

William Francis Thompson (1888–1965) and His Pioneering Studies of the Pacific Halibut, *Hippoglossus stenolepis*

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Introduction

William Francis Thompson (1888–1965) was born in Minnesota but moved in 1903 with his parents to Everett, Wash., where his father, Pirrie, worked for the Great Northern Railway. Will attended local schools and demonstrated an early interest in natural history. He entered the University of Washington, Seattle, in 1906 and majored in zoology.¹ Thompson impressed his professors with his work habits, and his diligence was noticed in 1909 by a visiting professor from Leland Stanford Junior University in Palo Alto, California, Edwin Chapin Starks (1867–1932).^{2, 3} Soon thereafter Thompson received an offer to work

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ABSTRACT—William Francis Thompson (1888–1965), as a temporary employee of the British Columbia Provincial Fisheries Department, was assigned in 1914 to undertake full-time studies of the Pacific halibut, *Hippoglossus stenolepis*. The fishery was showing signs of depletion, so Thompson undertook the inquiry into this resource, the first intensive study on the Pacific halibut. Three years later, Thompson, working alone, had provided a basic foundation of knowledge for the subsequent management of this resource. He published seven landmark papers on this species, and this work marked the first phase of a career in fisheries science that was to last nearly 50 years.

for David Starr Jordan (1851–1931), then the leading ichthyologist of the United States as well as the President of Stanford University.^{4, 5} During the early part of the 20th century, Stanford University was the center of research on fishes in the United States (Brittan, 1997). Thompson therefore transferred from the University of Washington to Stanford University in 1909 where he continued his studies in zoology.

As an undergraduate student, Thompson assisted Jordan in his study of the taxonomy and distribution of fishes and, in the process, co-authored a series

¹ Information about Thompson's early life is contained in an unpublished family memoir: Thompson, J. B. [Editor, dated July 1, 1925–July 1, 1972]. "Thompson: a family history," unpaginated, but ca 372 p. A photocopy of this manuscript has been deposited in the W. F. Thompson papers, Archives, School of Aquatic and Fishery Sciences, University of Washington. Hereafter referred to as J. B. Thompson, manuscr. (The volume and page numbers referred to in this paper are those that I added to my photocopy of the manuscript; the original is variously paginated).

² At the University of Washington, Thompson's mentor was Trevor Charles Digby Kincaid (1872–1970), a Professor of Zoology who was a principal in creating the University of Washington's marine biology station at Friday Harbor, Wash. (Pietsch, 1997).

³ Starks was a visiting professor conducting research at the Friday Harbor station in 1909 where Thompson was a summer student assistant (J. B. Thompson, manuscr., I:68). Additional information about Starks is given by McFarland (1933) and Pietsch (1997).

⁴ Jordan was mentor to many of the prominent ichthyologists of the era. His autobiography (Jordan, 1922) offers insight into the era of exploration of fish and fisheries of the early 20th century. Further information about Jordan is given by Myers (1951) and Brittan (1997).

⁵ Thompson received a wire from Professor Starks in August 1909 offering him a position as an assistant to Dr. Jordan. The wire concluded, "Come as soon as possible." J. B. Thompson, manuscr. I:66 (see footnote 1).

of publications with him. Thompson graduated from Stanford University in 1911 with a B.A. degree in zoology. One of Thompson's professors at Stanford University was Charles Henry Gilbert (1859–1928), the Chairman of the Department of Zoology (Brittan, 1997; Dunn, 1997). Thompson studied ichthyology under Gilbert and was exposed to Gilbert's critical thinking and fine eye for detail. Remaining at Stanford University, Thompson began his graduate work under Gilbert in the fall of 1911, continuing through 1913, and was thus introduced by Gilbert to the then newly developing field of fishery biology.⁶

Gilbert was a compulsive worker, and was strongly impressed by Thompson's hard work and dedication to the task at hand.⁷ Thompson's first field experience

⁶ Thompson wrote that his knowledge of fisheries science, as a study of the effect of commercial and sport fishing on fish populations, was obtained in seminars at Stanford University and through reading the reports of the great European investigators such as Johan Hjort, D'Arcy Wentworth Thompson, and others (J. B. Thompson, manuscr. II:8, see footnote 1). Johan Hjort (1869–1948) was a Norwegian biologist who became an important figure in fisheries of the first half of the 20th century. He was a founder of the International Council for the Exploration of the Sea, a major fisheries coordinating agency in Europe (Kendall and Duker, 1998). D'Arcy Thompson (1860–1948) was an internationally acclaimed professor at St. Andrews College in Scotland. He had a broad knowledge of natural history, the classics, and oceanography, but was best known to biologists for his application of mathematics to biology. His book *On Growth and Form* (D. Thompson, 1917) is a classic of the period (Gillispie, 1976).

