Paul S. Galtsoff, 1887 - 1979

Paul Simon Galtsoff was born in 1887 in Moscow, Russia. He was trained in invertebrate zoology at the Imperial Moscow University. Upon graduation in 1910 he received a two-year governmental scholarship for research and preparation for a professorship in zoology which allowed him to conduct scientific investigations in Western European research laboratories. During this time, Galtsoff was awarded a gold medal from the University of Moscow and two monetary prizes from Moscow Scientific Societies based on his investigations in protozoology and fresh water biology. He rapidly advanced to become one of Russia's leading scientists and in 1914, as a senior zoologist at the Imperial Academy of Sciences, he became the Director of the prominent Marine Biological Station at Sebastopol on the Black Sea. The 1917 Bolshevik Revolution reeked havoc throughout Russia and in 1921, with only 12 hours to spare; he escaped to New York City aboard a British naval vessel. Unfortunately when Galtsoff arrived in the United States marine science was not a focus of research.

There were no university courses in oceanography or fishery biology, yet government positions required training in these fields. Consequently, many fisheries positions remained vacant. In December of 1921, Galtsoff finally found a temporary position with the U.S. Bureau of Fisheries to survey the shellfish, fish and plankton of the upper Mississippi River following the construction of the Keokuk Dam in Iowa. Dr. Hugh Smith, Commissioner of Fisheries, was impressed with his meticulous and systematic study and, in 1923, offered him a permanent job at the Bureau of Fisheries' Laboratory in Woods Hole, Massachusetts. Commissioner Smith, using his Civil Service Commission authority to fill vacant positions without competitive examination, appointed Galtsoff to the Bureau's staff as the Naturalist onboard the Albatross, a position that had been vacant for nearly two years. Galtsoff simultaneously pursued graduate studies and in 1925 was awarded his Doctoral Degree from Columbia University. Also in 1925, at the request of the Oyster Growers and Dealers Association (OGDA), the Bureau assigned Galtsoff to lead a shellfish research program in Long Island Sound. At that time, most oyster research was conducted in New Jersey under Dr. Thurlow Nelson. Galtsoff initiated a comprehensive survey of oyster habitat and, through his extensive analysis, he concluded that the combination of over-fishing and predation (from both starfish and oyster drills) were the primary reasons for the recent oyster declines.

Disaster stuck the oyster industry in 1924-25 with a typhoid epidemic in Chicago linked to oysters from the Chesapeake Bay and New York. Demand for oysters plummeted nationwide. Government officials scrambled to save the industry and restore confidence in the public over the safety of consuming oysters. Commissioners turned to biologists, including Galtsoff, for practical solutions to this difficult situation. The vital issue was how to obtain "pure oysters, devoid of contamination by pathogenic bacteria."1 Although the importance of the oysters' filter feeding was recognized, rates of feeding and the effects of temperature on feeding were not known. Galtsoff started an innovative study on ciliary motion of the gills and designed methods to measure the volume of water passed through the oyster gills. Galtsoff's 1927 presentation on oysters was among the few scientific presentations at the OGDA convention but marked the return of scientists to the oyster industry meetings. Industry wanted oyster biologists to predict the time of spawning and the location of setting. Galtsoff investigated the sex, spawning and setting of oysters during a period when most of the research on oyster reproduction was still observational. Galtsoff published experimental data on the physiology of reproduction, the fundamental differences between the processes of male and female spawning, and the effects of temperature on spawning. In 1927, oyster research at the Bureau of Fisheries in Woods Hole continue to expand as Galtsoff collaborated with H. Federighi and H. R. Sewell on the effects of external factors on the survival of oyster larvae, with A. E. Hopkins on the sensory stimulation by chemicals, with E. B. Perkins on oyster culture, and with D. Whipple and H. B. Pease on oyster physiology. In the 1930s, following a sharp reduction in allocated funds, activities at the Woods Hole Fisheries Laboratory

declined and as a result, no summer Director for was appointed in 1932. Galtsoff, in charge of the Shellfisheries Section of the Bureau, continued his oyster research concentrating on diurnal oyster activities and the control of predatory starfish. He also conducted experiments on the growth and fattening of oysters with R. O. Smith. Over

the next several years Galtsoff adamantly fought to maintain the Fisheries Laboratory against strong public opinion to have it declared as surplus property and sold off. Galtsoff was a passionate advocate and the Shellfisheries Section was allowed to continue the oyster research but without a formal Director. Galtsoff assumed all administrative responsibilities for the Laboratory in addition to his own research. He continued to collaborate on oyster research projects including the deposition rate of shell material in oysters with D. H. Algire and oyster feeding physiology and the life history of the mud worm (Polydora ligni) with E. Morrison. The research station was closed by the U.S. Navy from 1941-1944 but Galtsoff remained at the Laboratory and continued some investigations. Shortly after the Laboratory reopened in 1944 a devastating hurricane damaged most of the buildings. Yet again it was Galtsoff who battled against the prevailing attitude of abandonment and campaigned for its rebuilding. By 1947, the Laboratory was operational and Galtsoff, continuing to serve as Director of the Laboratory, persisted with research on the variations in density of oyster blood under environmental conditions and completed toxicity tests of water and plankton associated with blooms of "red tide" organisms. In addition to being an excellent investigator with a wide array of interests, he was also a skillful organizer and proficient administrator. He proudly functioned as the Director until William F. Royce, Chief of the North Atlantic Fisheries Investigations, was officially appointed Director of the Laboratory in 1948.

