



BEeS

The LifeWatch ERIC Biodiversity & Ecosystem
eScience Conference



Heraklion, 30 June - 3 July 2025

1 July 2025 | 14:45



Session: Taxonomy: Identifying the units of diversity in life

1 July 2025 | 14:30-16:30



What is in a name?

Presenter: Dr Tammy Horton

WHAT IS IN A NAME?

DR TAMMY HORTON

Biodiversity and Ecosystem eScience Conference, 2025

Climate Change

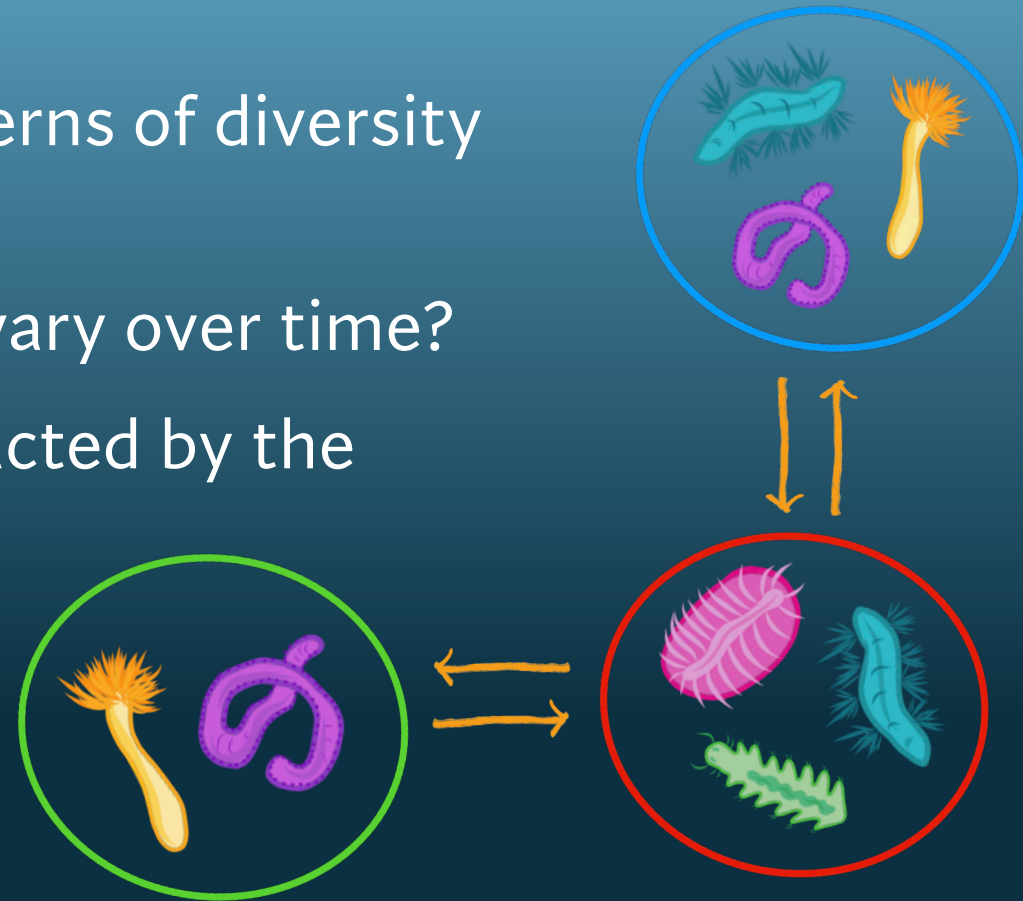
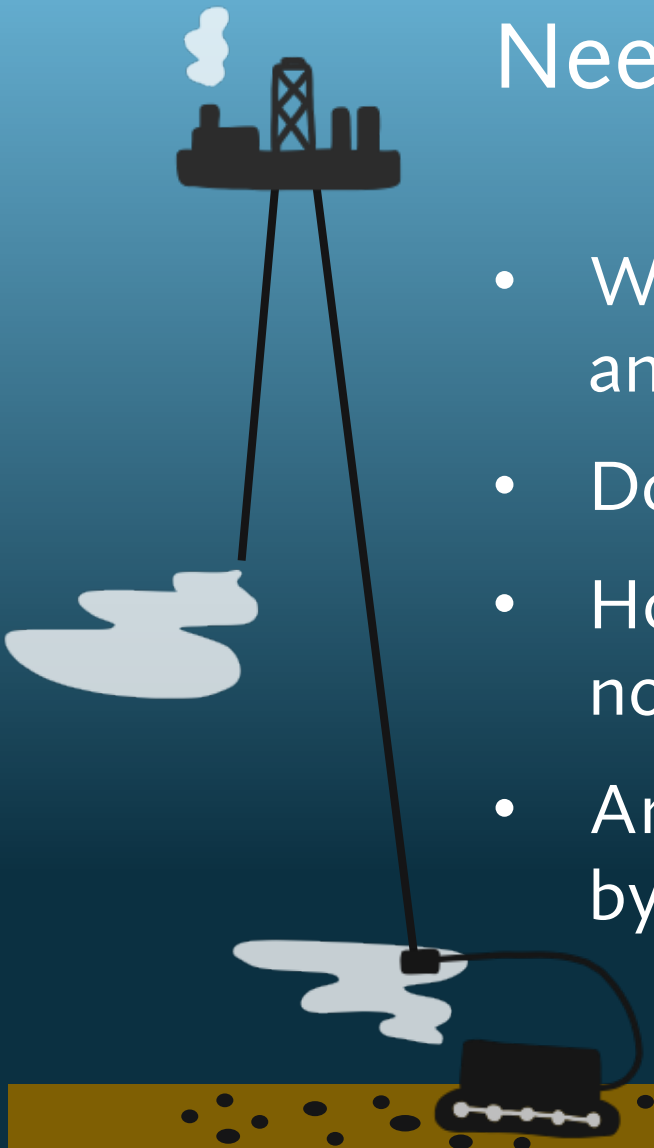