⁷ Gilbert wrote in early 1910 to John Pease Babcock (1855–1936), then with the California Fish and Game Commission, indicating that he had a new student by the name of Thompson who looked very promising: "He is an indefatigable worker and cares for little else. . . ." Gilbert to

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in fisheries biology occurred during the summer of 1911 when he surveyed clam beds in California for that state's Fish and Game Commission (Van Cleve, 1966).⁸

This paper describes Thompson's early years as a fishery biologist.⁹ He conducted the first comprehensive studies of the Pacific halibut, *Hippoglossus stenolepis*, and laid the scientific foundation for the subsequent management of this resource in the 1930's by the International Fisheries Commission (now the International Pacific Halibut Commission), which he then directed.¹⁰ These initial studies by Thompson marked the beginning of a 50-year career in which he became the most widely known fishery scientist and educator of the Pacific Northwest (Dunn, 2001a).

⁷ (continued) Babcock, dated Stanford University, 10 January 1910, British Columbia Archives and Records Service, Group 435, Box 198, Folder 1909. Babcock became an important contact in the fisheries field to both Gilbert and Thompson. Babcock was the Commissioner of Fisheries for the Province of British Columbia from 1901–1906. He was then Deputy Commissioner from 1907 to 1909 and, later, Assistant Commissioner (1912–35). He was with the California State Board of Fish Commissioners from 1891 to 1901 and from 1910 to 1911. A brief biography of Babcock is present in the Babcock papers, Manuscripts, Special Collections, and University Archives, University of Washington Libraries (hereafter University of Washington Archives), Accession No. 860-1, Box 1. An obituary of Babcock may be found in the *Victoria Daily Times*, 13 October 1936. For more on Babcock, see Gilbert (1988) and Dunn (1996).

⁸ Thompson was hired by Babcock, then Chief Deputy to the Board of the Fish and Game Commissioners of California, to survey the abundance and distribution of Pismo clams, *Tivela stultorum*, in northern California. Thompson's field diary for his clam surveys of 1911 is present in the files of the International Pacific Halibut Commission, Seattle, Wash. See also J. B. Thompson, manusc. I:72–73 (see footnote 1).

⁹ Elmer Higgins (1934) was likely the first person to define the term "fishery biologist" and to articulate its aims and methods, with an emphasis on a quantitative approach to the fisheries.

¹⁰ The International Fisheries Commission was established in 1923 by treaty between the United States and Canada. The Commission was organized to conduct research on the halibut and to regulate the fishery to provide the necessary management of the resource (Anonymous, 1978). It represented the first international attempt to conserve and replenish a marine fishery (Skud, 1973). The Commission's first Director was William Francis Thompson. The Commission was renamed the International Pacific Halibut Commission in 1953. For additional information on the establishment of the Commission, see Bell (1981) and Gilbert (1988).

The sources for the information presented here include Thompson's published works as well as other pertinent publications, his personal papers in the archives of the University of Washington Libraries, and records in the archives of the School of Aquatic and Fishery Sciences, University of Washington. Additional documents were examined from the Stanford University Libraries, Stanford, Calif., the British Columbia Archives and Records Service, Victoria, B.C., Can., and from the files of the International Pacific Halibut Commission, Seattle.

Thompson Joins the British Columbia Provincial Fisheries Department

In the early 20th century, concern over the depletion of the game animals and sport and commercial fishes was increasing. Human populations in the western United States were growing, and the visions of an earlier era of a vast abundance of fish and other wildlife were becoming mere reflections of the past. Rapidly dwindling populations of wildlife generated an interest in their preservation, which led to the acceleration of the American conservation movement (Reiger, 1975).

Knowledge of the fishery resources of British Columbia in the early 20th century was woefully inadequate for management of the stocks. The *Report of the Commissioner of Fisheries for the Province of British Columbia for the year ending December 31st, 1913* (Anonymous, 1914) stated:

"The growing future of the fisheries of British Columbia, which everything portends, accentuates the need for fuller investigation of the habits and distribution of the food-fishes of the Coast. No attempts on any worthy scale have as yet been made in this direction and aside from the investigations conducted by the Department in the past few years, the result of which have been given to the public in the annual reports, there is but scanty literature dealing with this very important subject."

