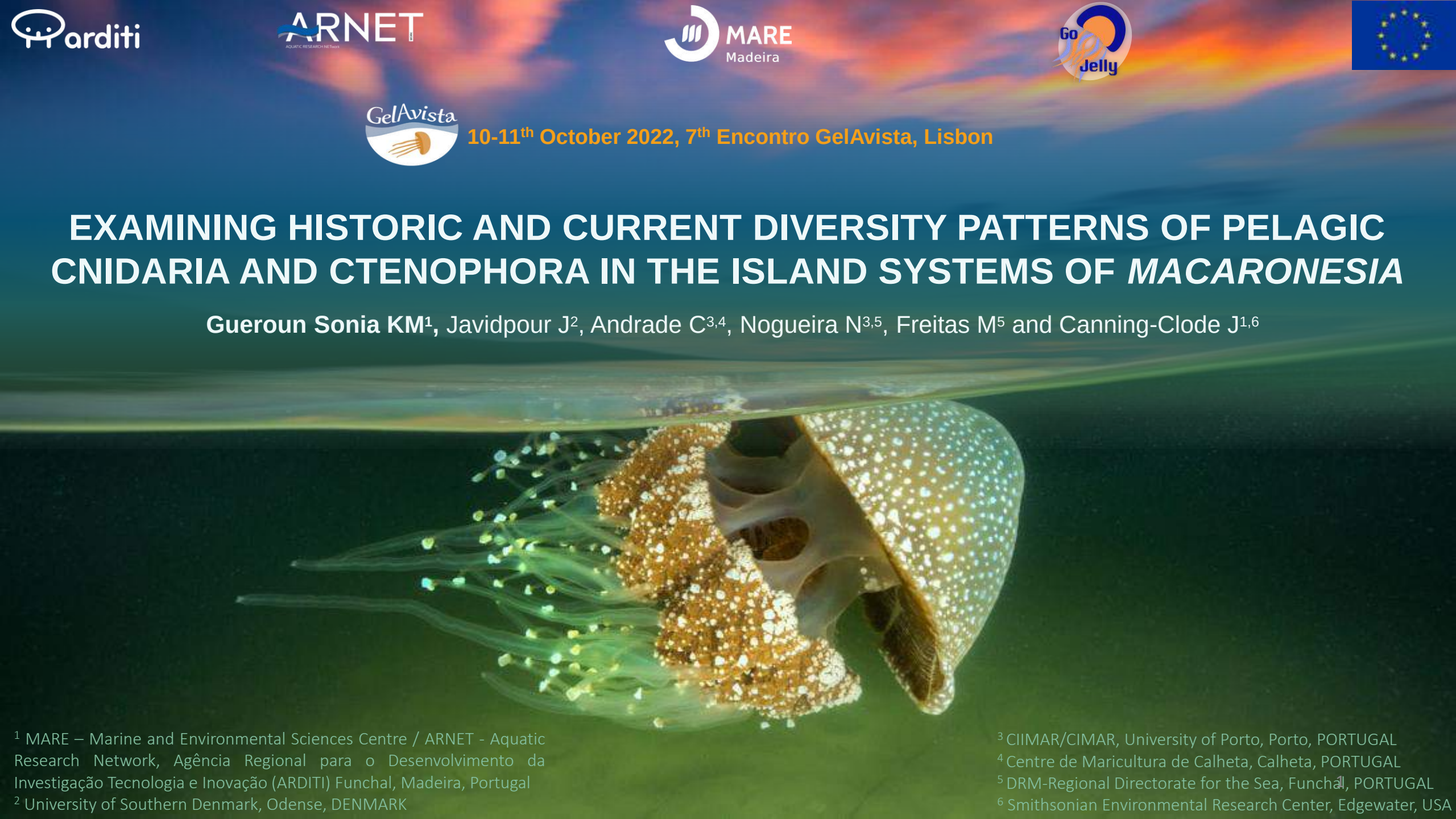