Biodiversity
Loss

Pollution

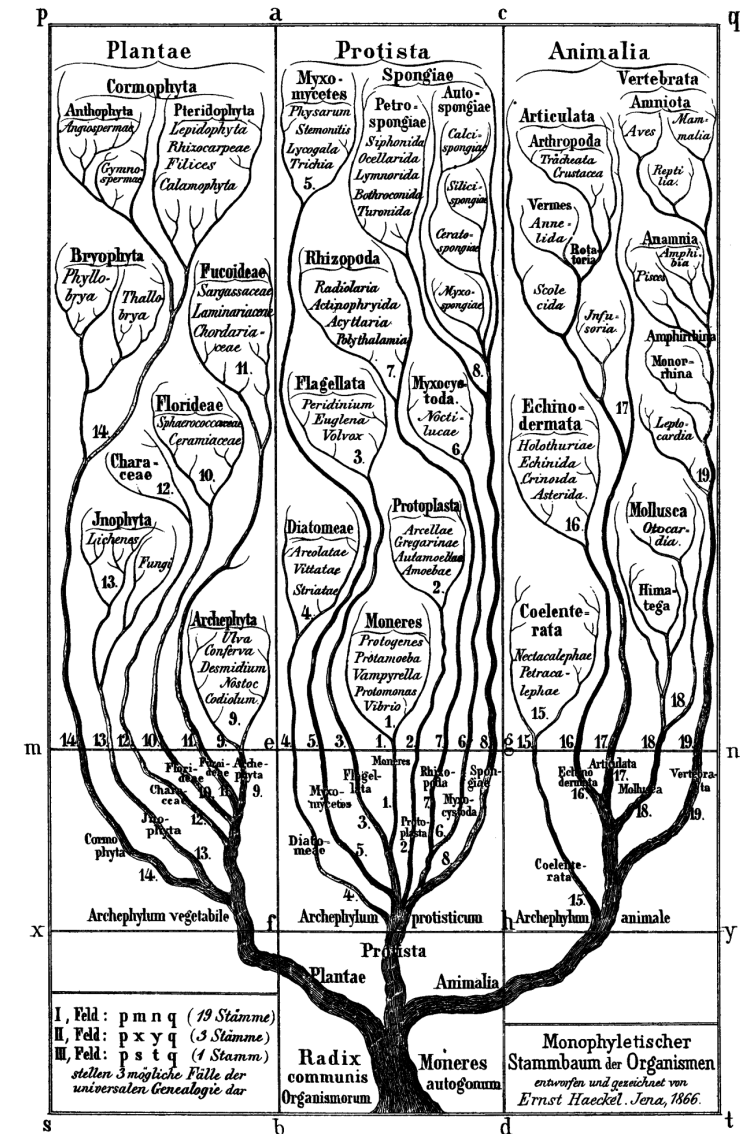
Need to know:

- What are the baseline patterns of diversity and abundance?
- Do communities naturally vary over time?
- How are communities impacted by the nodule collector vehicle?
- Are communities impacted by sediment plumes?



