., 1929, Prov. Brit. Col., 54-56.

sockeye; pink; Skeena R., B.C.; spawning period; distribution; sex ratios.

Gibson, Robert 1931

The spawning beds of the Skeena River. Rept. Comm. Fish., 1930, Prov. Brit. Col., 51-53.

sockeye; pink; Skeena R., B.C.; spawning period; sex ratios; distribution.

Gibson, Robert 1932

The spawning beds of the Skeena River. Rept. Comm. Fish., 1931, Prov. Brit. Col., 45-46.

sockeye; Skeena R., B.C.; spawning period; distribution.

Gilbert, Charles H. 1895

The ichthyological collections of the streamer Albatross during the years 1890 and 1891. U.S. Comm. Fish & Fish. Part XIX. Rept. Comm'er (1893), 393-476, plates 20-35.

O. gorbuscha, humpback; O. tschawytscha, quinnat, chinook, king; O. kisutch, silver; O. nerka, blueback, red; time species returns from ocean to stream mouth; movements in ocean; food & feeding habits; distribution; description.

Gilbert, Charles H. 1913a

The Fraser River sockeye run of 1912. Appendix, Rept. Fish. Comm'er for Brit. Col. (1912), 19-24.

sockeye; spring; chinook; Fraser R., B.C.; age at time of return; counts & measurements; time young spend in freshwater.

Gilbert, Charles H. 1913b

The salmon of Swiftsure Bank and the Fraser River sockeye run of 1913. Rept. Comm'er Fish., 1912, Prov. Brit. Col., 14-24.

coho; sockeye; humpback; spring; Swiftsure Bank, B.C.; racial analysis - anatomical comments; age at time of return; time young spend in freshwater; size at time of seaward migration; food & feeding habits, ocean; size at time of return.

Gilbert, Charles H. 1914a

Age at maturity of the Pacific coast salmon of the genus Oncorhynchus. Bull. U.S. Bur. Fish., 32: 1-22, 29 figs., 17 plates.

O. nerka, sockeye, red, blueback; O. tschawytscha (sic), king, chinook, spring, tyee, Sacramento; O. kisutch, silver, coho; O. keta, dog; O. gorbuscha, humpback; post spawning behavior (death after spawning except for precocious stream fish of 1st year whose fate is still unknown; time young spend in freshwater; time of seaward migration; food & feeding habits; grilse, sacksalmon, sachems; figured (scales of all species); age at time of return (age groups); length at time of return; sex ratios; intro. & acclim: Tomales Bay, Calif.

Gilbert, C.H. 1914b

Contributions to the life history of the sockeye salmon (No. 1). Rept. Comm. Fish. 1913., Prov. Brit. Col., 53-78, 13 figs., 14 tables, 6 plates.

O. keta, chum, dog; sockeye; Fraser R., Nass R., Rivers Inlet, B.C.; type of stream chosen; d arf redfish; Olympic Mts., Wash.; age at time of return; growth rates from scale studies; movements in ocean; food & feeding habits; length at time of return; grilse; racial analysis from scale studies; home stream theory; sex ratios, p. 73-74; time young spend in freshwater.

Gilbert, C.H. 1915

Contributions to the life history of the sockeye salmon (No. 2). Rept. Comm. Fish., 1914, Prov. Brit. Col., 45-75, 8 figs., 41 tables.

sockeye; Fraser R., Rivers Inlet, Smith Inlet, Skeena R., Nass R., B.C.; racial analysis; sex ratios; grilse, pp. 50-51; time young spend in freshwater; size at time of seaward migration; home stream theory; size at time of return.

Gilbert, C.H. 1916

Contributions to the life history of the sockeye salmon (No. 3). Rept. Comm. Fish., 1915, Prov. Brit. Col., 26-64, 58 figs., 3 plates with 9 figs.

sockeye; Brit. Col.; home stream theory; racial analysis - detailed; age at time of return; spawning period; growth rates from scale studies; size at time of seaward migration.

Gilbert, C.H. 1918

Contributions to the life history of the sockeye salmon (No. 4). Rept. Comm. Fish., 1917, Prov. Brit. Col., 33-80, 15 figs., 51 tables.

Gilbert, Charles H. (cont.) 1918

sockeye; Fraser R., Rivers Inlet, Skeena R., Nass R., B.C ; grilse, pp. 35-36, 53; racial analysis - detailed; age at time of return; growth rates from scales; home stream theory; size at time of return; parasites.

Gilbert, Charles H. 1919

Contributions to the life history of the sockeye salmon (No. 5). Rept. Comm. Fish., 1918, Prov. Brit. Col., 26-52, 34 figs., 30 tables.

sockeye; Fraser R., Rivers Inlet, Skeena R., Nass R., B.C.; racial analysis - detailed; age at time of return (age groups); home stream theory; time young spend in freshwater; size at time of return.

Gilbert, Charles H. 1920

Contributions to the life history of the sockeye salmon. (No. 6). Rept. Comm. Fish. 1919, Prov. Brit. Col., 35-68, 6 figs., 52 tables.

sockeye; Fraser R., Rivers Inlet, Skeena R., Nass R., B.C.; racial analysis - detailed from scale studies; size at time of return; sex ratios; length at time of seaward migration; time young spend in freshwater.

Gilbert, Charles H. 1921

Will there be a large sockeye run to the Fraser River in 1921? Rept. Comm.. Fish., 1920, Prov. Brit. Col., 27-28.

sockeye; Fraser R., B.C.; age groups - grilse.

Gilbert, Charles H. 1922

Contributions to the life history of the sockeye salmon (No. 7). An analysis of the runs of sockeye to the principal rivers of British Columbia in 1920 and 1921. Rept. Comm'er Fish., 1921, Prov. Brit. Col., 15-64, 64 tables.

sockeye; Fraser R., Rivers Inlet, Skeena R., Nass R., B.C ; age at time of return (age groups); size of species at time of return; sex ratios; time species migrates upstream; time young spend in freshwater; racial analysis - detailed data.

Gilbert, Charles H. 1923

Contributions to the life history of the sockeye salmon (No. 8). Rept. Comm'er Fish., 1922, Prov. Brit. Col., 16-49, 54 tables.

sockeye; Fraser R., Rivers Inlet, Skeena R., Nass R., B.C ; age at time of return; sex ratios; time species migrates upstream; racial analysis - detailed data; time young spend in freshwater.

Gilbert, Charles H. 1924a

Contributions to the life history of the sockeye salmon (No. 9), Rept. Comm'er Fish., 1923, Prov. Brit. Col., 16-40, 1 plate, 35 tables.

sockeye; Fraser R., Rivers Inlet, B.C.; time species migrates upstream; age at time of return (age groups); size at time of return; sex ratios; time young spend in freshwater; racial analysis - detailed data and discussion.

Gilbert, Charles H. 1924b

Experiment in tagging adult red salmon, Alaska Peninsula fisheries reservation, summer of 1922. Bull. U.S. Bur. Fish. 39: 39-50, 11 tables, 1 plate.

red, sockeye; Alaska Peninsula, Shumagin Islands, Alaska; tagging & recapture data; probable ocean movements.

Gilbert, Charles H. 1924c

The salmon of the Yukon River. Bull. U.S. Bur. Fish, 38: 317-332, 9 tables, 18 plates.

O. tschawytscha (sic), king; O. keta, chum, dog; O. nerka, sockeye; O. kisutch, coho; O. gorbuscha, humpback; relative abundance of the species; Yukon R., Alaska; time young spend in freshwater; distance travelled upstream; age at time of return; sex ratios; time species returns from ocean to stream mouth; racial analysis; size at time of return; growth rates from scales; sexual dimorphism.

Gilbert, Charles H. 1925

Contributions to the life history of the sockeye salmon (No. 10). Rept. Comm'er Fish., 1924, Prov. Brit. Col., 18-39, 31 tables.

sockeye; Fraser R., Rivers Inlet, Skeena R., Nass R., B.C.; size at time of return; age at time of return (age groups); time young spend in freshwater; sex ratios; racial analysis - detailed.

Gilbert, Charles H., and Evermann, Barton W. 1895

A report upon investigations in the Columbia River Basin, with descriptions of four new species of fishes. Bull. U.S. Fish Comm. 14: 169-207, 8 tables, plates 16-25.

O. gorbuscha, humpback; O. keta, dog; O. tschawytscha (sic), chinook; Columbia R.; time species migrates upstream; distribution; size at time of seaward migration; counts & measurements; distance travelled upstream.

Gilbert, Charles H., and O'Malley, Henry — 1921

Investigation of the salmon fisheries of the Yukon River. Dept. Commerce Fish (1921), U.S. Bur. Fish., Doc. No. 909, 126-154.

red, sockeye; humpback; silver, coho; chinook, king; chum, dog; Alaska, Yukon R.; spawning period; time species migrates upstream; color; sexual dimorphism; distance travelled upstream.

Gilbert, Charles H., and Rich, Willis H. — 1927

Second experiment in tagging salmon in the Alaska Peninsula fisheries reservation, summer of 1923. Bull. U.S. Bur. Fish., 42: 27-75, 9 figs., 43 tables.

red; dog; king; silver; humpback; Shumagin Islands, False Pass, Alaska Peninsula; tagging & recapture data; migration routes; home stream theory; distribution; racial analysis - comments (p. 73).

Gilbert, Charles H., and Rich, Willis H. — 1929

Investigations concerning the red salmon runs to the Karluk River, Alaska. Bull. U.S. Fish. Bur., 43(Part II): 1-69, 64 text figs., 26 tables.

O. nerka, red, sockeye; O. gorbuscha, pink; catch records; spawning period, Karluk Lake; nature of spawning sites; egg counts; time young spend in freshwater; time of seaward migration; size at time of return; length at time of seaward migration; age at time of return; grilse; sex ratios; racial analysis - comment.

Gill, T. — 1862

Note on some genera of fishes of western North America. Proc. Acad. Nat. Sci. Phila., 14: 329-332.

Hysifario kennerleyi; syn. Salmo kennerlii suckley.

Girard, Charles — 1857

Notice upon the species of the genus Salmo, of authors, observed chiefly in Oregon and California. Proc. Phila. Acad. Nat. Sci., 7: 217-218.

Salmo; Salmo scouleri; Salmo quinnat; synonomy; description; distribution; comparison.

Girard, Charles — 1859

Fishes, IN: Reports of explorations and surveys, to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean. 10: 1-400, 75 plates, senate ex. Doc. No. 78.

Salmo scouleri, ekewan natives of Col. R.; Salmo quinnat; Fario tsuppitch; Fario argyraus; synonomy; counts & measurements; description; figured.

Godfrey, H., Hourston, W.R., Stokes, J.L., and Withler, F.C. — 1954

Effects of a rock slide on Babine red salmon. Bull. Fish. Res. Bd. Can., No. 101, 1-100, 40 figs., 32 tables.

O. nerka, sockeye; O. gorbuscha, pink; O. kisutch, coho; O. tschawytscha (sic), spring; O. keta, chum; time species migrate upstream; counts of migrant adults; age at time of return; tagging & recapture data.

Goode, G. Brown — 1880

Exhibit of the fisheries and fish culture of the United States of America, made at Berlin in 1880. Bull. U.S. Natl. Mus., No. 18, 1-263.

Salmo kennerlyi, red; Salmo quinnat, quinnat, Sacramento; distribution.

Gordon, S.C. 1915

Tributaries of the Naas River. Rept. Comm'er Fish. 1914, Prov. Brit. Col., 43-44.

cohoe; sockeye; spring; humpback; dog; distribution.

Green, Loren W. 1887

Salmon in the McCloud River during the season of 1886. Bull. U.S. Fish Comm., 6: 334-336.

salmon, the only name used; Calif.;- time species returns from ocean to stream mouth; distance travelled upstream; post spawning behavior; mention made of revival of spawned salmon by being kept in saltwater.

Greene, Charles Wilson 1905

Physiological studies of the chinook salmon. Bull. U.S. Bur. Fish., 24: 429-455.

O. tschawytscha (sic), chinook; physiology: blood pressure, heart beat, respiratory rate; Baird Hatchery, McCloud R.; depression of freezing points of salmon blood & serum sea, brackish water & spawning ground salmon.

Greene, C.W. 1910

The speed of migrating salmon in the Columbia River. Proc. Indiana Acad. Sci., 1909 (1910), 25: 125-126.

Not abstracted.

Greene, Charles W. 1911a

The absorption of fats by the alimentary tract, with special reference to the pyloric caeca in the king salmon, Oncorhynchus tschawytcha. Trans. Amer. Fish. Soc., 41: 261-263.

O. tschawytscha (sic), king; anatomy, histology, biochemistry (fats) in alimentary tract.

Greene, Charles W. 1911b

The migration of salmon in the Columbia River. Bull. U.S. Bur. Fish., 29: 129-148, 4 figs., 6 tables, 2 plates.

O. tschawytscha, chinook; O. nerka; O. kisutch, silver; Columbia R., Sacramento R.; time young migrate downstream; time species migrates upstream; distance travelled upstream; type of stream chosen; food & feeding habits (freshwater); post spawning behavior (death after spawning); physiology (osmotic changes from salt to freshwater); tagging & recapture data; distribution; length at time of return; estimated weight at time of return.

Greene, Chas. W. 1912

A new type of fat storing muscle in the salmon, O. tschawytscha. Amer. J. Anat., 13: 175-178, 1 plate.

O. tschawytscha, king; anatomy, histology, biochemistry (fat).

Greene, Charles W. 1913

An undescribed longitudinal differentiation of the great lateral muscle of the king salmon. Anat. Rec., 7: 99-101.

king; anatomy & histology.

Greene, Charles W. 1914

Anatomy and histology of the alimentary tract of the king salmon. Bull. U.S. Bur. Fish., 32: 73-100, 11 figs., plates 25-28.

King; anatomy & histology (alimentary tract).

Greene, Charles W. 1915a

The fat-absorbing function of the alimentary tract of the king salmon. Bull. U.S. Bur. Fish., 33: 149-175, plates 12-15.

king; Monterey Bay, McCloud R.; anatomy & histology (alimentary tract).

Greene, C.W. 1915b

On some quantitative physiological changes in the Pacific Salmon during the run to the spawning grounds. Trans. Amer. Fish. Soc., 45: 5-12.

king; California; size at time of return; physiology.

Greene, Charles W. 1915c

The storage of fat in the muscular tissue of the king salmon and its resorption during the fast of the spawning migration. Bull. U.S. Bur. Fish., 33: 69-138, 1 table, plates 3-11.

O. tschawytscha, king; Columbia River Basin; biochemistry (fat); distribution; food & feeding habits (ocean).

Greene, Charles W. 1919

Biochemical changes in the muscle tissue of king salmon during the fast of spawning migration. J. Biol. Chem., 39: 435-456. October.

Not abstracted.

Greene, Charles W. 1921a

Chemical development of the ovaries of the king salmon during spawning migration. J. Biol. Chem., 48: 59-71.

Not abstracted.

Greene, Charles W. 1921b

Carbohydrate content of the king salmon tissues during the spawning migration. J. Biol. Chem., 48: 429-436.

Not abstracted.

Greene, Charles W., and Greene, Carl Hartley 1915

The skeletal musculature of the king salmon. Bull. U.S. Bur. Fish., 33: 21-59, text figs. 14, 2 plates.

O. tschawytscha (sic), king; anatomy (myology).

Grigo, L.D. 1953

Morphological differences between summer and autumn salmon Oncorhynchus keta (Walbaum), O. keta (Walbaum) infraspecies autumnalis Berg. Dok. Akad. Nauk S.S.S.R., 92(6):1225.

Not abstracted.

Guberlet, John E. 1926

Ecto-parasitic infusoria attacking fish of the Northwest. Fisheries, Wash. Univ. Publications, 2: 1-16.

O. kisutch, silver; chinook; ecto-parasites.

Guberlet, John E. 1936

A brief resume of trematode studies in Washington. The Biolog. (Dept. Biol., Univ. Portland, Ore.), 3(2): 1-2, 9-10. May.

Not abstracted.

Haderlie, E.C. 1953

Parasites of freshwater fishes of northern California. Univ. Calif. Pub. Zool., 57: 303-440, plates 31-63.

O. kisutch; O. nerka kennerleyi; O. tshawytscha; Nern. Calif.; parasites: internal: trematodes, nematodes.

Hagerman, Fred B. 1951

An easy method of separating king and silver salmon. Cal. Fish & Game, 37: 53-54, fig. 35.

O. tshawytscha, king; O. kisutch, silver; description; counts & measurements; comparisons.

Hallock, Richard J., Warner, George H., and Fry, Donald H., Jr. 1952

California's part in a three-state salmon fingerling marking program. Cal. Fish & Game, 38: 301-332, figs. 1-12, 4 tables.

O. tschawytscha (sic) king; O. kisutch, silver; comparisons; range; distribution; Upper Sacramento R., N. Calif.; type of stream chosen; nature of spawning site; behavior of fry & fingerlings; time of seaward migration; time young spend in freshwater; size at time of seaward migration; movements in ocean.

Hamilton, J.A.R., and Andrew, F.J. 1954

An investigation of the effect of Baker Dam on downstream migrant salmon. Bull. 6, Internat'l Pac. Salmon Fish. Comm., 73 pp., 28 figs., 31 tables.

O. nerka, sockeye; O. kisutch, coho; Baker R., Wash; time of seaward migration.

Hanavan, Mitchell G., and Skud, Bernard Einar 1954

Intertidal spawning of pink salmon. Fish. Bull. U.S. Fish & Wildlife Service, 56: 167-185, 3 figs., 3 tables.

O. gorbuscha, pink; Little Port Walter, Baranof Island, Alaka; time species returns from ocean to stream mouth; spawning period; time of emergence; type of stream chosen; nature of spawning site; distance travelled upstream.

Handa, Yoshio 1934

Salmon propagation in Hokkaido. Proc. Fifth Sci. Cong. (1933), 5: 3601-3605, 4 tables.

O. keta, sake; O. masu, masu; O. gorbuscha, karafutomasu; O. nerka, benimasu, himemasu (landlocked); O. kisutch, gimmasu; Japan; distribution; time species migrates upstream; time young spend in freshwater.

Hanson, Harry A. 1940

Preliminary report on an investigation to determine possible methods of salvaging the Sacramento River salmon and steelhead trout at Shasta Dam. Contrib. Fish Comm. State of Ore. Contrib. 2, 199-204, 1 map, 1 chart.

Sacramento R., Shasta Dam; counts of fish & eggs; nature of spawning site.

Hanson, Harry A., Smith, Osgood R., and Needham, Paul R. 1940

An investigation of fish-salvage problems in relation to Shasta Dam. Special Scientific Report No. 10, U.S. Fish & Wildlife Service, 1-200, 22 figs., 45 tables, 2 maps, appendices. (Also in Stanford Ichthyological Bull., 1(6): 199-204.

Hanson, Harry A., et al (cont.) 1940

O. tschawytscha (sic), chinook; Sacramento R. system; movements in ocean; racial analysis, comments; catch records, ocean & stream; counts of migrant adults; time species migrates upstream; size at time of return; sex ratios; size of redds; egg counts; spawning period; time of seaward migration; length of seaward migrants; distribution (in Sacramento drainage).

Hasler, Arthur D. 1938

Fish biology and limnology of Crater Lake, Oregon. J. Wildlife Management, 2(3): 94-103, 3 figs., 1 table.

O. kisutch, silverside; Crater Lake, Oreg.; food & feeding habits: lake; growth rates, in freshwater, by scale studies; distribution.

Hasler, Arthur D., and Farner, D.S. 1942

Fisheries investigations in Crater Lake, Oregon, 1937-1940. J. Wildlife Management, 6: 319-327, 3 tables, 1 fig.

O. kisutch, silver; Crater Lake, Ore.; food & feeding habits: lake; distribution; growth rates, in freshwater, by scale studies; nature of spawning site.

Hasler, Arthur D., and Wisby, Warren J. 1951

Discrimination of stream odors by fishes and its relation to parent stream behavior. The Amer. Nat., 85: (No. 823): 223-238.

O. nerka, sockeye; distribution; age at time of return; home stream theory.

Hatton, S. Ross 1940

Progress report on the Central Valley fisheries investigations in 1939. Cal. Fish & Game, 26: 334-372, figs. 127-152, 6 tables.

O. tschawytscha (sic); distribution; Sacramento R., San Joaquin R., Feather R., Calif.; type of stream chosen; nature of spawning site; behavior of fry & fingerlings; time of seaward migration; length at time of seaward migration; growth rates, freshwater, determined by direct measurement.

Hatton, S. Ross, and Clark, G.H. 1942

A second progress report on the Central Valley fisheries investigations; Cal. Fish & Game, 28: 116-135, fig. 37, 4 tables.

salmon; distribution; Sacramento R., San Joaquin R., Calif.; type of stream chosen; behavior of fry & fingerlings; time of seaward migration; growth rates, freshwater from direct measurement; size at time of seaward migration; time species migrates upstream.

Hefford, A.E. 1928

Quinnat salmon. New Zealand, Marine Dept. Rept. on Fisheries for 1928, 8-10, 12-13.

Quinnat; Hakataramea R., N. Zealand; intro. & acclim.: N. Zealand, Tasmania; distribution.

Hefford, A.E. 1929

Quinnat salmon. New Zealand, Marine Dept. Rept. Fisheries for 1929, 9-12, 21.

Quinnat (seagoing & lake dwelling); N. Zealand; catch records; intro. & acclim.: N. Zealand, Tasmania; distribution; time species returns from ocean to stream mouth; age at time of return; weight at time of return.

Hefford, A.E. 1930

Quinnat salmon. New Zealand, Marine Dept. Rept. Fisheries for 1930, 11-13, 21.

Quinnat; N. Zealand; time species migrates upstream; intro. & acclim.: N. Zealand, Tasmania.

Hefford, A.E. 1931

Quinnat salmon. New Zealand, Marine Dept. Rept. Fisheries for 1931, 10-13, 17-18.

Quinnat; N. Zealand; time species migrates upstream; tagging & recapture data on migration routes; intro. & acclim.: N. Zealand; distribution.

Hefford, A.E. 1932

Quinnat salmon. New Zealand, Marine Dept., Rept. Fisheries for 1932, 8-10.

Quinnat; N. Zealand; time species migrates upstream; distribution; intro. & acclim.: N. Zealand; weight at time of return.

Hefford, A.E. 1934a

Quinnat salmon. New Zealand, Marine Dept. Rept. Fisheries for 1933, 14-16.

Quinnat; N. Zealand; intro. & acclim.: N. Zealand; time species migrates upstream; catch records; weight at time of return.

Hefford, A.E. 1934b

Quinnat salmon. New Zealand, Marine Dept. Rept. Fisheries for 1934, 15-17.

Quinnat; N. Zealand; growth rates; tagging & recapture data; time species migrates upstream; weight at time of return.

Hefford, A.E. 1935

Quinnat salmon. New Zealand, Marine Dept. Rept. Fisheries for 1935, 12-14.

Quinnat; N. Zealand; time species migrates upstream; intro. & acclim.: N. Zealand, Tasmania; distribution; weight at time of return.

Hefford, A.E. 1936

Quinnat salmon. New Zealand, Marine Dept., Rept. Fisheries for 1936, 15-17.

Quinnat; N. Zealand; catch records; time species migrates upstream; marking & recapture data; growth rates; weight at time of return.

Hefford, A.E. 1938

Quinnat salmon. New Zealand, Marine Dept. Rept. Fisheries for 1937, 15-18.

Quinnat; New Zealand; time species migrates upstream; intro. & acclim.: N. Zealand; weight at time of return.

Hefford, A.E. 1940

Quinnat salmon. New Zealand, Marine Dept. Rept. Fisheries for 1939, 15-17.

Quinnat; N. Zealand; time species migrates upstream; intro. & acclim.: N. Zealand; weight at time of return.

Hefford, A.E. 1941

Quinnat salmon. New Zealand, Marine Dept. Rept. Fisheries for 1941, 13-14.

Quinnat; N. Zealand; time species migrates upstream; catch records; intro.& acclim.: N. Zealand; weight at time of return.

Hefford, A.E. 1946

Quinnat salmon. New Zealand, Marine Dept. Rept. Fisheries for 1945, 21.

Quinnat; N. Zealand; catch records; intro. & acclim.: N. Zealand; weight at time of return.

Heg, Robert, and Van Hyning, Jack 1951

Food of the chinook and silver salmon taken off the Oregon coast. Fish Comm. of Oregon, Res. Briefs, 3(2): 32-40. August. 5 figs., 5 tables.

Not abstracted.

Henry, Kenneth A. 1953

Analysis of factors affecting the production of chum salmon (Oncorhynchus keta) in Tillamook Bay. Fish Commis. of Oregon. Contrib. No. 18 (1953), 1-37, 6 figs., 9 tables.

O. tschawytscha (sic), chinook; red; pink; O. kisutch, silver; O. keta, chum; Tillamook Bay, Ore.; range; catch records; time species returns from ocean to stream mouth; age at time of return; time young spend in freshwater;

Henry, Kenneth A. 1954

Age and growth study of Tillamook Bay chum salmon (Oncorhynchus keta). Fish Commis. State of Ore. Contrib. No. 19, 1-28, 7 figs., 12 tables.

O. keta, chum; Tillamook Bay, Ore; sex ratios; growth rates from scale studies; age at time of return; size at time of return.

Hickman, C.P. 1914

The spawning beds of the Nass. Rept. Comm. Fish., 1913, Province Brit. Col., 49-50.

Hickman, C.P. (cont.) 1914

sockeye; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1915

The spawning grounds of the Nass River. Rept. Comm. Fish., 1914, Prov. Brit. Col., 41-42.

sockeye; spring; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1918

The spawning beds of the Nass River. Rept. Comm. Fish., 1917, Prov. Brit. Col., 30-32.

sockeye; cohoe; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1921

The spawning beds of the Nass River. Rept. Comm. Fish., 1920, Prov. Brit. Col. 24-26.

sockeye; spring; cohoe; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1922

The spawning beds of the Nass River. Rept. Comm. Fish., 1921, Prov. Brit. Col., 71-72.

sockeye; spring; cohoe; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1923

The spawning beds of the Meziadin Lake and Bowser Lake watersheds of the Nass River. Rept. Comm. Fish., 1922, Prov. Brit. Col., 56-58.

sockeye; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1924

The spawning beds of the Meziadin Lake and Bowser Lake watersheds of the Nass River. Rept. Comm. Fish., 1923, Prov. Brit. Col., 46-48.

sockeye; spring; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1925

The spawning beds of the Nass River. Rept. Comm. Fish., 1924, Prov. Brit. Col., 50-51.

sockeye; spring; cohoe; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1926

The spawning beds of the Nass River. Rept. Comm. Fish., 1925, Prov. Brit. Col., 52-53.

sockeye; spring; cohoe; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1927

The spawning beds of the Nass River. Rept. Comm. Fish., 1926, Prov. Brit. Col., 70-71.

sockeye; spring; cohoe; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1928

The spawning beds of the Meziadin Lake district of the Nass River. Rept. Comm. Fish., 1927, Prov. Brit. Col., 48-49.

sockeye; cohoe; spring; spawning period; Meziadin Lake, B.C.; distribution.

Hickman, C.P. 1929

The spawning beds of the Nass River. Rept. Comm. Fish., 1928, Prov. Brit. Col., 53-54.

sockeye; cohoe; spring; spawning period; distribution; Nass R., B.C.

Hickman, C.P. 1930

The spawning beds of the Nass River. Rept. Comm. Fish., 1929, Prov. Brit. Col., 57-58.

sockeye; cohoe; spring; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1931

The spawning beds of the Nass River. Rept. Comm. Fish., 1930, Prov. Brit. Col., 54-55.

sockeye; cohoe; spring; Nass R., B.C.; spawning period; distribution.

