

Discovering Sharks

A volume honoring
the work of Stewart Springer

Edited by
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Foreword

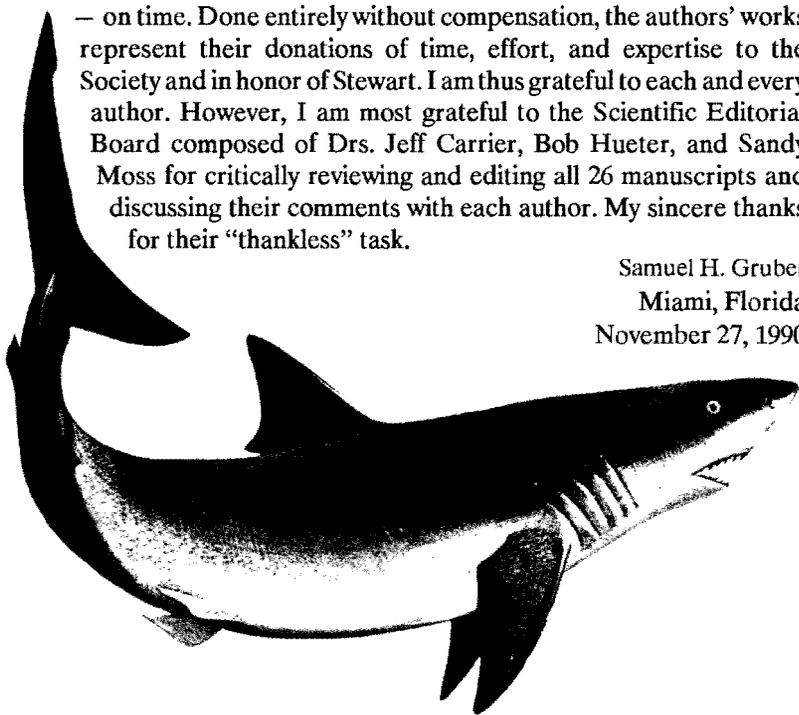
This volume, honoring the long and distinguished career of Stewart Springer, owes its genesis to a series of discussions I had late in 1989 with Dery Bennett, executive director of the American Littoral Society. In response to the crisis triggered by the apparent overexploitation of our shark stocks and the pending Secretarial Shark Management Plan, I enquired if the Society would publish a manuscript that John Morrissey and I wrote in support of the Plan. Our article was accepted (Bull. Am. Lit. Soc. 19(1):3-7) and moreover, Dery suggested that the Society would support an entire volume on shark biology and conservation. This special shark volume, I thought, could provide a way to express my gratitude to and admiration for Stewart Springer, certainly one of the major, if not *the* major influence on my scientific career.

I contacted more than 20 potential contributors and explained Dery's suggestion. The response was universally positive – especially since the volume was to honor Stew. It was really gratifying to see how many of my friends and colleagues felt the same as I about Stew.

In my haste to form a slate of knowledgeable authors, I relied heavily on personal acquaintances and inadvertently left out many who could and would have produced excellent articles. For this oversight I am truly sorry.

Dery Bennett and Hannah Johnson were helpful and supportive throughout, and the authors produced thoughtful, interesting articles – on time. Done entirely without compensation, the authors' works represent their donations of time, effort, and expertise to the Society and in honor of Stewart. I am thus grateful to each and every author. However, I am most grateful to the Scientific Editorial Board composed of Drs. Jeff Carrier, Bob Hueter, and Sandy Moss for critically reviewing and editing all 26 manuscripts and discussing their comments with each author. My sincere thanks for their "thankless" task.

Samuel H. Gruber
Miami, Florida
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Stewart Springer circa 1960.

Preface

by PERRY W. GILBERT

What a pleasure to write the preface to this volume honoring Stewart Springer, for Stew and I have been close friends for more than 30 years. He has been a delightful companion in the field, and for 13 years he was a wise counsellor and member of our American Institute of Biological Sciences (AIBS) Shark Research Panel. For 11 years he served as a valued colleague at the Mote Marine Laboratory in Sarasota, FL, while in charge of our Placida Station.

Stew and I spent a week together in the mid-fifties on board the National Marine Fisheries Service "Oregon I," out of Pascagoula, MS. On this trip Stew introduced me to the tiny, luminescent, deep water sharks *Etmopterus virens* and *Etmopterus schultzi*. I also recall that Stew set a long line and hooked a very lively oceanic whitetip, *Carcharhinus longimanus*. As he was about to bring the shark into the boat, it snapped the wire leader. Three days later, and several hundred miles away, he hooked the shark again and retrieved it and the broken leader — this shark had followed our boat for all that time.