This same report (Anonymous, 1914) called for particular attention to be directed at the Pacific halibut:

"In the case of the halibut, prediction is made that the fishery will be depleted, although the success of the catch in recent years would not seem to warrant this. Immediate study should be given to its life-history, however, in order that protective or other measures be taken to conserve it."

In an attempt to remedy this lack of knowledge, John Babcock, the Assistant Commissioner of Fisheries for the Province of British Columbia, turned to Stanford University in 1912 and hired its preeminent fishery scientist, Professor Charles Gilbert, as a temporary employee to investigate the salmon resources of the Province. Babcock had just returned to the British Columbia Provincial Fisheries Department after a short stay (1910–1911) in California with that state's fisheries agency (Dunn, 1996). Gilbert hired Thompson as his assistant.¹¹ Because of Thompson's experience in 1911 inventorying clams in California, Babcock asked him to survey the shellfish resources of British Columbia. This initial work by Thompson was conducted in the summers of 1912 and 1913, while he was a graduate student at Stanford University, and quickly resulted in two publications on the shellfish of the Province (Thompson, 1914a, b).¹²

In 1914 Babcock asked Gilbert to undertake a survey of the British Columbia halibut fishery. Gilbert, in turn, suggested that Thompson undertake the work "under my instruction."¹³ The

¹¹ Babcock was pleased that Thompson was available for work "this summer" and offered him a job to study shellfish for \$75 a month and expenses from and to Stanford University. Babcock wanted Thompson to begin work on 15 May 1912. Babcock to Thompson, dated Victoria, 25 April 1912. Letter is copied to C. H. Gilbert. University of Washington Archives, Accession Number 2597-77-1, Box 12, Folder 4.

¹² Thompson's field diaries for the years 1912 and 1913 are present in the files of the International Pacific Halibut Commission, Seattle, Wash.

¹³ I was unable to locate any correspondence in which Babcock specifically asked Gilbert to investigate the halibut. However, letters from Gilbert to Babcock that discussed the subject are present, e.g., Gilbert to Babcock, dated Stanford University, 18 March 1914: "I am greatly pleased that you are to utilize Thompson this coming year. He will accept and will be most useful."

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Department then hired Thompson as a temporary employee, and he duly began to study the halibut.¹⁴ As noted in the Annual Report of the Commission, "The first systematic attempt to trace the life-history of the halibut was inaugurated by the Department when W. F. Thompson was assigned the work" (Anonymous, 1915). The report further noted that Thompson "started actively the collection of specimens on a scale never before attempted" (Anonymous, 1915).¹⁵

For Thompson, the halibut investigation became a full-time, but still temporary, job with the Department.¹⁶ The Commissioner's Report for 1914 stated, "The impossibility of dealing with a subject of this scope in the short summer months was recognized by the Department, and Mr. Thompson was detailed to give his entire time to the problem" (Anonymous, 1915). Thompson was to be employed on a year-round basis at a salary of \$100 per month plus expenses.¹⁷ He again received high

praise from Gilbert for his industriousness, with the latter writing to Babcock: "He is certainly an engine to work and will improve in finish."¹⁸

The halibut fishery was then relatively young, being developed by Canadian and United States fishermen, but one whose stocks appeared to be declining in abundance. Thompson noted that the supply of halibut might have been in danger as the best-known halibut banks were becoming seriously depleted. Each season the catches were obtained from more distant banks, and it became evident that the supply was limited and rapidly decreasing. Hence, if this source of food was to be maintained, some protection of the resource appeared to be necessary. Before any protection could be extended to this important resource, knowledge of the life history of the halibut was required and, at that time, little such information was available (Thompson, 1915).

Depletion of deep-sea fisheries had previously been argued, but never widely accepted as fact.¹⁹ During his work on the halibut from 1914 to 1917, Thompson demonstrated the reality and extent of the depletion of the fishery and made recommendations for its restoration. According to Van Cleve (1966), Thompson "not only demonstrated his ability for independent thinking but also revealed his training in meticulous observation and careful measurement that he had learned so well from Professor Charles H. Gilbert. So successful was Thompson's work that the fishery was

to reach near-optimum productivity in later years."