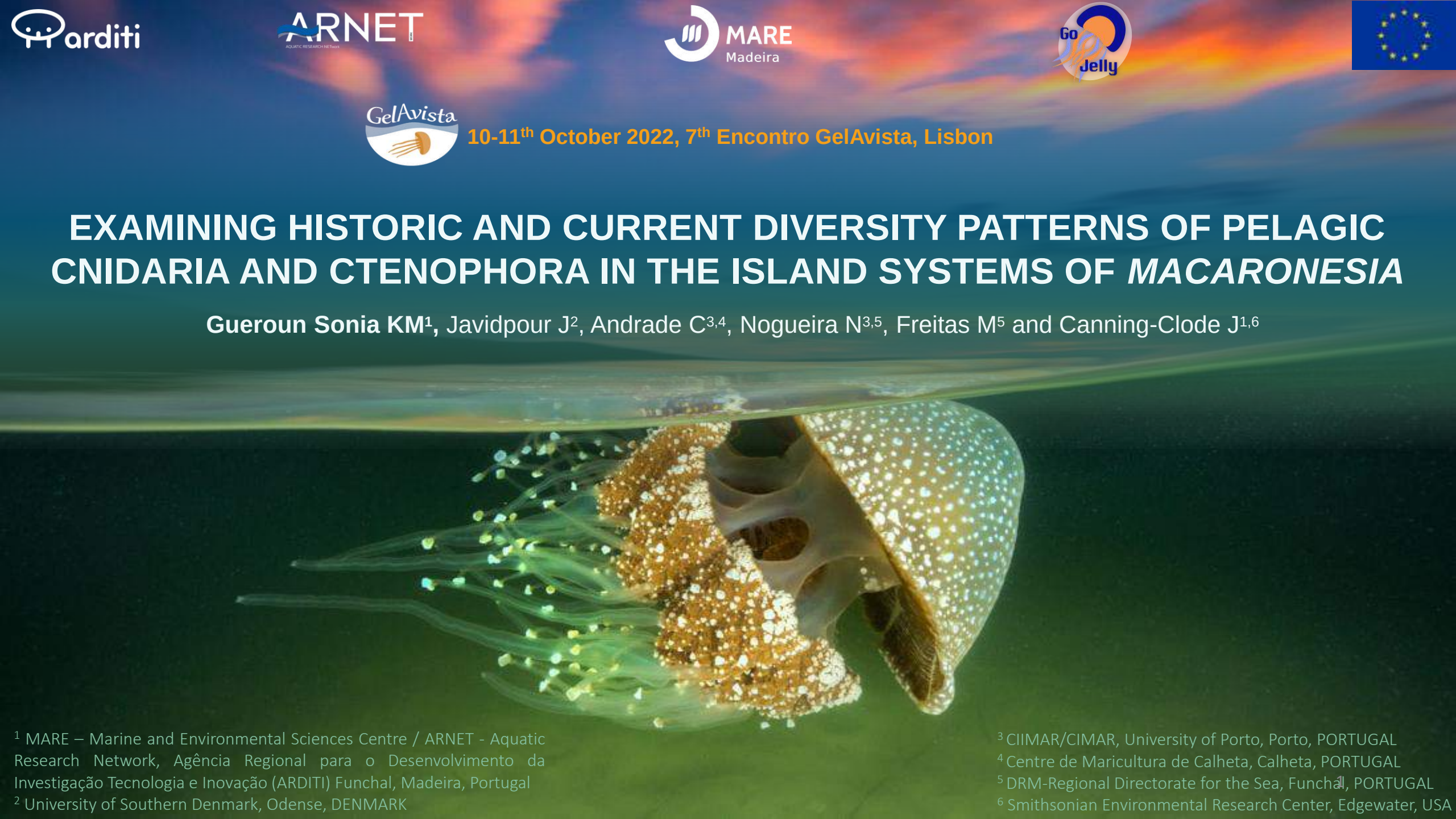