Hickman, C.P. 1932

The spawning beds of the Nass River. Rept. Comm. Fish., 1931, Prov. Brit. Col., 47-48.

sockeye; spring; cohoe; Nass R., B.C.; nature of spawning site; spawning period; distribution.

Hickman, C.P., and Collison, J. Maxwell 1920

The spawning beds of the Nass River. Rept. Comm. Fish., 1919, Prov. Brit. Col. 32-34.

sockeye; spring; coho; dog; humpback; Nass R., B.C.; spawning period; distribution.

Higgins, Elmer 1928

Progress in biological inquiries, 1926. Rept. Comm'er Fish. (1927), U.S. Bur. Fish., Doc. No. 1029, 517-559.

sockeye, blueback; chinook; Columbia R.; marking & recapture data; home stream theory (p. 535).

Higgins, Elmer 1929

Progress in biological inquiries 1927. Rept. Comm'er Fish. (1928), U.S. Bur. Fish. Doc. No. 1044, 139-247.

red; chinook; silver; pink; Alaska & Pacific coast; tagging & recapture data: migration routes.

Higgins, Elmer 1930

Progress in biological inquiries 1928. Rept. Comm'er Fish. (1929), U.S. Bur. Fish. Doc. No. 1068, 627-739.

O. nerka kennerlyi, little redfish, youk; marking & recapture data (experiment inducing sea run habit).

Higgins, Elmer 1931

Progress in biological inquiries 1930. Rept. U.S. Comm'er Fish. (1931), Appendix III, 553-626.

red; time of seaward migration; movements in ocean (fingerlings).

Higgins, Elmer 1932

Progress in biological inquiries 1931. Rept. U.S. Comm'er Fish. (1932), Appendix III, 441-529.

red; O. gorbuscha, pink; Alaska & Pacific coast; racial analysis, comments, p. 476; time young spend in freshwater; age at time of return.

Higgins, Elmer 1940

Progress in biological inquiries, Administrative Rep. No. 39, Appendix I, Rept. U.S. Comm'er Fish. (1940), 1-96.

red; Alaska; time species migrates upstream; egg counts; marking & recapture data: migration routes, saltwater.

Hikita, Hirochika (former name: Toyohiko) 1955

On an aberrant form of chum salmon taken from the Northern Pacific ocean and some examples of salmonoid fishes in Hokkaido. Sci. Rept. Hokkaido Fish Hatchery. Vol. 10(1-2): 63-71; 6 figs.; 1 plate. Japanese with English abstract and captions.

O. keta, chum; O. masou; species figured; counts & measurements; movements in ocean.

Hikita, Toyohiko 1951

Fishes of Volcano Bay in Hokkaido. Jap. J. Ichthyology, 1(5): 306-313.

O. keta, sake; O. masou, masu; O. gorbuscha, karafuto-masu; distribution; Vilcano Bay, southwestern coast in Hokkaido.

Hikita, Toyohiko 1953

A note on the fry of salmonoid fishes rearing in the artificial hatchery of Hokkaido, with special reference to the discrimination of the salmon fry. Sci. Rept. Hokkaido Fish Hatchery, 8(1-2): 11-20, 8 figs. Japanese with English abstract.

O. keta; O. masou; O. gorbuscha; O. tschawytscha (sic); O. nerka; O. kisutch; Japan; figured; description.

Hikita, Toyohiko 1954a

On the common names of the salmonoid fishes and their related forms found

Hikita, Toyohiko (cont.) 1954a

in northern Japan and its adjacent waters. Sci. Repts. Hokkaido Fish Hatchery, 9(1-2): 137-145. Japanese with English abstract.

Not abstracted.

Hikita, Toyohiko 1954b

An example of a silver-salmon-like salmon migrating upriver in Hokkaido. Sci. Repts. Hokkaido Fish Hatchery, 9(1-2): 195-198. 2 figs., 1 plate. In Japanese.

Not abstracted.

Hikita, Toyohiko 1955

An aberrant form of the dog-salmon with abnormal scales. J. Journal Ichthyology, 4(4-6): 133-135, 4 figs.

O. keta, dog; Hokkaido, Japan; species & scales figured; counts & measurements; color.

Hoar, William S. 1951a

The behavior of chum, pink, coho salmon in relation to their seaward migration. J. Fish. Res. Bd. Can., 8: 241-263, 5 figs., 5 tables.

O. keta, chum; O. gorbuscha, pink; O. kisutch, coho; time young stay in freshwater; behavior of fry & fingerlings; comparisons; time of seaward migration; physiology.

Hoar, William S. 1951b

The chum and pink salmon fisheries of British Columbia 1917-1947. Bull. Fish. Res. Bd. Can. No. 90, 1-46, 21 figs; 9 tables.

O. keta, chum; O. gorbuscha, pink; O. nerka, sockeye; O. kisutch, coho; O. tschawytscha (sic), spring; age at time of return.

Hoar, William S. 1951c

Hormones in fish, in some aspects of the physiology of fish. Univ. of Toronto Studies, No. 59, 1-51.

O. gorbuscha; O. keta, chum; O. kisutch, coho; biochemistry (physiology).

Hoar, William S. 1953

Control and timing of fish migration. Biol. Rev. of the Cambridge Philos. Soc., 28: 437-452.

O. kisutch, coho; O. keta, chum; O. gorbuscha, pink; O. nerka, sockeye; behavior of fry; downstream migration; biochemistry (physiology); movements in ocean; timing of migration, physiological.

Hoar, William S. 1954

The behavior of juvenile Pacific salmon, with particular reference to the sockeye (Oncorhynchus nerka). J. Fish. Res. Bd. Can., 11: 69-97, 8 tables, 8 figs.

O. nerka, sockeye; O. keta, chum; O. kisutch, coho; O. gorbuscha, pink; behavior of fry & fingerlings; counts & measurements.

Hoar, William S. 1955

Phototactic and pigmentary responses of sockeye salmon smolts following injury to the pineal organ. J. Fish. Res. Bd. Can., 12: 178-185, 2 tables; 2 plates.

O. nerka, sockeye; Lakelse, B.C.; behavior of fry & fingerlings (phototaxis).

Hoar, William S., and Bell, G. Mary 1950

The thyroid gland in relation to the seaward migration of Pacific salmon. Canad. J. Res., Sect. D, Zool. Sci., 28(3): 126-136.

Not abstracted.

Hobbs, Derisley F. 1937

Natural reproduction of quinnat salmon, brown and rainbow trout. New Zealand, Marine Dept., Fish. Bull. No. 6, 1-104, 8 figs., 23 tables, 11 plates.

O. tschawytscha (sic), quinnat; O. nerka, sockeye; N. Zealand; type of stream chosen; time species migrates upstream; spawning period; counts & measurements; age at time of return; counts of migrant adults; nature of spawning site; spawning behavior; post-spawning behavior; growth rates (hatchery).

Hodges, John I., and Gharrett, John T. 1949

Tillamook Bay spring chinook salmon. Fish Comm. Ore., Res. Briefs, 2(2): 11-16. 3 figs., 3 tables.

Not abstracted.

Holmes, Harlan B. 1928

Columbia River salmon - in progress in biological inquiries, 1926. Rept. Comm'er Fish. (1927); U.S. Bur. Fish. Doc. No. 1029, 645-650.

O. tschawytscha, chinook; O. nerka, sockeye; Columbia R.; marking & recapture data; home stream theory; racial analysis - comments; biochemistry; food & feeding habits: ocean.

Holmes, Harlan B. 1934

Natural propagation of salmon in Alaska. Proc. Fifth Pac. Sci. Cong., 1933, 5: 3585-3592.

red; Karluk & Chignik R., Alaska; age at time of return; time young spend in freshwater; time of seaward migration; racial analysis - comments, p. 3588; egg counts; size at time of seaward migration.

Holmes, Harlan B. 1940

The passage of fish at Bonneville Dam. Contrib. Fish Comm. State of Ore., Contrib. 2, 182-186, 1 table. Also in Stanford Ichthyological Bull., 1(6): 182-192.

chinook; blueback; silver; Bonneville Dam area; counts of migrant adults.

Honma, Yoshiharu 1952

A list of the fishes collected in the province of Echi-o, including Sado Island. Jap. J. Ichthyology, 2(3): 138-145.

O. masou; O. keta; distribution.

Honma, Yoshiharu, and Murakawa, Sinjuro 1955

Effects of thyroxine and thiourea on the development of chum salmon larvae (O. keta). Jap. J. Ichthyology, 4(1-3): 83-93, 3 figs., 6 tables. Japanese with English resume, tables and captions.

O. keta, chum; Japan; figured; counts & measurements; description; growth rates; histology.

Hoover, Earl E. 1936

Contributions to the life history of the chinook and landlocked salmon in New Hampshire. Copeia, No. 4, 193-198, 2 text-figs.

O. tschawytscha (sic), chinook, king; New Hampshire; figured; counts & measurements; color; time species migrates upstream (landlocked); size at time of return; age at time of return; distance travelled upstream; spawning period; nature of spawning site; sexual dimorphism; spawning behavior; post spawning behavior; food & feeding habits (very brief).

Hoshina, Toshikazu 1950

On the new myxosporidian parasite of the genus Myxosoma, M. salmonis n. sp., infecting the scales of the dog salmon. Fish. Abstracts of Japan, 36. Japanese with English title.

dog; Japan; parasites, external: Myxosoma salmonis n. sp.

Hourston, W.R., Clay, C.H., Edgeworth, L., Larkin, P.A., Vernon, E.H., and McMynn, R.G. 1955

Planning anadromous fish protection for proposed dams. Trans. 20th N. Amer. Wildlife Conference, Wash., D.C., 440-454.

O. gorbuscha, pink; O. keta, chum; O. kisutch, coho; O. tschawytscha (sic), spring; Capilano R., Vancouver, B.C.; time of seaward migration; size at time of seaward migration.

Howard, Gerald V. 1948

Problems in enumeration of population of spawning sockeye salmon. Bull. 2, Internat'l Pac. Salmon Fish. Comm., 1-66, 1 fig., 35 tables.

sockeye; Cultus Lake, B.C.; post-spawning behavior (length of post-spawning life, p 38).

Hubbs, Carl L. 1946

Wandering of pink salmon and other salmonid fishes into Southern California. Cal. Fish & Game, 32(2): 81-86.

O. gorbuscha, humpback, pink; O. tshawytscha, king; O. keta, dog, chum; O. kisutch, silver; description; counts & measurements; range; distribution; spawning period; time of seaward migration; time young spend in freshwater; movements in ocean; growth rates, saltwater, from scale studies.

Hudson, Charles Bradford 1917

Colored illustration, Quinnat salmon. Cal. Fish & Game, 3(3): 96.

O. tschawytscha; figured.

Hunter, J.G. 1948

Natural propagation of salmon in the Central Coastal area of British Columbia. Prog. Rept. Pac. Coast Stas., Fish. Res. Bd. Can., No. 77, 105-106.

O. gorbuscha, pink; O. keta, chum; O. nerka, sockeye; O. kisutch, coho; British Columbia; counts of migrant adults; egg counts; time species migrates upstream.

Hunter, J.G. 1949a

Natural propagation of salmon in the Central Coastal area of British Columbia II. The 1948 run. Prog. Rept. Pac. Coast Stas., Fish. Res. Bd. Can., No. 79, 33-34.

O. gorbuscha, pink; O. keta, chum; O. nerka, sockeye; O. kisutch, coho; time species migrates upstream; counts of migrant adults; time of seaward migration.

Hunter, J.G. 1949b

Occurrence of hybrid salmon in the British Columbia commercial fishery. Prog. Rept. Pac. Coast Stas., Fish. Res. Bd. Can., No. 81, 91-92.

O. gorbuscha, pink; O. keta, chum; O. kisutch, coho; Port John, B.C.; description; egg counts; color; age of species at time of return; hybridization: pink x chum; size at time of return.

Hunter, J.G. 1951

Efficiency of reproduction of pink salmon (Oncorhynchus gorbuscha) in the North Central coastal area of British Columbia. Prog. Rept. Pac.

Hunter, J.G. (cont.) 1951

Coast Stas., Fish. Res. Bd. Can., No. 88, 70-71, 3 tables.

O. gorbuscha, pink; O. keta, chum; Hooknose Cr., B.C.; counts of migrant adults; marking & recapture data.

Hume, R.D. 1893

Salmon of the Pacific Coast. Schmidt Label & Lith. Co., S.F., 1-53.

blueback, saw quai, red; silver, silversides; salmo quinnat, chinook, king; Pacific Coast; range; time species migrates upstream; type of stream chosen; spawning period; weight at time of return; spawning behavior; post-spawning behavior, survival; time young spend in freshwater; home stream theory.

Huntsman, A.G. 1922

The fishes of the Bay of Fundy. Contrib. Canad. Biol. (1921), 49-72.

O. gorbuscha, humpback; distribution; introduction & acclim.: Bay of Fundy.

Huntsman, A.G. 1937a

Migration and homing of salmon. Science, 85(2204): 313-314.

Not abstracted.

Huntsman, A.G. 1937b

Races and homing of salmon. Science, 85(2216): 582-583.

Not abstracted.

Hutchinson, S.J. 1944

Port Walter evidence points to fewer pinks in 1944 for Southeast Alaska generally. Pac. Fisherman, 42(3): 37-39.

pink; Southeast Alaska; time species returns from ocean to stream mouth; time species migrates upstream; counts of migrant adults; behavior at stream mouth

Hutchinson, S.J., and Shuman, R.F. 1942

Reproduction of pink salmon at Little Port Walter, 1941-1942. Pacific Fisherman, 40(14): 29, 31, 2 figs.

pink; Little Port Walter, Alaska; type of stream chosen; counts of migrant adults.

--I--

Igarashi, Hisanao, and Zama, Kouichi 1953

Biochemical studies of the salmon, Oncorhynchus keta. I. The changes in the chemical components of the body tissues during the spawning migration. Bull. Jap. Soc. Sci. Fish., 18(11): 615-622, 4 tables. Japanese with English summary and headings.

Not abstracted.

International North Pacific Fisheries Commission. 1955

On the salmon in water adjacent to Japan, a biological review. Bull. Internat'l N. Pac. Fish. Comm., No. 1, 57-92, 19 figs., 14 tables. Translated from the Japanese by Masao Ishida. Participating in the compilation were: Tatsuro Kubo, Yoshimi Hirano, Seizo Sano, Kisaburo Taguchi, Hiroshi Kasahara.

International North Pacific Fisheries Commission (cont.) 1955

O. keta; O. gorbuscha; O. nerka; O. tschawytscha (sic); O. kisutch; O. masou; Asiatic waters; most abundant species; time species migrate upstream; distance travelled upstream; time eggs hatch; time of seaward migration; growth & time in coastal waters; age at time of return; landlocked & resident O. masou; distribution in North Pacific & Bering Sea of catches delivered to mothership; tagging & recapture data; oceanic migration; trans-pacific migration; temperature & vertical & horizontal distribution in ocean; food & feeding habits, ocean; home stream theory; racial analysis; trap catch records for Soviet area, Kurile Islands, Kamchatka, Sakhalion.

--J--

Jampolsky, A., and Hoar, W.S. 1954

Growth hormone from salmon pituitary glands. J. Fish. Res. Bd. Can., 11(1): 57-62, 3 figs.

O. tschawytscha (sic), spring; Brit. Col.; biochemistry.

Jarvis, Norman D., Clough, William R., and Clark, E.D. 1926

Iodine content of the Pacific Coast salmon Univ. Wash. Publication in Fisheries, 1: 109-140.

chinook; pink; chum; sockeye; coho; biochemistry (iodine).

Jensen, Hans M. 1953

Migrations of silver salmon on Puget Sound. Wash. Dept. Fisheries, Fish. Res. Papers, 1(1) part 2: 13-21, 5 figs, 2 tables.

Jensen, Hans M. (cont.) 1953

pink; sockeye; silver; Puget Sound; tagging & recapture data, migration routes, segregation of populations; racial analysis.

Johnson, D.R., Chapman, W.M., and Schoning, R.W 1948

The effects on salmon populations of the partial elimination of fired fishing gear on the Columbia River in 1935. Contrib. Fish Comm. Ore., Contrib. No. 11, 1-32, 18 tables, 8 figs.

O. tschawytscha, chinook; O. kisutch, silver; O. nerka, blueback; O. keta, chum; Columbia R.; distribution; time of seaward migration; catch records.

Johnson, Harlan E., and Bruce, Richard F. 1952

Observations on columnaris in salmon and trout. Progressive Fish-Culturist, 14(3): 104-109, 1 fig., 1 table.

O. tschawytscha, chinook; O. kisutch, silver; blueback; parasites, bacterium.

Johnson, Robert S. 1914

The distribution of fish and fish eggs during the fiscal year 1913. Rept. Commr Fish for 1913, U.S. Bur. Fish. Doc. No. 794, 1-142.

O. tschawytscha (sic), chinook, king, spring; O. kisutch, silver, coho; O. nerka, blueback, redfish, sockeye; O. gorbuscha, humpback; intro. & acclim.: Maine, Nevada, N.Y., Mass., N. Hampshire.

Johnson, Robert S. 1915

The distribution of fish and fish eggs during the fiscal year 1914. Rept. Commr Fish for 1914, U.S. Bur. Fish. Doc. No. 808, 1-114.

Johnson, Robert S. (cont.) 1915

O. gorbuscha, humpback; intro. & acclim.: Maine.

Jones, E. Lester 1915

Report of Alaska investigations in 1914 Dept. Commerce. Bur. Fisheries, 1-155.

king; red, sockeye; pink, humpback; coho, silver; dog, chum; Alaska; figured; distribution.

Jordan, David Starr 1884

The salmons of the Pacific. (In: The Fisheries and Fishery Industries of the United States, by George Brown Goode and others Section I, Text, pp. 474-479, plates 188B, 189A, 189B, 190, 191A.) U.S. Commis. Fish & Fish. (1884-1887, 8 vols. (5 text vols., 3 vols. plates).

O. keta, dog, kayko, qualoch (Musquan, Fraser R.), ktla - why (Nisqually, at Seattle), le-kae (chinook jargon); O. gorbuscha, gorbuscha, humpback, dog, holia, hone (Fraser R.), Haddoh (Puget Sound); O. kisutch, silver, kisutch, bielaya ryba, whitefish, coho (Musquan on Fraser R.), skowitz (by Nisqually at Seattle), hoopid (Cape Flattery, by Makah), white; O. nerka, redfish, krasnaya ryba, suk-kegh; redfish of Pallo e L., Idaho; range; weight at time of return; time species migrate upstream; distance travelled upstream; figured.

Jordan, David Starr 1887a

A catalogue of the fishes known to inhabit the waters of North America, North of the Tropic of Cancer, with notes on the species discovered in 1883 and 1884. Rept. Comm'er for 1885, U.S. Commis. Fish & Fish., 789-793.

O. gorbuscha; O. keta; O. tschawytscha (sic); O. kisutch; O. nerka; distribution.

Jordan, David Starr 1887b

The fisheries of the Pacific Coast. (In: The Fisheries and Fishery Industries of the United States, by George Goode & others, Section II, pp. 589-670.)

O. chouicha, sawkey; O. nerka, socheye; O. kisutch, silver, hoopid; O. gorbuscha, haddo; O. keta; distribution.

Jordan, David Starr 1892

Salmon and trout of the Pacific Coast. Bienn. Rept. State Bd. Fish Comm'ers, State of Cal. (1891-1892), 44-58. A reprint of Bull. No. 4, 1892, 5-19, Bd. of Fish Comm'ers.

O. tschawyscha (sic), chinook, quinnat, king; O. nerka, blueback, redfish; O. kisutch, silver; O. keta, dog, chum; O. gorbuscha, humpback; Calif.; range; description; size at time of return; time of upstream migration; distance travelled upstream; spawning behavior; nature of spawning site; sexual dimorphism; color; post-spawning behavior; synonomy ("Hypsifario kennerlyi", koko); home stream theory; marking & recapture data; parasites, external.

Jordan, David Starr 1894

Salmon and trout of the Pacific coast. Thirteenth Bien. Rept. State Bd. Fish Comm. State of Cal. (1893-1894), 125-141.

Same, with several additions, as article in Bienn. Rept. State Bd. of Fish Comm. State of Calif. (1891-1892), 44-58.

O. chouicha, quinnat; food & feeding habits; figured.

Jordan, David Starr 1896a

A checklist of the fishes and fishlike vertebrates of North and Middle America. Rept.Commr for 1895, U.S. Comm. Fish & Fish., 209-584.

O. gorbuscha, humpback haddo, holia, gorbuscha, dog salmon of Alaska; O. keta, dog, hoy-ko, le kai salmon; O. tschawytscha,(sic), quinnat, king, chinook, tschavitche, Columbia R. salmon, Sacramento R. salmon, tyee, saw-kwey, chouicha or tschawytscha; O. kisutch, silver, kisutch, skowitz, hoopid, coho, bielaya, quisutsch; subgenus Hypsifario; O. nerka, blueback, redfish, Fraser R. salmon, saw-qui, sockeye, saukeye, krasnaya ryba; range; listed.

Jordan, David Starr 1896c

Salmon and trout of the Pacific Coast. Third & Fourth Ann. Repts. State Fish & Game Protector State of Ore. (1895-1896), 95-108.

O. tschawytscha (sic), quinnat, king, chinook; O. nerka, blueback, redfish; O. kisutch, silver; O. keta, dog; O. gorbuscha, humpback; O. kennerlyi, "koko"; counts & measurements; figured; description; color; sexual dimorphism; distribution; movements in ocean; time species migrates upstream; age at time of return; distance travelled upstream; parasites; spawning behavior; nature of spawning site; post-spawning behavior; time eggs hatch; home stream theory; marking & recapture data.

Jordan, David Starr 1904a

Pacific species of salmon and trout. Appendix to Eighteenth Bienn. Rept. Bd. Fish Comm. State of Cal. (1903-1904), 75-97.

O. tschawytscha (sic), quinnat, tyee, chinook, king; O. nerka, blue-back, redfish, sukkegh, sockeye; O. kisutch or O. milktschitch, silver, coho; O. keta, dog, calico, chum, sake; O. gorbuscha, humpback, pink; O. masou, masu, yezomasu; O. nerka kennerlyi, koko, benimasre; Pacific waters; fossils; description; sexual dimorphism; distribution; distance travelled upstream; movements in ocean; external parasites; nature of spawning site; post-spawning behavior; color; time species migrates upstream; type of stream chosen; age at time of return.

Jordan, David Starr 1904b

The parent-stream theory of the return of salmon. Appendix to Eighteenth Bienn. Rept. Bd. Fish Comm. State of Cal. (1903-1904), 98-102 (from the Popular Science Monthly, Nov. 1903).

King; red; silver; humpback; dog; racial analysis, comments; movements in ocean; marking & recapture data; home stream theory.

Jordan, David Starr 1907

The trout and salmon of the Pacific Coast. Appendix to Nineteenth Bienn. Rept. State Bd. Fish Comm'ers State of Cal. (1905-1906), 77-92.

O. tschawytscha, chinook, quinnat, king; O. nerka, blueback, Alaska red, Sukkegh, sockeye; O. milktschitch, silver; O. keta, dog, calico, sake; O. gorbuscha, humpback; Pacific waters; sexual dimorphism; description; range; color.

Jordan, David Starr 1916

The nomenclature of American fishes as affected by the opinions of the International Commission on Zoological Nomenclature. Copeia, 1916, No. 29, 25-28.

O. nerka; listed; synonomy.

Jordan, David Starr 1923

Name of the steelhead. Copeia, No. 121, 85.

O. nerka, blue backed salmon, sockeye; synonomy; counts & measurements (vertebral count).

Jordan, David Starr, and Evermann, Barton Warren 1896

The fishes of North and Middle America. Bull. U.S. Nat'l Mus., No. 47, Parts 1-3, text, 1-3136, Part 4, plates, 3137-3313.

O. quinnat; O. gorbuscha, humpback, haddo, holia, gorbuscha, dog; O. keta, dog, hay-ko, le kai; O. tschawytscha (sic), quinnat, tchaviche, king, Columbia, Sacramento, chinook, tyee, saw-kivey, tschawytscha; O. kisutch, silver, kisutch, skowitz, hoopid, coho, bielaya ryba, quisutsch; O. nerka, blueback, redfish, Fraser River, saw-qui, krasnaya ryba; description; counts & measurements; color; synonomy; comparisons; range; distribution; time species migrates upstream; spawning behavior; spawning period; movements in ocean; post-spawning behavior; time eggs hatch; sexual dimorphism, body changes, color changes; distance travelled upstream; type of stream chosen; nature of spawning site; size of species at time of return; figured.

Jordan, David S., and Gilbert, Charles H. 1881

Observations on the salmon of the Pacific. Amer. Nat., 15(3): 177-186.

Not abstracted.

Jordan, David S., and Gilbert, Charles H. 1882

Synopsis of the fishes of North America. Bull. U.S. Nat'l Mus., No. 16, 1-1018.

Jordan, David S., and Gilbert, Charles H. (cont.) 1882

O. gorbuscha, humpback, haddo, holia, gorbuscha, dog; O. keta, dog, hay-ko, le kai; O. chouicha, quinnat, king, Columbia, Sacremento, chinook, tyee, fall, spring, winter, saw-kwey, chouicha; O. kisutch, silver, kisutch, skowitz, hoopid, coho, bielaya ryba; O. nerka, blue-back, red-fish, Frazer's River, sugk-eyl, krasnaya ryba; description; counts & measurements; color; synonomy; comparisons; distribution.

Jordan, David Starr, and Gilbert, Charles H. 1887

The salmon fishing and canning interests of the Pacific coast (In: The Fisheries and Fishery Industries of the United States, by George Goode & others, Section V, 1: 731-753.)

O. chouicha, quinnat, king, chinook; O. nerka, blueback, redfish; O. kisutch, silver; O. keta, dog; O. gorbuscha, humpback; Calif., Ore., Wash.; time species migrates upstream; size at time of return; range; type of stream chosen; spawning behavior; sexual dimorphism; color; distance travelled upstream; home stream theory.

Jordan, David Starr, and McGregor, Ernest A. 1925

Family Salmonidae. (In: Record of fishes obtained by David Starr Jordan in Japan, 1922, by Jordan & Hubbs. Memoirs Carnegie Museum, 10: 122-146, plates 5-8.)

O. nerka, red, sock-eye, blue-back, krasnaya ryba; O. adonis, sp. nov.; O. kawamurae, sp. nov.; O. gorbuscha, karafuto-masu, koon-masu; O. keta, sake; O. tschawytscha, masunosuke; O. kisutch, ginmasu, silver; O. ishikawae, sp. nov., yamame, kawamasu; O. macrostomus, amenouwo (male), amaga (female), enoha; O. rhodurus, sp. nov.; Japan; comparisons (key); description; counts & measurements; figured; color; distribution.

Jordan, David Starr, and Starks, Edwin Chapin 1896

Fishes of Puget Sound. Proc. Calif. Acad. Sci.; 5(Part 2): 785-855.

O. tschawytscha, quinnat, chinook, tyee; O. kisutch, silver, skowitz; O. keta, dog, le kay; O. gorbuscha, humpback, haddo; O. nerka, sukkegy, blue-back; description; distribution; Puget Sound, Wash.; time species migrates upstream; time species returns from ocean to stream mouth; size of species at time of return.

Juday, C. 1935

Limnological studies of Karluk Lake, Alaska, 1926-1930. Bull. U.S. Bur. Fish, 47: 407-456, 6 figs., 14 tables.

O. nerka, red; Karluk Lake, Kodiac Island, Alaska; food & feeding habits; time spent in freshwater; age at time of return.

--K--

Katz, Max 1950

Some interesting cells in the blood of a diseased silver salmon fingerling. Copeia, No. 4, 295-298, 1 plate.

O. kisutch, silver; histology; Swamp Creek, Wash.

Katz, Max 1951

The number of erythocytes in the blood of the silver salmon. Trans. Amer. Fish Soc., 80: 184-193.