WHAT IS IN THE NAME: TAXONOMY??

- Classification of a species in the tree of life?
- Identification of a species?
- Discovering a new species?
- Description of a new species?
- Naming a new species?



WHAT IS IN THE NAME: TAXONOMY??

Species Discovery

- Classification of a species in the tree of life
- Morphological analysis of specimens
- Molecular barcoding of specimens

Result:

- Identification of a known species or
- Discovery of a new species

vs

Species Description

- Classification of a species in the tree of life
- Comparative analyses (morphological & molecular)
- Illustration of the new species
- Description of the new species
- Naming the new species
- Publication of the new species



WHAT IS IN A NAME? LINNAEAN VS NON-LINNAEAN NAMES

Linnaean

Scientific binomial + authority + year

Eurythenes gryllus (Lichtenstein in Mandt, 1822)

Non-Linnaean

- Incomplete identification:

Eurythenes sp.

(indet., stet., aff., cf., inc.)

- New species:

- *Eurythenes* sp. nov.



UNKNOWN BIODIVERSITY



- How much ocean biodiversity is unknown?
- Current predictions vary: 2.2 million (Mora *et al.*, 2011)
- ~250,000 accepted marine species



- ~ **88%** of marine species are yet to be described.
- Much of this unknown diversity will be found in the deep-sea, in or on sediments.





Current Biology

How many metazoan species live in the world's largest mineral exploration region?

Highlights

- We provide the first checklist for the Clarion Clipperton Zone (CCZ) metazoan fauna
- 5,142 unnamed species (informal names) are recorded from the CCZ
- Total estimates of species richness range from >6,000–>8,000
- An estimated 88%–92% of species in the CCZ region in total are undescribed

Authors

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In brief

Species-level biodiversity information is key to understanding ecosystems and tracking environmental impacts. Rabone et al. provide the first checklist (436 species) and total species estimates (>6,000–>8,000) for the world's largest mineral exploration region, the CCZ. Estimates provide a baseline to build biodiversity knowledge at a regional scale.

[Rabone et al., 2023. How many metazoan species live in the world's largest mineral exploration region?](#)

[Current Biology, 33, 1-14, doi:10.1016/j.cub.2023.04.052](#)

Article

News

90% of the 5000+ species in Clarion-Clipperton Zone are new to science

Posted: 26 May 2023

- First comprehensive checklist of life in the Clarion-Clipperton Zone compiled
- Over 90% of species in one of the most likely future mining sites are undescribed by science



Author Muriel Rabone, Data and Sample Coordinator, SCAN, with a selection of deep-sea specimens found in the CCZ from the Natural History Museum's collection © Trustees of the Natural History Museum London

PRESS RELEASE

New study highlights extent of biodiversity in world's largest mineral exploration region

First published 25 May 2023



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The CCZ is one of the best studied areas of the deepsea, and yet we still know relatively little about it
©SMARTEx Project/smartexccz.org

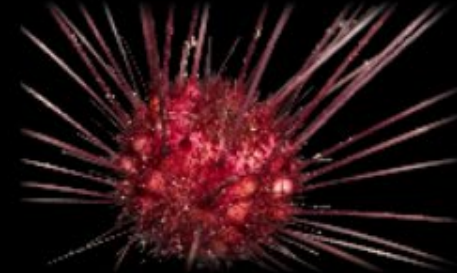
The Clarion Clipperton Zone (CCZ)

- Total number of species between 6,000 - 8,000
- > 5000 **unnamed species** are recorded
- < 500 species from the region are named
- 88% to 92% of species in the CCZ region are undescribed



