

Fishery Studies on the U.S. Pacific Coast, 1887-1931

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Introduction

In the maze of problems that face fishery scientists and administrators today, we soon forget that the birth of fishery biology and management on the Pacific coast began a little over 100 years ago with the establishment of the U.S. Bureau of Fisheries in 1871. The investigation, construction, and operation of the first hatcheries for Pacific salmon, *Oncorhynchus* spp., in the United States began on the McCloud River in northern California in 1872 and in 1877 and 1878 on the Clackamas and Rogue Rivers in Oregon. In their search for suitable hatchery sites, the early investigators provided a description of the local salmon fishery, the size and distribution of the runs, and other information.

First Surveys

The first comprehensive surveys of the fisheries along the Pacific coast and in Alaska were part of the 1880 U.S. Census. David Starr Jordan, then President of Indiana University, and Charles H. Gilbert, a young biologist at Indiana University, were chosen to write the first description of Pacific salmon fishing and canning interests of the United States (Jordan and Gilbert, 1887), with Tarleton Bean preparing a section on Pacific cod, *Gadus macrocephalus*, and Pacific halibut, *Hippoglossus stenolepis*

(Bean, 1887). In this section, Bean pointed out that cod and halibut were being fished in only a few known places in the Bering Sea and around the Aleutian Islands and that "very little is known of the extent and characteristics of the Alaskan fishing grounds; only a comparatively few soundings had been made to ascertain the depths of water at any distance from land, and the limits of the continental shelf were almost completely undetermined."

In 1885, Jordan was appointed the first President of the newly opened Leland Stanford University, and Gilbert followed him to become head of the Biology Department. Their influence, along with the recommendations of Bean, was instrumental in arranging for the *Albatross*, a U.S. Fish Commission vessel, to continue a series of annual surveys in the Aleutian Islands, in the Bering Sea, along the coasts of Washington, Oregon, and California, and even into distant waters off Japan and Hawaii. Frequently Jordan, Gilbert, or Barton Warren Evermann would accompany the vessel during its cruises, taking numerous soundings, temperatures, bottom samples, and other oceanographic tests.

Pacific Fishery Investigations

Because Jordan and Gilbert had written the first description of the salmon fisheries on the Pacific coasts, it was quite natural for Jordan to be chosen to head a select committee appointed by President Theodore Roosevelt in 1903 to investigate the causes for the decline in the salmon fisheries of Alaska. Then, in 1909, Gilbert was named scientist in charge of the Pacific Fishery Investigations of the U.S. Bureau of Fisheries. For the next 22 years, the Bureau's research center for fisheries of the

Pacific coast and Alaska remained at Stanford University, and the influence of Jordan, Gilbert, Evermann, and John Otterbein Snyder, and the contributions of their students, dominated all fishery surveys and investigations made in the North Pacific and beyond.

In 1915 William F. Thompson, an early student of Jordan, began his study of the halibut fisheries of British Columbia. Later he became the director of investigations for the International Fisheries Commission (Halibut), the International Pacific Salmon Fisheries Commission, and the Fisheries Research Institute of the University of Washington.

About 1918, Willis H. Rich, another of Jordan's students, was appointed as field assistant to work with Gilbert on Alaska salmon problems. In 1922 he became chief of the Division of Scientific Inquiry for the Bureau of Commercial Fisheries. He then went on to become head of the Pacific Fishery Investigations at the Bureau's Stanford station, and later was Director of the laboratory at Montlake in Seattle, Wash., for a short time.

Elmer Higgins, who took over in 1927 as the chief of the Division of Scientific Inquiry for the Bureau of Commercial Fisheries, was the third student of Jordan's to play an important role in the research programs at the BCF Montlake Laboratory.

Although each of these early scientists became experts in their own fields, all obtained their inspiration and their professional discipline from David Starr Jordan, considered by many to be the dean of all American fishery scientists.

During this period, the influence of the College of Fisheries at the University of Washington began to be recognized. Arnie Suomela, probably the first

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student from the College of Fisheries to be employed by the Bureau, worked during the summer of 1922 while a junior at the University as a fish warden because there were no openings for biologists. His first task was to help install a fish weir at Olga Bay (Kodiak, Alaska), where he ended up tagging pink salmon for the next 3 years. Arnie served in a variety of management and research jobs, received a Master's Degree from the University of Washington and would have been among the first group of scientists at Montlake had he not been placed in charge of the management of the Pribilof fur seals in the spring of 1931.

There were three other fishery biologists on the staff of the Pacific Fishery Investigations at Stanford who received Bachelor Degrees from the University of Washington and continued with graduate study at Stanford: Thomas Barnaby, George Kelez, and Edward Dahlgren. Thomas Barnaby received a Master's Degree from Stanford in 1929 and was placed in charge of the Karluk investigations; George Kelez was placed in charge of the Chignik investigations in 1933; and, Edward Dahlgren was placed in charge of the Alaska herring studies in 1935.

Montlake Laboratory

It is difficult to pinpoint the actual

beginning of the research program at the Montlake Biological Laboratory. The staff of the International Fisheries Commission (Halibut) had been well established in Fisheries Hall Number 4 at the University of Washington since 1923 or 1924, and the results of their work were already being published. At about the same time, Henry O'Malley, who at the time was both the Commissioner of the Bureau of Fisheries and a member of the Halibut Commission, felt that the Bureau should have a laboratory in Seattle.

In 1924, O'Malley sent Harlan Holmes to Seattle to find working space for the Bureau in Fisheries Hall Number 4, also. Arnie Suomela worked in 1924, 1925, and 1926 on the southeast Alaska salmon-tagging program; Edward Dahlgren, then a student at the College of Fisheries and a part-time employee of the Bureau, counted herring vertebrae here in 1927-28 as part of the Bureau's Alaska herring research program. Several "oldtime" employees of the Bureau were reported to have worked here in the pre-Montlake period although the dates are unconfirmed. Harlan Holmes played an especially important role for the Bureau during the construction of the Montlake Laboratory by ordering equipment and taking care of other details in preparation for moving the biological research staff to Montlake in 1931.

The biological research program that

came to the Montlake Laboratory in 1931 was actually a continuation of studies on salmon begun about 10 years previously by Rich on the Columbia River (in cooperation with the Oregon Fish Commission), and by Charles Gilbert in Bristol Bay and on Karluk River and Karluk Lake in Alaska. In 1926, more salmon studies were added for Chignik, Alaska, under Harlan Holmes. In 1929 new investigations were begun on the sockeye salmon in Bristol Bay under Alan Taft, and on the Copper River under Seton Thompson; other investigations were begun on the pink salmon of southeastern Alaska under Fred Davidson. Studies on the herring fisheries of southeastern Alaska and Prince William Sound began in 1925 under George Rounsefell. All of these studies were under the direction of Rich, Director of the Bureau's Pacific Fisheries Investigations, until his resignation in 1929, and all of the project leaders were graduates of Stanford University.

Literature Cited

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