O. kisutch, silver; counts of erythrocytes.

Katz, Max, and Southward, Morris 1950

The blood-clotting time in spent silver salmon, Oncorhynchus kisutch (Walbaum). Copeia, No. 2, 150.

O. kisutch, silver; physiology; Auburn, Wash.

Kauffman, Donald E. 1951

Research report on the Washington State offshore troll fishery. Bull. 2, Pac. Marine Fish. Comm., 77-91, 4 figs., 11 tables.

chinook; silver; Wash.; distribution; tagging & recapture data; migration routes; catch records; counts & measurements.

Kauffman, Donald E., and Martin, John W. 1951

Catalogue of salmon streams of southeastern Alaska, 1948-1950. Fish. Res. Inst., Univ. of Wash., approximately 1300 pages of tables and maps. Ozalid.

Not abstracted.

Kawakami, S. 1900a

The ancestry of the salmon of Hokkaido. Hokkaido Suisan Shiken Jo Shi, Junnpo (J. Hokkaido Fish. Lab., 10-day period report. No. 226.)

Not abstracted.

Kawakami, S. 1900b

Regarding ancestry of Hokkaido salmon studied from the viewpoint of body measurements. Hokkaido Suisan Shiken Jo Shi, Junnpo (J. Hokkaido Fish. Lab., 10-day period report. No. 244.)

Not abstracted.

Kelez, George B. 1937

Relation of size at release to proportionate return of hatchery-reared cohoe (silver) salmon. Prog. Fish Cult., No. 31, 33-36.

cohoe, silver; Puget Sound; marking & recapture data; home stream theory; age at time of return.

Kendall, William Converse 1913

Fishes and fishing in Sunapee Lake. Rept. Comm. Fish. for 1912, U.S. Bur. Fish Doc. No. 783, 1-96, 4 figs., 9 plates.

O. tschawytscha (sic), king, spring; O. kisutch, silver, coho; Sunapee Lake, N. Hampshire; intro. & acclim.; Geneva Lake, Wisconsin, Lake Ontario, Pierce Pond, Kennebec R., Maine, Sunapee Lake, N.Hampshire; food & feeding habits; counts & measurements; color; figured.

Kendall, William Converse 1922

Peritoneal membranes, ovaries and oviducts of salmonoid fishes and their significance in fish-cultural practices. Bull. U.S. Bur. Fish., 37: 183-208, 11 text figs.

O. nerka; O. kisutch; O. gorbuscha; O. tschawytscha (sic); anatomy (membranes, ovaries, oviducts).

Kerr, James E. 1953

Studies on fish preservation at the Contra Costa stream plant of the Pacific Gas and Electric Company. Cal. Fish & Game, Fish Bull. No. 92, 1-66, 38 text-figs.

O. tschawytscha (sic), king; South Bank of San Joaquin R., Calif.; time species migrates upstream; time of seaward migration; behavior of fry & fingerlings.

Killick, S.R. 1955

The chronological order of Fraser River sockeye salmon during migration, spawning and death. Bull. Internat'l Pac. Sal. Fish. Comm., 1-95, 39 figs., 47 tables.

O. nerka, sockeye; Fraser R., Can.; time species migrates upstream; distance travelled upstream; spawning period; racial analysis, p. 57-58; sex ratios; post-spawning behavior (time of death); tagging & recapture data.

Kimsey, J.B. 1951

Notes on kokanee spawning in Donner Lake, California, 1949. Cal. Fish & Game, 37 (3): 275-279, figs. 109-112.

O. nerka kennerlyi, kokanee red; O. nerka nerka, red; counts & measurements; Donner Lake, Calif.; time species migrate upstream; size at time of return; type of stream chosen; spawning period; nature of spawning site; sexual dimorphism, body changes; spawning behavior; time eggs hatch; behavior of fry & fingerlings; figured.

Kimsey, J.B. 1955

Post-spawning behavior of the kokanee, O. nerka kennerlyi, in Donner Lake, California. Copeia, No. 1, 51-52, 1 fig.

O. nerka kennerlyi, kokanee, landlocked red; Donner Lake, Calif.; spawning period; spawning behavior; post-spawning behavior.

Kirkness, W., Parker, R.R., Edson, Q.A., Huiser, E.J., Thorson, K.N., and Weidman, Carl 1952

Biological research Taku River investigation. Rept. Alaska Fish. Bd., No. 4, (1952), 18-35, 5 figs., 10 tables, 4 plates.

king; red; pink; silver; chum; Taku R., Alaska; tagging & recapture data; migration routes; size at time of return; age

Kirkness, W., et al (cont.) 1952

at time of return; type of stream chosen; time species migrates upstream.

Kirkness, W., Parker, R.R., Edson, Q.A., Huiser, E.[illegible]., Thorson, K.N., and Weidman, Carl Jr. 1953

Biological research. Ann. Rept. Alaska Fish. Bd., No. 4, 18-40.

king; silver; red; pink; chum; Southeast Alaska; time species migrates upstream; catch records; size at time of return; tagging & recapture data; age at time of return; counts of migrant adults (fish wheels); distribution; racial analysis, detailed data (river races of red).

Kobayashi, Harujiro 1934

Recent researches on Japanese fishes which serve as intermediate hosts of helminths. Proc. Fifth Pac. Sci. (1933), 5: 4157-4163.

O. masou; O. gorbuscha; O. keta; O. nerka; Japan; parasites, internal: Dibothriocephalus latus, cestode.

Kobayashi, Shinjiro 1955

Changes in catalase activity of the tissues and blood of "masu", Oncorhynchus masou, when transferred from fresh water to sea water. Bull. Fac. Fish., Hokkaido Univ., 6(1): 1-6, 2 figs., 3 tables.

O. masou, "masu"; Japan: biochemistry.

Kobayashi, Shinjiro, and Yuki, Ryogo 1954a

Differences in catalase activity in the tissues and blood between the smolt and parr of masu, Oncorhynchus masou, Bull. Fac. Fish., Hokkaido Univ., 5(3): 229-230, 2 figs., 3 tables. Japanese with English abstract.

O. masou; Panan; time eggs hatch; time young spend in freshwater; time of seaward migration; growth rates (hatchery); biochemistry.

Kobayashi, Shinjiro, and Yuki, Ryogo 1954b

On the specificity of kidney catalase activity in salmonid fishes. Bull. Fac. Fisheries, Hokkaido Univ., 5(2): 147-148, 4 tables. Japanese with English abstract.

O. keta, chum; O. nerka, landlocked red; O. masou, masu; Hokkaido, Japan; biochemistry.

Kobayashi, Tetsuo 1953

An ecological study on the salmon fry, Oncorhynchus keta (III) Observation on the descending of the salmon fry I. Sci. Rept. Hokkaido Fish Hatch., 8(1-2): 81-85, 2 figs., 3 tables. Japanese with English abstract.

O. keta; Japan; behavior of fry & fingerlings.

Kobayashi, Tetsuo 1955

A consideration on the method of measuring the scale size of the salmon (O. keta). Sci. Repts. Hokkaido Fish Hatchery, 10(1-2):36-41; 2 figs., 7 tables. Japanese with English abstract and headings.

O. keta, chum; Hokkaido, Japan; scale figured; growth rates from scale studies; counts & measurements.

Kobayasi, Hisao 1951

On the value of scale character considered as materials for the study of affinity in fishes. Jap. J. Ichthyology, 1(4): 226-237, 9 text-figs. Japanese with English abstract.

O. masou, saramaomase, yamame; O. rhodurus, amago; Japan; comparisons: difference in scales between the two species.

Kobayasi, Hisao 1952

Comparative studies of the scales in Japanese freshwater fishes, with special reference to phylogeny and evolution. I. Introduction. II. Tables of fishes used in this study. Jap. J. Ichthyology, 2(415): 183-191.

O. nerka; O. nerka adonis; O. kawamurae; O. gorbuscha; O. keta; O. kisutch; O. tschawytscha (sic); O. masou; O. masou macrostoma; O. rhodurus; listed.

Kobayasi, Hisao 1953

Comparative studies of the scales in Japanese freshwater fishes, with special reference to phylogeny and evolution. III. General lepidology of freshwater fishes. Jap. J. Ichthyology, 11(6): 246-260, 11 text-figs.

O. rhodurus; O. masou; Japan; comparisons (scales); racial analysis, comments only (importance of scales).

Kobayasi, Hisao 1955

Comparative studies of the scales in Japanese freshwater fishes, with special reference to phylogeny and evolution. IV. Particular lepidology of freshwater fishes I. Suborder Isospondyli (continued). Jap. J. Ichthyology, 4(1-3): 64-75, fig. 19.

O. kawamurae; O. nerka; O. adonis; O. gorbuscha; O. keta; O. masou; O. tschawytcha (sic); O. kisutch; O. macrostoma; O. rhodurus; Japan; comparisons (relationships, scale pattern); scales figured.

Konstantinov, A.S. 1951

Nutrition of juvenile chum salmon, (Oncorhynchus keta, Berg) in the Amur Basin. Zoologicheskii Zhurnal 30(6): 586-589. Abstract translated from Russian & summarized by Dr. G. Mares, Pacific Biological Station, Nanaimo, B.C., two typewritten pages.

O. keta, chum; Amur Basin; food & feeding habits, stream; larval chum.

Koo, Ted Swei-yen 1955

Biology of the red salmon, Oncorhynchus nerka (Walbaum) of Bristol Bay, Alaska as revealed by a study of their scales. Thesis submitted for Degree of Doctor of Philosophy, University of Washington, Seattle, Wash., May 25, 1955, 1-164, 49 figs., 9 tables.

Not abstracted.

Kubo, Tatsuro 1947

Scale pattern and ecology of chum salmon. I. Sci. Rept. Hokkaido Fish Hatchery, 2(1): 16-25.

Not abstracted.

Kubo, Tatsuro 1949

Scale pattern and ecology of chum salmon. II. Sci. Rept. Hokkaido Fish Hatchery, 4(2): 79-94.

Not abstracted.

Kubo, Tatsuro 1950

A preliminary report of the study of the groups of Oncorhynchus keta (Walbaum) (dog salmon) and the numbers of their segments. (Japanese with English abstract.) Bull. Fac. Fish. Hokkaido Univ., 1(1): 1-11, 3 figs., 9 tables.

Not abstracted.

Kubo, Tatsuro 1954

Some nitrogen compounds of blood and metamorphosis of Oncorhynchus masou. Bull. Fac. Fish., Hokkaido Univ., 5(3): 248-252, 1 fig., 3 tables. Japanese with English abstract.

O. masou; Japan; biochemistry.

Kubo, Tatsuro 1955

Changes of some characteristics of blood of smolts of O. masou during seaward migration. Bull. Fac. Fish., Hokkaido Univ., 6(3): 201-207, 2 figs., 2 tables. Japanese with English abstract.

O. masou, sakura-masu; Japan; distribution; biochemistry; behavior of smolts.

Kubo, Tatsuro, and Kobayashi, Tetsuo 1953

Some populations of dog salmon (Oncorhynchus keta (Walbaum)) in the Ishikari River system, Hokkaido, and the numbers of their vertebrae and lateral line scales. Bull. Jap. Soc. Sci. Fish., 19(4): 297-302, 2 figs., 8 tables. Japanese with English abstract and headings.

Not abstracted.

Kuitunen-Ekbaum, E. 1933a

Philonema oncorhynchi Nov. Gen. et Spec. Contrib. Can. Biol. Fish, N.S., 8: 71-75, 1 fig.

O. nerka, sockeye; parasite, internal, nematode; English Bay, B.C.

Kuitunen-Ekbaum, E. 1933b

A study of the cestode genus Eubothrium of Nybelin in Canadian fishes. Contrib. Can. Biol. Fish., N.S., 8:89-98, 3 figs.

O. nerka kennerlyi; Nanaimo Lakes, B.C.; parasite, internal: Eubothrium salvelini, pyloric caeca.

Kuroda, Nagamichi 1953

Fishes of Lake Biwa, with their distribution records. Jap J. Ichthyology, 11(6): 271-284. Japanese with English abstract.

O. nerka; O. rhodurus; O. keta; O. masou; O. gorbuscha; listed; distribution.

Kuzmetzov, I.I. 1928

Some observations on spawning of the Amur and Kamtchatka salmons. Bull. Pac. Fish. Res. Station, Vladivostak, 2(3): exerpts from pp. 1-124. Translated from Russian & summarized by Dr. G. Mares, Pac. Biol. Sta., Nanaimo, B.C., Canada. 10 typewritten pages.

O. tschawytscha (sic), king; O. nerka, red, Krasnaja; O. keta, chum; O. kisutch, silver; O. masu, sima; Amur basin & Kamchatka; time species migrates upstream; sexual dimorphism; egg counts; distance travelled upstream; size at time of return (in original only); type of stream chosen; spawning behavior; description of redds (in detail in original); incubation period; hybridization; age at time of return; counts of migrant adults.

Lawler, G.H., and Scott, W.B. 1954

Notes on the geographical distribution and the hosts of the cestode genus Triaenophorus in North America. J. Fish. Res. Bd. Can., 11(6): 884-895, 1 fig., 4 tables.

O. nerka; Wood R., Lakes system, Alaska; parasites, external

Leach, Glen C. 1922

Propagation and distribution of food fishes, 1921 Rept. Comm'er Fish for 1921, U.S. Bur. Fish. Doc. No. 912, 1-94.

O. tschawytscha (sic), chinook, king, quinnat; O. keta, chum, dog; O. kisutch, silver, coho; O. nerka, sockeye, blueback, redfish; intro. & acclim.: Calif. to Wash., Alaska to Wash., Wash. to Ore., to Maine; spawning period (esp. p. 73); nature of spawning site: tidewater area; time eggs hatch.

Leach, Glen C. 1923

Propagation and distribution of food fishes, 1922. Rept. Comm'er Fish. for 1922, U.S. Bur. Fish. Doc. No. 941, 1-100, 7 figs.

O. nerka, sockeye, blueback, redfish; O. tschawytscha (sic), chinook, king, quinnat; O. gorbuscha, humpback, pink; intro. & acclim.: Maine, Maryland (p. 88); spawning period.

Leach, Glen C. 1924

Propagation and distribution of food fishes, 1923. Rept. Comm'er Fish. for 1923, U.S. Bur. Fish. Doc. No. 964, 1-108, 3 figs.

O. kisutch, coho, silver; O. tschawytscha (sic), chinook, king, quinnat; O. gorbuscha, humpback, pink; O. nerka,

Leach, Glen C. (cont.) 1924

sockeye, blueback, redfish; O. keta, chum, dog; spawning period; intro. & acclim.: Maryland, N. Hampshire.

Leach, Glen C. 1925

Propagation and distribution of food fishes, fiscal year 1924. Rept. Comm'er Fish. for 1924, U.S. Bur. Fish. Doc. No. 978, 361-440, 2 figs.

chinook; intro. & acclim.: Illinois, Montana, Maine (humpback success), Idaho; distribution; sockeye in Skyhomish R. & Elwell Cr., Wash.; time species migrates upstream.

Leach, Glen C. 1926

Propagation and distribution of food fishes, 1925. Rept. Comm'er Fish. for 1925, U.S. Bur. Fish. Doc. No. 999, 439-500, 8 figs.

O. tschawytscha, chinook, king, quinnat; O. keta, chum, dog; O. gorbuscha, humpback, pink; O. kisutch, silver, coho; Afognak, Alaska; time species migrate upstream.

Leach, Glen C. 1927

Propagation and distribution of food fishes, 1926. Rept. Comm'er Fish. for 1926, U.S. Bur. Fish. Doc. No. 1011, 1-384.

O. tschawytscha (sic), chinook, king, quinnat; O. keta, chum, dog; O. kisutch, silver, coho; O. nerka, sockeye, blueback, red; Alaska, Wash., Ore., Calif.; intro. & acclim.; time species migrates upstream.

Leach, Glen C. 1928

Propagation and distribution of food fishes, 1927. Rept. Comm'er Fish. for 1927, U.S. Bur. Fish. Doc.

Leach, Glen C. (cont.) 1928

No. 1033, 683-736, 4 figs.

O. tschawytscha (sic), chinook, king, quinnat; O. keta, chum; O. gorbuscha, humpback, pink; O. kisutch, silver, coho; O. nerka, sockeye, blueback, red; intro. & acclim.: Hawaii, Illinois; spawning period.

Leach, Glen C. 1930

Propagation and distribution of food fishes, 1929. Rept. Comm'er Fish. for 1929, U.S. Bur. Fish. Doc. No. 1070, 759-823.

O. tschawytscha (sic), chinook, king, quinnat; O. keta, chum; O. gorbuscha, humpback, pink; O. kisutch, silver, coho; O. nerka, sockeye, blueback, red; Alaska, U.S.; spawning period.

Leach, Glen C. 1931

Propagation and distribution of food fishes, 1930. Rept. Comm'er Fish. for 1930, U.S. Bur. Fish. Doc. No. 1098, 1123-1191.

O. tschawytscha (sic), chinook, king, quinnat; O. keta, chum; O. gorbuscha, humpback, pink; O. nerka, sockeye, blueback, red; Pacific coast; spawning period; intro. & acclim.: chum to Utah.

Leach, Glen C. 1932

Propagation and distribution of food fishes, 1931. Rept. U.S. Comm'er Fish. for 1932, Appendix IV, 627-690, 2 figs.

O. tschawytscha (sic), chinook, king, quinnat; O. keta, chum; O. gorbuscha, humpback, pink; O. kisutch, silver, coho; O. nerka, sockeye, blueback, red; Alaska, U.S.; spawning period; intro.& acclim.; time species migrates upstream.

Leach, Glen C., and James, M.C. 1937

Propagation and distribution of food fishes, 1936. Administrative rept. No. 25, Appendix III to Rept. U.S. Comm'er Fish. for 1936, 349-379.

silver; intro. & acclim.: Virginia, W. Virginia, Maryland.

Leach, Glen C., and James, M.C. 1939

Propagation and distribution of food fishes. Administrative Rept. No. 33, Appendix IV to Rept. U.S. Comm'er Fish. for 1937, 461-492.

silver; sockeye; intro. & acclim.: Maryland, Utah, W. Virginia.

Leach, Glen C., James, M.C., and Douglass, E.J. 1939

Propagation and distribution of food fishes. Administrative Rept. No. 34, Appendix IV, Rept. U.S. Comm'er Fish. for 1938, 461-494.

chum; intro. & acclim.: Utah.

Leach, Glen C., James, M.C., and Douglass, E.J. 1941

Propagation and distribution of food fishes, 1939. Administrative Rept. No. 68, Rept. U.S. Comm'er Fish. for 1939, 555-598.

sockeye; chum; landlocked sockeye; silver; intro. & acclim.: Idaho, Utah.

Linton, Edwin 1941

Trematodes from fishes mainly from the Woods Hole region, Massachusetts. Proc. U.S. Nat'l Mus., 88(3078): 1-172, 5 figs., 3 plates.

O. tschawytscha (sic), chinook; distribution; parasites, internal.

Little, A.C. 1898

Ninth Ann. Rept. State Fish Comm'er, State of Wash. Dept. Fish & Game for 1898, 1-93.

quinnat, royal chinook; Wash.; racial analysis; time species migrates upstream; distribution.

Locke, S.B. 1929

Whitefish, grayling, trout and salmon of the intermountain region. Rept. Comm'er Fish. for 1929, U.S. Bur. Fish. Doc. No. 1062, 173-190.

O. tschawytscha, chinook; O. kisutch, silver, coho; O. nerka, big redfish, blueback (sockeye or red salmon in Alaska); O. nerka kennerlyi, little redfish, silver trout, silverside; O. keta, dog; figured; comparisons (key); distribution; intro. & acclim.: Utah; distance travelled upstream; spawning period; time young spend in freshwater; post-spawning behavior (death); size at time of return; sexual dimorphism; range; color; food & feeding habits.

Lockington, W.N. 1879

Report upon the food fishes of San Francisco. Rept. Comm'er Fish. Cal. for 1878-1879, 17-58.

O. quinnat listed; San Francisco Bay.

Lockington, W.N. 1880

Report upon the edible fishes of the Pacific Coast, U.S.A. Rept. Comm'er Fish Cal., 16-66.

O. nerka, blueback, rascal, sockeye, redfish, dog; O. gorbuscha, humpback; O. quinnat, king; O. kisutch, dog; O. keta, silverside, coho, tsuppitch; O. kennerlyi, redfish; Pacific Coast; range; spawning behavior; sexual dimorphism; description; color.

Loomis, Watts T. 1884

A landlocked salmon caught in Erie Canal. Bull. U.S. Fish Comm., 4: 288.

California salmon; Mohawk R.; intro. & acclim.: Erie Canal.

Lowe, Charles W. 1936

Observations on some Pacific diatoms as the food of copepods and fishes. J. Biol. Bd. Can., 3: 15-19, 2 tables.

O. keta, chum; O. tschawytscha (sic), spring; food & feeding habits.

Lowman, F.G 1956

Electron microscope studies of silver salmon spermatozoa (Oncorhynchus kisutch (Walbaum)). Exp. Cell Res., 5(2): 358-360. 2 figs., 2 tables, 8 plates.

Not abstracted.

Lowman, F.G., and Jensen, L.H. 1955

Preliminary note on X-ray diffraction studies with the tails of spermatozoa of silver salmon (Oncorhynchus kisutch). Biochem. et Biophys. Acta, 16: 468-469.

Not abstracted.

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MacKay, Donald C.G. 1931

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O. tschawytscha (sic), king; O. kisutch, silver; catch records.

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The fisheries of Alaska in 1908. Rept. U.S. Bur. Fish for 1908, Fish. Doc. No. 645, 1-78.

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The fisheries of Alaska in 1909. Rept. U.S. Bur. Fish for 1909, Fish. Doc. No. 730, 1-58.

king, spring; coho, silver; humpback, pink; dog, chum; red, sockeye; Alaska, Lake Aleknagik; size at time of return; marking & recapture data; time species migrates upstream; time eggs hatch.

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The fisheries of Alaska in 1910. Rept. U.S. Bur. Fish for 1910, Fish. Doc. No. 746, 1-72.

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Mathisen, L.M. 1950

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chinook; silver; Winchester Bay, Ore.; catch records; movements in ocean.

McConnell, J.A., and 1946

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O. nerka, sockeye; O. gorbuscha, pink; O. kisutch, coho; Kitwanga Lake, B.C.; racial analysis; nature of spawning site.

McDonald, Marshall 1893

Rept. U.S. Comm. Fish & Fish. for 1889-1890 and 1890-1891. Rept. Comm'er for 1889-1891, U.S. Comm. Fish & Fish., 1-96.

quinnat; intro. & acclim.: France, Norway, Oregon.

McDonald, Marshall 1894a

Report on the salmon fisheries of Alaska. Bull. U.S. Fish. Comm., 12: 1-20, 9 plates.

O. nerka, red, blueback; O. chouicha, king; O. kisutch, silver; O. gorbuscha, humpback; O. keta, dog; Alaska; range; time species migrates upstream; type of stream chosen; O. gorbuscha most abundant and smallest salmon in Alaska; distribution.

McDonald, Marshall 1894b

Rept. U.S. Comm'er Fish & Fish. for 1892, U.S. Comm. Fish & Fish., vii-lxxxvii.

O. chouicha, quinnat; intro. & acclim.: Mexico, Oregon, Long Island, N.J., Vermont.

McDonald, Marshall 1894c

The salmon fisheries of the Columbia River basin. Rept. Comm'er Fish & Fish. on Investigations in the Columbia River Basin in regard to the Salmon Fisheries, 1-57, tables A-G, 8 plates.

chinook; blueback; silver; Columbia R., Wash., Ore.; time young spend in freshwater; size at time of seaward migration.

McDonald, Marshall 1895

The salmon fisheries of the Columbia River Basin. Bull. U.S. Fish Comm., 14: 153-168, 8 tables, plates 13-15.

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king; counts & measurements; egg counts.

McGregor, E.A. 1923a

Notes on the egg yield of Sacramento River king salmon. Cal. Fish & Game, 9(4): 184-188, 1 table, 1 graph.

king; Klamath R., Sacramento R.; egg counts.

McGregor, E.A. 1923b

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Report on the work of removal of obstructions to the ascent of salmon on the Fraser River at Hell's Gate, Scuzzy Rapids, China Bar, and White's Creek during the year 1914 and the early portion of the year 1915. Rept. Comm'er Fish. 1914, Prov. Brit. Col., 20-31, 1 fig.

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O. tshawytscha, chinook; O. kisutch, silver; Oregon; range; age at time of return; time species migrate upstream; tagging & recapture data; counts of migrant adults; time young spend in freshwater.

McLean, Donald D. 1945

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O. tschawytscha, chinook, king; distribution; Sacramento R., Cal.; time species migrates upstream; size at time of return; spawning period; spawning behavior.

McMahon, V.H. 1948

Lakes of the Skeena River drainage. VII. Morrison Lake. Progr. Repts. Pac. Coast Stas., Fish. Res. Bd. Can., No. 74, 6-9.

O. nerka, sockeye; O. nerka kennerlyi; Morrison Lake, B.C.; distribution.

Meehan, O. Lloyd 1941

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Japan; home stream theory; age at time of return; movements in ocean.

Miller, Robert R., and Miller, Ralph G. 1948

The contribution of the Columbia River system to the fish fauna of Nevada: five species unrecorded from the state. Copeia, No. 3, 174-187, 1 map.

O. tschawytscha (sic); small tributary of South Fork of Owyhee R., Bruneau R., Owyhee R., Idaho, Nevada; distribution.

Milne, D.J. 1949

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sockeye; Skeena R., B.C.; tagging & recapture data on migration rate.

Milne, D.J. 1950a

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coho; Brit. Col.; migration routes; weight at time of return.

Milne, D.J. 1950b

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spring; coho; sockeye; pink; Skeena R., B.C.; time species migrates upstream.

Milne, D.J. 1952

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coho; Brit. Col.; catch records; tagging & recapture data on migration routes.

Milne, D.J. 1955

The Skeena River salmon fishery, with special reference to sockeye salmon. J. Fish. Res. Bd. Can., 12: 451-485, 15 figs., 9 tables.

O. nerka, sockeye; O. gorbuscha, pink; O. tschawytscha (sic), spring; O. kisutch, coho; O. keta, chum; Skeena R., B.C.; time species migrates upstream; sex ratios; tagging & recapture data; age at time of return; racial analysis.

Milne, D.J., and Pritchard, A.L. 1948

The true picture of the 1947 Skeena River sockeye run. Progr. Rept. Pac. Coast Stas., Fish. Res. Bd. Can., No. 75, 46-47.

sockeye; Skeena R., B.C.; counts of migrant adults.

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Milne, John Adam (cont.) 1913

Milne, John Adam 1917

Further applications of scale reading to the solution of practical problems Salm. Trout Mag., 35-41.

sockeye; Brit. Col.; home stream theory; tagging & recapture data; racial analysis; time of seaward migration; age at time of return.

Milner, James W. 1874

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Moffett, James W. 1949

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O. tschawytscha, king; distribution; Sacramento R., Calif.; time species migrates upstream; type of stream chosen; spawning period; time of seaward migration; length at time of seaward migration.

Moffett, James W., and Smith, Stanford H. 1950

Biological investigations of the fishery resources of Trinity River, California. Spec. Sci. Rept. Fish., U.S. Fish & Wildlife Service, No. 12, 1-71, 15 figs., 24 tables. Processed.

Moffett, James W., and Smith, Stanford H. (cont.) 1950

O. tschawytscha (sic), king; O. kisutch, silver; Trinity R., Calif.; time of upstream migration; migrating behavior; spawning period; time fry emerge from gravel; time of seaward migration; size at time of seaward migration; time young spend in freshwater; sex ratios; egg counts; behavior of fry & fingerlings (migration); size at time of return.

