

Special Issue—Scripps Centennial

Oceanographic Collections at Scripps



Philip A. Hastings, Richard H. Rosenblatt

Scripps Institution of Oceanography, University of California • San Diego, California USA

Scientists, like most people, are instinctive collectors. The founders of Scripps Institution of Oceanography were no exception. As they began exploring the marine realm in the vicinity of the fledgling field station and beyond, they naturally collected specimens, bringing them into the laboratory for identification and study (Figure 1). They, and a host of scientists after them, knew that the materials they were assembling had a value transcending their own interests. This realization led to efforts to archive them for future use and thus to the eventual creation of the Scripps Oceanographic Collections.

As Scripps Institution grew, so did its collections. Today there are five major natural history collections at Scripps: three biological and two geological (Figure 2). Each is unique, reflecting to a large degree the research interests of the Scripps scientists and staff who worked to build them. They also represent the tangible results of the expeditionary voyages of the Scripps fleet over the years. Together the Scripps Collections comprise the largest, most complete natural history repository devoted to the study of the world's oceans.

Biological Collections

One of the earliest specimens in the Marine Vertebrates Collection is the holotype (type specimen) of the cuskeel *Otophidium scrippsi*, collected in 1908 near Cedros Island off Baja California and described in 1916 by Carl L. Hubbs, then a student at Stanford University. He named it in honor of "Miss Ellen B. Scripps whose generous gifts to the Scripps Institution have been a great help in the study of the zoology of Southern California" (Figure 3). Hubbs later moved to Scripps, where in 1944 he took over the collection of fishes made by Percy S. Barnhardt, then director of Scripps Aquarium. The Marine Vertebrates Collection blossomed under Hubbs, an avid and tireless collector (Figure 4), and later under Curator Richard H. Rosenblatt who arrived in 1958. Collections of pelagic and deep-sea fishes made from Scripps vessels were regularly added to the collection. Regional collections of coastal fishes from California expanded to include the Gulf of California, and eventually the entire eastern Pacific Ocean from Alaska to Chile. Over the years, the collection has grown steadily. Today it contains more than two million specimens representing more than 5,300 species, as well as extensive osteological and tissue collections.

The first specimens housed in the Pelagic Invertebrates Collection were collected one hundred years ago by Calvin Esterly, a student of William E. Ritter, the founding director of the institution. Systematic sampling of zooplankton in small areas of the California Current was carried out in the mid-1930s, while extensive, quantitative zooplankton sampling began in earnest after World War II. Samples were rapidly added to the collection in the 1940s and early 1950s by the Marine Life Research Group's work in the California Current as part of the California Cooperative Oceanic Fisheries Investigations (CalCOFI), which is ongoing, and by a series of major open ocean expeditions. Abraham Fleminger, a distinguished copepod systematist and evolutionary biologist, assumed the title of Curator in 1966 and shepherded the continued rapid growth of the collection. Today, it represents an unparalleled archive of over 110,000 plankton samples.

The Benthic Invertebrate Collection also dates back to the institution's inception in 1903. It includes samples from contributors such as Ritter and other charter biologists including Fred Baker. The Baker-Kelsey Mollusk Collection of 1921 documents a substantial portion of the molluscan fauna of the California region from that time period. The Benthic Invertebrate Collection's unique geographic and bathymetric strengths result from numerous Scripps expeditions, as well as individual investigations since World War II. William A. Newman, an expert in barnacles and curator since 1962, has overseen more recent growth of this collection of more than 40,000 samples representing all major invertebrate phyla.

Geological Collections

Material in the Dredged Rocks Collection also dates from the early part of the 1900s. The collection has slowly evolved from individual bags of rocks to tall metal shelves housing thousands of wooden storage boxes full of rocks. During the 1940s and 1950s Hubbs and Roger Revelle provided rock materials from expeditions off Mexico, and Francis Shepard dredged many regions along the California coast. During the 1960s Albert Engel, William Menard, and Robert Fisher dredged and collected extensively throughout the Pacific basin. These and other geologists have used samples from this collection to elucidate the

This article has been published in *Oceanography*, Volume 16, Number 4, a quarterly journal of The Oceanography Society. Copyright 2003 by The Oceanography Society. All rights reserved. Reproduction of any portion of this article by photocopy, machine, reposting, or other means without prior authorization of The Oceanography Society is strictly prohibited. Send all correspondence to: info@ios.org, or 5912 LeMay Road, Rockville, MD 20851-2326, USA.



Figure 1. Specimens in the “Little Green Lab” located at La Jolla Cove, circa 1907.

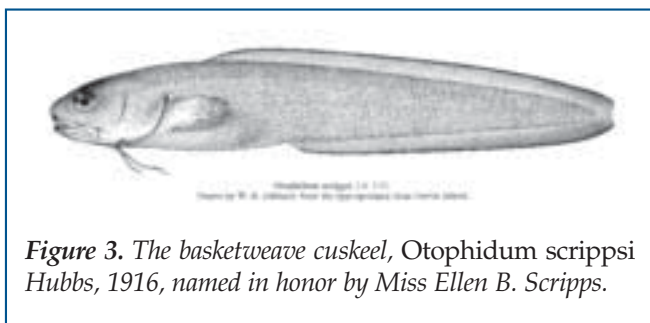


Figure 3. The basketweave cuskeel, *Otophidium scrippsi* Hubbs, 1916, named in honor by Miss Ellen B. Scripps.



Figure 4. Carl L. Hubbs, an avid, tireless collector, at work in his laboratory in the late 1940s.

fundamental geophysical and geochemical processes that have shaped the ocean basins.

Scripps, one of the first U.S. institutions to undertake large-scale collection of sediment cores, has historically been a leader in core curation. The Cored Sediments and Microfossil Collections contain samples from as early as 1916. William R. Riedel became the first curator of Geological Collections in 1955. He began to gather private collections, dating back to the early 1900s, and created a cohesive, well-documented collection that has continued to the present day. Today, the Cored



Figure 2. Compacterized shelving in the newly outfitted Marine Vertebrates Collection in Vaughan Hall, 2002.

Sediments and Microfossil Collections, with more than 6,600 cores and numerous microfossil samples, embody not only the geological history of the oceans, but also the scientific history of Scripps.

How Scripps Oceanographic Collections Are Used

The fundamental role of these collections is support of research documenting and describing the earth’s geological and biological diversity both past and present. The collections facilitate research into the processes that have led to the evolution of the earth and its biota, and permit assessment of past, present and future changes. This includes describing species and understanding how they are interrelated and distributed across the earth’s surface. Even well-described specimens archived in the collections continue to be used in taxonomic and systematic studies, providing essential comparative material for new research on biodiversity. The large series of specimens that are the substance of these collections also provide unique insights into variation across time and space that lead to new theories in evolution, population biology and community ecology.

These “libraries” of rocks, sediments, organisms and communities, dating back to the early part of the last century, afford a picture of the past that is otherwise unavailable. Such baselines are essential to documenting and understanding the local, regional and global effects of climate change and human-induced changes on community structure, ecosystem function and fisheries production.

For the past 100 years Scripps Institution of Oceanography has been a world leader in the study of all aspects of the world’s oceans. The Scripps Oceanographic Collections have played key roles in supporting much of that research. With our sustained care, these invaluable resources will continue to inspire and support the research of scientists throughout the new century and beyond. 