10-11<sup>th</sup> October 2022, 7<sup>th</sup> Encontro GelAvista, Lisbon

# EXAMINING HISTORIC AND CURRENT DIVERSITY PATTERNS OF PELAGIC CNIDARIA AND CTENOPHORA IN THE ISLAND SYSTEMS OF *MACARONESIA*

Gueroun Sonia KM<sup>1</sup>, Javidpour J<sup>2</sup>, Andrade C<sup>3,4</sup>, Nogueira N<sup>3,5</sup>, Freitas M<sup>5</sup> and Canning-Clode J<sup>1,6</sup>



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Medusen I.



## Jellyfish

### Cnidaria

≈ 30% Hydrozoa  
Scyphozoa  
Cubozoa

### Ctenophora

≈ 1700 – 1750 species

*Biogeographia* vol. XXIV - 2003  
(Printed October, 31st 2003)  
Marine biogeography of the Mediterranean Sea: patterns and dynamics of biodiversity

Who cares about the Hydrozoa of the  
Mediterranean Sea?  
An essay on the zoogeography  
of inconspicuous groups

FERDINANDO BOERO\*, JEAN BOUILLON\*\*,  
CINZIA GRAVILI\*, STEFANO PIRAINO\*



Who cares about the jellyfish of the  
Eastern Atlantic and Macaronesia  
areas?

Why do we need to care about  
them?



# Without taxonomy, ecological research is unthinkable

LIMNOLOGY  
and  
OCEANOGRAPHY

ASLO

Limnol. Oceanogr. 1999, 2009, 1-17  
© 2020 The Authors. Limnology and Oceanography published by John Wiley & Sons, Inc.  
on behalf of the Association for the Sciences of Limnology and Oceanography  
doi: 10.1002/lno.14048

Tackling the jelly web: Trophic ecology of gelatinous zooplankton in oceanic food webs of the eastern tropical Atlantic assessed by stable isotope analysis

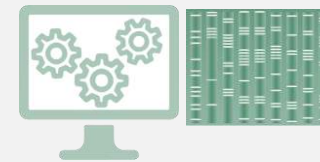
Xupeng Chi<sup>1,2\*</sup>, Jan Dierking,<sup>2</sup> Henk-Jan Hoving,<sup>2</sup> Florian Lüsken,<sup>3,4</sup> Anneke Denda,<sup>5</sup> Bernd Christiansen,<sup>3</sup> Ulrich Sommer,<sup>2</sup> Thomas Hansen,<sup>2</sup> Jamileh Javidpour<sup>2,6</sup>