Image: Eva Stewart (NHM)

Clarion-Clipperton Zone Species Checklist



[About](#) | [Search taxa](#) | [Browse taxa](#) | [Deep Sea Portal](#) | [Log in](#)

<https://www.marinespecies.org/deepsea/CCZ>

A biodiversity inventory of benthic species
vital to assessments of environmental impacts



WoRMS AphialID: 1579386 (urn:lsid:marinespecies.org:taxname:1579386)

Eurythenes sp_DISCOLL_PAP_B [of Horton et al., 2020]

GenBank Taxonomy ID:

2686106
(NCBI:txid2686106)

Eurythenes sp.
DISCOLL PAP B

Publication:

[https://doi.org/10.1016/j.poc
ean.2020.102292](https://doi.org/10.1016/j.poc
ean.2020.102292)

Eurythenes sp.
DISCOLL_PAP_B

BOLD BIN

Barcode Index Number
BOLD:AEF7086
Eurythenes sp.
DISCOLL PAP B

Specimen label &
Collections database:

Eurythenes sp. nov. PAP B
JC085_19_B3

GenBank Accession Number:
MN832609

Eurythenes sp. DISCOLL PAP
B voucher 2JC085_19_B3
cytochrome c oxidase subunit I
(COX1) gene

BOLD Specimen

GBMNB51592-20
Eurythenes sp. DISCOLL PAP
B [COI-5P:484]
MN832609[sampleid],
2JC085_19_B3[museumid]

WoRMS name details

★ *Eurythenes* sp_ DISCOLL_PAP_B [of Horton et al., 2020]

AphiaID	1579386 (urn:lsid:marinespecies.org:taxname:1579386)
Classification	Biota > ★ <i>Animalia</i> (Kingdom) > ☆ <i>Arthropoda</i> (Phylum) > ★ <i>Crustacea</i> (Subphylum) > ★ <i>Multicrustacea</i> (Superclass) > ★ <i>Malacostraca</i> (Class) > ★ <i>Eumalacostraca</i> (Subclass) > ★ <i>Peracarida</i> (Superorder) > ★ <i>Amphipoda</i> (Order) > ★ <i>Amphilochidea</i> (Suborder) > ★ <i>Lysianassida</i> (Infraorder) > ★ <i>Lysianassidira</i> (Parvorder) > ★ <i>Lysianassoidea</i> (Superfamily) > ★ <i>Eurytheneidae</i> (Family) > ★ <i>Eurythenes</i> (Genus) > ★ <i>Eurythenes</i> sp_ <i>DISCOLL_PAP_B</i> (Species)
Status	temporary name
Rank	Species
Parent	★ <i>Eurythenes</i> S. I. Smith in Scudder, 1882
Environment	marine, brackish, fresh, terrestrial
Fossil range	recent only
Original description	Not documented



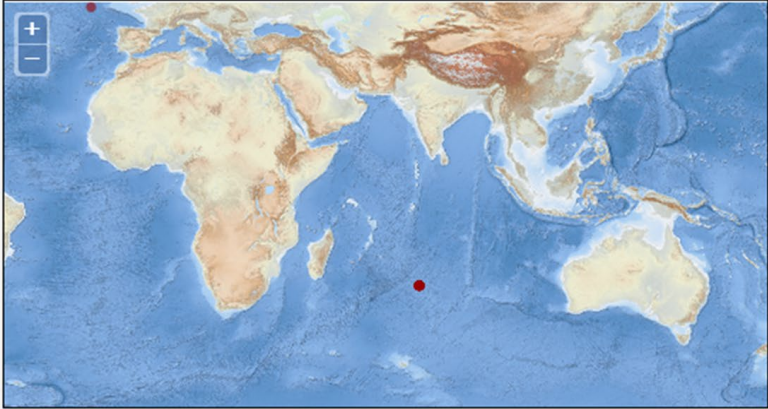
★ *Eurythenes* sp. DISCOL...

