Chapter 52
STRALSUND: The German Oceanographic Museum

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Abstract The foundation German Oceanographic Museum in Stralsund (Stiftung Deutsches Meeresmuseum, DMM) today is established as a scientific, educational and collective national museum institution. It maintains four exhibition facilities attracting about 800,000–1 million visitors annually. The exhibitions and marine aquaria impart knowledge about marine environments, organisms, processes and ecological contexts of life in the seas, as well as interactions of man with the marine ambience and resources. As a research museum, it houses zoological (and botanical) collections of marine and coastal organisms, documents of coastal geology, marine science technologies and artisanal coastal fisheries.

The rather young museum—founded in 1951 during the era of the German Democratic Republic (GDR)—works with an explicit emphasis on attractive educational exhibitions and aquaria. Research activities were focused on distinct subject sectors like marine mammals, fish systematics or coral reef ecology—the collections amount to approx. 42,000 items (in 2017). Large subunits are represented by the collections of fish, coelenterates, crustaceans and shelled molluscs, with a further significant number of Baltic marine mammals. Smaller convolutes include shorebirds, marine turtles, cephalopods and various invertebrate taxa.

Keywords Baltic • Marine mammals • Fishes • Crustaceans • Molluscs • Coral

52.1 The Museum's Collection History in Brief

The museum was founded only in 1951 by Prof. Dr. Otto Dibbelt as a municipal nature museum. Its natural history collections and exhibits originated from aged gymnasium funds, from various acquisitions and from the private collection Dibbelt had accumulated as a teacher from 1920 to 1940 in Kolberg (Kołobrzeg, PL) to establish a local museum. The overall convolute was a diverse accumulation of

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mixed quality and value. It contained a couple of noteworthy objects like the skeleton of a fin whale that stranded in the mouth of the Dievenow (Dziwna) in 1899. In 1940, Dibbelt was displaced to Franzburg, and in 1944, his collection was relocated to the town hall of Stralsund (Schulze 2006). Dibbelt died in 1956, aged 75. His collections first exhibited in the "Natur-Museum" became the nucleus of the "Meereskundemuseum" in Stralsund, which significantly evolved during the GDR era.

Taking over as director in 1956, Dr. Sonnfried Streicher began to purposefully develop the museum's marine profile, focusing on research activities, collections and exhibitions towards life in and close to the marine environment. With the museum situated on the Baltic coast, the regional subjects of artisanal and coastal fisheries were included and became integral elements of the museum's profile as the "GDR Museum of Marine Research and Fisheries" in 1974. Housed in the medieval St. Catherine's Monastery founded in 1251, the exhibitions were extended into the rebuilt hall church since 1974 (Fig. 52.1). Already in the 1980's, the museum had attracted up to 900,000 visitors per year. After the end of the GDR and the subsequent reunification of Germany, the municipal museum was turned into a private law foundation and was acknowledged as a collective national museum.

In 1991 and 1999, the museum regionally expanded with the opening of two smaller exhibition locations before opening a second large facility at the Stralsund portside, the OZEANEUM, in 2008 (Fig. 52.2). Visitors' numbers then surpassed 1.2 Mio. guests in 2009.

With the marine focus pursued since 1956, the collections and exhibitions were consequently profiled. Exhibits of terrestrial origin got handed to other museums or were occasionally exchanged for marine objects. Purposeful collecting extended the inventory during 1974–1983 alone by 10,076 well-documented zoological collection units. The museum's field campaigns, e.g., two ACROPORA expeditions to the Red Sea in 1976 and 1979, as well as the work of the GDR national research, fishing and trading fleets yielded significant collections that also served as an explicit fundus for the layout of exhibitions. A key exhibit first presented in 1982 was the 4.5 m-high model of a coral pinnacle copied from original habitats in the Red Sea (Fig. 52.3).

The DMM collections today represent about 2 % of marine life collections in German museums (Türkay 2015, pers. comm.). They are stored mainly in the wet collections and in historic storehouse magazines. An extensive convolute of over 50 artisanal fishing boats from the Baltic shores is kept in open sheds and a modern exhibition storehouse.