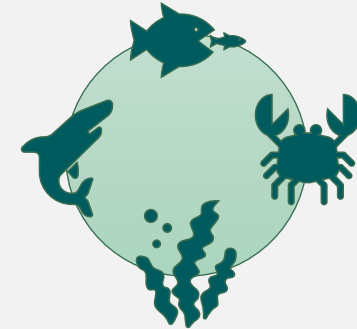
Food industry



Novel pet



Biotechnology

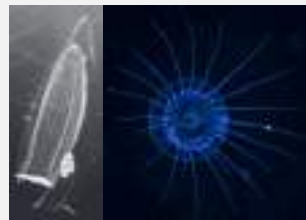


Ecosystem service

Fisheries & Aquaculture



Salmon



*Muggiaea altantica*

*Solmaris corona*

Health & Tourism



Power plants

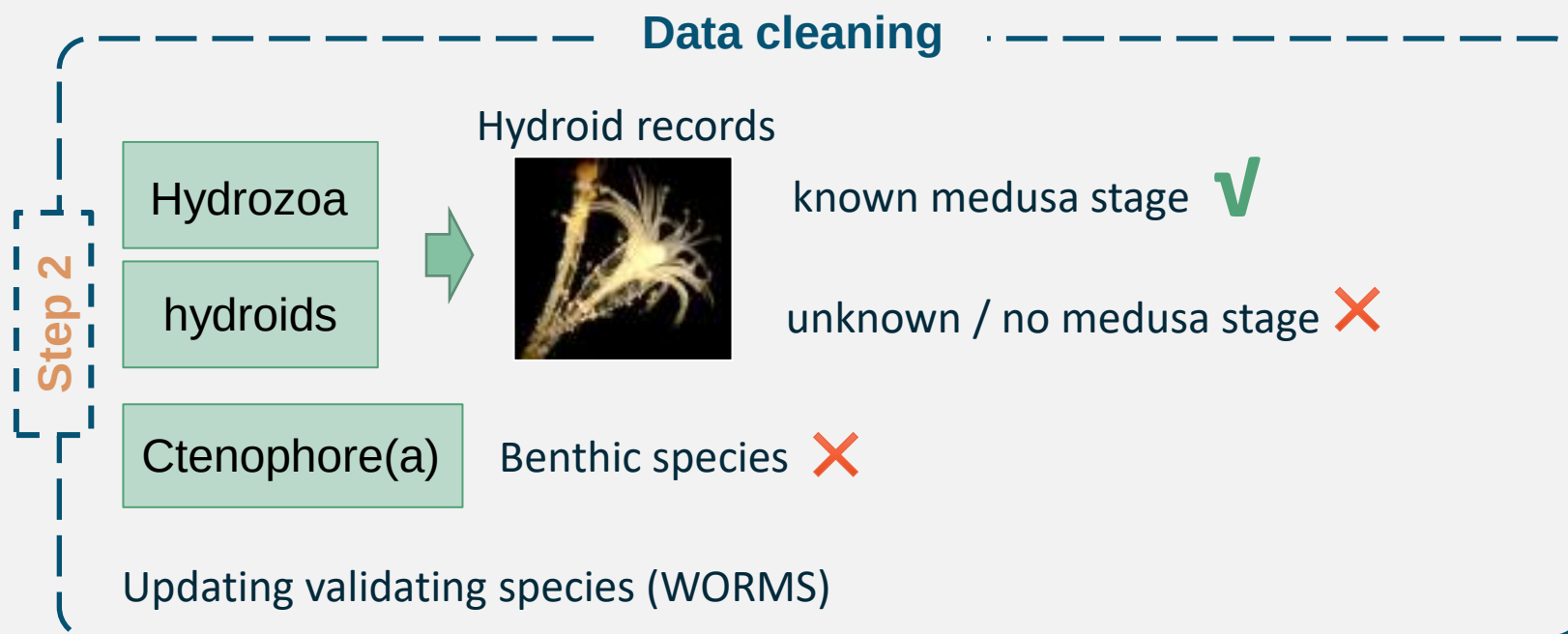
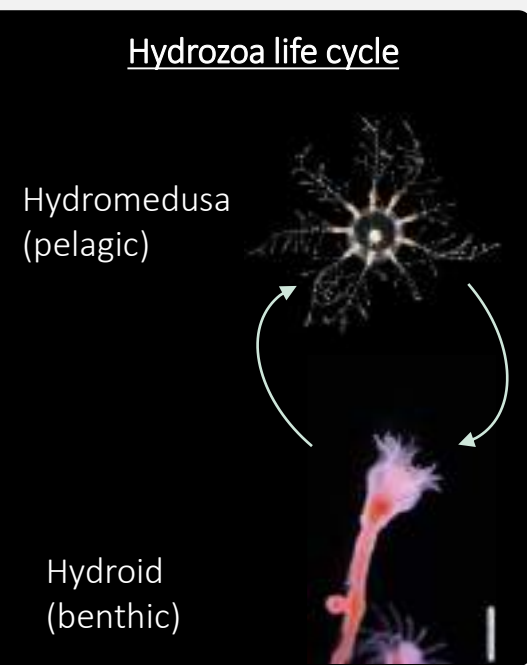
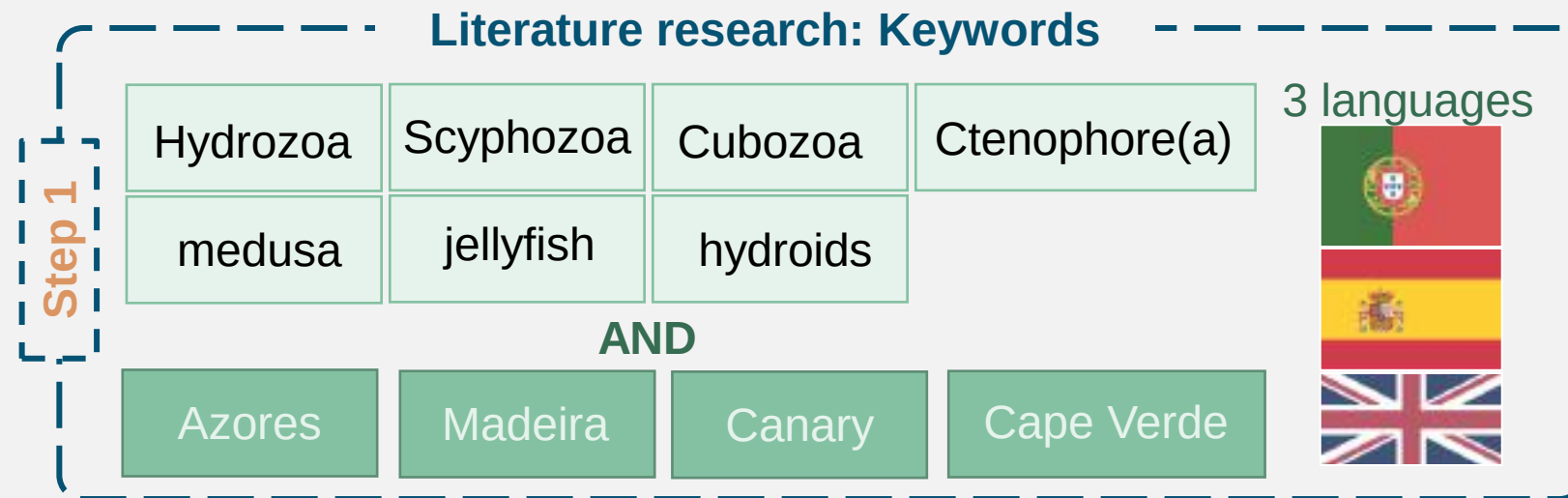