Thompson's plan of study of the halibut included four elements, based on the research approach used in the North Sea. According to some of his later writings, Thompson's first objective was the collection of statistical data from the fishery to measure "catch-per-unit-of-effort." Second was to attempt to measure "racial" differences among the stocks; third was to determine the history of the fishery, its expansion and then depletion; and, finally, the use of age determination to develop population parameters. Thompson was able to immediately implement some, but not all, of these approaches. He later claimed that his study of catch-per-unit-of-effort and his examination of the history of the fishery to detect depletion were the first such studies to be applied to an American fishery (Van Cleve, 1966).^{20, 21}

In May 1914 Thompson began a detailed study of the life history of the Pacific halibut. He made many trips aboard halibut fishing vessels in Canadian waters and as far west as Kodiak Island, Alaska. Thompson's basic approach was to collect information on age and growth, length and weight, and sex and maturity of halibut and to determine the variation present in these parameters.²² Additionally, he was interested in the timing, duration, and location of the halibut spawning season. He therefore investigated the fecundity of the species by studying the number, size, and maturity of ova produced by female halibut. Thompson also determined the age at which the fish matured. The food of the halibut was investigated, and notes were made on halibut parasites and

¹³ (continued) British Columbia Archives and Records Center, hereafter British Columbia Archives, Group 435, Box 56, Folder 509. Gilbert to Babcock, dated Stanford University, 8 April 1914: "I believe it is important to push the halibut investigation, but do not see how I can carry it very far this year. What would you think of putting Thompson on that work this summer, under my instructions? He could pretty well clean that up in the year, besides finishing the shell-fish survey and getting me the fall salmon material which I need. He will do much better if he be given definite tasks, or rather definite subjects for investigation. The halibut job will be a big one and will require continued work on the halibut banks, so the fish are all eviscerated there." British Columbia Archives, Group 435, Box 56, Folder 509.

¹⁴ Thompson's field diaries for the years 1914-16 and for part of 1917 are present in the files of the International Pacific Halibut Commission, Seattle, Wash.

¹⁵ When Thompson began his studies (Thompson, 1915), virtually nothing had been published on the life history of the Pacific halibut.

¹⁶ Thompson wrote later that undertaking the halibut study was the major turning point of his career. He apparently discussed the halibut project with his fellow graduate students at Stanford University who, according to Thompson, considered the task too difficult to undertake, e.g. "who could study a fish a hundred fathoms deep in the ocean, without even a vessel?" Thompson then wrote "So I promptly got off the 'bandwagon' of the most popular and overcrowded fields of endeavor and into a very new one where I was alone on the ground floor." J. B. Thompson, *manuscr.* III:68-69 (see footnote 1).

¹⁷ Records show that Thompson was paid \$75.00 for July 1912. Schedule D, Salaries of

¹⁷ (continued) Staff for Month of July 1912, Government of British Columbia. British Columbia Archives, Group 435, Box 86, Folder 818. His salary was increased for 1914. See Night Telegram from D. N. McIntyre, Deputy Commissioner of Fisheries [n.d., marked in pen 1913] to W. F. Thompson, c/o Dr. Gilbert, Stanford University, Calif.: "As instructed by Commissioner to offer you year's engagement at hundred month and traveling expenses to continue clam investigations and such other field work as may be desired by department." British Columbia Archives, Group 435, Box 93, Folder 911.

¹⁸ Gilbert to Babcock, dated Stanford University, 30 October 1914. "Thompson is here hard at work on otoliths and scales. He is certainly an engine to work and will improve in finish." British Columbia Archives, Group 435, Box 56, Folder 511.

¹⁹ A history of the early arguments about the depletion of sea fisheries is given by Smith (1994).

²⁰ Thompson and Freeman (1930) wrote a history of the halibut fishery. For a more recent summary of the fishery, see Bell (1981).

²¹ J. B. Thompson, *manuscr.* III:69-70 (see footnote 1).

²² During his field seasons, Thompson corresponded with Gilbert, who offered suggestions to Thompson about lines of inquiry to pursue. As an example, in the summer of 1914 Gilbert advised Thompson on research methods and concluded with a word of praise, "It is a fascinating problem and I do not know anyone else who is so likely to work it out in an exhaustive and trustworthy fashion." Gilbert to Thompson, dated Victoria, 28 July 1914, University of Washington Archives, Accession Number 2597-77-1, Box 1, Folder 51.

