

What do we learn from collections? The Shell Museum perspective

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The publisher of this beautiful magazine, *Conchologists of America* (COA), is undoubtedly the largest assemblage of shell enthusiasts in the world, with its membership comprised mostly of collectors. Chances are, if you received this magazine in the mail, you like and collect shells. We humans have the desire to collect. Our inquisitive nature compels us to accumulate natural objects. The resulting assemblages are informative and have the potential to enhance knowledge about the group of things collected, no matter their kind: meteorites, mushrooms, bird eggs, insects, bones, or shells, to name just a few. From a conceptual standpoint, the large institutional collections (museums, universities, etc.) often mentioned in the pages of this magazine are intrinsically extensions of your private, enthusiast's collection.

Much of what we know about the natural world we owe to museum collections. Natural history collections are "libraries" of the natural world and, as such, are vital to our understanding of nature and our planet. Historically, natural history collections became firmly established as an outcome of the cycle of European exploration voyages that peaked between the 16th and 18th centuries. The so-called "curiosity cabinets" of natural objects, animals, and plants accrued by European voyagers and nobility as a result of world exploration (and annexation) morphed into the official collections of "royal," and later, "national" natural history museums.

Current scientific research on animals and plants relies heavily on natural history collections. Collections provide baseline data for animal and plant inventories and geographical surveys; the resulting knowledge of distributions (or *geographic ranges*) of different species is instrumental in the study of local extinctions (known as *extirpations*) caused by environmental changes. For example, more local species of plants and animals are likely to be found in the collections of the Bishop Museum (Honolulu) than living in the Hawaiian Islands today. A study of small mammals collected at Yosemite National Park in the early 1900s and deposited at the Museum of Vertebrate Zoology at the University of California, Berkeley, revealed that many of these species now live at higher altitude in that area, a shift most likely induced by global climate change (warmer climate allowing the species to "move upward" the mountain ranges). At The Bailey-Matthews National Shell Museum on Sanibel Island, Florida, the Sanibel-Captiva collection includes a number of species that were abundantly collected a few decades ago but are not so common nowadays.

Every shell in a collection is a potential environmental data recorder. Shells grow by *accretion* (gradual accumulation along an edge) of calcium carbonate: the shell built



View of the collection work area at the Shell Museum, with volunteer Curatorial Assistants Linda Annesley and Tom Risher (background).

by the young animal is retained throughout the mollusk's life. Minerals present in the water at different times during shell formation are retained in their original form, and this may provide a record of the environmental conditions (such as salinity and temperature) at the time the shell was made. Bivalve samples from the Shell Museum collection amassed on Sanibel in the 1970s have been used in this type of study.

The science of systematics, or the study of the evolutionary relationships of animals, plants, and other living things, would not exist without collections. Scientific collections provide the anatomical and genetic data needed for contemporary phylogenetic studies (the studies of the degrees to which different groups of organisms are related to each other). Research on the evolutionary relationships of animals, plants, and other living things would not exist without collections. Other than sampling from alcohol-preserved animal tissues, modern techniques allow for the extraction of DNA material from dry tissue, including those sometimes found inside old shells. There are many other cases illustrating the value of natural history collections and what can be learned from them, but I hope that at this point I have convinced you of the notion of collections as "snapshots" or "photo albums" of nature and biodiversity.

The collection at the Shell Museum consists of a combination of gifts of private and institutional collections. Private collections may include self-collected shells, shells acquired from dealers or through exchange with other collectors, or any combination of these. The Colin Redfern Collection of Bahamian seashells, donated in 2014 to the Shell Museum, is an excellent example of a collection of self-collected specimens. The Redfern Collection, exceed-



