National Oceanography Centre

The importance of marine biodiversity collections

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What do we know about marine biodiversity?

- How much ocean biodiversity is unknown?
- Current predictions vary: 2.2 million (Mora *et al*., 2011)
- **241,129** accepted marine species
- ~ 90% of marine species are yet to be described.
- Much of this unknown diversity will be found in the deep-sea, in or on sediments

Why are biodiversity collections important?

Bathynomus affinis @ the NHM

- Deepwater samples are valuable (costly to collect), rare, and little known
- Represent the evidence that particular species were present at the time of collection. They are therefore part of the audit trail and should be kept safe
- Specimens are of greater value within an organised, curated, accessible collection, than isolated or dispersed across several places
- Openly available to other researchers for comparison

Why are biodiversity collections important?

Samples can provide information about what lived where - before impact from e.g. pollution / fishing / environmental change…

- Environmental baselines – knowledge for policy and management of impacts

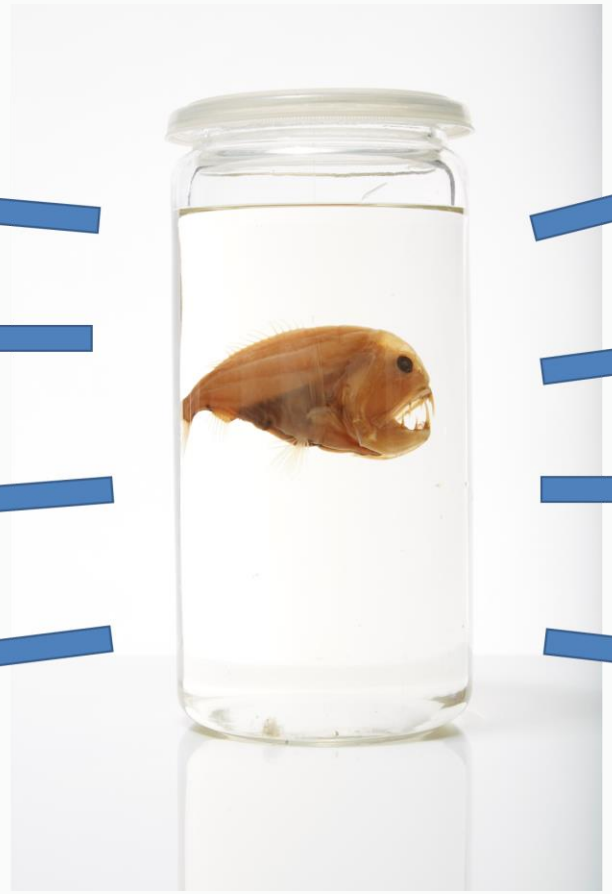
Requires well curated samples and datasets, and a robust taxonomy…

CCZ Peracarid Crustaceans (clockwise from top left: Tanaid, Isopod, Cumacean, Amphipod)

Value of baseline datasets

- Build an environmental legacy from any deep-sea work
- Better understanding of patterns (for input to regional/spatial planning)
- Study of samples as part of global analyses
- Value-added investigations on fauna (e.g. new species/ranges)
- Improved environmental decision making

What is in a specimen?



Taxonomic data

Ecological data

Trait data

Anatomy/Morphology

Genomic data

Chemical data

Geographical data

Historical data

What is a Biodiversity Collection?

A centralised facility providing access to collected samples and specimens

- Preserved specimens and whole samples (incl. fluid preserved & frozen specimens/tissue samples)
- Data is as important as the specimens
- Associated data:
  - Identification & identifier
  - Photos, sketches, illustrations
  - Preservation method
  - Molecular sequences/subsamples

Sharing biodiversity data

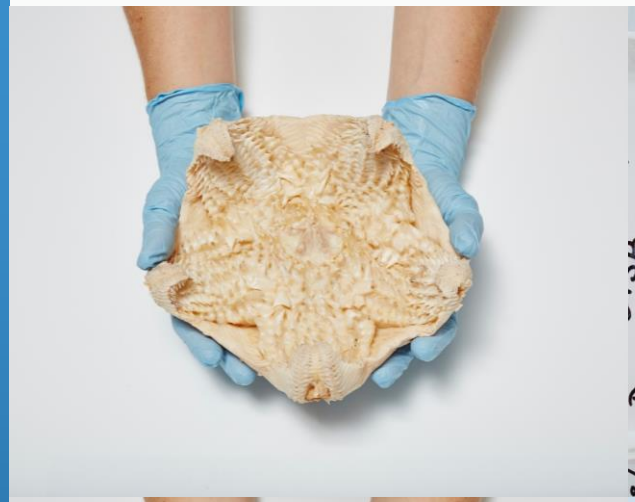
WoRMS
World Register of Marine Species

- Global database - Ocean Biodiversity Information System – (OBIS)
- https://obis.org/
- Datasets visible/searchable through OBIS & GBIF (Global Biodiversity Information Facility)
- Dynamic database – links to WoRMS & uses standardised vocabulary
- Updatable, version control, DOI

OBIS
OCEAN BIODIVERSITY INFORMATION SYSTEM

Teaching & Outreach

- Undergraduate and postgraduate teaching
- Open days & school visits
- Exhibition & display materials
- Twitter: @tammy_horton #discoverycollections
- Website: https://noc.ac.uk/facilities/discovery-collections



Depth: 2621 - 1630m
130 specimens





Thank you for listening!

Any Questions?