

Status of Marine Biodiversity Center (MBC)/Polychaete and Crustacea/Echinoderm collection rooms

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The marine invertebrate collections of NHM include some of the largest collections in the world, housing roughly 1,500,000 specimen lots^a. The Crustacea Collection (about 4,500,000 specimens in 150,000 lots, including over 5,500 type specimens^b) is the second largest in the United States and the fourth largest in the world. In the same collection room as Crustacea, the Echinoderm Collection is the third largest in the United States. The Polychaetous Annelid Collection (several million specimens contained in 400,000 lots, with 2,225 lots of type material) make it one of the world's largest and most influential repositories for this group. In the same collection room as the Polychaeta, the Marine Biodiversity Center (MBC) Collection (23,000 lots with 231 lots of type material) contains specimens from an extremely broad range of phyla. It is home to many of the specimens from the Allan Hancock Collections from the University of Southern California as well as specimens from research expeditions, field-work by Museum staff, and donations.

Dry material

These collections are dominated by wet preserved specimens (in alcohol), but also contain substantial dry material. The Crustacea/Echinoderm Collection Room houses 150 linear ft of dry Crustacea specimens and an additional 30 ft³ of large dry specimens that do not fit on the shelving. The MBC/Polychaete Collection Room houses 125 linear ft of dry MBC specimens plus 60 ft³ of large dry specimens. At present, some of MBC's dry collections are at the Carson Invertebrate Paleontology Facility, filling 245 linear ft of shelving in open wall units and Lane cases.

Collection room status

The Crustacea/Echinoderm collection room measures 2,050 ft². The fixed ceiling is 17 ft high, with a drop ceiling 11 ft high through the shelving area and 9 ft high in the preparation room. Above the drop ceiling is a 7 ft² louvered vent, open to the outdoors. This uncontrolled opening probably accounts for the finding that between January 2014 and May 2015 (when we have data for both the collection rooms and the Museum garden), the temperature in this room is a slightly damped version of the outdoor temperature. During that time, humidity was better controlled (mostly between 50% – 60%) until November 2014, when humidity, too, started tracking outdoor humidity. Temperature and humidity in the Crustacea/Echinoderm collection room have been in the acceptable range (see accompanying document on *Collection climate standards*) 22% of the time between January 2014 and November 2015. Airflow monitoring began in mid-November. Airflow is 456–1,008 cfm.

The MBC/Polychaete collection room is 4,200 ft². The MBC/Polychaete temperature shows little sign of tracking the outdoor temperature. However, humidity has been less controlled. During January 2014 – May 2015, humidity largely tracked outdoor humidity. The exception is the three month period from August – October 2015, when humidity was tightly maintained between 75% – 80% (precipitating intense mold growth). MBC/Polychaete collection room conditions have been within the acceptable range 15% of the time between January 2014 and November 2015. Since mid-November, airflow has been 0 cfm (no airflow).

When the Invertebrate Paleontology collection was moved to the Carson Invertebrate Paleontology Facility, the site was selected for the storage of stony fossils. The space has no climate control, and is likely to be unsuitable for long term storage of organic specimens. We have just begun monitoring temperature and RH there, so we have no useful data yet.

^a A *specimen lot* is a group of multiple specimens that were collected at the same time and place.

^b A *type specimen* is the specimen chosen to represent a newly described species and is preserved in perpetuity as the defining reference of the concept of the species. Type specimens are therefore irreplaceable and considered our most valuable specimens.