52.2 Vertebrate Collections

Fish, shorebirds and marine mammals constitute the core of the vertebrate collections. A small convolute of marine turtles amounts about 180 collection units.

Fig. 52.1 The DMM's parent house is located in St. Catherine's Monastery with its spacious hall church (with permission from: Stiftung Deutsches Meeresmuseum)

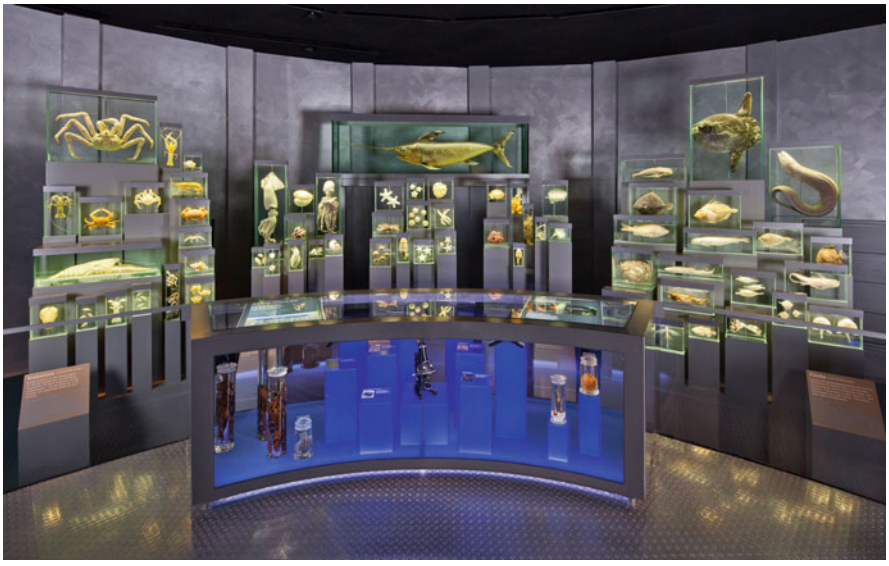

Fig. 52.2 Exhibition of marine biodiversity in the OZEANEUM in Stralsund; Source: Johannes-Maria Schlorke Photography (with permission from: Stiftung Deutsches Meeresmuseum)

Fig. 52.3 The DMM's model of a coral pinnacle after the extensive revision during 2012–2014 (with permission from: Stiftung Deutsches Meeresmuseum)

52.2.1 Fishes (Pisces)

In the collection, currently about 4400 units are registered, mainly comprising of over 1000 species. Most of the material is kept as wet collection, mainly fixed in formalin and stored in 70 % ethanol. Over 500 units in the dry collection include specimens prepared for various exhibition purposes in the museum's taxidermy workshop.

Older fish collections include material collected in cooperation with the GDR's coastal and high-seas fishing fleets as well as the museum's director S. Streicher from various locations: off Mozambique, the North Atlantic, off West Africa and the Baltic Sea. An important collection is the fishes from the museum's Red Sea expeditions in 1976 and 1979, originating to a large part from locations around Port Sudan. After 1990, the collections focused on the Baltic and North Sea waters as well as the Mediterranean northern coasts. Significant enlargement of the collection came from T. Moritz's personal collection of African fishes, as well as from a recent collection trip to Taiwan. A larger collection of cleared and double-stained fish specimens for systematic and anatomical studies is presently built up, as well as a collection of tissues for molecular studies, presently containing about 1300 samples.

52.2.2 Birds (Aves)

The DMM bird collection comprises 1160 mounted specimens, 130 bantlings, 200 skeletons and skulls as well as close to 6000 eggs. About 260 of the mounted specimens are displayed in the exhibitions and were prepared in the museum's taxidermy workshop. Most of the material, mostly shore- and seabirds, originates from the southern Baltic.

In the context of ongoing climate changes, especially old records of historic occurrence are of noteworthy significance. Today's regionally rare specimens of ruff (*Philomachus pugnax*) and dunlin (*Calidris alpina schinzii*) tell stories of bird diversity in past decades, when these were regular and abundant breeding species.