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Figure 1.—William F. Thompson, Sidney Island, B.C., 1912. Source: William F. Thompson papers, Archives, School of Aquatic and Fishery Sciences, University of Washington, Seattle.

potential predators. The initial results of this research were published in 1915 (Thompson, 1915).

Thompson first looked for scientific as opposed to anecdotal evidence of depletion in the halibut stocks. During his numerous trips aboard halibut schooners, he quickly became aware of the ship's logs and the careful manner in which masters and mates of the vessels maintained catch and location records. He obtained the trust of the vessel captains and was allowed to examine ship's logs for over 900 halibut fishing voyages taken from about 1902 to 1915.²³ These records provided the data for his analyses of Pacific halibut catches and offered valuable insight into the condition of the fishery (Thompson, 1916a).

²³ "Captain Freeman says he has log and tally sheets for ten years back ... I am to remind him to get them when we get ashore." W. F. Thompson diary 5 March 1915 (aboard the *S. S. Flamingo*). "I am copying his log as fast as I get an opportunity." W. F. Thompson diary 13 March 1915. Files, International Pacific Halibut Commission, Seattle, Wash.

Thompson spent many days at sea aboard halibut boats to collect data from the catches (Fig. 1–5).²⁴ The boats were small and cramped, the weather was often uncooperative, and Thompson found the general conditions quite uncomfortable. As he noted in his first halibut report (Thompson, 1915):

"The work concerning which this preliminary report is issued was begun in May, 1914, when the first trip to the fishing-grounds was made. Since then numerous trips have been made to various banks,

²⁴ Thompson spent much of 1914 and 1915 at sea collecting data. For example, he was aboard the halibut schooner *James Carruthers* in June and September 1914, the *S. S. Kelly* in July and August 1914, and the *Flamingo* in March 1915. He returned to Stanford University in early April, but was on the *Chief Skugard* from mid July to mid August 1915. A winter trip aboard the *Flamingo* was made in December 1915 and early the following January. He then boarded the *Andrew Kelly* in mid January 1916. J. B. Thompson, manuscr. II:1–26, (see footnote 1). See also the W. F. Thompson diaries for 1914–16, International Pacific Halibut Commission, Seattle, Wash.

especially to those fished by vessels from Canadian ports."

The work was arduous and potentially dangerous (Thompson, 1915):

"The fish were examined on the deck as they were brought in. The decks were always so slippery and slimy that it was necessary to lash the fish down 'fore and aft' to guard against the rolling movements of the vessels as they lay in the trough of the seas. Also, of course, the place chosen to work on could not be in the way of the fishermen at their work, and it was, therefore, necessarily distant from the 'checkers' or pens of fish, despite the difficulty of handling heavy fish on a slippery deck. Care was likewise necessary that no cuts were made which could injure the market value of the fish. As a result of these conditions it was possible to examine less than a hundred fish in a day, save in exceptional cases



Figure 2.—William F. Thompson (right) aboard the halibut fishing vessel *Flamingo* in 1915. Source: William F. Thompson papers, Archives, School of Aquatic and Fishery Sciences, University of Washington, Seattle.

where the fish were small. It need only be said that accurate work under such conditions was time consuming.”

When not sampling or conducting other work on the vessels, Thompson wrote frequent letters to his friend, a fellow graduate student at Stanford University and soon to be wife, Julia Bell Shands (1884–1976).²⁵ In addition to explaining to Julia his work on the boats, Thompson described the often difficult conditions he faced, particularly in the winter. Aboard the *Andrew Kelly* in January 1916 he wrote about the cold and the living conditions aboard the vessels. After describing the snow, wind squalls, and icing, Thompson wrote:

“Every window is tightly closed, all the ventilators are choked with something, the hatches are battened down and frozen so, and all the doors are closed. The air is atrociously bad and fetid, but even then cold, except in the pilothouse. There the skipper, clad in his great “doffer” and sea-cap, peers out through a half opened window, because the glass is all sheeted with ice. In sheer need for a clean breath I have come up here, when it is cold, to write.”²⁶

²⁶ Thompson to J. B. Thompson, dated Petersburg, Alaska, 21 January 1916. J. B. Thompson, manusc. II:37 (see footnote 1). Thompson narrowly escaped death in January 1916. He was scheduled to board the halibut schooner *Onward Ho* out of Prince Rupert, B.C., to sample the halibut catches. However, delays in completing his research reports caused him to miss the sailing. Instead Thompson took the vessel *Andrew Kelley* for his work. The *Onward Ho* disappeared in mid January during a violent storm and no remnants of the vessel were ever found. All aboard the vessel perished (summary by William Francis Thompson, Jr., dated 12 October 1973, in J. B. Thompson, manusc. II:145b (see footnote 1)).