Morgon, Alfred R., and Cleaver, F.C. 1954

The 1951 Alsea River silver salmon tagging program. Fish Comm. State of Ore., Contrib. No. 21, 1-30, 6 figs., 16 tables.

O. kisutch, silver; Alsea R., Ore.; catch records; tagging & recapture data.

Mori, Tamezo 1934

On the geographical distribution of Korean Salmonidae. Proc. Fifth Pac. Sci. Cong., (1933), 5: 3775-3776.

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Moser, Jefferson F. 1898

Report on the work of the steamer Albatross (Abstract). Rept. Comm'er for 1897, U.S. Comm. Fish & Fish., cxlvii-clxxi.

dog; humpback; Nikolski, Bering Is., Priobrajenski, Copper Island, Petro-paulski Harbor; distribution.

Moser, Jefferson F. 1899

The salmon and salmon fisheries of Alaska. Bull. U.S. Fish. Comm., 18: 1-178, figs. & tables, 63 plates.

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Salmon investigations of the steamer Albatross in the summer of 1900 and 1901. Bull. U.S. Fish. Comm., 21:173-398, numerous figs., 44 plates, 1 chart.

redfish, cohoe; Alaska; time species migrates upstream; distribution; rela-tive abundance of species; egg counts & size (p. 306-335); home stream theory, p. 308; sex ratios; response of fry to salt, p. 347; catch records; intro. & acclim.; barren lakes; size at time of seaward migration.

Motherwell, J.A. 1934

The salmon-spawning areas. Rept. Comm'er Fish. for 1933, Prov. Brit. Col., 48-53.

sockeye; pink; spring; cohoe; chum; Fraser R., Skeena R., Rivers Inlet, Nass R., B.C.; distribution; spawning period.

Motherwell, J.A. 1935

Condition of British Columbia salmon spawning grounds. Rept. Comm'er Fish. for 1934, Prov. Brit. Col., 59-67.

sockeye; cohoe; spring; pink; chum; Brit. Col.; distribution.

Motherwell, J.A. 1937

Report on salmon spawning grounds, 1936. Rept. Prov. Fish. Dept., 1936, Prov. Brit. Col., 68-74.

sockeye; chum; pink; cohoe; spring; Brit. Col.; distribution.

Motherwell, J.A. 1938

Report on inspection of salmon-spawning grounds, 1937 Rept. Prov. Fish. Dept., 1937, Prov. Brit. Col., 104-109.

sockeye; pink; chum; spring; cohoe; Brit. Col.; distribution.

Motherwell, J.A. 1939

Report on inspection of salmon-spawning grounds, 1938. Rept. Prov. Fish. Dept., 1938, Prov. Brit. Col., 85-91.

sockeye; pink; chum; cohoe; spring; Brit. Col.; distribution.

Motherwell, J.A. 1940

Report on inspection of salmon spawning grounds, 1939. Rept. Prov. Fish. Dept., 1939, Prov. Brit. Col., 75-79.

sockeye; pink; chum; spring; cohoe; Brit. Col.; distribution.

Motherwell, J.A. 1941

Report on inspection of salmon spawning grounds 1940. Rept. Prov. Fish. Dept., 1940, Prov. Brit. Col., 98-99.

sockeye; chum; pink; spring; cohoe; Brit. Col.; distribution.

Motherwell, J.A. 1942

Spawning report, British Columbia, 1941 Rept. Prov. Fish. Dept., 1941, Prov. Brit. Col., 86-92.

sockeye; chum; pink; spring; cohoe; Brit. Col.; distribution.

Motherwell, J.A. 1943

Spawning report, British Columbia, 1942. Rept. Prov. Fish. Dept., 1942, Prov. Brit. Col., 78-84.

sockeye; chum; cohoe; pink; spring; Brit. Col.; distribution.

Motherwell, J.A. 1944

Spawning report, British Columbia, 1943. Rept. Prov. Fish. Dept., 1943, Prov. Brit. Col., 98-105.

sockeye; pink; cohoe; chum; spring; Brit. Col.; distribution.

Motherwell, J.A. 1946

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sockeye; spring; cohoe; pink; chum; Brit. Col.; distribution.

Mottley, Charles McC. 1929

Report on the study of the scales of the spring salmon, Oncorhynchus tschawytscha, tagged in 1926 and 1927 off the west coast of Vancouver Is. Contrib. Can. Biol. Fish N.S., 4: 471-493, 7 tables, 3 plates.

O. tschawytscha, spring; Vancouver Is., B.C.; time eggs hatch; time of seaward migration; age at time of return (age groups); movements in ocean; racial analysis, comments; distribution.

Mottley, Charles McC. 1936

The nooked snout in the salmonidae. Progr. Repts. Pac. Biol. Sta. & Pac. No. 30, Fish. Expt. Sta., 9-10.

spring; sexual dimorphism.

Munro, F.A., and Clemens, W.A. 1937

The American merganser in British Columbia and its relation to the fish population. Bull. Biol. Bd. Can., No. 55, 1-50, 10 figs., 5 tables.

O. nerka, sockeye; O. nerka kennerlyi, kokanee; Brit. Col.; food & feeding habits.

Murphy, Garth I. 1952

An analysis of silver salmon counts at Benbow Dam, South Fork of Eel River, California. Cal. Fish & Game, 38(1): 105-112, 3 tables.

O. kisutch, silver; distribution; Benbow Dam, Eel R., Calif.; time species migrates upstream; age at time of return; distance travelled upstream; spawning period; time of seaward migration; time young spend in freshwater; movements in ocean.

Murphy, Garth I., and Shapovalov, Leo 1951

A preliminary analysis of Northern California salmon and steelhead runs. Cal. Fish & Game, 37(4): 497-507, fig. 182, 4 tables.

O. tshawytscha, king; O. kisutch, silver; comparisons; distribution; Eel R., Mad R., Klamath R., Shasta R., Calif ; time species migrates upstream; type of stream chosen; behavior of fry & fingerlings; time of seaward migration; time young spend in freshwater; movements in ocean.

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Nakai, Zinziro, and Honjo, Koji 1954

A preliminary report on surveys of plankton and salmon stomach contents from the N. Pac., 1952. Spec. Pub. Tokai Reg. Fish. Res. Lab., No. 3, 6-12, 2 figs. Japanese with English abstract.

O. keta, chum; O. gorbuscha, pink; food & feeding habits, ocean; Aleutian Islands.

Neave, Ferris 1939

Salmon Angling Records from Cowichan Bay. Progr. Rept. Biol. Stas. Nanaimo & Prince Rupert, Fish. Res. Bd. Can., No. 42, 22-24.

Neave, Ferris (cont.) 1939

spring; coho; Cowichan Bay, B.C.; catch records; size at time of return.

Neave, Ferris 1941a

Cowichan cohoes in the commercial catch. Progr. Rept. Biol. Stas. Nanaimo & Prince Rupert, Fish. Res. Bd. Can., No. 49, 6-7.

Coho; Brit. Col.; marking & recapture data.

Neave, Ferris 1941b

Return of marked cohoe to the Cowichan River 1940. Progr. Rept. Biol. Stas. Nanaimo & Prince Rupert, Fish. Res. Bd. Can., No. 47, 19-20.

coho; Cowichan River, B.C.; marking & recapture data; home stream theory.

Neave, Ferris 1943

Diurnal fluctuations in the upstream migration of coho and spring salmon. J. Fish. Res. Bd. Can., 6: 158-163, 1 fig., 1 table.

O. tschawytscha (sic), spring; O. kisutch, coho; Cowichan R., Vancouver Is.; time species migrates upstream; spawning period; dominant species.

Neave, Ferris 1947

Natural propagation of chum salmon in a coastal stream. Progr. Rept. Pacific Coast Stas., Fish. Res. Bd. Can., No. 70, 20-21.

coho; chum; pink; Nile Cr., B.C.; counts of migrant adults; egg counts; time of seaward migration.

Neave, Ferris 1948

Fecundity and mortality in Pacific salmon. Trans. Roy. Soc. Can., Ser. 3, 42(sect. 5): 97-105, 2 tables.

O. tshawytscha, spring; O. gorbuscha, pink; O. keta, chum; O. kisutch, coho; O. nerka, sockeye; distribution; time young spend in freshwater; time of seaward migration; age at time of return; effects of environmental change.

Neave, Ferris 1949

Game fish populations of the Cowichan River. Bull. Fish. Res. Bd. Can., No. 84, 32 pp., 9 figs.

O. tschawytscha (sic), spring; O. kisutch, coho; O. gorbuscha, pink; O. keta, chum; O. nerka, sockeye; kokanee; Cowichan L., Cowichan R.; age at time of return; time species returns from ocean to stream mouth; spawning period; type of stream chosen; time young spend in freshwater; distribution; size at time of return.

Neave, Ferris 1951

Observations on troll-caught salmon of the west coast of Vancouver Island, 1949. Bull. 2, Pacific Marine Fisheries Comm., 95-101; 2 figs., 9 tables.

chinook; silver; Vancouver Is.; counts & measurements; catch records; age at time of return from scale studies; time young spend in freshwater; tagging & recapture data on migration routes.

Neave, Ferris 1953

Principles affecting the size of pink and chum salmon populations in British Columbia. J. Fish. Res. Bd. Can., 9: 450-491, 9 figs., 13 tables.

O. gorbuscha, pink; O. keta, chum; time species migrates upstream;

Neave, Ferris (cont.) 1953

type of stream chosen; distance travelled upstream; spawning period; time eggs hatch; time of seaward migration; sex ratios; age at time of return; egg counts; movements in ocean (young).

Neave, Ferris 1955

Notes on the seaward migration of pink and chum salmon fry. J. Fish Res. Bd. Can., 12: 369-374, 1 fig.

O. gorbuscha, pink; O. keta, chum; Charlotte & Vancouver Is.; behavior of fry & fingerlings (migrants).

Neave, Ferris, Hunter, J.G., and Wickett, W.P. 1953

The 1952-54 pink salmon cycle in the Queen Charlotte Islands. Progr. Rept. Pac. Coast Stas. Fish. Res. Bd. Can., No. 97, 9-10.

O. keta, chum; Johnstone Strait, B.C.; tagging & recapture data; age at time of return; length at time of return.

Neave, Ferris, and Pritchard, A.L. 1942

Recoveries of Cowichan River coho salmon from the year 1938 brood year, emphasize the value of marking experiments. Progr. Rept. Pac. Coast Stas., Fish. Res. Bd. Can., No. 51, 3-7.

coho; Cowichan R., B.C.; marking & recapture data; movements in ocean; distribution; home stream theory; age at time of return; time young spend in freshwater.

Neave, Ferris, and Wickett, W.P. 1953

Factors affecting the freshwater development of Pacific salmon in British Columbia. Proc. Seventh Pac. Sci. Cong., 1949, 4: 548-556, 4 figs.

O. nerka, sockeye; O. kisutch, coho; O. keta, chum; O. gorbuscha, pink; O. tschawytscha (sic), spring; Brit. Col.; time young spend in freshwater; type of stream chosen.

Needham, Paul R., Hanson, Harry A., and Parker, Lewis P. 1943

Supplementary report on investigations of fish-salvage problems in relation to Shasta Dam. Spec. Sci. Rept., U.S. Fish & Wildlife Service, No. 26, 1-50, 17 tables, 2 maps.

O. tschawytscha (sic), chinook; Sacramento R.; counts of migrant adults; time species migrates upstream; transplanting of runs; time of seaward migration; size of species at time of seaward migration.

Needham, Paul R., Smith, Osgood R., and Hanson, Harry A. 1941

Salmon salvage problems in relation to Shasta Dam, California, and notes on the biology of the Sacramento River salmon. Trans. Amer. Fish. Soc. 70th Ann. Meeting for 1940, 55-69, 2 figs., 4 tables.

O. tschawytscha (sic), chinook, quinnat; Sacramento R., Calif.; time species migrates upstream; size at time of return; counts of migrant adults; racial analysis, comments; time of seaward migration; time young spend in freshwater; spawning period.

Nelson, Philip R., and Abegglen, Carl E. 1955

Survival and spawning of gill-net-marked red salmon. U.S. Fish & Wildlife Service, Res. Rept. 40, 1-19.

red; Karluk L., Alaska; figured.

Newcomb, Hugh Ross 1948

Umpqua River study continues, Bull. Ore. State Game Comm., 3(9): 1,4,7,8.

chinook; silver; Umpqua R., Ore.; counts; tagging & recapture data; time of seaward migration.

Newcomb, Hugh Ross, and Mathesin, Leonard M. 1946

The Umpqua River study, Bull. Ore. State Game Comm., 1(9): 1,7,8.

chinook; silver; Umpqua R., Ore.; catch records; tagging & recapture data on rate of migration; counts of migrant adults.

Ney, Phyllis W., Deas, Catherine P., and Tarr, H.L.A. 1950

Amino acid composition of fishery products (II). J. Fish. Res. Bd. Can., 7:563-566, 1 table.

chum; pink; biochemical: amino acids.

Nichols, John Treadwell 1908

A small collection of Alaska fishes. Proc. Biol. Soc. Wash., 21: 171-174.

O. gorbuscha, humpback; O. kisutch, coho; O. nerka, sockeye; Alaska; distribution.

Nielson, Reed S. 1950

Survey of the Columbia River and its tributaries, Part V. Spec. Sci. Repts., Fish. U.S. Fish & Wildlife Service, No. 38, 1-41, 6 figs., tables.

chinook; distribution.

Nishida, Hideo 1953a

The cyto-histological observations on the gland cell of the branchial epidermis with the comparison of two types of Oncorhynchus masou, land-locked and sea-run form. Sci. Rept. Hokkaido Fish Hatch., 8(1-2): 33-38, 3 figs., 3 plates. Japanese with English abstract.

O. masou "yamabe", land-locked; O. masou "masu", sea-run form, called "ginke-yamabe" before migrating seaward; Chitose Fish Hatch., Japan; anatomy; histology.

Nishida, Hideo 1953b

Histological and cytological studies on the hatch of salmon, Oncorhynchus keta (I) On the hatching gland, mucous, cell, and softening of egg membrane. Sci. Rept. Hokkaido Fish Hatch, 8(1-2): 63-70, 5 figs. Japanese with English summary.

O. keta; Japan; anatomy & histology.

Nishida, Hideo 1954

Occurence of remarkable glands in the oral cavity epidermis of adult salmon, Oncorhynchus keta. Sci. Repts. Hokkaido Fish Hatchery, 9(1-2): 147-150, 3 figs. Japanese with English abstract.

Not abstracted.

Nishida, Hideo 1955

Morphological and histochemical studies on the blood cells finding in the yolk of salmon embryo. Sci. Repts. Hokkaido Fish Hatchery. 10(1-2): 45-52, 2 figs., 13 plates. Japanese with English abstract and headings.

O. keta; Hokkaido, Japan; histology, blood cells.

Nishino, Kazuhiko 1953

Bacteriological study on disease of salmon and trout rearing for maturity (I). Sci. Repts. Hokkaido Fish Hatch., 8(1-2): 47-58, 7 tables. Japanese with English abstract.

O. masou; O. gorbuscha; O. keta; Hokkaido, Japan; parasites, bacteria.

Nomura, Minoru 1953

On the taxonomic characters in the mouth cavity of salmonoid fishes. Jap. J. Ichthyology, 2(6): 261-270, 3 figs., 3 plates. Japanese with English abstract.

O. nerka, Himenasu; O. rhodurus, biwamasu; O. gorbuscha, karafuto masu; O. keta, sake; figured; comparisons; osteology.

Novisoff, Henry 1912

Salmon fishing in Russia. Pacific Fisherman, 10(7): 20.

tschawytsche, king; gorbuscha, sockeye; silver; Russia; time species migrates upstream; size at time of return.

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Ohno, Isokichi 1954

Life-history of Oncorhynchus masou found in the waters of Hokkaido. Proc. Fifth Pac. Sci. Cong., 1953, 5: 3785-3786.

O. masou, masu, cherry; Hokkaido, Japan; distribution; time species migrates upstream; color; spawning period; time eggs hatch (fry emerge from gravel); time young spend in fresh water; post-spawning behavior (live to spawn another season or two, landlocked forms.)

Okada, Shun S. 1954

On the change of shape in the blastodiso of the unfertilized egg of dog salmon, Oncorhynchus keta (Walbaum) activated by water. Sci. Repts. Hokkaido Fish Hatchery, 9(1-2): 127-129, 15 figs., Japanese with English abstract.

Not abstracted.

O'Malley, Henry 1904

The blueback salmon of Baker Lake, Washington. Pacific Fisherman, 2(8): 17-18.

quinnat; blueback; Baker L., Wash.; time species migrates upstream; color; sexual dimorphism; type of stream chosen; spawning behavior.

O'Malley, Henry 1917

The distribution of fish and fish eggs during the fiscal year 1916. Rept. Commr Fish for 1916, U.S. Bur. Fish., Doc. No. 827, 111 pp.

O. gorbuscha, humpback; intro. & acclim.: Wash., D.C.; Maine.

O'Malley, Henry 1919

The distribution of fish and fish eggs during the fiscal year 1917. Rept. Comm'er Fish. for 1917, U.S. Bur. Fish. Doc. No. 846, 1-99.

O. tschawytscha (sic), chinook, king, quinnat; O. gorbuscha, humpback; intro. & acclim.: Kentucky, Maine.

O'Malley, Henry 1920a

Artificial propagation of the salmons of the Pacific Coast Rept. Comm'er Fish., U.S., for 1919, Bur. Fish., Doc. No. 879, 1-82, 9 plates, 11 figs.

O. tschawytscha (sic), chinook, Sacramento, spring, Columbia, king, tyee, quinnat; O. nerka, blueback, sockeye, redfish; O. gorbuscha, humpback, pink; O. kisutch, silver, coho; O. keta, chum, dog; figured; description; color; size at time of return; range; distance travelled upstream; sexual dimorphism; time species migrates upstream; spawning period; nature of spawning site; intro. & acclim.; type of stream chosen; time young spend in freshwater; age at time of return.

O'Malley, Henry 1920b

The distribution of fish and fish eggs during the fiscal year 1918. Rept. Comm'er Fish. for 1918, U.S. Bur. Fish., Doc. No. 863, 1-82.

O. tschawytscha (sic), chinook, king, quinnat; O. gorbuscha, humpback; intro. & acclim.: Maine, Japan.

O'Malley, Henry 1922

Annual report of the commissioner of fisheries. Rept. Comm'er Fish. for 1952, U.S. Bur. Fish. Doc. No. 913, 1-50.

humpback; intro. & acclim : Maine.

O'Malley, Henry 1924

Annual report of the commissioner of fisheries, 1924 Rept. Comm'er Fish. for 1924, U.S. Bur. Fish. Doc. No. 966, 1-40.

chinook; sockeye; intro. & acclim.: Maryland, Montana, Chile, Netherlands; marking & recapture data, migration routes, Alaska Peninsula.

O'Malley, Henry 1926

Report of the commissioner of fisheries. Rept. Comm'er Fish. for 1926, U.S. Bur. Fish. Doc. No. 1002, i-xlvi.

chinook; intro. & acclim.: Hawaii.

O'Malley, Henry 1933

Sport fishing in Alaska. U.S. Dept. Commerce, Bur. Fish., Fish. Circ. 13, 1-18, 12 figs.

chinook, king; silver, cohoe; Alaska; species figured; description; color.

O'Malley, Henry, and Rich, Willis H. 1911

Migration of adult sockeye salmon in Puget. Rept. Comm'er Fish. for 1918. Prov. Brit. Col., 58-89, 29 tables.

sockeye; Puget Sound, Fraser R.; tagging & recapture data; migration routes.

O'Malley, Henry, and Rich, Willis H. 1920

Migration of adult salmon in Puget Sound and Fraser River, Rept. Comm'er Fish. for 1918, U.S. Bur. Fish. Doc. No. 873, 1-88, 29 tables, 1 plate.

sockeye; Puget Sound, Fraser R.; marking & recapture data, migration routes; racial analysis, comments only, p. 86.

Oregon Fish Commission 1931

A brief report on cooperative experiments in marking young chinook salmon on the Columbia River. Biennial Rept. Oregon Fish Comm., 1931, 31-31.

chinook, spring; Columbia R.; marking & recapture data; age at time of return; home stream theory.

Oregon Fish Commission 1941

Biennial Rept. Ore. Fish. Comm., 1-45.

chinook; blueback; silverside; chum, keta; Oregon; catch records.

Oregon Fish Commission 1943

Biennial Rept. Ore. Fish. Comm., 1-55, 4 tables, 7 graphs.

chinook; silver; chum; Oregon; catch records.

Oregon Fish Commission 1949a

Biennial Rept. Ore. Fish Comm., 1-36.

chinook; blueback; silversides; chum; Oregon; counts of migrant adults; catch records.

Osaki, Masao 1936

The identification of the species of Oncorhynchus in the east coast of Kamchatka. Bull. Jap. Soc. Sci. Fish., 4(5): 321-324, 2 tables. Japanese with English abstract.

Not abstracted.

Oshima, Masamitsu 1934

Life history and distribution of the freshwater salmons found in the waters of Japan. Proc. Fifth Pac. Sci. Cong., 1933, 5: 3751-3775, 9 plates.

O. masou, cherry; O. rhodorus, biwa; O. formosanus, biwa-masu; O. kawamurae, kuni-masu; O. adonis; O. gorbuscha; O. keta; O. tschawytscha (sic); O. kisutch; O. ishikawae; O. macrostomus, amenouwo, amago, enoha; Japan; synonomy; description; counts & measurements; color; figured; artificial hybridization; time young spend in freshwater; time of seaward migration; post-spawning behavior (survival after spawning of precocious males); age at time of return; distribution.

Oregon Fish Commission 1949b

Crab larvae as food for silver salmon at sea. Fish Comm. of Oregon, Res. Briefs, 2(1): 17.

Not abstracted.

Palmer, David D., Burrows, Roger E., 1954
Robertson, O. H., and Newman,
H. William

Further studies on the reactions of adult blueback salmon to injected salmon and mammalian gonadotrophins. Progressive Fish Culturist, 16: 99-107.

O. nerka, blueback; O. tschawytscha, listed; O. keta, chum: locality: state of Washington; biochemistry.

Parker, Lewis P. 1943

Notes on the Pyloric Caeca of Chinook Salmon. Copeia, 3: 190-191.

Oncorhynchus tschawytscha, Sacramento R., Calif.; chinook; racial analysis.

Parker, Lewis P., and 1944
Hanson, Harry A.

Experiments on transfer of adult salmon into Deer Creek, California. Jour. of Wildlife Management, 8: 192-198.

O. tschawytscha, chinook; distribution; Sacramento R., Deer Cr., Calif.; time species migrates upstream; type of stream chosen; marking & recapture data; spawning behavior; post-spawning behavior.

Parker, Robert R., and 1951
Kirkness, Walter

Biological investigations. Annual Report Alaska Fisheries Board, No. 2, 25-41.

king; silver; Southeast Alaska; tagging & recapture data; migration routes; time young spend in freshwater; age at time of return; growth rates; racial analyses - detailed data; length at time of return.

Parker, Robert R., Kirkness, Walter, 1952
Thorson, K. N., Edson, Q. A.,
MacSpadden, M. L. and Heidman, Carl, Jr.

Biological investigations. Report, Alaska Fisheries Board, No. 3, 20-41.

King; sockeye; Alaska; racial analysis; tagging & recapture data on migration routes; distribution; counts of migrant adults; catch records; nature of spawning site; type of stream chosen; size at time of return.

Parker, Robert R., Kirkness, Walter E. 1953
Thorson, K. N., Edson, Q. A., Huizer,
E. J.

Taku River Investigation; Report, Alaska Fisheries Board, No. 5, 24-41.

King; pink; red; silver; chum; Taku River Alaska; time of seaward migration; racial analysis-comments; measurements; counts of migrant adults; age at time of return; catch records (gill nets, fish wheels); tagging & recapture data.

Parkhurst, Zell E. 1950a

Survey of the Columbia River and its tributaries, Part 6. Special Scientific Report, Fisheries, U.S. Fish & Wildlife Service, No. 39, 1-58.

Chinook; silver; land-locked blueback; distribution

Parkhurst, Zell E. 1950b

Survey of the Columbia River and its tributaries. Part VII. Special Scientific Report, Fisheries, U. S. Fish & Wildlife Service, No. 40, 1-95.

Chinook; blueback; time species migrates upstream; little red fish; distribution.

Parkhurst, Zell E. 1950c

Survey of the Columbia River and its tributaries, part 8. Special Scientific Reports, Fisheries, U. S. Fish & Wildlife Service, No. 57, 1-19.

Chinook; distribution.

Parkhurst, Zell E., Bryant, Floyd G., and Nielson, Reed S. 1950

Survey of Columbia River and its tributaries, Part III. Special Scientific Report, Fisheries, U. S. Fish & Wildlife Service, No. 36, 1-103.

Chum, silver; chinook; Columbia Riv.; distribution; time species migrates upstream.

Pentegov, B. P., Mentov, Iu. N., and Kurvaev, E. F. 1928

(Physico-chemical characteristic of breeding migration fast of keta salmon). (In Russian with English summary) Bull. Pac. Ocean Sci. Fish Res. Sta., Vladivostok, 2 (1): 3-64.

Not abstracted.

Popov, A. M. 1933

Fishes of Avatcha Bay on the Southern Coast of Kamtchatka. Copeia, 2: 59-67.

Oncorhynchus kisutch; O. keta; O. nerka; O. gorbuscha; O. tchawytscha; Kamchatka; time species migrates upstream.

Potter, Gilbert D., and Hoar, William S. 1954

The Presence of androgens in chum salmon (Oncorhynchus keta walbaum). Journal of the Fisheries Research Board of Canada, 11: 63-68.

O. keta, chum; silver; British Columbia; anatomy--histology; biochemistry.

Pottinger, S. R., and Baldwin, Willis H. 1940

The content of certain amino acids in the edible portions of fishery products. Proc. Sixth Pac. Sci. Cong., 3: 453-459.

O. keta; chum; O. tschawytscha, king; O. gorbuscha, pink; O. kisutch, silver; O. nerka, sockeye; biochemistry.

Powers, Edwin B. 1939

Chemical factors affecting the migratory movements of the Pacific salmon. In: The migration and conservation of salmon, Amer. Assoc. for the Advancement of Science, 8: 72-85.

O. gorbuscha, humpback; O. nerka, red, sockeye; O. tschawytscha, king, spring; chinook, quinnat; home stream theory; biochemistry; physiology; leaping and other migration behavior; tagging and recapture data on migration routes; distribution; introduction and acclimatization to New Zealand.

Powers, Edwin B. 1941

Physico-chemical behaviors of waters as factors in the "homing" of the salmon; Ecology, 22:1-16.

Red, coho, humpback, dog; range; racial analysis, comments; type of stream chosen; movements in ocean; homing instinct.

Pressey, Richard T. 1953

The sport fishery for salmon on Puget Sound. Washington Department of Fisheries, Fisheries Research Papers. 1, (5): 33-48.

Chinook; silver; pink; chum; Puget Sound; catch records; age at time of return; length at time of return.

Prince, Edward E. 1916a

The fish and fisheries of New Zealand. Trans. Amer. Fish. Soc., 45:117-128.

Quinnat; intro. & acclim.: New Zealand.

Prince, Edward E. 1916b

On the red color of the flesh in the salmons and trouts. Trans. Amer. Fish. Soc. 46: 50-61.

Common names; theories regarding flesh color.

Pritchard, A. L. 1930

Pacific Salmon Migration: The Tagging of the Pink Salmon and t the Chum Salmon in British Columbia in 1928. Bull. Biol. Bd. Can., 14: 1-17.

Oncorhynchus gorbuscha, pink; O. keta, chum; O. tschawytscha, spring; O. kisutch, coho; locality: Johnson & Broughton Straits, B. C.; tagging & recapture data; migration routes.