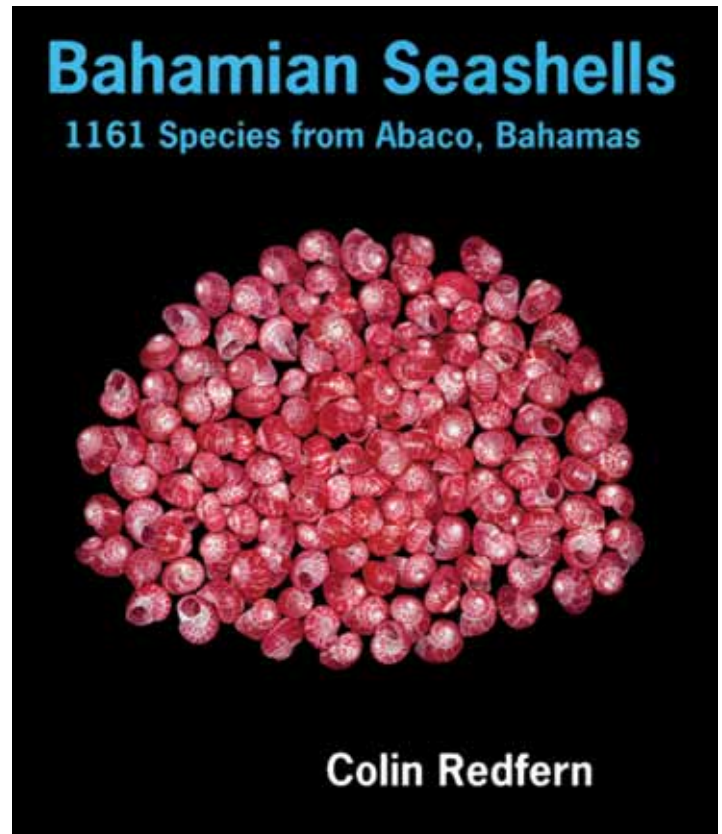
Deep-sea mollusks from the Shell Museum collection.



Four world record-size shells from the Shell Museum collection: From left: *Lobatus goliath* (Schröter, 1805) (380 mm), *Busycon sinistrum* Hollister, 1958 (402 mm); *Charonia variegata* (Lamarck, 1816) (387 mm); and *Triplofusus giganteus* (Kiener, 1840) (606 mm).

ing 10,000 lots, includes the material illustrated in his superb “Bahamian Seashells” books. During the its initial years, the Shell Museum received gifts from the National Museum of Natural History (Smithsonian Institution, Washington, DC), and the American Museum of Natural History (New York City). Since the acquisition of those “seed” collections, the Shell Museum has become a magnet for donations of collections of all sizes, currently reaching an estimated total of 120,000 lots. The collection is managed through a state-of-the-art digital catalogue programmed in-house by volunteer Richard Willis, and collection holdings are posted online via the Shell Museum web site.

In 2011, to help expedite our cataloging efforts, the Shell Museum prepared a proposal requesting funds from the Institute of Museum and Library Services (IMLS, a federal funding agency) to hire staff solely to perform data entry. Since beginning of funding in September 2012, an additional 38,000 lots were catalogued, and we expect to have catalogued about 20,000 more at the end of the grant period in late 2015. The “well-oiled machine” that includes pro-



The mollusks illustrated and discussed in Colin Redfern’s “Bahamian Seashells” are now deposited in the Shell Museum collection.

cessing of collection lots and data entry, consists of a group of volunteer curatorial assistants led by Sanibel’s own Tom Risher, working in tandem with part-time collection associates Kim Trebatoski and Heather Williams (whose salaries are funded by the IMLS grant).

In addition to the regular collection, which includes marine, terrestrial, and freshwater mollusks, the Shell Museum also holds a small collection of type specimens (the material examined by the species author(s) and referred to in the original description). The collection is also the source of materials the Shell Museum exhibits.

Next time you wonder about a museum collection, please remember that it is not just a place where thousands of shells are “stored,” but a dynamic source of information for many branches of natural sciences and human endeavors, as distinctive from simple shell storage as a busy library is from a book warehouse.

Collection records are stored in digital databases. Search the Shell Museum database online at <http://shellmuseum.org/collection.cfm>.

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