Much of Thompson’s work was published in the *Province of British Columbia Report of the Commissioner of Fisheries for the year ending December 31st, 1915*.²⁷ Three of his papers appeared in that volume.²⁸ The first paper was a lengthy analysis of the statistics of the halibut fishery, a culmination

²⁷ Thompson received high praise from Gilbert for his publications on halibut. “I am in receipt of your Report for 1914 and want to congratulate you on its excellent form and on the showing made of the activities of the Department. I venture the assertion that it packs within comparatively small compass more valuable contributions to the scientific and economic advancement of our fisheries industry, than does any other government publication in America, not to carry our comparison farther afield. The most valuable single contribution, marked by the novelty of the results, the thoroughness of its methods, and its finished form—is Thompson’s paper on the Halibut. Making all allowance for the fact that he had a virgin field to cultivate, the fact remains that he achieved most valuable results in the face of difficulties which would have appalled most men.” Gilbert to Babcock, dated Stanford University, 3 November 1915, British Columbia Archives, Group 435, Box 105, Folder 1045.

²⁸ Thompson’s third paper, published in 1916, dealt with a parasite that caused “mushy” halibut (Thompson, 1916b).

²⁵ Julia Bell Shands was born in San Marcos, Texas. She met Will Thompson in 1914 at Stanford University where she was seeking a Master’s Degree in English. They were married in San Marcos on 26 September 1915. The couple had four children, two boys and two girls. J. B. Thompson, manusc. I:95–117 (see footnote 1); Anonymous (1970).



Figure 3.—Coiling longline fishing gear aboard the vessel *James Carruthers*, 1914. Source: William F. Thompson papers, Archives, School of Aquatic and Fishery Sciences, University of Washington, Seattle.



Figure 4.—Long-lining aboard the vessel *James Carruthers*, 1914. Source: William F. Thompson papers, Archives, School of Aquatic and Fishery Sciences, University of Washington, Seattle.

of Thompson's research through 1915 (Anonymous, 1916; Thompson, 1916a). He concluded that the area where the most intensive fishing occurred during this period shifted yearly to a greater distance from shore and also farther to the north; the fishing likewise shifted to deeper water in the winter months.²⁹ The length of the voyages and the time fished increased, indicating depletion of stocks. Additionally, the weight of halibut caught per skate (i.e. the catch-per-unit-of-effort or the weight of fish

caught per unit of fishing gear) on all fishing grounds declined by a factor of more than four.³⁰ The number of fish caught per skate declined by a factor of 3.5–4. Furthermore, the average weight of fish caught declined markedly over time. Moreover, banks nearest the open ocean seemed to yield smaller fish than the more protected banks or enclosed waters. Finally, relatively small yields

composed of large fish indicated declining productivity; these statistics characterized the banks that had been most recently exploited. These factors together strongly suggested a resource being depleted.

Thompson also published a general summary titled "The Problem of the Halibut" (Thompson, 1916c). In this paper he reviewed the status of knowledge and methods of the halibut fishery, and presented evidence that suggested the stocks were declining (Fig. 6–8). Thompson called for additional study of the resource, particularly an investigation of the spawning habits, migrations,

²⁹ Subsequent studies showed that the halibut underwent a winter spawning migration to deeper water (Anonymous, 1978).

³⁰ A "skate" is a unit of halibut fishing gear consisting of lines with baited hooks. During Thompson's investigations, a skate consisted of 8 lines of 50 fathoms each with about 32 hooks per line (Thompson, 1916a). More on halibut fishing gear is given by Bell (1981).

and population structure of the species. Such data were needed, he argued, before a rational plan could be assembled to reverse the decline in yield.