Pritchard, A. L. 1931a

A Report of the Pink Salmon Investigation in British Columbia. Progr. Rep. Biol. Stas. Nanaimo & Prince Rupert. Biol. Bd. of Canada, 9: 509.

Pink; McClinton Creek, B.C.; time species migrates upstream; egg counts; time of seaward migration.

Pritchard, A. L. 1931b

Summary of the Results of Tagging of Spring Salmon in 1929 and 1930. Progr. Reg. Biol. Stas. Nanaimo & Prince Rupert Biol. Bd. of Can.

Spring; Brit. Col; tagging & recapture data, migration routes.

Pritchard, A. L. 1931c

The Tagging of Coho Salmon in British Columbia During the Years 1929 and 1930. Progr. Rep. Biol. Stas. Nanaimo & Prince Rupert. Biol. Bd. of Can.

Coho; Brit. Col; tagging & recapture data, migration routes.

Pritchard, A. L. 1931d

The Tagging of Pink & Chum Salmon in British Columbia in 1929. Progr. Rep. Biol. Stas. Nanaimo & Prince Rupert. Biol. Bd. of Can.,9: 12-14.

Pink, chum; Brit. Col.; tagging & recapture data, migration routes.

Pritchard, A. L. 1932a

Pacific Salmon Migration: The Tagging of the Pink Salmon and the Chum Salmon in British Columbia in 1929and 1930. Bull. Biol. Bd. Can., 31: 1-16.

Oncorhynchus gorbuscha, pink; O. keta, chum; Vancouver Island; age at time of return; weight at time of return; tagging & recovery data; migration routes; separation of runs.

Pritchard, A. L. 1932b

Relation of tagging programs to the conservation of Pacific salmon off the coast of British Columbia. Trans Amer. Fish. Soc., 62: 88-93.

Oncorhynchus tschawytscha, spring; O. kisutch, coho; O. gorbuscha, pink; O. keta, chum; O. nerka, sockeye; tagging & recapture data, migration routes.

Pritchard, A. L. 1932c

Report on investigation of the natural run of the pink salmon (O. gorbuscha--Walbaum) during the year 1931. Annual Report, Biol. Bd. of Can. for 1931, p. 78.

Coho; chum; O. gorbuscha, pink; McClinton Creek, Massett inlet, B.C.; counts of migrant adults; time species returns from ocean to stream mouth.

Pritchard, A. L. 1932d

The Returns of Marked Pink Salmon in 1932, Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert. Biol. Bd. of Can., 15: 10-11.

Pink; N. Brit. Col.; marking & recapture data; age at time of return; home stream theory.

Pritchard, A. L. 1934a

The Interpretation of the Recoveries of Marked Pink Salmon in 1933. Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert. Biol. Bd. of Can., 20: 3-5.

Pink; Brit. Col; home stream theory.

Pritchard, A. L. 1934b

Pacific Salmon Migration: The Tagging of the Coho Salmon in British Columbia in 1929 and 1930. Bull. Biol. Bd. Can., 40: 1-24.

Oncorhynchus kisutch, silver; Northern Brit. Col.; tagging and recapture data; distribution.

Pritchard, A. L. 1934c

Pacific Salmon Migration: The Tagging of the Spring Salmon in British Columbia in 1929 and 1930. Bull. Biol. Bd. Can., 41: 1-31.

Oncorhynchus tschawaytscha, spring; tagging and recapture data; distribution; Racial analysis: comments; migration routes.

Pritchard, A. L. 1934d

The Recovery of Marked Pink Salmon in 1934. Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert. Biol. Bd. of Can., 22: 17-18.

Pink; Br. Col.; McClinton Creek, etc.; marking & recapture data.

Pritchard, A. L. 1934e

Tagging programmes and their relation to the conservation of fish, with special reference to Pacific salmon in British Columbia waters. Proc. Fifth Sci. Cong., 1933, 5: 3733-3740.

O. tschawytscha, spring; O. kisutch, coho; O. gorbuscha, pink; O keta, chum; Brit. Col.; tagging & recapture data--migration routes; type of stream chosen.

Pritchard, A. L. 1936a

Factors Influencing the Upstream Spawning Migration of the Pink Salmon, Oncorhynchus gorbuscha. J. Biol. Bd. Can., 2: 383-389.

Oncorhynchus gorbuscha, pink; McClinton Cr., B.C.; type of stream chosen; size at time of seaward migration; distance traveled upstream; time species returns from ocean to stream mouth.

Pritchard, A. L. 1936b

Facts concerning the coho Salmon (Oncorhynchus kisutch) in the Commercial Catches of British Columbia as Determined from their Scales. Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert. Biol. Bd. of Can., 29: 16-20.

Oncorhynchus kisutch, coho, blueback; Brit. Col.; time of seaward migration; time young spend in freshwater; racial analysis.

Pritchard, A L. 1936c

Stomach content analysis of fishes preying upon the young of Pacific Salmon during the fry migration at McClinton Creek, Massett Inlet, British Columbia. The Canad. Field-Nat., 50: 104-105.

O. gorbuscha, pink; O. kisutch, coho; distribution; locality: McClinton Cr., Masset Inlet, B. C.; time of seaward migration; length at time of seaward migration; food and feeding habits.

Pritchard, A. L. 1937a

The Findings of the British Columbia Pink Salmon Investigation, Part I - Introduction & General Observations. Prog. Biol. Stas. Nanaimo & Prince Rupert. Biol. Bd. of Can., 33: 3-6.

Pink; McClinton Creek, B.C.; time species migrates upstream; sexual dimorphism; time of seaward migration.

Pritchard, A. L. 1937b

The Findings of the British Columbia Pink Salmon Investigation, Part II- Marking Experiments of Natural Propagation. Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert. Biol. Bd. of Can., 34: 8-12.

Pink; McClinton Creek, B.C.; home stream theory; age at time of return; marking & recapture data, migration route.

Pritchard, A. L. 1937c

Variation in the time of Run, Sex Proportions, Size and Egg Content of Adult Pink Salmon (Oncorhynchus gorbuscha) at McClinton Creek, Masset Inlet, B.C. J. Biol. Bd. Can., 3: 402-416.

Oncorhynchus gorbuscha, pink; O. nerka, sockeye; McClinton Cr., B.C.; sex ratios; sexual dimorphism; time species migrates upstream; size at time of return.

Pritchard, A.L. 1938a

The findings of the British Columbia pink salmon investigation. Part III - attempts to build an "off" year run in Masset Inlet. Fisheries Research Board of Canada. Prog. Reps. of Pac. Biol. Sta. & Pac. Fish. Exp. Sta., 35: 14-17

Pink; Masset Inlet, B. C.; age at time of return; intro. & acclim.: of odd year run to Masset Inlet, B.C.

Pritchard, A. L. 1938b

Transplantation of Pink Salmon (Oncorhynchus gorbuscha) into Masset Inlet, British Columbia, in the Barren Years. J. Fish.Res. Bd. Can., 4: 141-150.

Oncorhynchus gorbuscha, pink; Masset Inlet; transplantation of fry; marking & recapture data.

Pritchard, A. L. 1939a

Homing Tendency and Age at Maturity of Pink Salmon Oncorhynchus gorbuscha in British Columbia. J. Fish. Res. Bd. Can., 4: 233-251.

Oncorhynchus gorbuscha, pink; McClinton, B.C.; age at time of return; time young spend in freshwater; homing instinct; marking & recapture data.

Pritchard, A. L. 1939b

Natural Propagation of Pink Salmon in Masset Inlet, British Columbia, Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert Fish. Res. Bd. of Can., 41: 6-7.

Pink; Masset Inlet, B.C.; egg counts.

Pritchard, A. L. 1940a

The Age of Spring Salmon in the Commercial Catches in British Columbia Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert. Fish. Res. Bd. of Can., 44: 9-11.

Spring; Brit. Col.; age at time of return (age groups).

Pritchard, A. L. 1940b

Studies on the age of the coho salmon (Oncorhynchus kisutch) and the spring salmon (Oncorhynchus tschawytscha) in British Columbia. Trans. Roy. Soc. Can., (3), 34: 99-120.

O. kisutch, coho; O. tschawytscha (sic), spring, king, chinook; O. gorbuscha, pink; O. keta, chum; blueback; distribution; time young spend in freshwater; time species migrates upstream; type of stream chosen; nature of spawning site; time eggs hatch; age at time of return; age group ratios; behavior of fry; marking & recapture data; home stream theory.

Pritchard, A. L. 1940c

A study of the natural propagation of the pink salmon, O. gorbuscha, in British Columbia. Trans. Amer. Fish. Soc., 69: 69: 237-239.

O. gorbuscha, pink; McClinton Creek, B.C.; weir counts.

Pritchard, A. L. 1941

The Recovery of Marked Masset Inlet Pink Salmon During the Season of 1940. Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert. Fish. Res. Bd. of Can., 48: 13-17.

Pink; Masset Inlet, B.C. ; time species return to stream mouth; marking & recapture data; home stream theory.

Pritchard, A. L. 1943a

The Age of Chum Salmon Taken in the Commercial Catches in British Columbia. Prog. Rep. of the Pac. Coast Stas. Fish Res. Bd. of Can., 54: 9-11.

Oncorhynchus keta, chum; Brit. Col.; age at time of return; size at time of seaward migration; time young spend in freshwater.

Pritchard, A. L. 1943b

Results of the 1942 Pink Salmon Marking at Morrison Creek, Courtenay, B.C. Prog. Rep. of the Pac. Coast Stas. Fish. Res. Bd. of Can., 57: 8-10.

Pink; Morrison Creek, Courtenay, B.C.; marking & recapture data; home stream theory; migration routes; age at time of return.

Pritchard, A. L. 1943c

Salmon Angling in Cowichan Bay, Vancouver Island. Prog. Rep. of the Pac. Coast Stas. Fish. Res. Bd. of Can., 54: 6-8.

Coho, spring; Cowichan Bay, B.C.; catch records; time species migrates upstream.

Pritchard, A. L. 1944a

Physical Characteristics and Behavior of Pink Salmon Fry at McClinton Creek, B.C. J. Fish. Res. Bd. Can., 6: 217-227.

Oncorhynchus gorbuscha, pink; O. masu; McClinton Creek, B.C.; marking & recovery data; time eggs hatch; behavior of fry; counts and measurements (of fry); color (fry); time of seaward migration;

Pritchard, A.L. 1944c

Return of Two Pink Salmon (Oncorhynchus gorbuscha) to the Natal Stream from Distant Places in the Sea. Copeia, 1944: 80-82.

Oncorhynchus gorbuscha, pink; Brit. Col.; time species returns from ocean to stream mouth; time of seaward migration; movements in ocean; marking and recapture data; migration routes; home stream theory.

Pritchard, A.L. 1944d

Sockeye Salmon Tagging off the Skeena River in 1944. Prog. Rep. of the Pac. Coast Stas., Fish. Res. Bd. of Can., 61: 8-12.

Sockeye; Skeena River, B.C.; tagging & recapture data; distribution;

Pritchard, A.L. 1945a

Counts of Gill Rakers and Pyloric Caeca in Pink Salmon. J. Fish Res. Bd. Can., 6: 392-398.

Oncorhynchus gorbuscha, pink; O. tshcawytscha, king; O. nerka, sockeye; O. keta; Brit. Col.; racial analysis; counts & measurements.

Pritchard, A.L. 1945b

Observations on the Upstream Migration of the Coho Salmon Spawning Runs in the Cowichan River. Prog. Rep. of the Pac. Coast Stas. Fish. Res. Bd. of Can., 62: 14-16.

Coho; Cowichan River,B.C.; time species migrates upstream.

Pritchard, A.L. 1945c

Sockeye Salmon Tagging off the Skeena River in 1945. Prog. Rep. of the Pac. Coast Sas. Fish. Res. Bd. of Can., 65: 77-70.

Sockeye, Spring, coho; Skeena River, B.C.; tagging & recapture data; distribution.

Pritchard, A.L. 1947

Sockeye Salmon Tagging off the Skeena River in 1946. Prog. Rep. of the Pac. Coast Stas; Fish. Res. Bd. of Can., 70: 13-16

Sockeye; Skeena River, B.C.: tagging & recapture data, on migration routes.

Pritchard, A.L. 1948a

A discussion of the mortality in pink salmon (Oncorhynchus gorbuscha) during their period of marine life. Trans. Roy. Soc. Can., (3) 42: 125-133.

O. gorbuscha, pink; distribution; age at time of return; home stream theory; movements in ocean.

Pritchard, A.L. 1948b

Efficiency of Natural Propagation of the Pink Salmon (Oncorhynchus gorbuscha) in McClinton Creek, Masset Inlet, B.C. J Fish. Res. Bd. Can., 7: 224-236.

Oncorhynchus gorbuscha, pink; McClinton Creek, Masset Inlet, B.C.; sex ratios, adults; egg counts; weight at time of seaward migration.

Pritchard, A.L. 1948c

Sockeye Salmon Tagging off the Skeena River in 1947. Prog. Rep. Pac. Coast Stas., Fish. Res. Bd. of Can., 75: 40-42.

Sockeye; Skeena River, B.C.; tagging & recapture data, migration routes; segregation of populations.

Pritchard, A.L. 1949

Appendix IX, Report for 1948 on the Skeena River Salmon Investigation. Annual Report Fish. Res. Bd. of Can., 1948: 79-85.

Sockeye; chum; pink; coho; spring; Skeena River, B.C.; type of stream chosen; catch records.

Pritchard, A.L., and Brett, J.R. 1945

A Sockeye Salmon Tagging Experiment in Lakelse Lake. Prog. Rep. of the Pac. Coast Stas. Fish. Res. Bd. of Can., 62: 4-6.

Sockeye; Lakelse Lake, B.C.; tagging & recapture data (movements within the lake system).

Pritchard, A. L., and Cameron, W.M. 1940

Observations on the Sockeye Salmon Run at Lakelse Lake (Skeena River) in the Year 1939. Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert. Fish. Res. Bd. of Can., 43: 14-16.

Sockeye; Lakelse Lake (Skeena River), B.C. description; time species migrates upstream; egg counts; spawning period.

Pritchard, A.L., and DeLacy, Allan C. 1944a

Migration of Pink Salmon (Oncorhynchus gorbuscha) in Southern British Columbia and Washington in 1943. Bull. Fish. Res. Bd. Can., 66: 1-23.

Oncorhynchus gorbuscha, pink; So. Brit. Col. & Wash.; time species returns from ocean to stream mouth; time species migrates upstream; tagging & recapture data; migration routes.

Pritchard, A.L., and DeLacy, Allan C. 1944b

Pink Salmon Tagging Experiments During 1943 in Southern British Columbia & the Puget Sound Area of the State of Washington. Prog. Rep. of the Pac. Coast Stas. Fish. Res. Bd. of Can., 58: 8-12.

Pink; Southern B.C. & Puget Sound, Wash.; tagging & recapture data; distribution.

Pritchard, A. L., and Neave, Ferris 1942

What Did the Taggin of Coho Salmon at Skutz Falls, Cowichan River, Reveal? Prog. Rep. of the Pac. Coast Stas. Fish. Res. Bd. of Can., 51: 8-11.

Coho; Skutz Falls, B.C.; tagging & recapture data; spawning period; migration behavior: leaping habit.

Pritchard, A.L., and Tester, Albert L. 1939

The Food of Spring Salmon in British Columbia Waters During 1939. Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert, Fish. Res. Bd. of Can., 42: 3-7.

Spring; Brit. Col.; food & feeding habits.

Pritchard, A.L., and Tester, Albert L. 1941

The Food of Spring Salmon in British Columbia Waters in 1940. Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert, Fish. Res. Bd. of Can., 47: 14-18.

Spring; Brit. Col.; food & feeding habits.

Pritchard, A.L. and Tester, Albert L. 1942

The Food of Spring Salmon in British Columbia Waters in 1941. Prog. Rep. of the Pac. Coast Stas. Fish. Res. Bd. of Can., 53: 3-6.

Spring; Brit. Col.; food & feeding habits.

Pritchard, A.L., and Tester, Albert L. 1943

Notes on the Food of Coho Salmon in British Columbia waters. Prog. Rep. of the Pac. Coast Stas. Fish. Res. Bd. of Can., 55: 10-11.

Coho; Brit. Col.; food & feeding habits.

Pritchard, A.L., and Tester, Albert L. 1944

Food of Spring and Coho Salmon in British Columbia. Bull. Fish. Res. Bd. Can., 65: 1-23.

Spring; coho; Brit. Col.; food & Feeding habits; figured.

Pugsley, L.I. 1942

Vitamin A and D Potencies of Oil from Body, Liver and Intestines of Pilchard, Herring, Salmon and Tullibee. J. Fish. Res. Bd. Can., 5: 428-437.

Oncorhynchus nerka, sockeye; O. gorbuscha, pink; O. keta, chum; O. tschawytscha, spring; biochemical.

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Radcliffe, Lewis 1920

Fishery industries of the United States Rep. Commissioner Fish. for 1918, U.S. Bureau Fish. Doc., 875: 1-167.

Chinook; silver, humpback, blueback, sockeye, chum; Wash.; Ore.; Calif.; distribution (pp. 94); size of species at time of return; time species migrates upstream.

Radcliffe, Lewis 1921

Fishery industries of the United States Rep. Comm. Fish. 1921, U.S. Bur. Fish Doc., 908: 1-187.

Humpback; intro. & acclim.; Maine.

Radcliffe, Lewis 1928

Need for Racial Study of Fishes. Copeia, October-December, 1928, 169: 85-88.

Red Salmon; Vancouver Isl.; racial analysis-comments; type of stream chosen; distance traveled upstream.

Radovich, John, and Gibbs, Earl O. 1954

The use of a blanket net in sampling fish populations; Cal. Fish & Game, 40: 353-365.

O. tshawytscha king; distribution.

Rathbun, Richard 1894

Summary of the Fishery Investigations Conducted in the North Pacific Ocean and Bering Sea from July 1, 1888, to July 1, 1892, by the U.S. Fish Commission Steamer Albatross, Bull. U.S. Fish Comm., 12: 127-201.

O. gorbuscha, humpback; O. keta, dog; O. nerka, red; silver; king; Nusagok R.; Unalaska; time species migrates upstream.

Rathbun, Richard 1900

A review of the fisheries in the contiguous waters of the state of Washington and Brit. Col. Rep. Commr. for 1899, U.S. Comm. Fish and Fish., 253-350.

Oncorhynchus nerka, blueback, sockeye, redfish; O. tschawytscha, quinnat, tyee, spring; O. kisutch, silver, coho; O. keta, dog; O. gorbuscha, humpback, haddo; movements in ocean (migration routes); type of stream chosen; time species migrates upstream; racial analysis--comments only; distribution; spawning period; postspawning behavior (survival after spawning); weight of species at time of return; description--flesh color, p. 283.

Ravenel, W. de C. 1896a

Report on the propagation and distribution of food fishes. Rep. Commr. for 1895, U.S. Comm. Fish and Fish., 6-72.

Oncorhynchus tschawytscha, chinook, quinnat, silver; Klamath R.; Mad R.; McCloud R.; Calif.; time species migrates upstream; spawning period; intro. & acclim.: France, Calif., Ore.

Ravenel, W. de C. 1896b

Report on the propagation and distribution of food fishes. Rep. Commr. for 1896, U.S. Comm. Fish and Fish., 11-92.

Quinnat; intro. & acclim.: Calif., Ore., Germany, Nicaragua, Ireland.

Ravenel, W. de C. 1898

Report on the propagation and distribution of food fishes. Rep. Commr. for 1897, U.S. Comm. Fish and Fish., xviii-xc.

Quinnat; intro. & acclim. : Calif., Me. Md., N.H., N. Y., Ore., Pa., Vt., Wash., France, Germany; spawning period.

Ravenel, W. de C. 1899

Report on propagation and distribution of food fishes. Rep. Commr. for 1898, U.S. Comm. Fish and Fish., xxxi-cxxii.

California salmon; Calif., Ore.; spawning period; intro. & acclim.: Calif., Me., Mass., N.Y., Ore., Wash., Italy, Germany, Japan, France.

Ravenel, W. de C. 1900

Report on the propagation and distribution of food fishes. Rep. Commr. for 1899, U.S. Comm. Fish and Fish, xxxv-cxvii.

Salmon (quinnat salmon?); Ore., Wash., Calif.; spawning period; intro. & acclim.: Calif., Ore., Wash., Vt., Va., Japan, France, New Zealand.

Ravenel, W. de C. 1901

Report on the propagation and distribution of food fishes. Rep. Commr. for 1900, U.S. Comm. Fish and Fish., 25-118.

Quinnat; sockeye; Wash., Ore., Calif.; spawning period; intro. & acclim.: Mo., New Zealand, France.

Ravenel, W. de C. 1902

Report on the propagation and distribution of food fishes. Rep. Commr. for 1901, U.S. Comm. Fish and Fish., 21-110.

Quinnat; blueback; silver; Wash., Ore., Calif.; spawning period; intro. & acclim.: Misc., New Zealand.

Raveret-Wattel, C. 1885a

American Fish in France. Bull. U.S. Fish Comm., 5: 423.

California salmon, Salmo quinnat; apparently spawned in Gartempe Riv., France; mention of recaptures in Aude & Herault Rivers; intro. & acclim.: France.

Raveret-Wattel, C. 1885b

Note on the Culture of American Salmon in France. Bull. U.S. Fish Comm., 5: 1-260.

Salmo quinnat; recaptures in Herault & Aude Rivers, France; intro. & acclim.: France.

Raveret-Wattel, C., and Barrett 1883

Reproduction of California Salmon in the Aquarium of Trocadero. Bull. U.S. Fish Comm., 3: 207-208.

Oncorhynchus quinnat, California salmon; Paris, France; intro. & acclim.; hybridization.

Reagan, Albert B 1917

Archaeological notes on Western Washington and adjacent British Columbia: Proc. Calif. Acad. Sci.; 7(4): 1-31.

O. tschawytscha, spring; O. nerka, sockeye; O. kisutch, silver; O. keta, dog; O. gorbuscha, humpback; fossil; La Push, Wash.

Redding, B. B. 1876

Correspondence relating to the San Joaquin River and its fishes. Rep. Commr. for 1873-74 and 1874-75, U.S. Comm. Fish and Fish., Part III, 479-483.

California salmon; San Joaquin R.; distribution; spawning period.

Redding, B.B., Throckmorton, S.R., and Farwell, J.D. 1933

Report of Commission of Fisheries of the State of California for the years 1870 and 1871; Cal. Fish & Game, 19: 41-45.

Salmon; distribution; Sacramento & San Joaquin R., Calif., Snake R.; time species returns from ocean to stream mouth; distance traveled upstream; spawning behavior; nature of spawning site; time eggs hatch; time young spend in freshwater.

Regan, C. Tate 1914

Systematic arrangement of the fishes of the family Salmonidae. Ann. Mag. Nat. Hist., 13 (8): 405.

Regan, C. Tate 1920

The Geographical Distribution of Salmon & Trout. Salm. Trout Mag., 25-35.

Salmo masu,masu ; Lake Biwa, Japan; range; figured.

Rich, Willis H. 1921a

An Instance of Adult, Sea-Run chinook Salmon Found Feeding in Fresh Water, Calif. Fish & Game, 7: 7-8.

Chinook; Cowlitz River, Columbia River; food & feeding habits - freshwater; stomach analyses.

Rich, Willis H. 1921b

The Relative Maturity of the Chinook Salmon Taken in the Ocean Along the Pacific Coast, Calif. Fish & Game, 7: 12-22.

Chinook; Columbia River, Monterey Bay; age at time of return - determined by scale studies; racial analysis - comments only.

Rich, Willis H. 1922

Early history and seaward migration of chinook salmon in the Columbia and Sacramento Rivers. Bull. U.S. Bur. Fish., 37: 1-73.

Oncorhynchus tschawytscha, chinook; Columbia & Sacramento Rivers; time of seaward migration; precociously maturing male stream fry; growth rates (scale studies); sex ratios; smallest young chinook caught in ocean off Half Moon Bay, Calif.; description of precociously mature stream males; age at time of maturity; time young spend in freshwater; time fry emerge; time species migrates upstream.

Rich, Willis H. 1924

Progress in biological inquiries, 1923. Rep. Commr. Fish. for 1923, U.S. Bur.Fish. Doc., 956: 1-27.

O. nerka, redfish; sockeye, blueback; North Pacific & Bering Sea; tagging & recapture data (migrated routes); distance traveled upstream.

Rich, Willis H. 1925a

Progress in biological inquiries, fiscal year 1924. Rep. Commr. Fish for 1924, U.S. Bur. Fish. Doc., 971: 1-46.

Red; humpback; dog; silver; marking & recapture data, Bristol Bay; migration routes; movements in ocean (feeding grounds); racial analysis, comments, pg. 26.

Rich, Willis H. 1925b

Progress in biological inquiries, July 1 to December 31, 1924. Rep. Commr. Fish. for 1925, U.S. Bur. Fish. Doc., 990; 37-64.

Sockeye, blueback; intro. & acclim.: from Alaska to Herman Cr., Ore.; distribution: Okanagan R.

Rich, Willis H. 1926

Growth and Degree of Maturity of Chinook Salmon in the Ocean. Bull. U.S. Bur. Fish., 41: 15-90.

Chinook; Columbia Riv.; ocean near Col. Riv.; Fort Bragg & Pt. Reyes; Monterey Bay; egg counts; age at time of return; age groups; racial analyses-comments; growth rates (from scale studies); time young spend in freshwater.

Rich, Willis H. 1927

Salmon-tagging experiments in Alaska, 1924-and 1925. Bull. U.S. Bur. Fish., 42: 109-146.

Red, coho, pink, chum; southeastern Alaska; tagging & recapture data; migration routes.

Rich, Willis H. 1935a

Salmon-tagging experiments in Alaska, 1930. Bull. U.S. Bur. Fish., 47: 399-406.

Pink, red, chum, coho, king; southeastern Alaska; Cape Fox and Sitklan & Kanaganut Isls.; tagging & recapture data; migration routes.

Rich, Willis H. 1935c

Statistical Review of the Alaska salmon fisheries, Par IV; southeastern Alaska. Bull. U. S. Bur. Fish., 47: 437-662.

Red, pink, king chum, coho; southeastern Alaska; catch records; distribution; tagging & recovery data; Columbia R. kings off S.E. Alaska.

Rich, Willis H. 1939

Local Populations and Migration in relation to the conservation of Pacific Salmon in the Western States and Alaska. Contrib. Fish. Comm. of State of Oregon, Contrib. 1: 45-50.

Oncorhynchus nerka, red, sockeye, blueback; O. tshawytscha,,chinook; O. gorbuscha, pink; general Pacific region from Columbia R. to Alaska; Aleutian Islands; movements in ocean; marking & recapture data; migration routes, segregation; home stream theory.

Rich, Willis H. 1940a

Seasonal Variations in Weight of Columbia River Chinook Salmon. Copeia, 1: 34-43.

Chinook; Columbia R.; weight at time of return.

Rich, Willis H. 1940b

The Future of the Columbia River Salmon Fisheries. Contrib. Fish. Commis. State of Oregon, 6: 37-47.

Chinook, quinnat; blueback; silver; chum; locality - Columbia R, Klamath, Sacramento, Fort Bragg Rivers; catch records; egg counts.

Rich, Willis H. 1941

The Present State of the Columbia River Salmon Resources. Contrib. Fish. Comm. of the State of Oregon, 3: 425-430.

Oncorhynchus tshawytscha, chinook; O. nerka, blueback, O. kisutch, silver; O. keta, chum. Columbia river; catch records; tagging & recapture data.

Rich, Willis H. 1942

The Salmon Runs of the Columbia River in 1938. Contrib. Fish. Comm. State of Oregon. Contrib. 7; 103-147.