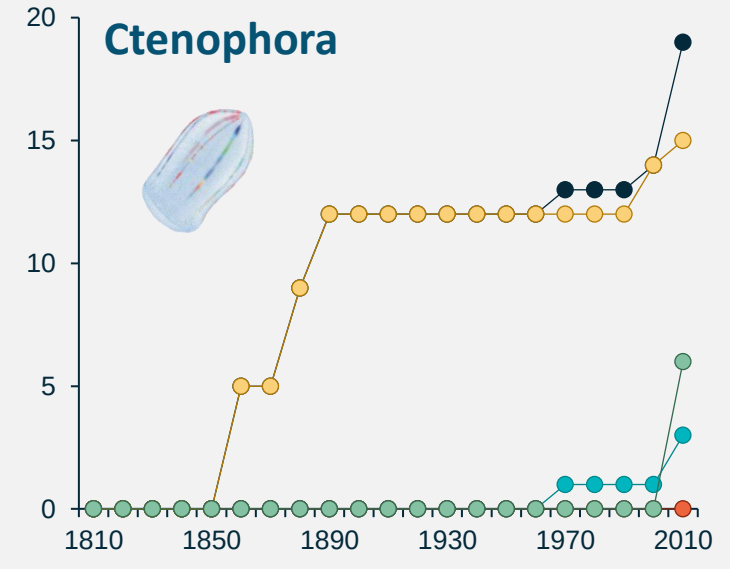
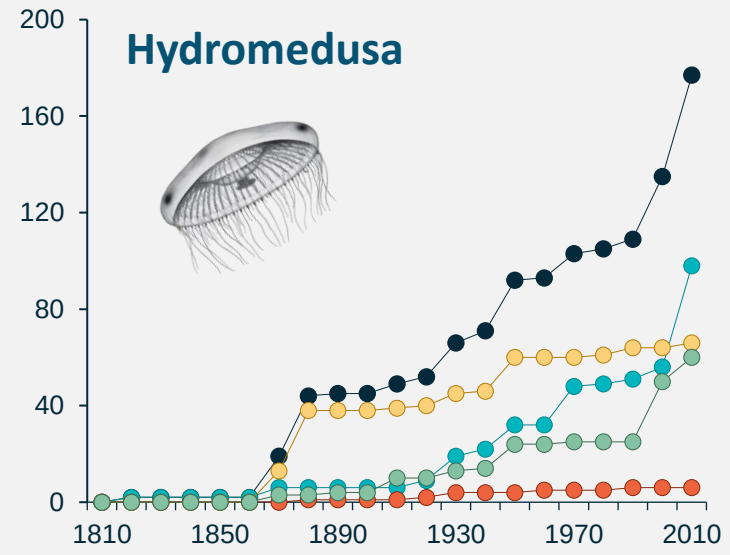
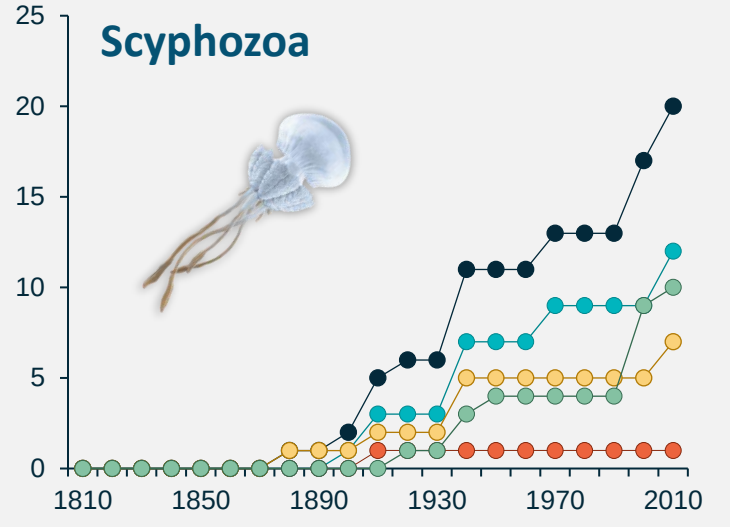