For gulls (Laridae), a collection of over 4000 blood and tissue samples was established in 2006. DNA sequences were used for molecular analyses of systematics and speciation in this taxon (Liebers-Helbig et al. 2010). However, type material is not represented in the DMM bird collection.

52.2.3 Marine Mammals (Mammalia)

The whale collection comprises about 850 units. Of these 150 represent large cetaceans and dolphins stranded on German shores. This includes significant historical items transferred from the Zoological Museum of the University of Greifswald in 1968. Thanks to those former zoologists, the skeleton of a young fin whale (*Balaenoptera physalus*) which stranded on the western shores of Rügen Island in 1825 (Fig. 52.4), an orca whale (*Orcinus orca*) that beached in Neu-Mukran/Rügen in 1851 and a bottlenose whale (*Hyperoodon ampullatus*) that beached north of Stralsund in 1877 were recovered. Further to these, the collection keeps a number of historical documents of the early German whale research in Greifswald.

The collection of harbour porpoise finds (*Phocoena phocoena*) on German shores amounts about 700 units (in 2017) and documents the carcass monitoring along the coastline of Mecklenburg-Vorpommern carried out since 1955. Since 1995, finds from Schleswig-Holstein Baltic and North Sea coasts were included. The collection keeps skulls and entire skeletons of both sexes and diverse age groups representing the find locations of the North Sea and Baltic realm, including the available scientific documentation about the specimens (Fig. 52.5). Type material is not represented in the DMM marine mammal collection.

The section of Pinnipedia and Sirenia (seals and sea cows) houses about 400 units (in 2017) of mainly earless seals (Phocidae) as well as eared seals (Otariidae) and walruses (Odobenidae) and includes three units of sea cows from all oceans. The main focus on the regional fauna documents the regular carcasses monitoring on Mecklenburg-Vorpommern shores. Skulls, complete skeletons, taxidermy models and organ tissue wet samples are kept including the available

Fig. 52.4 Hands on—the fin whale skeleton of 1825 is among the most spectacular exhibits of the museum (with permission from: Stiftung Deutsches Meeresmuseum)

scientific documentation about most specimens. Some further units represent other locations in the Baltic region.

Fig. 52.5 The DMM's dry collection of small marine mammals and marine turtles (with permission from: Stiftung Deutsches Meeresmuseum)

52.3 Invertebrate Collections

Shelled molluscs, coelenterates (especially Scleractinia and Octocorallia), crustaceans and echinoderms constitute the core of the invertebrate collections.

52.3.1 Coelenterates (Coelenterata)

The core of about 85 % in the DMM coelenterate collection comprises c. 3120 dry samples of stony coral skeletons (Scleractinia). Geographic focus areas cover the Indo-Pacific region with emphasis on the Red Sea with collections of the DMM's expeditions in 1976 and 1979 and of Schuhmacher, from Yemen (collection Eisinger) and the Philippines (collection Kühlmann). Also the Caribbean region is represented by collections of two German coral researchers in the second half of the twentieth century, H. Schuhmacher and D. H. H. Kühlmann.

Further, 15 % of the collection includes wet collections of diverse taxa, especially octocorals (Alcyonacea) from the Red Sea and subantarctic Atlantic waters. Some minor convolutes include anthozoans, hydrozoans and scyphozoans from the North Sea and North Atlantic locations. Type material is not represented in the DMM coelenterate collection.

Fig. 52.6 Detail from the wet collection of cephalopods (with permission from: Stiftung Deutsches Meeresmuseum)

52.3.2 Molluscs (Mollusca)

The shell collection includes especially gastropods and bivalves, in total over 10,500 units comprising over 2000 species. About 3 % of samples are preserved as wet collections, including c. 200 units of Cephalopoda (Fig. 52.6). Geographic focus areas cover the Red Sea (collection of the museum expeditions 1976 and 1979) including the Gulf of Aden, extensive stretches of the Mediterranean and the French Atlantic coastlines (collection of L. + R. Enzenross during 1991–2005), as well as northern European coastal regions and diverse worldwide material.