Oncorhynchus tshawytscha. chinook; O. kisutch, silver; O. nerka, blueback, O. keta, chum; Columbia R.; catch records for each species; distribution; time species migrates upstream; counts of grilse or jack salmon (chinook); counts of migrant adults.

Rich, Willis H. 1943

An Application of the Control Chart Method to the Analysis of Fisheries Data. Contrib. Fish. Comm. State of Oregon, 8: 1-5.

Chinook, Columbia River; catch records.

Rich, Willis H. 1948

A survey of the Columbia River and its tributaries with special reference to the management of its fishery resources. U.S. Fish & Wildlife Service Spec. Sci. Rep. 51: 1-26.

O. tshawytscha, chinook; O. nerka, blueback; O. kisutch, silver, jack, grilse; O. keta, chum; O. gorbuscha, pink; distribution; Columbia R.; age at time of return; type of stream chosen; nature of spawning site; time eggs hatch; behavior of fry; time of seaward migration; time young spend in freshwater; length of time of seaward migration; food & feeding habits; lake; home stream theory.

Rich, Willis H., and Ball, Edward M. 1931

Statistical Review of the Alaska Salmon fisheries, Part III; Chignik to Resurrection Bay. Bull. U.S. Bur. Fish. 46: 643, 712.

Red; pink; coho; king; Chignik to Resurrection Bay, Alaska; catch records; home stream theory.

Rich, Willis H., and Ball, Edward M. 1935

Statistical Review of the Alaska Salmon Fisheries Part III: Prince William Sound, Copper River and Bering River. Bull. U.S. Bur. Fish., 47: 187-247.

Red; coho; pink; chum; king; Prince William Sound, south Alaska; catch records.

Rich, Willis H., and Holmes, Harlan B. 1928

Experiments in marking young chinook Salmon on the Columbia River, 1916 to 1927. Bull. U.S. Bur. Fish., 44: 215-264.

Chinook; Columbia R.; marking and recapture data; time species migrates upstream; racial analysis-experimental data; size of species at time of return; movements in ocean; time species returns from ocean to stream mouth; home stream theory; expts. 6,7,8 & p. 262; spawning period; age at time of return; transplantation expt.

Rich, Willis H., and Morton, Frederick G. 1930

Salmon-tagging experiments in Alaska, 1927 and 1928. Bull. U.S. Bur. Fish., 45: 1-23.

Pink; red; chum; coho; king; southeastern Alaska, Uganik Bay, Kokiak Island & Nicholaski Spit, Alaska Peninsula; tagging & recapture data; migration routes in channels of S.E. Alaska and Alaskan Peninsula.

Rich, Willis H., and Suomela, Arne J. 1929

Salmon & tagging Experiments in Alaska, 1926. Bull. U.S. Bur. Fish., (2) 43: 71-104.

Red, coho, pink, chum; southeastern Alaska; tagging & recovery; migration routes.

Ricker, William E. 1934

Plankton Organisms and their Relation to the Sockeye of Cultus Lake. Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert. Biol. Bd. of Can., 21: 14-17.

Sockeye; Cultus Lake, B.C.; food & feeding habits in lakes.

Ricker, William E. 1937

The Food and Food Supply of Sockeye Salmon (Oncorhynchus nerka) in Cultus Lake, British Columbia. J. Biol. Bd. Can., 3: 450-468.

Oncorhynchus nerka, sockeye; Cultus Lake; food & feeding habits in first, second, & third year of life; Oncorhynchus kisutch, coho, competitor; intra-specific food competition.

Ricker, William E. 1938a

A Comparison of the Seasonal Growth Rates of Young Sockeye Salmon & Young Squawfish in Cultus Lake; Prog. Rep. Biol. Stas. Nanaimo & Prince Rupert, Fish. Res. Bd. of Can., 36: 3-5.

Sockeye; Cultus Lake, B.C.; growth rates.

Ricker, William E. 1938b

"Residual" and Kokanee salmon in Cultus Lake. J.Fish. Res. Bd. Can., 4: 192-218.

Oncorhynchus nerka, sockeye; Cultus Lake; anadromous, kokanee (landlocked sockeye) & "residual" sockeye

O. nerka kennerlyi; comparisons; sex ratios; age & size at maturity; simportance of rate of growth & sex in residualness; parasite; spawning period; food & feeding habits; growth rates; color; spawning behavior.

Ricker, William E. 1940

On the origin of kokanee, a freshwater type of sockeye salmon. Trans. Roy. Soc. Can., 34 (3): 121-135.

O. keta, chum; O. nerka, sockeye; O. n. kennerlyi, kokanee, kickaninnies, landlocked sockeye, little redfish, silver trout; distribution; detailed racial analysis; parasites; spawning period; age at time of return; length at time of return; sexual dimorphism, color, body changes; behavior of fry; food & feeding habits; time young spend in freshwater; home stream theory.

Ricker, William E. 1947

Hell's Gate and the sockeye. Jour. of Wildlife Management, 11: 10-20.

Sockeye; distribution; time species migrates upstream.

Ricker, William E. 1954

Pacific salmon for Atlantic waters? The Canadian Fish Culturist, 16: 6-14.

O. masou, cherry; O.tschawytscha (sic.), chinook, spring; O. kisutch, coho; O. nerka, sockeye; O. gorbuscha, pink; O. keta, chum; time young spend in freshwater; food & feeding habits: ocean; range; age at time of return.

Ricker, William E., and Robertson, A. 1935

Observations on the behavior of adult sockeye salmon during the spawning migration. Can. Field-Nat., 49: 132-134.

O. nerka, sockeye; Vedder Cr., Fraser R., B.C.; time species migrates upstream; marking & recapture data--migration routes; home stream theory.

Riddle, Matthew C. 1917

Early development of the Chinook salmon. Puget Sound Marine Station Publ., Wash. (State) Univ., 1: 319-339.

O. tshawytscha; Oregon; description of egg & sperm; development & hatching.

Rivers, Cole M. 19 7

Rogue River investigations. Bull. Oregon State Game Comm., 2: 1,4

Chinook; silver; Rogue River, Oregon; time species returns from ocean to stream mouth; time eggs hatch; time of seaward migration.

Robertson, Alexander 1920

The progeny of a pair of salmon. Pac. Fisherman, July, 18: 55-56.

Dog; sockeye; Harrison L., B.C.; Nature of spawning site; behavior of fry.

Robertson, Alexander 1921

Some observations on the growth of young sockeyes. Trans. Amer. Fish. Soc. 51: 91-94.

Sockeye; Brit. Col.; time of seaward migration; time young spend in freshwater; size at time of seaward migration; growth rates in freshwater (direct measurements); marking & recapture data; food in lakes.

Robertson, J.G. 1948

Smith Inlet Sockeye, Prog. Rep. Pac. Coast Stas., Fish. Res. Bd. of Can., 75: 31-34.

Sockeye; Smith Inlet, B.C.; age at time of return (by scale studies); sex ratios; size of species at time of return.

Robertson, J.G. 1949

Sockeye Fry Production in a Small British Columbia Coastal Watershed; Prog. Rep. Pac. Coast Stas. Fish, Res. Bd. of Can., 80: 55-57.

Pink; chum; coho; sockeye; Port John Lake, B.C.; time sockeye migrate upstream; egg counts: counts of migrant adults; time of downstream migration to lake (fry).

Robinson, W. Russell 1884

A California Salmon taken in James River; Bull. U.S. Fish. Comm. 4: 290.

California Salmon; James River; Virginia; intro. & acclim.

Rockwood, A.P. 1876

Hatching and distribution of Calif. salmon in tributaries of Great Salt Lake. Rep. Commr. for 1873-74 and 1874-75, U.S. Comm. Fish & Fish., 434-435.

California salmon; intro. & acclim.: Utah.

Roedel, Phil M. 1948

Common Marine Fishes of California. Calif. Fish Game, Fish Bull. 68: 1-150.

Oncorhynchus keta, chum; O. gorbuscha, pink; O. nerka, red; O. tshawytscha, king; O. kisutch, silver; figured; color; distribution; unauthorized names for O. tshawytscha: chinook salmon, quinnat, tyee, spring, black, dog, chub, silver, hookbill, Sacramento River salmon, Columbia River salmon; unauthorized names for O. kisutch: coho, dog. hookbill, silversides, jack.

Roedel, Phil M. 1953a

Common Ocean Fishes of California Coast. Calif. Fish Game, Fish Bull., 91: 1-184.

Oncorhynchus nerka, sockeye; O. keta, chum; O. gorbuscha, pink; listed; O. tshawytscha, king, chinook, quinnat, tyee, spring, black, chub, hookbill, Sacramento River Salmon, Columbia R., salmon; O. kisutch, silver, coho, dog, hookbill, silversides, jack; range; color; comparison (keys).

Roedel, Phil M. 1953b

Official common names of certain marine fishes of California. Cal. Fish & Game., 39: 251-262.

O. gorbuscha, pink; O. keta, chum; O. tshawytscha, king, chinook; O. kisutch, silver; O. nerka, sockeye, red; listed.

Rounsefell, George A., and Kelez, George B. 1940

The Salmon and Salmon fisheries of Swiftsure Bank, Puget Sound, and the Fraser River. Bull. U.S. Bur. Fish., 48: 693-823.

Oncorhynchus nerka, red (in Alaska), blueback (on Skagit, Quinault, & Col. Rivers), sockeye; O. kisutch, coho, silver, silversides; O. tshawytscha, king, spring, chinook (on Col. Riv.), quinnat (on Sacramento Riv.); O. gorbuscha, pink, humpback; O. keta, chum, dog;

blackmouth, for immature king and sometimes cohos; immature cohos in Gulf of Georgia called bluebacks; size at time of return; Swiftsure Bank, Puget Sound & Fraser River; general life history; age at time of return; spawning period; time young migrate seaward; size at time of seaward migration; movements in ocean, young coho; growth rates; marking & recapture data; white & red fleshed kings; homing instinct; time species returns from ocean to stream mouth; trap catches-relative abundance of species; distribution; nature of spawning site; food & feeding habits; immature coho & king feeding at Swiftsure Bank.

Royal, Lloyd A. 1951

Sockeye Facts which may bear upon the Fraser Run of '51. Pac. Fisherman, 49: 22-25.

Sockeye; Fraser River; segragation of populations; time species returns from ocean to stream mouth; time species migrates upstream; counts; racial analysis.

Rucker, R.R., Whipple, W.J., Parvin, J.R., and Evans, C.A. 1953

A contagious disease of salmon possible of virus origin. Fish. Bull. U.S. Fish & Wildlife Service, 54: 35- 6.

Oncorhynchus nerka, blueback, sockeye, kokanee; Leavenworth & Winthrop hatcheries, Wash.; internal, probably virus disease which did not infect O. tshawytscha, O. kisutch, or Salmo clarki clarki.

Rutter, Cloudsley 1902

Studies in the Natural History of the Sacramento Salmon, Appendix to 17th Biennial Report of Bd. of Fish. Comm., 64-76.

Oncorhynchus chouicha, Sacramento quinnat; dog; humpback; Calif.; figured; nature of spawning site; spawning behavior, milt & ova described; time eggs hatch; time of seaward migration; rate growth of fry; behavior of migrating fry; food; external & internal parasites; marking & recapture data; age at time of return; rate of upstream migration; home stream theory; sexual dimorphism; post spawning behavior.

Rutter, Cloudsley 1904a

Artificial propagation of salmon in the Sacramento R. Append. to 18th Biennial Rep. Bd. of Fish. Commrs. State of Calif., 1903-1904: 103-107.

Quinnat or Sacramento R. salmon; figured.

Rutter, Cloudsley 1904b

Natural History of the Quinnat Salmon, A Report on Investigations in the Sacramento River, 1896-1901. Bull. U.S. Fish Comm., 22: 65-141.

Oncorhynchus tshawytscha, Sacramento or quinnat, Columbia River salmon, king, chinook; O. nerka, blueback, red, redfish, sockeye; O. kisutch, silver; O. gorbuscha, humpback; O. keta, dog; Sacramento Riv. & tributaries; survival time of milt & fertilizable period of ova; behavior of migrating fry; movements in ocean; feeding habits in freshwater; sexual dimorphism; two forms of adult males; post spawning behavior (death after spawning); distribution; type of stream chosen; spawning time; spawning behavior; incubation period; behavior of alevins & fingerlings; behavior of migrating fry; effect of sea water on alevins & fry; fingerling marking experiments; mature males & females 4"-6" long, eggs fertilized & hatched; homing

theory, p. 121; migration through S.F. Bay; marking & recapture data; bodily changes after entering freshwater; figures of alimentary tracts; sex ratios; hermaphrodites; time of seaward migration; time young spend in freshwater; age at time of return; into. & acclim., Paper Mill Creek, Marin Co., Calif., of king salmon; color; time species migrates upstream.

Rutter, Cloudsley 1907

Do quinnat salmon return to their native streams? (Extracts from "Rep. on Investigations in the Sacramento R., 1896-1901") App. 19th Biennial Rep. State. Bd. Fish. Commrs. Calif., 1905-06: 93-97.

Quinnat; Sacramento R., Calif.; home stream theory; tagging and recapture data; spawning behavior; spawning period.

Rutter, Cloudsley 1908

The Fishes of the Sacramento-San Joaquin Basin, with a study of their distribution and variation. Bull. U.S Bur. Fish., 27: 103-152.

Oncorhynchus gorbuscha, humpback; O. keta, dog; reported rarely in canneries; O. kisutch, O. tshawytscha; listed; key; spawning period; time young stay in freshwater; time species migrates upstream; distribution.

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Saito, Toradiro 1940

Structure of scales of Kamchatka silver salmon, Oncorhynchus keta (Walb.), in relation to the locality from which the fish are taken. (In Japanese with English summary). Bull. Jap. Soc. Sci. Fish., (2)9:47-50.

Sakano, Eiichi and Hara, Shigeru 1955

Marking experiments of young salmon in Hokkaido. 1) Results recaptured in 1954. Scientific Reps. of the Hokkaido Fish Hatchery, 10: 57-61. (Entirely in Japanese).

No English abstract.

Sano, Seizo 1951

On the stock of salmon (Oncorhynchus keta Walbaum) in the Coastal waters of Japan and their homing instinct. Sci. Reps. of the Hokkaido Fish Hatchery, 6: 1-10. (English summary included).

Oncorhynchus nerka Walbaum, sockeye; O. keta Walbaum, chum, dog; white salmon, Tokeshiazu salmon, autumn salmon; under autumn salmon; south Kurile group, Tohoku, Pacific, Nemuro Bay, Kitami, Ishikari by group (October, December) Shiriuchi group; Japan; description; racial analysis--comments; tagging & recapture data on migration routes; home stream theory; parasites.

Sano, Seizo 1955

Observations on the natural spawning of the salmon, O. keta. Conditions of the spawning bed. Sci. Reps. of the Hokkaido Fish Hatchery., 10: 1-6. (In Japanese with English abstract).

O. keta; localities: Shiriuchi, Mohegi, Yurappu Rivers, and tributaries of Tokachi R., Japan; time species migrates upstream; nature of spawning site.

Sano, Seizo 1954

On the recovery of tagged salmon, June-October 1954. (In Japanese). Sci. Rep. Hokkaido Fish Hatchery, 9(1,2): 199-204.

Not abstracted.

Sano, Seizo, and Kobayashi, Tetsuo 1952

An ecological study on the salmon fry Oncorhynchus keta (I). Sci. Rep. Hokkaido Fish Hatch., 7: 1-10. (with English summary)

Oncorhynchus keta; O. masou; coastal waters and rivers of Hokkaido, Japan; time of seaward migration; movements in ocean; growth rates determined by direct measurement; scale figures.

Sano, Seizo, and Kobayashi, Tetsuo 1953a

An ecological study on the salmon fry Oncorhynchus keta (II). The migration and growth of the fry in the marking experiment. Sci. Rep. Hokkaido Fish Hatch., 8: 71-79. (with English summary)

Oncorhynchus masou; O. keta; Japan; marking and recapture data on migration routes; growth rates; time of seaward migration.

Sano, Seizo, and Kobayashi, Tetsuo 1953b

On the returning of pink salmon (Oncorhynchus gorbuscha Walbaum) in Yurappu R. Sci. Rep. Hokkaido Fish Hatch., 8: 1-10. (with English abstract).

Oncorhynchus gorbuscha, pink; Yurappu R., Japan; Marking & recapture data on migration routes; figured.

Scattergood, Leslie W. 1949

Notes on the Kokanee (Oncorhynchus nerka kennerlyi). Copeia, 4:297-298.

Oncorhynchus nerka kennerlyi, kokanee, silver trout, little redfish, land-locked sockeye, "yank" ; range: Lakes of Pacific Northwest and British Columbia; Washington State; sexual dimorphism; intro. & acclim.: Maine; size at time of return; egg count.

Schaefer, Milner B. 1951

A study of the spawning populations of sockeye salmon in the Harrison River System, with special reference to the problem of enumeration by means of marked members. Bull. 4, Internat'l. Pac. Salmon Fish. Comm., 1-207.

Sockeye; Fraser R., Can.; distribution; spawning period; racial analysis: detailed data -- scale studies: tagging & recapture data.

Scheer, Bradley T. 1939

Homing instinct in salmon. The Quart. Review of Biol., 14:

O. gorbuscha, humpback, pink; O. keta, chum, dog; O. kisutch, coho, silver; O. nerka, bluleback, quinault, red, sockeye; O. tschawytscha, king, chinook quinnat, spring, tyee; distribution; marking & recapture data; homing instinct; distance traveled upstream; time young spend in freshwater; age at time of return; age group ratios; size at time of return; detailed racial analysis, methods; type of stream chosen; movements in ocean.

Schultz, Leonard P. 1929

Check-list of the Fresh-water Fishes of Oregon & Washington. Fisheries, Wash. University Publications, 2: 43-50.

Oncorhynchus gorbuscha, humpback; O. keta, dog; O. tschawytscha, king, spring; O. kisutch, silver; O. nerka, sockeye; O. nerka kennerlyi, little redfish; listed.

Schultz, Leonard P. 1934

Species of salmon and trout in the northwestern United States. Proc. Fifth Pac. Sci. Cong., 1933, 5: 3777-3782.

O. keta, dog; O. gorbuscha, humpback; O. nerka, blueback, red; O. kennerlyi (not considered a species), little redfish, silver trout; O. kisutch, silver, coho; O. tschawytscha, king, quinnat; northwestern United States; comparisons (key).

Schultz, Leonard P. 1935

The breeding activities of the little redfish, a land-locked form of the sockeye salmon, Oncorhynchus nerka. Mid-Pacific Magazine, 48(1): 67-77.

O. nerka, little redfish, silver trout; O. kisutch; Swamp Cr., Washington; nature of spawning site; spawning period; sexual dimorphism; color, bodily changes; size at time of return; spawning behavior; post-spawning behavior.

Scofield, N. B. 1896a

Notes on an Investigation of the Movement & Rate of Growth of the Quinnat Salmon Fry in the Sacrament River. Extracted from the Appendix of the 15th Biennial Rep. State Bd. of Fish Comm. State of Cal., 1897-1898: 66-71.

Quinnat; Sacramento River; time eggs hatch; rate of growth of fry; time of seaward migration; time young spend in freshwater; size at time of seaward migration.

Scofield, N. B. 1896b

A Report on the Planting of Quinnat Salmon Fry in the Short Coast Streams Marin County, Calif. Extracted from the Appendix of the 15th Biennial Report. State Bd. of Fish Comm. State of Cal. Year 1879-1898., 49-65.

Oncorhynchus keta, dog; quinnat; Marin County, Calif.; time eggs hatch; frys figured; food & feeding habits in stream; behavior of fry; time & rate of seaward migration; growth rate of fry in freshwater; time young spend in freshwater.

Scofield, N.B. 1900

A report on the planting of quinnat salmon fry in the short coast streams of Marin County, California, with results of observations made upon their movements, food, rate of growth, enemies, etc. Appendix, Fifteenth Biennial Report of the State Board of Fish Commissioners of the State of California for the years 1897-1898, 49-62.

Quinnat; O. keta, dog; locality: Marin Co., Calif., species figured; time of seaward migration; behavior of fry and fingerlings; rate of growth (determined by direct measurement); food & feeding habits; intro. & acclim. to Marin Co., Calif.

Scofield, N.B. 1916

The Humpback & Dog Salmon Taken in San Lorenzo River, Calif. Fish & Game, 2: 1-41

Oncorhynchus gorbuscha, humpback O. keta, dog; quinnat, silver, blueback; description; color; San Lorenzo River; weight at time of return.

Scofield, N. B. 1918

Quinnat Salmon in New Zealand, Calif. Fish & Game, 4: 16-17.

Quinnat; intro. & acclim. into New Zealand.

Scofield, N. B. 1919a

Commercial Fishery Notes, Salmon at Monterey, Calif. Fish & Game, 5:1-198.

King; Monterey; approximate time of runs.

Scofield, N. B. 1919b

Salmon of the Sacramento Need More Protection. Calif. Fish & Game, 5: 196-197.

Salmon; distribution; Sacramento River; approximate time species migrate upstream.

Scofield, N.B. 1920

Marking Sockeye Salmon Fry, Calif. Fish & Game, 6: 80-81.

Sockeye; distribution; Oregon, Columbia River, Alaska; marking & recapture data.

Scofield, N.B. 1922

Commercial Fishery Notes, Salmon Investigation, Calif. Fish & Game, 1922, 8: 236.

Salmon; Monterey, Point Reyes, Fort Bragg, Eureka, Klamath River; distribution; age at time of return; movements in ocean.

Scofield, N.B. 1929

The status of the salmon in Calif. Calif. Fish and Game, 15: 13-18

Sacramento R. salmon, chinook; Sacramento R., Klamath R.; time the species migrate upstream; distribution.

Scofield, W.L. 1920

Silver Salmon at Monterey in 1920. Calif. Fish & Game, 6:175.

Chinook, silver; Monterey Bay; size at time of return; time species returns from ocean to stream mouth.

Scofield, W. L. 1937

A Silver Salmon at Los Coronados Islands; Cal. Fish & Game, 23: 225.

Oncorhynchus kisutch, silver; Los Coronados Islands; distribution.

Schoning, Robert W. 1948

Trends of Columbia River blueback salmon populations, 1938-1947. Fish Comm. of Oregon, Res. Briefs, 1(2):33-40.

Not abstracted.

Schoning, R.W., Merrell, T.R., Jr., and Johnson, D.R. 1951

The Indian Dip Net Fishery at Celilo Falls on the Columbia River. Fish Commis. State of Oregon. Contrib. 17: 1-43.

Spring, chinook; blueback; silver; Celilo Falls, on Columbia River, Oregon; catch records.

Senter, Vance E 1940

Observations on the Food of Pacific Salmon. Pac. Fisherman, 38: 26.

Pink, chum; red; coho; king; Alaska; food.

Shapovalov, Leo 1940

The homing instinct in salmon and trout. Proc. Sixth Pac. Sci. Cong., 1939, 3: 317-322.

Silver; O. gorbuscha, pink; homing instinct.

Shapovalov, Leo 1947

Distinctive characters of the species of anadromous trout and salmon found in California. Cal. Fish & Game, 33: 185-190.

O. tshawytscha, king, black, chub, dog, hookbill, silver, chinook, spring, quinnat, tyee; O. kisutch, silver, jack dog, hookbill, coho, silversides; O. gorbuscha, pink, humpback; O. keta, chum, dog; O. nerka, red, sockeye, blueback, kokanee, little redfish, silver trout; figured; description; counts & measurements; color; comparisons, relationships, keys; range; distribution; sexual dimorphism; color & body changes.

Shapovalov, Leo, and Berrian, William 1940

An experiment in hatching silver salmon (O. kisutch) eggs in gravel. Trans. Amer. Fish. Soc. 69yh Annual Meeting for 1939, 135-140.

O. kisutch, silver; locality: Santa Cruz, Cal.; time eggs hatch; behavior fry and fingerlings; spawning behavior.

Shapovalov, Leo, and Taft, Alan, C. 1954

The Life Histories of the Rainbow Trout (Salmo gairdneri gairdneri)and Silver Salmon (Oncorhynchus kisutch) with special reference to Waddell Creek, California, and Recommendations regarding their Management. Calif. Fish Game Fish Bull., 98: 1-375.

Oncorhynchus keta, chum, dog; O. nerka, red; O. gorbuscha, pink; and king were mentioned; O. kisutch, silver, jack, dog, hookbill, coho, silversides; Waddell and Scott creeks, Santa Cruz County, Calif.; time species migrates upstream; age at time of return; size at time of return; sex ratio; sexual dimorphism; spawning behavior; growth rates; behavior of fry and fingerlings; time young spend in freshwater; time of seaward migration; movements in ocean; homing instinct; external parasites; food & feeding habits.

Shaw, Paul A., and Maga, John A. 1943

The effect of mining silt on yield of fry from salmon spawning beds; Cal. Fish & Game, 29: 29-41.

O. kisutch, silver; Brookdale Fish Hatchery, Santa Cruz County, Calif; spawning period; time eggs hatch.

Shebley, W. H. 1921

Salmon Egg Collecting, Fall of 1919, Calif. Fish & Game, 7: 49-51.

Salmon; Sacramento R., Klamath R.; time species migrates upstream

Silliman, Ralph P. 1941

Fluctuations in the Diet of the Chinook and Silver Salmons (Oncorhynchus tschawytscha and O. kisutch) off Washington, as Related to the Troll Catch of Salmon. Copeia, 2: 80-87.

Oncorhynchus tschawytscha, chinook; O. kisutch, silver; Estevon Pt. Vancouver Is. to Neah Bay and Destruction Is. to Columbia River.; food and feeding habits; ocean.

Silliman, Ralph P. 1942a

Estimation of the Troll Catch of Columbia River chinook Salmon, Oncorhynchus tschawytscha. Special Sci. Rep. U.S. Fish & Wildlife Service, 50: 1-12.

Oncorhynchus tschawytscha, chinook; Columbia River; California; distribution; catch records; tagging and recapture data.

Silliman, Ralph P. 1950

Fluctuations in abundance of Columbia River chinook salmon (Oncorhynchus tschawytcha), 1935-1945. Fish Bull. U.S. Fish & Wildlife Service, 51: 365-383.

Oncorhynchus tschawytscha, chinook, spring, king; Columbia Riv.; time species migrates upstream;

Silliman, Ralph P., Rich, Willis H., and Bryant, Floyd G. 1947

Intraseasonal and interseasonal variations in average weight of Columbia River Chinook salmon (Oncorhynchus tschawytscha). Special Sci. Rep. U.S. Fish & Wildlife Service, 34: 1-11.

Oncorhynchus tschawytscha, chinook, Columbia; weight at time of return.

Skud, Bernard Einar 1955

Length-weight relationship in migrating fry of pink salmon. (O. gorbuscha) in Sashin Creek, Little Port Walter, Alaska. Copeia, 3: 204-207.

O. gorbuscha, pink; locality: Little Port Walter, Alaska; time species migrates upstream; time of seaward migration; size at time of return.

Slack, J. H. 1876

Hatching and distribution of California salmon. Rep. Commr. for 1873-74 and 1874-75, U.S. Comm. Fish and Fish., Part III, 431-434.

Salmo quinnat, California salmon; intro. & acclim.: Pa., N.J., Va., N.Y.

Smedley, Enid Mary 1933

Nematode Parasites from Canadian Marine and Fresh-water Fishes. Contrib. Can. Biol. Fish. N.S., 8: 169-179.

Oncorhynchus nerka, Cultus Lake, internal parasite: Philonema oncorhynchi, in body cavity, a nematode.

Smedley, S. C. 1952

Notes, pink salmon in Prairie Creek, California. Cal. Fish & Game, 38: 275.

O. gorbuscha, pink, humpback; Calif.; range; distribution; time the species migrates upstream; size of species at time of return; age at time of return; sexual dimorphism, body changes; figured.