In Mazatlan, Mexico, in the spring of 1964 Stew, Shelly Applegate, Sus Kato, and I watched shark fishermen haul their catch ashore in the early morning hours and counted 17 species. Stew identified all of them for us. Later, on this same trip, as guests of the Mexican government, we visited the prison colony and shark fishery at Las Tres Marias, one of the most modern prisons in the world. There were no bars and the prisoners, who lived with their wives, became our good friends. I remember one young American prisoner who remarked he had been in several jails in the United States but this

one beat them all for he had never had it so good.

The AIBS Shark Research Panel, composed of Leonard Schultz, Sid Galler, John Olive, Dave Baldrige, Al Tester, Stew and myself, met two or three times a year. Our job was to stimulate and coordinate shark research in this country and abroad, and to perform our own research on the biology and behavior of sharks. Usually we met at least once a year in Washington, DC, and once or twice a year in Florida, Louisiana, California, or Hawaii. The results of our deliberations have appeared in various books and professional journals.

The Placida Station was located at Charlotte Harbor, one of the few, relatively uncontaminated, large estuaries east of the Mississippi. The Station was very near the Cape Haze Marine Laboratory which was founded by Dr. Eugenie Clark in 1955 and was the forerunner of the Mote Marine Laboratory (MML). Here Stew hosted visiting investigators and student classes from Cornell, acquainting them with the fauna that he knew so well. For years he had been Collector and Director of the Bass Biological Laboratory in nearby Englewood, Florida. Stew also played a prominent role in MML's Red Tide Program. Each week he obtained water samples from 13 stations in Charlotte Harbor and brought them to our headquarters on Siesta Key in Sarasota where they were analyzed.

We owe Stew Springer so much for he has directly, or indirectly, been teacher, wise counsellor, and good friend to all of us who have contributed to this volume. It is most fitting that the articles which follow pay tribute, in some small way, to this fine scientist and scholar.

Life History Notes on Stewart Springer

by GEORGE H. BURGESS

During this century the field of elasmobranch studies has been blessed by a number of prominent workers – the names Garman, Bigelow, Schroeder, and Gilbert immediately come to mind – but one person stands out above all others when discussions turn to sharks. It is safe to say that there isn't a serious student of sharks who hasn't heard of Stewart Springer. We all have consulted, at one time or another, one or more of Stew's many publications. More importantly, he has served as a living source book of first-hand observations and analysis to three generations of elasmobranch workers. The breadth of Springer's knowledge of sharks – his publications cover the gamut of their biology, including life history, systematics, ecology, and fishery management – has placed him in constant demand as a consultant. Many a research project has included, "Check with Stewart Springer," as part of its initial planning. Additionally, Stew has planted the seed for many others by freely sharing his observations and hypotheses in off-the-cuff discussions with colleagues.

Perhaps the most impressive aspect of Springer's career is the way he gained his knowledge. After graduating from high school in Indianapolis in 1924, where he got his first taste of biology as a zoology assistant, Stew attended Butler College for two years while simultaneously supporting himself as a union musician and

serving as the first curator of the Children's Museum of Indianapolis. After spending a year as a chemistry technician at the Indianapolis Activated Sludge Plant, he embarked on a southward migration that eventually landed him in Biloxi, MS, in 1929. Prior to this move Stew's biological passion was terrestrial in nature with summer field trips yielding many interesting specimens and observations. Four of his first five papers, in fact, covered herpetological or mammalian subjects, and included among these was the description of a new lizard, *Cnemidophorus velox*, which, to his current surprise, has stood the test of time as a valid species.

Springer spent seven years in Biloxi working as a commercial biological specimen collector and a commercial fisherman. His "hands on" experiences with sea creatures during this period shifted his interest from terrestrial to marine biology and provided his earliest interactions with elasmobranchs. Elasmobranch studies began in earnest while Stew worked at his next position as manager of the Bass Biological Laboratory in Englewood, FL. From 1936-1940 Springer served as the laboratory's resident guide for visiting researchers while continuing to procure biological specimens and fish commercially for sharks. He learned longline and gillnet technologies in the same manner he had learned shrimping and boatsmanship in Biloxi: by asking a lot of questions (in this case of Shark Industries, which operated out of Salerno, FL) and trial and error. During this period Stew published 10 papers, the first two his final forays into the non-ichthyological arena (least shrew and leopard frog) and the remainder on sharks, skates, and rays. His first elasmobranch paper, *Notes on the Sharks of*

Director of the International Shark Attack File and senior biologist in ichthyology at the Florida Museum of Natural History, University of Florida, Gainesville, Burgess is a past president of the American Elasmobranch Society. His research interests include shark conservation, the systematics of deep-sea dogfish sharks, and life history and ecology of nearshore sharks as well as shark attacks.