Although best known for his work with mollusks, Galtsoff also studied sponges and enjoyed traveling on behalf of the U.S. government to foreign field sites. He could read Russian, French, German, Spanish, Italian and English2 and sought research articles in each language. Galtsoff accompanied Operation Crossroads ordered by the U. S. Joint Chiefs of Staff to test the effects of dropping two atomic bombs off Bikini Atoll, Marshall Islands and documented their destructive results on the sea life in the area. In 1938, he evaluated the problems associated with the sponge population at Andros Island, Nassau, Bahamas, and led the Pearl and Hermes Reef Expedition in Hawaii. Another of his passions was the protection against pollution. Often bellowing "there is no pollution that is good pollution"1, he investigated and condemned many forms including: crude oil, pulp and paper mill wastes and heavy metals (e.g., iron, copper, zinc and manganese). Galtsoff believed pollution was primarily a social problem and the focus should be on educating the public on the dangers of all marine pollutants.

Paul Galtsoff was a prolific writer. He authored more than 100 papers on edible and pearl oysters. In 1964 he published The American Oyster an 18 chapter monograph with over 1,000 references. In his preface he explained the book was written for "biologists, administrators of oyster resources of various States, public health officers, students of marine biology, and oyster growers who may be interested to learn about the life history and mode of living of this species."3 He acknowledged the difficulty in "trying to be scientifically accurate and at the same time to make the text understandable to those who have only elementary knowledge of biological sciences." Galtsoff started the classic in 1925 and, as each chapter was concluded, he would eagerly report his results at the subsequent convention. In 1972 he published an impressive 17,500+ entry bibliography titled Bibliography of oysters and other marine organisms associated with oyster bottoms and estuarine ecology compiled during research at the Marine Biological Laboratory library in Woods Hole. The bibliography, representing 43 years of collection by Galtsoff, is a massive folio-size book weighing almost 9 pounds and divided into subjects from "abundance" to "zinc."4 Although considered "costly" at $74.00 in 1975 it was immediately recognized as an invaluable tool for any laboratory interested in "bivalves, mariculture, estuarine studies or environmental protection." Much of the background material for both the bibliography and The American Oyster are now housed at the Pell Marine Science Library of the University of Rhode Island's Narragansett Bay Campus. The collection was donated by Galtsoff and includes more than 200 boxes of original papers, reprints, reports, maps, letters, memos, newspaper articles and conference notes. It is indeed an impressive sight!

Throughout his memorable career Galtsoff was energetically involved in the National Shellfisheries Association (NSA). He "heartily endorsed"5 the 1931 name change from National Association of Fisheries Commissioners to

the National Shellfisheries Association to better reflect the more active role that scientists were taking in the society. Throughout the years he would lead fervent discussions on topics such as: Production and conditioning of oysters (1934); The pulp mill menace to the oyster industry (1937); Productivity of oyster bottoms (1942); Increasing production of oysters and other shellfish in the United States (1943); and Important milestones of scientific discoveries in oyster biology (1957). He served as President of NSA 1939-1941. In 1957 when the NSA Honored Life Member Award was reactivated Paul Galtsoff, along with Thurlow Nelson, Reginald Truitt and Trevor Kincaid, were elected "in recognition of distinctive and valuable contributions to the knowledge and utilization of shellfish."5 In Galtsoff's tribute Dr. Victor Loosanoff wrote "under his leadership oyster research ceased to resemble, in some respects, the fine arts and began to approach an exact science"6 and predicted Galtsoff's "contributions in the field of applied biology will constitute a remarkable chapter in the history of shellfisheries." 6

Those who remember him described Paul Galtsoff as a confident, articulate man who was sometimes domineering and often intimidating. Galtsoff never hesitated to comment on the presentations of other speakers, especially students. But those who knew Galtsoff also describe him as friendly and outgoing7. He enjoyed designing and preparing exhibits for the Public Aquarium at the Fisheries Laboratory in Woods Hole, MA. He made it a practice to wander through the crowds pretending to be a visitor so that he could gauge honest reactions to the aquarium displays. He was often surprised to learn many people had never seen living invertebrates like squid, starfish and sponges. Occasionally large sharks were housed in the aquarium's outdoor pool. This often led to large crowds discussing the dangers of sharks and their attacks on humans. On one occasion Galtsoff noticed some men arguing over the sharks and refreshing themselves with "frequent excursions to hip-pocket flasks."8 Galtsoff recounted: "...I moved close to the group and heard how one rather fat and vociferous fellow proposed a bet of $5 to $25 that he would enter the water where sharks were swimming and remain there immobile for 10 minutes. The bet was accepted, and the man stripped to his bathing trunks, stepped into the water while his companions anxiously looked at their watches. When he successfully emerged from the pool and collected his bet, I quietly remarked that the large sand sharks in the pool are sluggish animals which subsist on small fish and never attack humans. Since the explanation was not appreciated by the winner, I hastily retreated to my quarters..."8

Galtsoff was also known for his compassion and generous support offered to other Russian refugees in the United States. Although he officially retired in 1957 he actively participated in talks at the Marine Biological Laboratory, Fisheries Bureau and Woods Hole Oceanographic Institutions until his death in 1979. Paul Simon Galtsoff is remembered as one of shellfisheries pioneering biologists.

Acknowledgements
I would like to thank Dr. Melbourne Carriker for providing stories and memories of Dr. Paul Galtsoff and Ms. Eleanor Uhlinger for providing assistance. I would also like to thank Dr. Sandra Shumway for suggesting I write this biography.

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The next installment of the Pioneering Shellfish Bioligists Series will feature the life of Victor Loosanoff.

Excerpted from: National Shellfisheries Association Quarterly Newsletter, August 2004, "Pioneering Shellfish Bioligists Series: Paul S. Galtsoff by Maille Lyons, Page 10-12.