Old collections date back to the acquisitions by O. Dibbelt or entered the museum during the profiling in the 1960's. They include material of J. W. Tetschke (1796–1865, a teacher in Stralsund), material referred to H. v. Maltzahn (Waren/Berlin) and F. Borcherding (1849–1924, Vegesack). A collection of Red Sea Mollusca collected by C. F. Jickeli (1850–1925) was transferred from the museum in Görlitz in 1987 and material collected by E. Sturmhövel (1904–1985) mainly from the Baltic shores—these, however, go without extensive documentation. Type material is not present in the DMM mollusc collection.

52.3.3 Crustaceans (Crustacea)

The collection of crustaceans comprises about 4000 units (550 species) mostly preserved as wet collection in formalin or ethanol (Fig. 52.7). Over 770 specimens

Fig. 52.7 Part of the DMM's wet collection of fish, coelenterates, molluscs and crustaceans (with permission from: Stiftung Deutsches Meeresmuseum)

are kept as dry samples. Geographic focus areas of the collection cover the Red Sea (collection of the ACROPORA expeditions in 1976 and 1979) and extensive stretches of the Mediterranean and the French Atlantic coastlines (collection of L. and R. Enzenross during 1991–2005), which include reference samples of Lessepsian migrants through the Gulf of Suez into the Mediterranean Sea.

Further the collection holds documents of Pacific and Atlantic neozoan invaders to European waters. Immigrant species to the coasts of Mecklenburg-Vorpommern receive particular attention.

52.4 Other Small Convolutes of Natural History Collections

52.4.1 Echinoderms (Echinodermata)

Dry and wet collections of echinoderms comprise c. 420 units from various locations on European shores and the Red Sea. One separate convolute of 60 units originates from the shallow waters around the island of Soqotra (Yemen, Indian Ocean).

Fig. 52.8 Legend has it that the catch of this leatherback turtle near Stralsund in 1965 initiated the focus as an oceanographic museum (with permission from: Stiftung Deutsches Meeresmuseum)

52.4.2 Marine Turtles (Cheloniidae)

A small collection of marine turtles highlights one special focus of the museum's work. Three species kept alive on display in the aquarium are supplemented by about 180 units representing this taxon. Among them are the remains of the only leatherback turtle (*Dermochelys coriacea*) ever recorded from the Baltic Sea that got caught in a fishing net close to Stralsund in the Prohner Wieck in 1965. A model copy of the specimen is presented in the exhibition (Fig. 52.8).

52.4.3 Plant Collection (Herbarium)

Further to the zoological collections, the DMM houses herbaria of about 780 aquatic algae (Rhodophyceae, Phaeophyceae, Chlorophyceae, marine fungi) and phanerogams from the Baltic and North Sea, as well as some units from Mediterranean, Atlantic and tropical waters. The Stralsund homeland herbarium of O. Bürgener (1876–1966) comprises another 3285 files of fern and seed plants (1313), liverworts (218), mosses (914) and fungi from Western Pomerania including the islands of Rügen and Usedom (Hoppe 2006).

52.4.4 Geology-Palaeontology

The museum's collections include about 3500 units of fossil and geological specimens and originate from the museum's founder O. Dibblet's collections in the Stralsund gymnasium before 1951. After 1978, the collection was focused towards the following aspects: sedimentary rocks of marine origin including usable minerals and rocks from seafloors and coasts, fossils and sedimentary rocks from the Baltic shores and cliffs, glacial drift deposits containing Pleistocene fossils from the Baltic region and fossils of marine origin including characteristic representatives of major geological eras and marine taxa.

52.5 Current Situation and Perspectives

The DMM natural history collections are maintained by five museum curators and one technician in cooperation with the taxidermy workshop. New collections are acquired in the course of ongoing projects and fieldwork, occasionally transferred from other collectors. However, capacities of staff are in conflict with various other duty obligations, and storage space for collections is rather exhausted. In the long term, a new magazine facility is inevitable for responsible care and preservation.

52.6 Digital Exploitation, Access and Contact

Most of the DMM collections are digitally listed and can be researched via personal consultation. Ongoing inventory revisions prepare for the presentation and accessibility through internet portals. Some historical convolutes await further revision and special systematic research. Further information can be provided by the scientific staff of the DMM, who also supplied many details for this manuscript.

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