Sources (2) Documented distribution (2) Specimens (1) Attributes (3) Links (1) Images (1)

basis of record Horton, T.; Cooper, H.; Vlierboom, R.; Thurston, M.; Hauton, C.; Young, C. R. (2020). Molecular phylogenetics of deep-sea amphipods (*Eurythenes*) reveal a new undescribed species at the Porcupine Abyssal Plain, north east Atlantic Ocean. *Progress in Oceanography*. 183: 102292., available online at <https://doi.org/10.1016/j.pocean.2020.102292>
 note: Confirmed new lineage *Eurythenes* sp. DISCOLL_PAP_B is indicated confirmed using both mitochondrial and nuclear gene sequences (nuclear 28S and mitochondrial COI data), and morphological characters. [details] Available for editors [request]

additional source Kniesz, K.; Jażdżewska, A. M.; Martinez Arbizu, P.; Kihara, T. C. (2022). DNA barcoding of scavenging amphipod communities at active and inactive hydrothermal vents in the Indian Ocean. *Frontiers in Marine Science*. 8., available online at <https://www.frontiersin.org/articles/10.3389/fmars.2021.752360/full>
 note: Identified the taxon *Eurythenes* sp. DISCOLL PAP B, delimited using COI, 16S and 18S [details]

Sources (2) Documented distribution (2) Specimens (1) Attributes (3) Links (1) Images (1)



☒ EMODnet Bathymetry
☐ Countries
☒ Exact points
☐ Standardized distributions (kml)
☐ Standardized points
☐ Unique points (kml)

Present Present in aphia/obis/gbif/digbio Inaccurate Introduced: alien Containing type locality

Collapse all Expand all

FROM EDITOR OR GLOBAL SPECIES DATABASE

+ Indian Ocean
 + North Atlantic Ocean

Sources (2) Documented distribution (2) Specimens (1) Attributes (3) Links (1) Images (1)

★ Nontype DY077/83_B4, geounit Porcupine Abyssal Plain Sustained Observatory [details]

WoRMS Specimens details

Code/Type no.	DY077/83_B4
Alternative code	MN832603
Specimen count	1
Identification	Nontype: <i>Eurythenes sp. DISCOLL PAP B</i> [of Horton et al., 2020] [details]
Geounit	Porcupine Abyssal Plain Sustained Observatory
Start latitude	49.0073 (49° 0' 26.4" N)
Start longitude	-16.4195 (16° 25' 10.2" W)
Depthdeep	4 846 m
Begindate	2017-04-25
Edit history	Date 2022-05-02 08:05:02Z action created by Horton, Tammy

Sources (2) Documented distribution (2) Specimens (1) Attributes (3) Links (1) Images (1)

★ BOLD BIN Cluster: BOLD:AEF7086 for *Eurythenes sp. DISCOLL PAP B*

BOLD SYSTEMS DATABASES IDENTIFICATION TAXONOMY WORKBENCH RESOURCES LOGIN

BOLD:AEF7086 PUBLIC DATA ? SEARCH

Specimens: DWC XML TSV
Sequences: FASTA TRACE
Combined: XML TSV
Map: Generate from

Records 1 to 13 Page 1 Records Per Page 100

- ☐ GBMN851592-20 - *Eurythenes sp. DISCOLL PAP B* [COI-5P:484]
 Taxonomy: Arthropoda, Malacostraca, Amphipoda, Eurythenidae, Eurythenes
 Identifiers: MN832609[sampleid], 2JC085_19_B3[museumid]
 Depository: Mined from GenBank, NCBI
- ☐ GBMN851593-20 - *Eurythenes sp. DISCOLL PAP B* [COI-5P:484]
 Taxonomy: Arthropoda, Malacostraca, Amphipoda, Eurythenidae, Eurythenes
 Identifiers: MN832610[sampleid], 2JC085_19_B8[museumid]
 Depository: Mined from GenBank, NCBI
- ☐ GBMN851594-20 - *Eurythenes sp. DISCOLL PAP B* [COI-5P:484]
 Taxonomy: Arthropoda, Malacostraca, Amphipoda, Eurythenidae,

Results Summary

Found 13 published records, with 13 records with sequences, forming 1 BINs (clusters), with specimens from 1 country, deposited in 2 institutions.

Of these records, 13 have species names, and represent 1 species.