Florida, was named the best paper of 1938 by the Florida Academy of Sciences.

When Jack Bass died, the Bass Laboratory closed, and Springer moved on to Islamorada, in the upper Keys, where he managed Florida Marine Products, a commercial sharkfishing operation. Here he first learned some valuable economic facts of life relating to shark populations and the vitamin A contents of their livers. Sharks were the major source of vitamin A at this time. He began to more fully understand the principles of total, accessory, and principal populations and "bank loafers," a term he coined for the few large and old resident sharks with high vitamin A contents that are easily caught during initial fishing activities. Bank loafers lead inexperienced fishermen into thinking they have found a rich fishing ground; unfortunately for Stew and his parent company, too many of the early catches from this area were these kinds of sharks, and the operation folded after a year due to poor catches.

Springer was offered jobs at the University of Miami and Shark Industries and chose the latter. He worked as assistant manager of the largest commercial sharkfishing operation on the East Coast for a short time before he was called to Washington to work with the government's war-time efforts in formulating a shark repellent. Large numbers of aviators were going down over the ocean and stories of shark attack were rampant among pilots, leading to a considerable loss of morale. To quote Springer, "It was okay to give one's life for your country, but to get eaten for it was another matter." Work on a repellent took Stew to Woods Hole, La Jolla, Biloxi, and the Keys, but a truly effective product was never formulated. Stew takes solace in knowing the developed product, "Shark Chaser," saved at least some lives and that the compound provided a psychological lift to many servicemen.

Springer spent 1945 in St. Petersburg, FL, working on development of a dried mullet product intended for use by the

British Army's elite Gurka Unit. A devastating hurricane and the end of the war terminated this project, and Stew moved to south Florida where he resumed commercial sharkfishing out of Card Sound. Once again a hurricane proved his nemesis by sinking his vessel, so he returned to Shark Industries in 1947 as port manager. For the next three years Stew worked not only to maximize total shark catches but also to find sharks with vitamin A-rich livers, by selecting specific fishing sites based on season, depth, and his knowledge of migratory patterns. Working without the benefit of tag data, Springer developed fishing strategies from examination of fishery records and frequent, daily quantitative determinations of vitamin A levels. He also made exploratory shark fishing trips to the Bahamas, the southern Caribbean, and Brazil and continued to publish his observations on sharks.

The development of a cheaper source of vitamin A caused the collapse of the shark fishery in 1950, and Stew was hired as station chief of the U.S. Fish and Wildlife Service's (USFWS) Commercial Fisheries Laboratory in Pascagoula, MS. At first "laboratory" was a totally inappropriate word since Springer was asked to start up a USFWS facility that would interact with the commercial sector. Armed only with "an order pad and a vessel," the *RV Oregon*, Stew directed the formation and early growth of what is now the National Marine Fisheries Service's (NMFS) Southeast Fisheries Center, Pascagoula facility. Perhaps the most important development was the Springer-designed exploratory fishing surveys. These field operations provided badly needed data on Gulf of Mexico stocks, areas of exploitable concentrations, and new resources. Equally important were the large collections of marine organisms Springer ordered saved for use by systematists. In particular, our current knowledge of the Gulf of Mexico ichthyofauna was greatly enhanced by these and subsequent USFWS and

NMFS collections. Results of the *Oregon's* activities and continuing shark studies were reported in a series of publications during this period.

Stew moved to Washington, D.C. in late 1955 to head up the Exploratory Fishing branch of USFWS. He took night courses at George Washington University and, 39 years after starting his education at Butler College, received his bachelor's degree in 1964 at the age of 58. Soon after Springer transferred to Stanford University where he spent three years working on shark fisheries and systematic research projects. While at Stanford he spent a lot of time advising a young student named Leonard Compagno, who was just starting graduate school with George Myers. Stew returned to Washington in 1968 and, after serving as Deputy Assistant Director for the USFWS for a short period, settled into

the Systematics Laboratory at the Smithsonian Institution where he remained until his retirement in 1971. He served as an affiliated researcher at the Mote Marine Laboratory for several years while working at his retirement home in Placida, FL, and published his revision of the catsharks in 1979. In 1980 he moved to Gainesville where he has remained active as a research associate at the Florida Museum of Natural History. Springer was awarded the American Elasmobranch Society's Distinguished Service Award in 1988 in honor of a lifetime of research on sharks.

Our knowledge of sharks has been substantially enhanced by Stewart Springer. We owe a great deal of thanks to the "Grand Old Man of Sharks" for his many contributions and contagious enthusiasm for these fascinating creatures.



Blue shark. Photo by H.W. Pratt.