Smiley, Charles J. 1884a

Brief Notes upon Fish and Fisheries Bull. U.S. Fish Comm., 4: 359-368.

California salmon; Wisconsin; Lake Geneva; Australia; intro. & acclim.

Smiley, Charles J. 1884b

Index to the distribution, made under the auspices of the United States Fish Commission, of fish in public waters of the United States, during the decade ending 1880. Rep. Commr. for 1881, U.S. Comm. Fish & Fish., 917-1035.

California salmon; intro. & acclim.; States in U.S.A.

Smiley, Charles W. 1884c

A statistical review of the production and distribution to public waters of young fish, by the U.S. Fish Comm. from its organization in 1871 to the close of 1880. Rep. Commr. for 1881, U.S. Comm. Fish & Fish., 925-915.

Calif. salmon; intro. & acclim.: Ala., Ark., Calif., Col., Conn., Del., Ga., Ill., Ind., Iowa, Kan., Ky., La., Me., Md., Mass., Mich., Minn., Miss., Mo., Nebr., Nev., N.H., N. J., N.Y., N. C., Ohio, Penn., R. I., S. C., Tenn., Tex., Vt., Va., W. Va., Misc., with detailed distribution in these states.

Smiley, Charles W. 1884d

Brief Notes upon Fish and the Fisheries. Bull. U.S. Fish Comm., 4: 305-320.

Spring & fall salmon; Sacramento R., Calif.; catch records,: 313.

Smiley, Charles J. 1885

Notes upon fish and fisheries. Bull. U.S. Fish Comm., 5: 465-469.

California salmon; Yarra Yarra, near Melbourne; intro. & acclim.

Smiley, Charles J. 1887a

Notes upon fish and the fisheries. Bull. U.S. Fish Comm., 6: 401-416.

California salmon, Oncorhynchus chouicha; egg size; egg counts; intro. & acclim. in Australia; size at time of return.

Smiley, Charles S. 1887b

Notes upon fish and the fisheries. Bull. U.S. Fish Comm., 6: 449-464.

Salmo quinnat; intro. & acclim.: New Zealand.

Smith, E. Victor 1915

Salmon hybridization. Trans. Pac. Fish. Soc. for 1914, 71-78.

O. tschawytscha, chinook; O. kisutch, silver; locality: Washington; time eggs hatch; hybridization; description; counts & measurements; color.

Smith, E. Victor 1916

Effect of light on the development of young salmon. Puget Sound Biological Station Publications, 1: 89-107.

O. tschawytscha, chinook, king; O. gorbuscha, humpback; Washington: effect of light on growth, development & behavior of pinks and kings.

Smith, Hugh M 1895a

Notes on the Capture of Atlantic Salmon at Sea & in the Coast Waters of the Eastern States. Bull. U.S. Fish Comm., 14: 95-99.

Oncorhynchus chouicha, chinook, quinnat; key to separate Atlantic & Pacific salmon; figured; intro. & acclim.: Atlantic Coast.

Smith, Hugh M. 1895b

Notes on a Reconnoissance of the Fisheries of the Pacific Coast of the United States in 1894. Bull. U.S. Fish Comm., 14: 223-288.

Oncorhynchus chouicha, chinook or quinnat; O. keta, dog; O. gorbuscha, humpback; O. kisutch, silver; blueback; distance traveled upstream; distribution; catch records; weight at time of return; food & feeding habits; stream; time species migrates upstream.

Smith, Hugh M. 1898a

Report of the Div. of Scientific Inquiry. Rep. Commr. for 1897, U. S. Comm. Fish and Fish., xci-cxlvi.

Chinook; Oncorhynchus nerka, blueback sockeye; Ore., Idaho, Wash., distribution; time eggs hatch; time young spend in freshwater; intro. and acclim.: quinnat salmon, Bear Valley Creek, Paper Mill Creek, Dutch Bill Cr., Olema Cr., Calif.; behavior of fingerlings.

Smith, Hugh M. 1898b

The Salmon Fishery of Penobscot Bay and River in 1895 and 1896. Bull. U.S. Fish. Comm., 17: 113-124.

Oncorhynchus tschawytscha, quinnat or chinook; distance traveled upstream; nests; condition after spawning; key; figure of adult; intro. & acclim., Maine time species migrates upstream; Pac. Coast;

Smith, Hugh M. 1899

Report on the inquiry respecting food fishes and the fishes grounds. Rep. Commr. for 1898, U.S. Comm. Fish and Fish., cxxii-cxlvi.

Oncorhynchus nerka, redfish, dwarf redfish; O. tschawytscha, chinook ; O. kisutch, silver, dog; Ore., Wash., Calif.; spawning period; racial analysis--mention of two forms of nerka in Wallowa L., Ore.; time of seaward migration; behavior of fingerlings; distribution.

Smith, Hugh M. 1900

Report on the inquiry respecting food fishes and the fishing grounds. Rep. Commr. for 1899, U.S. Comm. Fish and Fish., cxix-cxlvi.

Oncorhynchus nerka, redfish and the small form; California salmon; Columbia R.; Calif.; time species migrates upstream; spawning period; nature of spawning site; spawning behavior; behavior of fry and fingerlings; time of seaward migration; age at time of return.

Smith, Hugh M. 1907

Some observations on European Fisheries and fish culture. Trans. Amer. Fish Soc., 36: 170-179.

Humpback; intro. & acclim. along Norwegian coast.

Smith, Hugh M. 1917

Report of the United States Comm. of Fisheries, 1916. Rep. Comm. Fish., for 1816. U.S. Bur. Fish., 836:1-114.

Blueback; chinook; redfish; Alaska; Yes Bay; Wood R.; Dennyo R., Maine; Clackamas R., Ore.; time species migrates upstream; into. & acclim.: Maine.

Smith, Hugh M. 1919

Report of the Comm. of Fisheries for the fiscal year ended June 30, 1917. Rep. Comm. Fish. for 1917, U.S. Bur. Fish, 845: 1-104.

intro. & acclim.: eggs of the Ayu (dwarf salmon of Japan) to Wash. (unsuccessful).

Smith, Hugh M. 1920

Report of the U.S. Commr. of Fisheries for the fiscal year 1918. Rep. Comm. Fish for 1918, U.S. Bur.Fish., 862: 1-94.

Pink, humpback; intro. & acclim.: Me: Denny's and Pembroke, etc. Rivers; size of species at time of return.

Smith, Richard R., and Quistorff, Elmer 1940

The control of octomitus--calomel in the diet of hatchery salmon. Prog. Fish. Cult., July-Oct., 51: 24-25.

Chinook; silver; Wash. (state); parasites.

Smoker, William A. 1953

Stream flow & silver salmon production in western Washington. Wash. Dept. of Fisheries. Fish. Res. Papers., 1: 5-12.

O. kisutch, silver; time young spend in freshwater; catch records.

Smoker, William A. 1954

A preliminary review of salmon fishing trends on inner Puget Sound. State of Wash., Dept. of Fisheries., Res. Bull., 2: 1-55.

O. tschawytscha, chinook, king, blackmouth, tyee, quinnat, spring; O. keta, chum, dog, fall; O. kisutch, silver, hooknose, coho, silver trout, salmon trout, silverside; O. gorbuscha, pink humpback, humpies; O. nerka, sockeye, red. blueback, landlocked sockeye salmon, kokanee, redfish, silver "trout"; Puget Sound; time young spend in freshwater; age at time of return; time species migrate upstream; type of stream chosen; catch records.

Snyder, John Otterbein 1908

The Fishes of the Coast Streams of Oregon and Northern Calif. Bull. U.S. Bur. Fish., 27: 153-189.

Oncorhynchus keta; O. tschawytscha; O. kisutch; northern Calif. & Oregon; range.

Snyder, John Otterbein 1914

The Fishes of the Streams Tributary to the Monterey Bay, California. Bull. U.S. Bur. Fish., 32: 47-72.

Oncorhynchus tschawytscha, chinook; O. kisutch, silver; distribution; streams tributary to Monterey Bay, Calif.

Snyder, John Otterbein 1916

The fishes of the Lahontan System of Nevada and Northeastern California. Bull. of U.S. Bur. Fish, 35: 33-86. (1915-1916)

O. kisutch, silver; O. tschawytscha, king; locality: Lehontan System, Nev. & Calif. intro. to Truckee River of O. kisutch; distribution.

Snyder, John Otterbein 1921a

How Many Eggs Does a Salmon Lay? Cal. Fish & Game, 7: 63-64.

King; Klamath River; size at time of return; age at time of return; egg counts.

Snyder, John Otterbein 1921b

Three California Marked Salmon Recovered. Calif. Fish & Game, 7: 1-6.

Salmon; figured; counts & measurements; distribution; Monterey, Shelter Cove, Sacramento River; size at time of return; age at time of return; growth rates determined by scale studies; marking & recapture data.

Snyder, John Otterbein 1922

The Return of Marked King Salmon Grilse. Calif. Fish & Game, 8: 102-107.

King; description; counts & measurements; Klamath River; time returned from ocean to stream mouth; size of species at time of return; age at time of return; time of seaward migration; time young spend in freshwater; size at time of seaward migration; growth rates (freshwater, saltwater, hatchery) determined by scale studies; marking & recapture data; food & feeding (ocean, stream).

Snyder, John Otterbein 1923

A Second Report on the Return of the King Salmon Marked in 1919, in Klamath River. Calif. Fish & Game, 9: 1-9.

King; Sacramento Riv., Klamath Riv.; range; time species migrates upstream; sex ratios; marking & recapture data; size at time of return; movements in ocean;

Snyder, John Otterbein 1924

Young Salmon Taken at Sea, Calif. Fish & Gam., 10: 62-64.

King; Half Moon Bay, Monterey Bay, Calif.; color; food & feeding habits-ocean; age when caught; time young spend in freshwater.

Snyder, John Otterbein 1928

Salmon investigation, Calif. Fish & Game, 14: 25-29.

King; Sacramento R., Klamath R.; distribution; marking & recapture data; migration routes.

Snyder, John Otterbein 1931

Salmon of the Klamath River, California. I. The Salmon and the Fishery of Klamath River. II. A Report on the 1930 Catch of King Salmon in Klamath River. Fish Bull., Calif Fish& Game, Bull., 34: 1-130.

Oncorhynchus tschawytscha, king; O. kisutch, silver; O. gorbuscha, humpback; O. keta, dog; O. nerka, blueback or redfish; Klamath River, Sacramento R., Feather R., Trinity R., Monterey Bay; age at time of return; size at time of return; counts & measurements; time species migrates upstream; comparisons (fig. 2); catch records; description; color; sex ratios; time of seaward migration; tagging & recapture data; movement in ocean; home stream theory.

Snyder, John Otterbein 1933

California trout; Calif. Fish & Game, 19: 81-112.

Oncorhynchus; king, silver, humpback, dog; listed.

Snyder, John Otterbein 1934

Plant silver salmon in Eagle Lake; Calif. Fish & Game, 20: 389-390.

Silver; Eagle Lake, Lassen County, Calif.; food; intro. & acclim.

Snyder, John Otterbein 1936a

Experimental introduction of salmon into Klamath River. Cal. Fish & Game, 22: 322-323.

King; time species migrates upstream; intro. & acclim.; Columbia R. to Klamath R.

Snyder, John Otterbein 1936b

Notes on the 1930 Catch of King Salmon Klamath R. Cal. Fish & Game, 22: 129-138.

King; age at time of return.

Snyder, John Otterbein, and Scofield, Eugene C. 1924a

An Experiment Relating to the Homing Instinct of King Salmon, Calif. Fish & Game, 10: 9-17.

King; Klamath, Shasta Rivs; size of pond fish; description of precocious males; color; marking of fins; homing instinct; food & feeding habits.

Stone, Arthur W. 1914

The spawning beds of Rivers Inlet, Report of the Commissioner of Fisheries, 1913, Province of British Columbia, 46-48.

Sockeye; spring; coho; Rivers Inlet, B.C., distribution; spawning period.

Stone, Arthur W. 1915a

The spawning grounds of Rivers Inlet. Rep. Commr. Fish. 1914, Prov. Brit. Col., 32-34.

Sockeye; coho; spring; Rivers Inlet, N.C.; spawning period - approx., no exact dates; distribution.

Stone, Arthur W. 1915b

The spawning grounds of Smith Inlet. Rep. Comm. Fish, 1914, Prov. Brit. Col., 35-36.

Sockeye; coho, spring; Smith Inlet, B.C.; spawning period - approx., no exact dates.

Stone, Arthur W. 1916a

The spawning grounds of Rivers Inlet. Rep. Commr. Fish., 1915, Prov. Brit. Col., 22-24.

Sockeye, coho; Rivers Inlet, B.C. spawning period; distribution.

Stone, Arthur W. 1916b

The spawning grounds of Smith Inlet. Rep. Comm. Fish., 1915, Prov. Brit. Col., 24-25.

Sockeye; spring; spawning period - approx., no exact dates; distribution; Smith Inlet, B.C.

Stone, Arthur W. 1917a

The spawning beds of Rivers Inlet. Rep. Comm. [illegible] Fish., 1916, Prov. Brit. Col., 22-24.

Sockeye; coho; spring; Rivers Inlet, B.C.; spawning period-approx., no exact dates; distribution.

Stone, Arthur W. 1917b

The spawning grounds of Smith Inlet. Rep. Comm. Fish., 1916, Prov. Brit. Col., 25-26.

Sockeye; spring; Smith Inlet, B.C.; spawning period - no exact dates; distribution.

Stone, Arthur J. 1917b

The spawning grounds of Smith Inlet. Rep. Comm. Fish., 1916, Prov. Brit. Col., 25-26.

Sockeye; spring; Smith Inlet, B.C.; spawning period - no exact dates; distribution.

Stone, Arthur J. 1918a

The spawning beds of Rivers Inlet, Rep. Comm. Fish., 1917, Prov. Brit Col., 25-28.

Sockeye; spring; spawning period; distribution.

Stone, Arthur J. 1918b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1917, Prov. Brit. Col., 29-30.

Sockeye; coho; Smith Inlet, B.C.; spawning period - approx., - no exact dates; distribution.

Stone, Arthur J. 1919

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1918, Prov. Brit. Col., 21-23.

Sockeye; spring; coho; humpback River Inlet; spawning period - approx., no exact dates; distribution.

Stone, Arthur J. 1920a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1919, Prov. Brit. Col., 24-25.

Sockeye; Rivers Inlet, B.C.; spawning period - approx., no exact dates; distribution.

Stone, Arthur J. 1920b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1919, Prov. Brit. Col., 27-28.

Sockeye; coho; humpback; dog; Smith Inlet, B.C.; spawning period - approx., no exact dates; distribution.

Stone, Arthur J. 1921a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1920, Prov. Brit. Col., 15-17.

Sockeye; spring; coho; dog; Rivers Inlet, B.C.; spawning period - approx., no exact dates; distribution.

Stone, Arthur J. 1921b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1920, Prov. Brit. Col., 18-19.

Sockeye; coho; Smith Inlet, B.C.; spawning period - approx., no exact dates; distribution.

Stone, Arthur J. 1922a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1921, Prov. Brit. Col., 74-76.

Sockeye; spring; coho; chum; Rivers Inlet, B.C.; spawning period - approx., no exact dates; distribution.

Stone, Arthur J. 1922b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1921, Prov. Brit. Col., 73.

Sockeye; Smith Inlet, B.C.; spawning period - approx., no exact dates; distribution.

Stone, Arthur J. 1923a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1922, Prov. Brit. Col., 61-63.

Sockeye; coho; Rivers Inlet, B.C.; spawning period - approx., no exact dates; distribution.

Stone, Arthur M. 1923b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1922, Prov. Brit. Col., 59-60.

Sockeye; spring; Smith Inlet, B.C.; spawning period - approx., no dates given; distribution.

Stone, Arthur M. 1924a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1923, Prov. Brit. Col., 50-52.

Sockeye; spring; coho; Rivers Inlet, B.C.; spawning period - approx., no exact dates; distribution.

Stone, Arthur M. 1924b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1923, Prov. Brit. Col., 49.

Sockeye; spring; coho; Smith Inlet, B.C.; spawning period - approx., no exact dates; distribution.

Stone, Arthur M. 1925a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1924, Prov. Brit. Col., 46-48.

Sockeye; coho; spring; dog; Rivers Inlet, B.C.; distribution; spawning period - approx.

Stone, Arthur M. 1925b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1924, Prov. Brit. Col., 49.

Sockeye; spring; coho; spawning period - approx.,no exact dates; distribution.

Stone, Arthur M. 1926a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1925, Prov. Brit. Col., 47-49.

Sockeye; coho; Rivers Inlet, B.C.; spawning period - approx., no exact dates; distribution.

Stone, Arthur M. 1926b

The spawning beds of Smith Inlet, Rep. Comm. Fish., 1925, Prov. Brit. Col., 50-51.

Sockeye; shum; pink; Smith Inlet, B.C.; spawning activity, no dates; distribution.

Stone, Arthur M. 1927a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1926, Prov. Brit. Col., 65-67.

Sockeye; coho; spring; chum; Rivers Inlet; spawning period -- approx., dates only; distribution.

Stone, Arthur M. 1927b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1926, Prov. Brit. Col., 68-69.

Sockeye; coho; humpback; chum; Smith Inlet; spawning period; distribution.

Stone, Arthur M. 1928a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1927, Prov. Brit. Col., 43-45.

Sockeye; spring; coho; spawning period --approx., no exact dates; distribution; sex ratios; weight at time of return.

Stone, Arthur W. 1928b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1927, Prov. Brit Col., 46-47.

Sockeye; spring; coho; Smith Inlet; spawning period - approx., no exact dates; sex ratios; distribution; weight at time of return (approx.)

Stone, Arthur W. 1929a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1928, Prov. Brit. Col., 46-48.

Sockeye; coho; spring; humpback; chum; Rivers Inlet; spawning period - approx., no exact dates; sex ratios; distribution.

Stone, Arthur W. 1929b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1928, Prov. Brit. Col., 49.

Sockeye; spring; coho; humpback; Smith Inlet; spawning period; distribution.

Stone, Arthur W. 1920a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1929, Prov. Brit. Col., 49-51.

Sockeye; spring; Rivers Inlet; spawning period - approx., no exact dates; distribution.

Stone, Arthur W. 1930b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1929, Prov. Brit. Col., 52-53.

Sockeye; spring; coho; Smith Inlet, B.C.; approx., no exact dates; distribution.

Stone, Arthur W. 1931a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1930, Prov. Brit. Col., 46-48.

Sockeye; spring; Rivers Inlet; spawning period - approx., no exact dates; distribution; sex ratios.

Stone, Arthur W. 1931b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1930, Prov. Brit. Col., 49-50.

Sockeye; spring; coho; pink; chum; Smith Inlet, B.C.; spawning period -- approx., no exact dates; distribution.

Stone, Arthur W. 1932a

The spawning beds of Rivers Inlet. Rep. Comm. Fish., 1931., Prov. Brit. Col., 40-42.

Sockeye; spring; chum; Rivers Inlet, B.C.; spawning period --approx.; distribution.

Stone, Arthur W. 1932b

The spawning beds of Smith Inlet. Rep. Comm. Fish., 1931, Prov. Brit. Col., 43-44.

Sockeye; spring; coho; Smith Inlet, B.C.; spawning period - approx; distribution.

Stone, Livingston 1874a

On the salmon fisheries of the Sacramento River. Rep. Commissioner for 1872 and 1873, U.S. Comm. Fish and Fisheries, Part II, 374-379.

Sacramento salmon; Sacramento R.; time species migrates upstream.

Stone, Livingston 1874b

Report of operations during 1872 at the United States salmon-hatching establishment on the M'Cloud River, and on the California Salmonidae generally; with a list of specimens collected. Rep. Commr. for 1872 and 1873, U.S. Comm. Fish & Fish., II: 168-215.

Sacramento salmon, dog salmon, dog-toothed salmon; Sacramento R., M'Cloud R., Calif.; spawning period; distribution; time species migrates upstream; size of species at time of return; time species returns from ocean to stream mouth; distance traveled upstream; time of seawardmigration --p. 182, approx.; sexual dimorphism; movements in ocean; age groups (grilse); food and feeding habits --postspawning behavior--death; spawning behavior; time eggs hatch; parasites; color; specimen No. 106--may be different species; intro. and acclim.

Stone, Livingston 1876a

Report of operations in California in 1873. Rep. Commr. for 1873-74 and 1874-75., U.S. Comm. Fish & Fish., Part III, 377-429.

California salmon; McCloud R., Calif. size of species at time of return; spawning period; intro. & acclim.: N.J., Pa., N.Y., Conn., N.H., Mass., Me., Utah., Mich.

Stone, Livingston 1876b

Report of operations during 1874 at the United States Salmon hatching establishment on the M'Cloud River, Calif. Rep. Commr. for 1873-74 and 1874-75, U.S. Comm. Fish & Fish., Part III, 437-478.

California salmon ; intro. & acclim. : Utah; Iowa; Minn.; Mich.; N.Y.; Conn.; Penn.; Md.; R.I.; Cntario, Canada; Me.; Mass.; Col.; Ill.; Va.; New Zealand; spawning period, p. 470.

Stone, Livingston 1878a

Operations of the McCloud River in salmon breeding, in 1875. Rep. Commr. for 1875-76, U.S. Comm. Fish & Fish., Part IV: 921-934.

Salmo quinnat, California salmon; Quinnault (Indian name); square taled salmon, Indian name Hwanig, p. 932; intro. & acclim.: Mass., Conn., R.I., N.Y., N. J., Penn., Md., Va., Mich., Ill., Wis., Iowa, Col., Utah, Canada, New Zealand.

Stone, Livingston 1878b

Operations on the McCloud River on salmon breeding in 1876. Rep. Commr. for 1875-76, U.S. Comm. Fish & Fish., Part IV: 935-958.

California salmon; McCloud R., Calif.; spawning period; intro. & acclim.: Penn, Wisc., Ill., Utah., Mich., Ky., Md., Minn., Conn., Mass., Tenn., N.Y., Sandwich Is., New Zealand.

Stone, Livingston 1878c

The salmon fisheries of the Columbia River. Rep. Commr. for 1875-76, U.S. Comm. Fish & Fish., Part IV: 801-823.

Salmo quinnat, California salmon, chinook, tyee, common salmon of the Columbia; Salmo proteus, humpbacked; Salmo scouleri, hooknosed; Salmo canis, dog; Salmo truncatus, hardhead; Columbia R., time species migrates upstream; size of species at time of return· sexual dimorphism; time species returns from ocean to stream mouth; postspawning behavior--death; distance traveled upstream; food and feeding habits; nature of spawning site; spawning behavior.

Stone, Livingston 1879a

Report of operations at the salmon-hatching station on the Clackamas R., Oregon, in 1877. Rep. Commr. for 1877, U.S. Comm. Fish & Fish., Part V: 789-796.

Salmo quinnat, chinook; Clackamas R., Ore.; spawning period.

Stone, Livingston 1879b

Report of operations at the U.S. salmon hatching station on the M'Cloud R., Calif., in 1877. Rep. Commr. for 1877, U.S. Comm. Fish & Fish., 797-810.

Calif. salmon; McCloud River, Calif.; intro & acclim.: Ill., Iowa, Kan., Ky., Mass., Md., Minn., Mich., N.J., N. Y., N. H., Neb., Ohio, Penn., Va., Wisc., N.C., Prussia, Germany, Netherlands, England, France, Canada, Australia, New Zealand, Ore., Calif.

Stone, Livingston 1880

Report of operations at the U.S. salmon hatching station on the M'Cloud R., Calif., in 1878. Rep. Commr. for 1878, U.S. Comm. Fish & Fish., 741-770.
Calif. salmon; McCloud R., Calif.; spawning period; intro. & acclim.: Ill., Iowa, Kan., Me., Md., Mass., Mich., Minn., Mo., Neb., Nev., N.H., N. J., N.Y., N.C., Ohio, Penn., R.I., Utah, Va., W.Va., Misc., Canada, England, France Holland, Germany, New Zealand; weight of species at time of return.

Stone, Livingston 1882

Report of operations at the U.S. salmon breeding station of the McCloud River, California, during the season of 1879. Rep. Commr. for 1879, U.S. Comm. Fish & Fish., 695-708.

California salmon, McCloud R., Calif., intro. & acclim.: Iowa, Kans., Md., Minn., Neb., N.J., N.C., Ohio, Penn., Utah, Va., W.Va., Misc., Netherlands, New South Wales, France, Germany, Canada, N.Y.

Stone, Livingston 1883a

Account of operations at the McCloud River fish-breeding stations of the United States Fish Commission from 1872-1882 inclusive. Bull. U.S. Fish Comm., 2: 217-236.

Salmo quinnat; Oncorhynchus chouicha; Calif; color; weight of species at time of return; spawning period; time species migrates upstream; intro. & acclim.

Stone, Livingston 1883b

Report of operations at the U.S. salmon hatching station on the M'Cloud R., Calif., during the season of 1880, Rep. Commr. for 1880, U.S. Comm. Fish & Fish., 597-612.

Calif. salmon; McCloud R., Calif.; spawning period; intro. & acclim.: Ill., Kan., Md., Mo., Minn., Neb., N.Y., N. J., N.C., S.C., W. Va., Canada., France, Germany, Holland, Me., Mich., Nev., N.H.

Stone, Livingston 1883c

Scarcity of salmon in the Little Spokane and other streams on the Pacific Coast. Bull. U.S. Fish Comm., 3: 776-777.

Salmon; Snake R.; distribution.

Stone, Livingston 1884a

The quinnat or California salmon -- Oncorhynchus chouicha. (In: The Fisheries and Fishery Industries of the United States by George Brown Goode and others, Section I, Text, 479-485.)

O. chouicha, quinnat, California salmon, chowcecha, tschawytcha, sahkwey (by the Musquam, Fraser R.), Columbia River salmon, tyee (chinook jargon), chinook; O. quinnat, Salmo chouicha, O. chouicha, Fario argyreus, Salmo argyreus, Salmo warreni; weight at time of return; time species migrates upstream; type of stream chosen; distance traveled upstream; range; feeding habits, ocean & stream; synonomy; distribution; behavior of fry; spawning behavior; sexual dimorphism--body changes; spawning period; figured.

Stone, Livingston 1884b

The report of operations at the U.S salmon breeding station on the McCloud R. Calif., during the season of 1881. Rep. Commr. for 1881, U.S. Comm. Fish & Fish., 1063-1078.

Calif. salmon; McCloud R., Calif.; intro. & acclim.: Md., Minn., Nebr., N.H., Nev., Penn., S.C., W. Va.; Canada, N.J.

Stone, Livingston 1884c

Weights of salmon taken at McCloud River station in 1880. Bull. U.S. Fish Comm., 4: 178-179.

McCloud R. salmon; McCloud R., Calif.; weight at time ofreturn.

Stone, Livingston 1885

History of operations at the Fish-Hatching Stations on the McCloud River, California; from the beginning, August, 1872, to October, 1884. Bull. U.S. Fish Comm., 5: 28-31

intro. & acclim.: Atlantic Coast of U.S.A. and Europe.

Stone, Livingston 1897

The artificial propagation of salmon on the Pacific Coast of the United States with notes on the Natural history of the quinnat salmon. Bull. U.S. Fish Comm., 16: 203-235.

Oncorhynchus tschawytscha, quinnat, noolh; O. nerka, blueback; O. kisutch, silver; O. keta, dog; O. gorbuscha, humpback; O. nerka; behavior of migrating young; post-spawning behavior (death after spawning); intro. & acclim.: eastern U.S., Australia, New Zealand, Prussia, Netherlands, England, France, Canada; history of common names; figured-adults & young; Battle Creek, Calif.; description; time species migrates upstream; range; feeding habits & freshwater; size of species at time of return; rate of travel upstream; spawning period; sexual dimorphism; egg counts; egg size; behavior of alevins.