Horton et al., Tackling Temporary Names: Interim Solutions for the Taxonomic Impediment. <http://dx.doi.org/10.2139/ssrn.4917749>

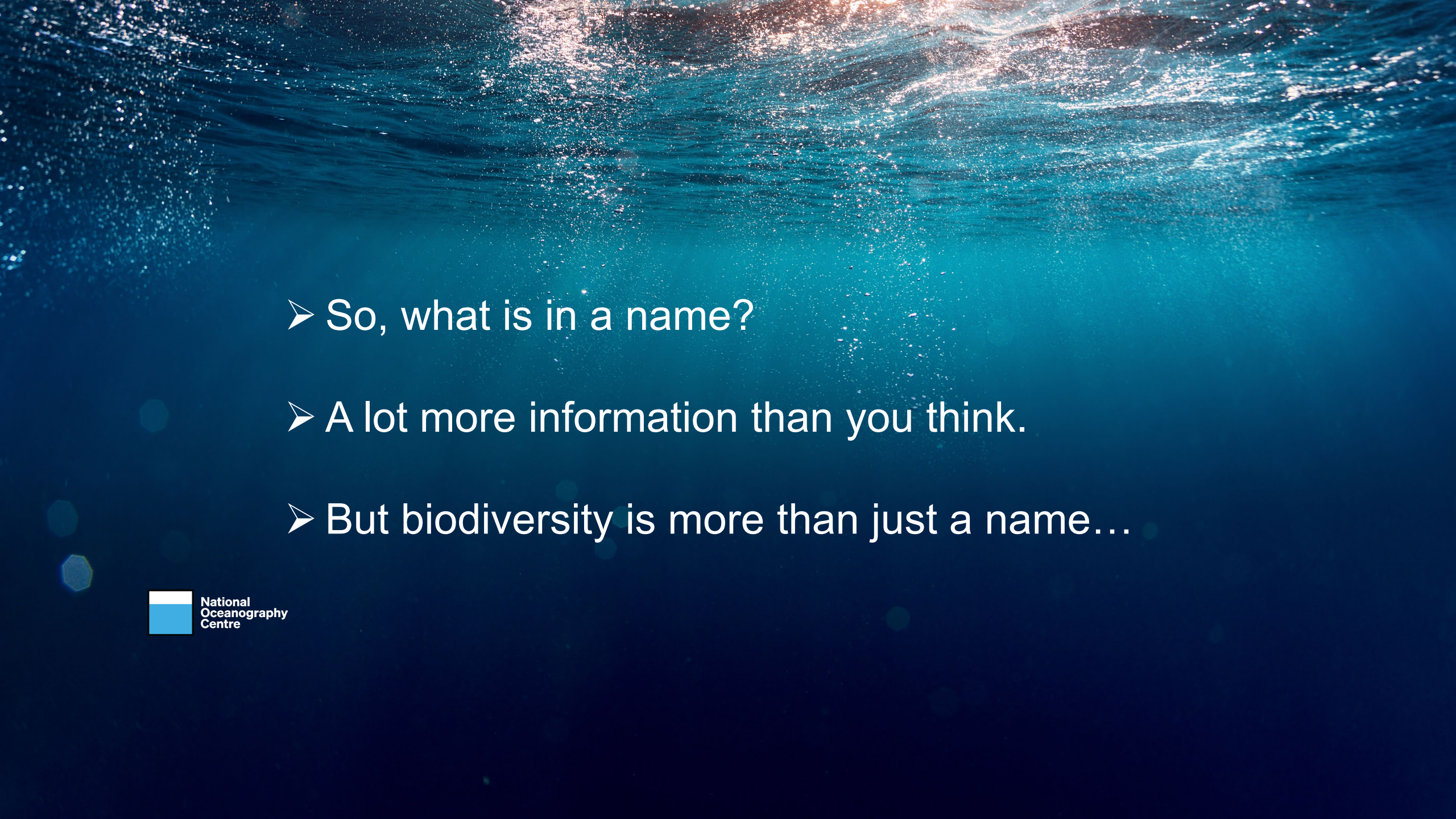
WHAT NEXT?



TAXONOMY TRAINING WORKSHOPS



Sponges (NOC, March, 2024)
Amphipods (Poland, February, 2024)
Polychaetes (NOC, January, 2025)

- 
- So, what is in a name?
 - A lot more information than you think.
 - But biodiversity is more than just a name...

Thank you!

Questions?
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