The reports published by Thompson in 1916 provided dramatic evidence of depletion of the halibut fishery, in contrast to a report published by Professor Arthur Willey shortly before Thompson's paper was disseminated.³¹ Willey expressed doubts as to the decline of the halibut fishery, and he further suggested that limitation of the industry was not needed (Willey, 1916). Thompson addressed Willey's paper in a footnote, noting that the scientific basis for Willey's conclusions were very weak (Thompson, 1916a).³²

Steps were initiated by the United States and Canada to regulate the halibut fishery. The U.S. Senate passed a measure in 1916 (Senate Bill 4586) to establish a closed season on halibut between December and January of each year and also to establish a closed zone of some 200 square miles off British Columbia and in the Gulf of Alaska. Enforcement of the proposed regulations was contingent upon the enactment of similar laws by the Canadian government. The bill failed to pass in the U.S. House of Representatives, and therefore the proposed law was not implemented (Anonymous, 1917; Gilbert, 1988).³³

Thompson next published a report on the regulation of the halibut fishery (Anonymous, 1917; Thompson, 1917a). He directed much of his analysis to the U.S. Senate Bill 4586 of 1916 that would have imposed some regulations on the halibut fishery. Thompson argued that the 2-month winter closed period for

³¹ Arthur Willey was a Professor of Zoology at McGill University in Montreal, Canada (Cattell and Cattell, 1938).

³² Thompson had only a summary of Willey's paper at that time, but he was disturbed by the conclusions it contained. He described it as "... obviously simply a review of the literature of the subject and an attempt to advance certain surmises as to the life history of the halibut." Thompson to Babcock, dated Stanford, 24 February 1915. Photocopy in University of Washington Archives, Accession Number 2597-77-1, Box 1, Folder 51.

³³ Additional information on the political background of the various treaties proposed to regulate the Pacific halibut is given by Bell (1981) and Gilbert (1988).



Figure 5.—William F. Thompson (left) aboard the vessel *James Carruthers*, 1914. Source: William F. Thompson papers, Archives, School of Aquatic and Fishery Sciences, University of Washington, Seattle.

halibut as called for by the U.S. Senate might well result in more intensive fishing the remainder of the year, possibly by a larger fleet. Fishing in the winter months was the least profitable for the fishermen and a closed period as proposed would not protect the spawning stock as asserted by the proponents of the closure. The Senate Bill, according to Thompson, provided protection for the fishing banks that showed the least need for such protection. The areas that needed protection were those in which halibut rarely had a chance to mature because of the harvest of the fishery. Thompson laid out recommendations for closed

areas and seasons based on more biological evidence than the U.S. Senate proposal.^{34, 35} An effective mechanism for

³⁴ Thompson was apparently asked by the Commission to develop a plan for future halibut research to be conducted by the Province. I was unable to locate such a request in the archives, but Thompson responded with a detailed outline that included studies of halibut early life history, hydrography, collecting adult halibut vital statistics, and determining adult distribution. See Thompson to McIntyre, dated Victoria, 6 January 1916, University of Washington Archives, Accession Number 2597-77-1, Box 12, Folder 4; and D. W. McIntyre to Thompson, dated Victoria, 1 February 1916, University of Washington Archives, Accession Number 2597-77-1, Box 12, Folder 5.

³⁵ See next page for Footnote 35.



Figure 6.—Landing fish at National Independent Fish Company, Seattle, 7 July 1915. Source: William F. Thompson papers, Archives, School of Aquatic and Fishery Sciences, University of Washington, Seattle.

³⁵ Thompson was also asked to comment on the Canadian Government's draft regulations for the halibut in response to the U.S. Senate Bill 4586. G. J. Desbarats, Deputy Minister of the Naval Service, Ottawa, Canada, to Thompson, dated Ottawa, 26 February 1917. Thompson responded with a 4-page letter and a 20-page summary of his recommendations for regulating the halibut

fishery. Thompson to Desbarats, dated Everett, Washington, 29 March 1917. Thompson later provided additional information on the "halibut problem" to Desbarats. Thompson to Desbarats, dated Stanford, 27 April 1917. Photocopies of all three letters are in University of Washington Archives, Accession Number 2597-77-1, Box 1, Folder 51.

regulating the halibut fishery was still several years away (Gilbert, 1988).

This work ended Thompson's studies of the halibut, at least for this initial period.³⁶ In the summer of 1916, Thompson was asked to undertake an investigation of the Pacific herring, *Clupea pallasii*.³⁷ This he did in his normally intensive manner and produced the first such work on herring outside of Europe (Thompson, 1917c).