Suckley, George 1862

Description of several new species of Salmonidae from the northwest coast of America. Ann. Lyceum Nat. Hist., N.Y., 7: 1-10.

Not abstracted.

Suckley, George 1874

On the North American species of salmon and trout. Rep. Commr., for 1872 and 1873, U.S. Comm. Fish & Fish., Part II, 91-160.

Oncorhynchus; Salmo scouleri Richardson, skowitz, hooknosed salmon, fall salmon, kutshkuss; Salmo proteus Pallas, humpbacked salmon; Salmo cooperi Suckley, little red salmon, Coopers salmon, ta-ah-nia; Salmo dermatinus Richardson; tleukh-ko (Bering Sea); Salmo consuetus Richardson; Salmo canis, dog salmon, spotted salmon, le kai salmon; Salmo quinnaut,Richardson, California salmon, yomutsh, satsup; kwitshia; Salmo confluentus, Suckley, tsah-kwai, towatl salmon; Salmo aurora, Girard, red char, salmon; Salmo argyreus Girard; Salmo paucidens, Richardson, weaktoothed salmon; Salmo tsuppitch Richardson, white salmon; Salmo truncatus Suckley , short-tailed salmon, square-tailed salmon; Salmo richardi Suckley, Richards salmon; suk-kegh salmon; Salmo campbelli Suckley, Campbell's salmon; Salmo rossii Richardson, Ross's salmon (Arctic Ocean, Boothia Felix); Salmo hearnei, Richardson, coppermine salmon (Arctic); Salmo kennerlyi, Suckley, Isi-nia, Kennerly's trout; Salmo warreni, Suckley, Warren's trout; Salmo gibbsii, Suckley, Columbia salmon trout; description; synonomy; distribution; counts and measurements; color; time species migrates upstream; sexual dimorphism; distance traveled upstream; size at time of return.

Sugano, Susumu 1936a

The depth and the distance from shore of the routes of migration of salmon. (In Japanese with English summary). Bull. Jap. Soc. Sci. Fish., 4(5): 318-320.

Not abstracted.

Sugano, Susumu 1936b

Immigration of salmons to a fishing ground on the west coast of Kamchatka in relation to the hydrographical conditions. (In Japanese with English summary). Bull. Jap. Soc. Sci. Fish., 4(6): 407-408.

Not abstracted.

Sumner, Francis B. 1906

The Physiological Effects upon Fishes of Changes in the Density and Salinity of Water. Bull. U.S. Bur. Fish, 25: 53-108.

Oncorhynchus tschawytscha, chinook; physiology; change in weight when transferred from fresh to salt water;

Sumner, Francis H. 1953

Migrations of salmonids in Sand Creek, Oregon. Trans. Amer. Fish. Soc, 82: 139-150.

Oncorhynchus kisutch, coho; O. keta, chum; Oregon; spawning period; time of seaward migration of fry & fingerlings; recapture data.

Sumner, Francis H., and Smith, Osgood R. 1940

Hydraulic mining and debris dams in relation to fish life in the American and Yuba Rivers of California. Cal. Fish & Game, 26: 2-22.

O. tshawytscha, chinook; distribution; lower American & Yuba River; time species migrates upstream; type of stream chosen; distance traveled upstream; spawning period; nature of spawning site; food & feeding habits.

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Taguchi, K. 1948

On the scale and stock of red salmon, Oncorhynchus nerka migrating to the Kamchatka. (In Japnese with English summary). Bull. Jap. Soc. Sci. Fish., 13(4): 158-160.

Not abstracted.

Taliev, D. N. 1932

A new form of Oncorhynchus. (In Russian with English summary). Doklady Akademii Nauk SSSR, Ser. A (C.R. Acad. Sci., URSS, Ser. A), 1932, no. 14: 346-351.

Not abstracted.

Taft, A.C. 1937a

Marked silver salmon from Waddell Creek, caught near Fort Bragg. Cal. Fish & Game, 23(2): 177-178.

O. kisutch, silver; Waddell Cr., Fort Bragg, Calif.; marking & recapture data; movements in ocean.

Taft, A.C. 1937b

A red salmon taken in the Klamath R. Cal. Fish & Game, 23(2): 178.

O. nerka, red, sockeye, blueback; Klamath R.; description; counts & measurements; color; comparisons; length at time of return.

Taft, A.C. 1938

Pink salmon in California. Cal. Fish & Game, 24(2): 197-198.

O. gorbuscha, pink, humpback; Ten Mile R., Garcia R., Calif.; description; color; range; distribution; size of species at time of return; nature of spawning site; sexual dimorphism, body changes; spawning period.

Taft, A.C., and Shapovalov, Leo 1938

Homing instinct and straying among steelhead trout and silver salmon. Cal. Fish & Game. 24(2): 118-125, figs., 39-40, 3 tables.

O. kisutch, silver; Scott Cr., Waddell Cr., Klamath R., Calif.; marking & recapture data, migration routes; home stream theory.

Takayasu, Mitsugu, Kondo, Kenzo, Ohigashi, Shinichi, and Kuroda, Kunio 1955

Limnological studies on the lakes of Kunasiri Island. Sci. Repts. Hokkaido Fish Hatchery, 10(1-2): 183-216, 17 figs., 8 plates, 26 tables. Japanese with English abstract.

O. keta; O. gorbuscha; O. masou; Kunasiri Is., Japan; distribution.

Talbot, G.B. 1950

A biological study of the effectiveness of the Hell's Gate fishways. Bull. 3, Internat'l Pac. Salmon Fish. Comm., 1-80, 39 figs., 7 tables.

sockeye; Fraser R.; distribution (detailed map).

Tanaka, Shigeho 1931

On the distribution of fishes in Japanese waters. Jr. Faculty Sci., Imperial Univ. Tokyo, 3(part 1): 2-90, 3 plates.

O. milktschitsch; L. Suwa, Biwa, Chuzenzi, Japan; Salmo kisutch, S. tschawytscha (sic); O. masou, (Salmo masou); S. macrostomus; S. formosanus; O. ishikawae; O. rhodurus; distribution.

Tanner, Z.L., and others 1890

Explorations of the fishing grounds of Alaska, Washington Territory, and Oregon, during 1888, by the U.S. Fish Commission steamer albatross. Bull. U.S. Fish Comm., 8: 1-95, 10 figs.

O. gorbuscha, humpback; O. keta, dog; Humboldt Harbor, Popoff Is.; O. nerka, suk-kegh; Alert Bay, Vancouver Is.; O. chouicha, Columbia; O. kisutch, silver; table showing location and depth of salmon and other trial caught fish; size at time of return.

Tchernavin, V. 1937

Preliminary account of the breeding changes in the skulls of Salmo and Oncorhynchus. Proc. Linnean Soc. London, 1937, session 14: 11-19.

Tchernavin, V. 1938

Changes in the salmon skull. Trans. Zool. Soc. London, 24(part 2): 103-184, 17 text-figs., 5 tables, 5 plates, 8 keys, 12 diagrams.

O. gorbuscha, humpback; O. keta, dog; O. tschawytcha (sic); O. masu; Amur R.; osteology; description; counts & measurements; comparisons, keys.

Tchernavin, V. 1939

The origin of salmon. Salm. & Trout Mag., 120-140, 1 table, 4 maps.

Oncorhynchus; freshwater origin; life history and distribution compared with those of Salmo.

Terao, Arata 1935

Cross between the cod, Gadus macrocephalus Tilesius, and the salmon O. keta (Walbaum). J. Jap. Genetics, 9(3): 183. Japanese.

Not abstracted.

Thompson, Seton H. 1931

Salmon-tagging experiments in Alaska, 1929. Bull. U.S. Bur. Fish., 46: 177-195, 6 figs., 12 tables.

red; pink; chum; coho; king; Prince William Sound, Cook Inlet, Gulf of Alaska; tagging & recapture data, migration routes; time species returns from ocean to stream mouth.

Thompson, W.F. 1938

Report on the investigations of the International Pacific Salmon Fisheries Commission on the Fraser R. sockeye for the year 1938. Ann. Rept. Internat'l Pac. Salmon Fish. Comm., 15-21.

sockeye; Fraser R., B.C.; tagging & recapture data.

Thompson, W.F. 1939

Report on the investigations of the International Pacific Salmon Fisheries Commission on the Fraser R. sockeye for the year 1938. Ann. Rept. International Pac. Salmon Fish. Comm., 6-12.

sockeye; Fraser R., B.C.; tagging & recapture data.

Thompson, W.F. 1940

Report on the investigations of the International Pacific Salmon Fisheries Commission on the Fraser R. sockeye for the year 1940. Ann. Rept. Internat'l Pac. Salmon Fish. Comm., 5-12.

sockeye; Puget Sound, Gulf of Georgia; tagging & recapture data.

Thompson, W.F. 1941

Report on the investigations of the International Pacific Salmon Fisheries Commission on the Fraser R. sockeye for year 1941. Ann. Rept. Internat'l Pac. Salmon Fish. Comm., 6-15, 1 table.

sockeye; Fraser R.; tagging & recapture data; sex ratios; time species migrates upstream; age at time of return.

Thompson, W.F. 1942

Report on the investigations of the International Pacific Salmon Fisheries Commission on the Fraser R. sockeye for the year 1942, 6-15, 1 table, 4 photos.

sockeye; Fraser R., B.C.; tagging & recapture data; time species migrates upstream; age at time of return.

Thompson, W.F. 1945a

Effect of the obstruction at Hell's Gate on the sockeye salmon of the Fraser R., Bull. 1, Internat'l Pac Salmon Fish. Comm., 1-175, 58 figs , 24 tables.

O. nerka, sockeye; Fraser R., Can.; type of stream chosen; behavior of fry & fingerlings; racial analysis, comments; age at time of return; tagging & recapture data, races.

Thompson, W.F. 1945b

Report of the International Pacific Salmon Fisheries Commission for the year 1945. Ann. Rept. Internat'l Pac. Salmon Fish. Comm., 5-53, 7 tables, 14 photos, 1 map (back flap).

sockeye; Juan de Fuca Strait, Fraser R.; tagging & recapture data.

Thomson, John H. 1882

Some results of the artificial propagation of Maine and California salmon in New England and Canada recorded in the years 1879 & 1880. Bull. U.S. Fish Comm., 1: 270-277.

California salmon; intro. & acclim.: New Bedford, Mass; St. Croix R., New Brunswick.

Titcomb, John W. 1904

Report on the propagation and distribution of food fishes. Rept. Comm'er for 1902. U.S. Comm. Fish & Fish., 22-110.

quinnat; silver; blueback; Wash., Ore., Calif.; spawning period; intro. & acclim.: Iowa.

Titcomb, John W. 1905a

Report on the propagation and distribution of food fishes. Rept. Comm'er for 1903. U.S. Comm. Fish & Fish., 39-74.

quinnat; intro. & acclim.: Arkansas, Iowa, Mo., Tasmania.

Titcomb, John W. 1905b

Report on the propagation and distribution of food fishes. Rept. Comm'er for 1904, U.S. Comm. Fish & Fish., 25-80.

quinnat; intro. & acclim.: Ark., Maine, Missouri, New Hampshire, New York, New Zealand.

Tokahisa, Mikusa, and Takeshi, Ito 1934

On the artificial propagation of salmon, trout, and other kinds of fish in Japan. Proc. Fifth Sci. Cong., 1933, 5: 3599-3600, 1 table.

O. keta, sake; O. nerka, benimasu; O. gorbuscha, karafuto-masu; O. masou, sakura-masu; O. tschawytscha (sic), masunosuke; Lake Biwa, Ishikari R., Japan; landlocked masu; time species migrates upstream.

Toner, G.C. 1933

Annotated list of fishes of Georgian Bay. Copeia, 1933, 3, 138-140.

O. tchawytscha (sic); Georgian Bay; listed.

Townsend, C.H. 1899

Report of the Division of Statistics and Methods of the Fisheries. Rept. Comm'er for 1898, U.S. Comm. Fish & Fish., cxlvii-clxxv.

king, quinnat; Yukon R., Alaska; distance travelled upstream; time species migrates upstream; size at time of return.

Townsend, C.H. 1904

Report of the division of statistics and methods of the fisheries. Rept. Comm'er for 1902, U.S. Comm. Fish & Fish., 143-160.

Pacific salmon; Monterey Bay, Pacific Coast; distribution; movements in ocean - time of arrival at Monterey Bay.

Townsend, Lawrence D. 1944

Variation in the number of pyloric caeca and other numerical characters in chinook salmon and in trout. Copeia, No. 1, 52-54.

chinook; racial analysis from pyloric caeca.

Tuge, Hideomi 1937

The reactions of the melanophores of embryonic and larval salmon, Oncorhynchus keta. Sci. Rept. Tohoku Imp. Univ., Sendai, Japan, Ser. 4 (Biology), 12(1): 19-44. English.

Not abstracted.

Tulian, E.A. 1910a

Acclimatization of American fishes in Argentina. Bull. U.S. Bur. Fish., 27(part 2): 955-965, tables.

O. tschawytscha (sic), quinnat; O. nerka, sockeye; O. kisutch; Argentina; intro. & acclim.; distribution.

Tulian, E.A. 1910b

Five years progress in fish culture in Argentina. Trans. Amer. Fish. Soc., 40: 415-422.

quinnat; blueback; silver; intro. & acclim.

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U.S. Fish & Wildlife Service 1878

Correspondence relating to the exportation of fishes and fish-hatching apparatus to New Zealand, Germany, etc. Rept. Comm'er for 1875-1876, U.S. Comm. Fish & Fish. Part 4, 959-1024.

California salmon, salmo (Oncorhynchus) lycaodon; introduction & acclim.: New Zealand, Germany.

U.S. Fish & Wildlife Service 1880a

Correspondence connected with the transmission of eggs of the quinnat salmon and whitefish to Australia and New Zealand, 1877, 1878, and prior years. Rept. Comm'er for 1878, U.S. Comm. Fish & Fish., 825-905.

Salmo quinnat, Calif. Salmon; intro. & acclim.: Australia, New Zealand.

U.S. Fish & Wildlife Service 1880b

Correspondence connected with the transmission of eggs of the quinnat salmon and other salmonidae to European countries in 1878 and prior years. Rept. Comm'er for 1878, U.S. Comm. Fish & Fish., 907-924.

Salmo quinnat, Calif. salmon; intro. & acclim.: Germany, Netherlands.

U.S. Fish & Wildlife Service 1880c

Summary of reports for 1878, by state fish commissioners re the increase of food fishes by artificial propagation. Rept. Comm'er for 1878, U.S. Comm. Fish & Fish., 925-943.

Salmo quinnat, Calif. salmon; intro. & acclim.

U.S. Fish & Wildlife Service 1882

Memorandum of some results of the artificial propagation and planting of fish due mainly to the efforts of the United States Fish Commission. Bull. U.S. Fish. Comm. for 1881, 1: 208-215.

O. chouicha, quinnat, California salmon; Intro. & acclim.: Lake Ontario, Lake Michigan, Green Bay, Mich.

U.S. Fish & Wildlife Service 1887

American fish in New Zealand. Bull. U.S. Fish Comm. for 1886, 6: 304.

Salmo quinnat, California salmon; intro. & acclim.: New Zealand; weight at time of return

U.S. Fish & Wildlife Service 1909

The distribution of fish and fish eggs during the fiscal year 1908. Rept. U.S. Bur. Fish. for 1908, Bur. Fish. Doc. No. 644, 1-95.

O. tschawytscha (sic), king, chinook, quinnat; O. kisutch, silver, coho; O. nerka, blueback, redfish, sockeye; O. gorbuscha, humpback; intro. & acclim.: New Hampshire, New York, Virginia, Argentina, Penna., Maine.

U.S. Fish & Wildlife Service 1910

The distribution of fish and fish eggs during the fiscal year 1909. Rept. U.S. Bur. Fish for 1909. Fish Doc. No. 728, 1-103.

U.S. Fish & Wildlife Service (cont.) 1910

O. tschawytscha (sic), chinook, king, quinnat; O. kisutch, silver, coho; O. nerka, blueback, redfish, sockeye; O. gorbuscha, humpback; intro. & acclim.: Mass., Michigan, New Hampshire, New York, Argentina, Penna.

U.S. Fish & Wildlife Service 1911

The distribution of fish and fish eggs during the fiscal year 1910. Rept. U.S. Bur. Fish. for 1910, Bur. Fish. Doc. No. 740, 1-112.

O. tschawytscha, (sic), chinook, king, quinnat; O. kisutch, silver, coho; O. nerka, blueback, redfish, sockeye; O. gorbuscha, humpback; intro. & acclim.: Penna., Argentina, New York, New Hampshire.

U.S. Fish & Wildlife Service 1913

The distribution of fish and fish eggs during the fiscal year 1912. Rept. Comm'er Fish for 1912, U.S. Bur Fish. Doc. No. 770, 1-108.

O. tschawytscha (sic), chinook, king, quinnat; O. kisutch, silver, coho; O. nerka, blueback, redfish, sockeye; O. gorbuscha, humpback; O. keta, dog; intro. & acclim.: New York, Vermont, Mass., Michigan, Minnesota, New Hampshire.

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pink; cohoe; red; chum; king; Alaska; counts of migrant adults: (various paginations).

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blueback; chinook; silver; Bonneville Dam, Ore.; counts of migrant adults: various paginations.

U.S. Fish & Wildlife Service 1939d

Salmon tagging on Columbia River.

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chinook; Columbia R.; tagging & recapture data, migration routes; distribution.

U.S. Fish & Wildlife Service 1945

Pacific salmons U.S. Dept. Int. FWS, Fish. Leaflet 14, rev. Feb. 1945, 1-8, 2 tables.

O. tschawytscha (sic), chinook, king; O. kisutch, silver, coho; O. gorbuscha, pink, humpback; O. keta, chum, dog; O. nerka, red, sockeye, blueback; O. masu, "masu"; range; food; home stream theory; distribution; time species migrates upstream; age at time of return; nature of

U.S. Fish & Wildlife Service (cont.) 1945

spawning site; time eggs hatch; time young spend in freshwater; size at time of return.

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250 pp., 9 figs., 72 tables.

O. tschawytscha (sic), king, chinook, masunosuke; O. nerka, red, beni sake, beni masu; O. kisutch, silver, gin sake; O. gorbuscha, humpback, pink, nasu; O. keta, chum, dog, sake; range; relative abundance; time species migrates upstream.

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Acclimatization of Salmo-quinnat in France. Bull. U.S. Fish Comm., 4: 138.

Salmo quinnat; intro. & acclim.: France; distribution.

Van Cleve, Richard 1944

Report of Bureau of Marine Fisheries. 38th Biennial Rept. Calif. Div. Fish & Game, 1942-1944, 33-41, 7 tables.

Calif ; catch records; tagging & recapture data; counts of migrant adults.

Van Cleve, Richard 1945

A preliminary report on the fishery resources of California in relation to the Central Valley project. Cal. Fish & Game, 31(2): 55-52, figs., 13-15, 1 table.

silver; c inook; distribution; Central

Van Cleve, Richard (cont.) 1945

Valley, Calif.; time species migrates upstream; type of stream chosen; distance travelled upstream; spawning period; nature of spawning site; time eggs hatch; time of seaward migration; time young spend in freshwater; length at time of seaward migration.

Van Hyning, Jack M. 1951

The ocean salmon troll fishery of Oregon. Bull. 2, Pac. Marine Fish. Comm., 43-76, 19 figs., 10 tables.

O. tschawytscha (sic), chinook, king, spring; Oregon; O. kisutch, silver, coho; time species migrates upstream; distribution; marking & recapture data, migration routes, segregation of populations; time young spend in freshwater; rate of migration; growth rates from scale studies and direct measurement; age from scale studies; catch records; length at time of return.

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pink; southeastern Alaska; general life history; trap catch records.

Vaughan, Elizabeth 1947

Time of appearance of pink salmon runs in Southeastern Alaska. Copeia, No. 1, 46-50, 4 text-figs.

O. gorbuscha, pink; southeastern Alaska; time species migrates into streams; age at time of return; time eggs hatch; time of seaward migration.

Verhoeven, Leon A. 1952

A report to the salmon fishing industry of Alaska on the results of the 1947 tagging experiments. Mimeographed, 1-31, 35 figs., 4 tables.

all 5 species; Alaska; Oncorhynchus gorbuscha, pink, most abundant; behavior of pinks on spawning migration; mixing & segregation of races; home stream theory; time different races present in fishery; movements in saltwater.

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Oncorhynchus chouicha Walb. on its introduction in the Lake of Castel Gandolfo. Bull. Soc. Romana Zool., Italy, 2: 253-264.

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Wales, J.H., and Wolf, H. 1955b

Three protozoan diseases of trout in California. Cal. Fish & Game, 41(2): 165-167.

O. nerka kennerlyi, Kokanee red; O. tshawytscha, king; O. kisutch, silver; distribution; internal parasites.

Walford, Lionel A. 1931

Handbook of common commercial and game fishes of California. Fish. Bull., Cal. Fish & Game, Bull. No. 28, 1-181, 137 text-figs. (salmon, pp. 56-57).

O. tschawytscha (sic), king, Sacramento R. salmon, chinook, quinnat, Columbia R. salmon, spring; O kisutch, silversides, coho, silver; key; counts & measurements; size at time of return; figured; distribution.

Wallis, Orthello L., and Bond, Carl E. 1959

Establishment of Kokanee in Crater Lake, Oregon. J. Wildl. Mgt., 14(2); 190-193, 1 table.

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Ward, Henry B. 1909

Notes on the leaping of the Pacific salmon Trans. Amer. Fish. Soc., 38: 162-167.

O. nerka, Alaska, red; leaping.

Ward, Henry B. 1910

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O. nerka, Alaska salmon, red, pink; Alaska; leaping; distribution.

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Ward, Henry B. 1939

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O. nerka, red, sockeye; spring; pink; home stream theory; Intro. & acclim.: Baker L., Wash., Wasset Inlet, etc.; marking & recapture data.

Wardle, Robert Arnold 1932

The cestoda of Canadian fishes. I The Pacific Coast region. Contrib. Canad. Biol. Fish. N.S. 7: 221-243, 15 figs.

O. nerka kennerlyi; O. tschawytscha (sic); O. kisutch; parasites.

Wardle, Robert Arnold 1933

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O. nerka; internal parasite, Proteocephalus arcticus, on a fingerling; Cultus Lake.

Warne, F. 1947

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sockeye; spring; cohoe; pink; chum; Brit. Col.; distribution.

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Annual Bull., Dept. Fisheries.

sockeye; pink; silver; chum; chinook; Wash.; catch records; distribution; (various paginations).

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Watanabe, Nobuo 1954

A report on oceanographical investigations in the salmon fishing grounds of the North Pacific, 1952 and 1953. English. Tokai Reg. Fish. Res. Lab., Spec. Pub., No. 3, 1-5, 1 map.

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O. nerka, sockeye; Flathead Lake, Montana; histology (ovary).

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O. tschawytscha; home stream theory.

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O. kennerlyi, kennerly's salmon, little redfish; Brit. Col., Kootenay L., Christina L.; distribution.

Whitmore, A.J. 1948

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sockeye; spring; cohoe; pink; chum; Brit. Col.; distribution.

Whitmore, A.J. 1950

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sockeye; cohoe; spring; pink; chum; Brit. Col.; distribution.

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Salmon spawning report, British Columbia, 1952. Rept. Prov. Fish. Dept., 1952, Prov. Brit. Col., 91-102.

sockeye; spring; cohoe; chum; pink; Brit. Col.; distribution.

Wickett, W. Percy 1951

The coho salmon population of Nile Creek. Progr. Rept. Pac. Coast Stas., Fish. Res. Bd. Can., No. 89, 38-39.

O. kisutch, coho; Nile Creek, B.C.; counts of migrant adults; sex ratio; egg counts; time eggs hatch; description, of jaws.

Wilcox, William A. 1898

Notes on the fisheries of the Pacific Coast in 1895 Rept. Comm. for 1896, U.S. Comm. Fish & Fish., 575-659.

chinook; blueback; silver; dog; humpback; Pacific Coast; distribution; catch records by species in geographical detail; time species migrates upstream.

Wilcox, William A. 1902

Notes on the fisheries on the Pacific Coast in 1899. Rept. Comm'er for 1901, U.S. Comm. Fish & Fish., 505-574.

O. tschawytscha, chinook; quinnat; O. nerka, blueback, red; O. kisutch, silver; O. keta, dog; Pacific Coast; figured.

Williamson, H. Chas. 1927

Pacific Salmon migration: Report of the tagging operations in 1925. Contrib. Canad. Biol. & Fish. N.S. 1927, 3: 265-306, 6 figs , 4 maps.

O. tschawytscha, spring; O. nerka, sockeye; O. kisutch, silver; O. gorbuscha; figured; color; counts & measurements of young; distribution; racial analysis, comments (p. 280); West Coast Vancouver Is., Queen Charlotte Islands, Georgia Str.; weight of species at time of return; time species migrate upstream; movements in ocean; tagging & recapture data; food & feeding habits, saltwater; sea spawning suspected O. tschawytscha; time of day of capture, depth, etc.; egg size; flesh color; individuals migrating together; rate of travel.

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spring; coho; tagging & recapture data; time species return to stream mouth; West Coast Vancouver Is., Barclay Sound; racial analysis: "canal" fish that spawn in Alberni Canal; distribution; mention of possible survival after spawning of two sockeye; rate of travel.

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spring; coho; Brit. Col.; tagging & recapture data; rate of travel; distribution; time adults arrive at stream mouth from ocean; instinct of association; comment on theory of migration; age at time of return; weight at time of return.

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Not abstracted.

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California salmon; New Brunswick, Ontario; intro. & acclim.

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Remarks on the scarcity of male and grilse salmon in the rivers of Ontario, Canada. Bull. U.S. Fish. Comm., 1: 379-381.

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Copepod parasites of freshwater fishes and their economic relations to muscle phlochioia. Bull. U.S. Bur. Fish., 34: 361-374, 1 table, plates 66-74.

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Wilson, Samuel 1878

The Californian salmon with an account of its introduction into Victoria. Melbourne, Sands & McDougall, printers, 1878, 131 pp.

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Wisley, William A. 1920

The spawning beds of Skeena River. Rept. Comm. Fish., 1919, Prov Brit. Col., 29-31.

sockeye; humpback; Skeena R., B.C.; spawning period; distribution.

Withler, F.C. 1948

Lakes of the Skeena River drainage. VIII. Lakes of the Lac-da-dah Basin. Progr. Rept. Pac. Coast Stas., Fish. Res. Bd. Can., No. 74, 9-12.

O. gorbuscha, pink; O. tschawytscha, spring; O. kisutch, coho; O. nerka, sockeye; Lakes of Lac-da-dah Basin, B.C.; food & feeding habits.

Withler, F.C. 1950

Egg content of Babine sockeye. Progr. Rept. Pac. Coast Stas., Fish. Res. Bd. Can., No. 82, 16-17.

O. nerka, sockeye; Babine fence, Skeena River system, B.C.; egg counts; counts of migrant adults.

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O. nerka, sockeye; Six Mile Cr., B.C.; counts of migrant adults.

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sockeye; migration route upstream from observation & tagging & recapture data; spawning behavior; spawning period; time eggs hatch; behavior of fry & fingerlings; food; time young spend in freshwater; time of seaward migration.

Worth, S.G. 1895

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king; dog; sockeye; coho; pink; Alsek-Dezadeash R., Yukon R.; time species migrates upstream; type of stream chosen; distance travelled upstream; spawning period; distribution.

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3 species of Pacific salmon; Mackenzie R., Canada; distribution.

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O. keta; anatomy (ovary).

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quinnat; intro. & acclim.: New Zealand; weight at time of return; distribution.

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quinnat; intro. & acclim.: New Zealand; time species migrates upstream.

U. S. GOVERNMENT PRINTING OFFICE : 1957 O - 436069