Conclusions

The fishery research efforts of the Province of British Columbia were terminated in 1917 as World War I continued.³⁸ Political winds in British Columbia, at times hostile to "Americans" working in Canada, were also changing as the Liberal Party came to power to replace the Conservatives.³⁹ With his

³⁶ Thompson (1917b) also published an analysis of the fecundity of the halibut.

³⁷ Babcock to Thompson, dated Victoria, 15 June 1916: "After talking the matter over with Dr. Gilbert I think we will ask you to make a study of the herring as soon as you think that you can draw your halibut work to a conclusion." Thompson to Babcock, dated Stanford, 20 June 1916: "The study of the herring should be a very fruitful one and I will undertake it with a great deal of pleasure, thanking you for the opportunity." Later in this letter Thompson indicated that he wished also to continue his analysis of the halibut data he had collected. Photocopies of both letters are present in the University of Washington Archives, Accession Number 2597-77-1, Box 1, Folder 51. See also Gilbert to Thompson, dated Victoria, 29 July 1916. "Mr. Babcock agrees with me that you would do well to take up the herring next winter, if all goes well." Photocopy in J. B. Thompson, manusc. II:37 (see footnote 1).

³⁸ W. F. Thompson to J. B. Thompson, dated Vancouver, 28 September 1915. "Canada is much in earnest about the war." And "The papers make a great deal out of the British advances, each one being announced one day, in big headlines, elaborately reported the next two days, and then made the subject of special articles." J. B. Thompson, manusc. II:41 (see footnote 1).

³⁹ From the beginning of his work in British Columbia, Thompson was concerned about the political situation in the Province: "I do not want to think of the situation at Victoria. There are signs of a rising prejudice against Americans, but I hope there will be nothing serious resulting from it." Thompson to J. B. Shands, dated Victoria, 1 March 1914. Photocopy in J. B. Thompson, manusc. II:1 (see footnote 1). "The election was overwhelmingly against the government, and the Liberals have as overwhelming a majority as had the Conservatives." Thompson to J. B. Thompson enroute Victoria to Vancouver, dated 18 September 1916. Photocopy in J. B. Thompson, manusc. II:38 (see footnote 1). "Mr. Babcock said the Liberals would come to power on the 15th

continued



Figure 7.—Fish Exchange, Seattle, 7 July 1915. Source: William F. Thompson papers, Archives, School of Aquatic and Fishery Sciences, University of Washington, Seattle.

job prospects shaky, Thompson decided to seek employment elsewhere. With the help of Gilbert and Babcock, he secured employment with the California Fish and Game Commission where he ultimately developed a major marine research program for that agency (Dunn, 2001b). It would be seven years before Thompson returned to the Pacific Northwest and to the study of the Pacific halibut.³⁹

³⁹ (*continued*) of October, and he estimated six months as the time it would take them to formulate plans and policies on their own. Mr. Babcock says he will not stay even if he is allowed to unless his superior officer—the Commissioner of Fisheries—is thoroughly satisfactory to him.” Thompson to J. B. Thompson, dated Vancouver, 1 October 1916. Thompson recounted three items that would have caused Babcock to resign, if they occurred. He indicated that “Any of these things means the cessation of my work.” Photocopy in J. B. Thompson, *manuscr.* II:45 (see footnote 1).

⁴⁰ Thompson was appointed Director of Investigations of the International Fisheries Commission in November, 1924 (Anonymous, 1924). His diary for this period documents his meeting with the Commissioners in Seattle and his acceptance of the new position. Files, International Pacific Halibut Commission, Seattle, Wash.

William Thompson, at a relatively young age, left a legacy of significant accomplishment in the newly developing field of fisheries science. He was among the first to apply a measure of abundance, catch-per-unit-of-effort, to the stocks of a North American fishery. Thompson was also among the first to document a decline in any fishery, anywhere. He established a baseline for the subsequent research on the Pacific halibut. During this early period in his career, Thompson acquired a reputation for diligent and intensive work, a strongly focused mind, and penchant for extreme accuracy in his biological measurement (Van Cleve, 1966). Thompson’s reputation continued and led to a long and very productive career as the predominant fishery biologist of the Pacific Northwest.⁴¹

⁴¹ Smith (1994) provides further information on Thompson’s accomplishments in fisheries research.

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Figure 8.—Fish stall in Seattle, November 1915. Source: William F. Thompson papers, Archives, School of Aquatic and Fishery Sciences, University of Washington, Seattle.

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