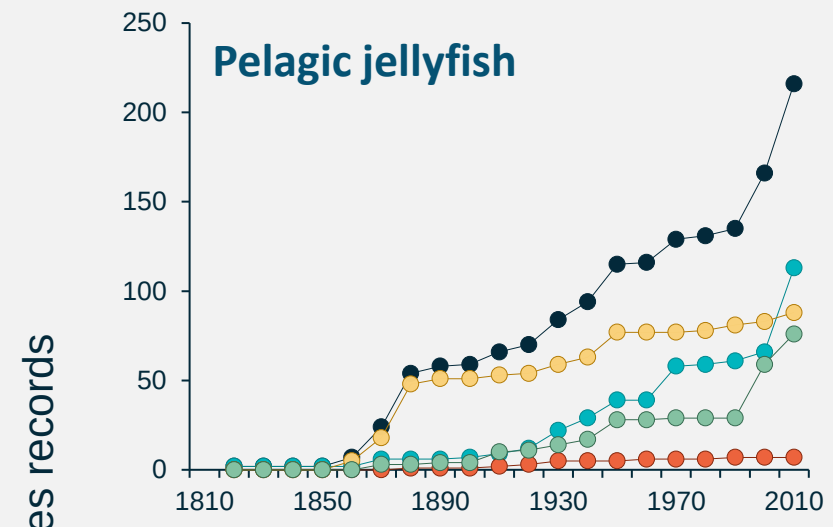
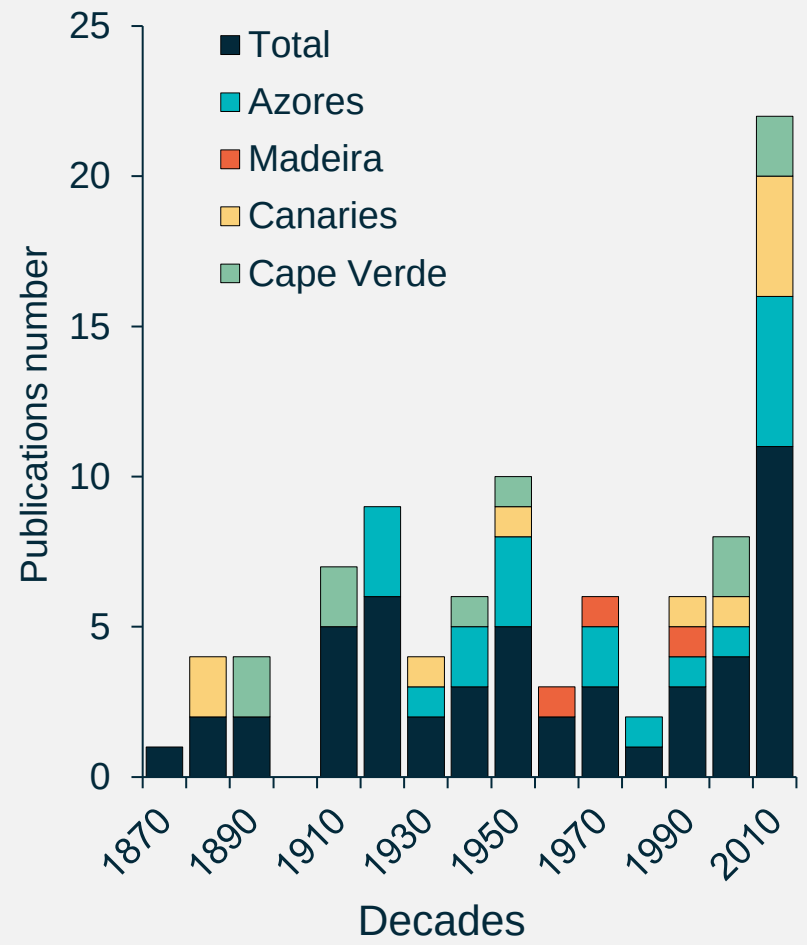
# QUESTIONS

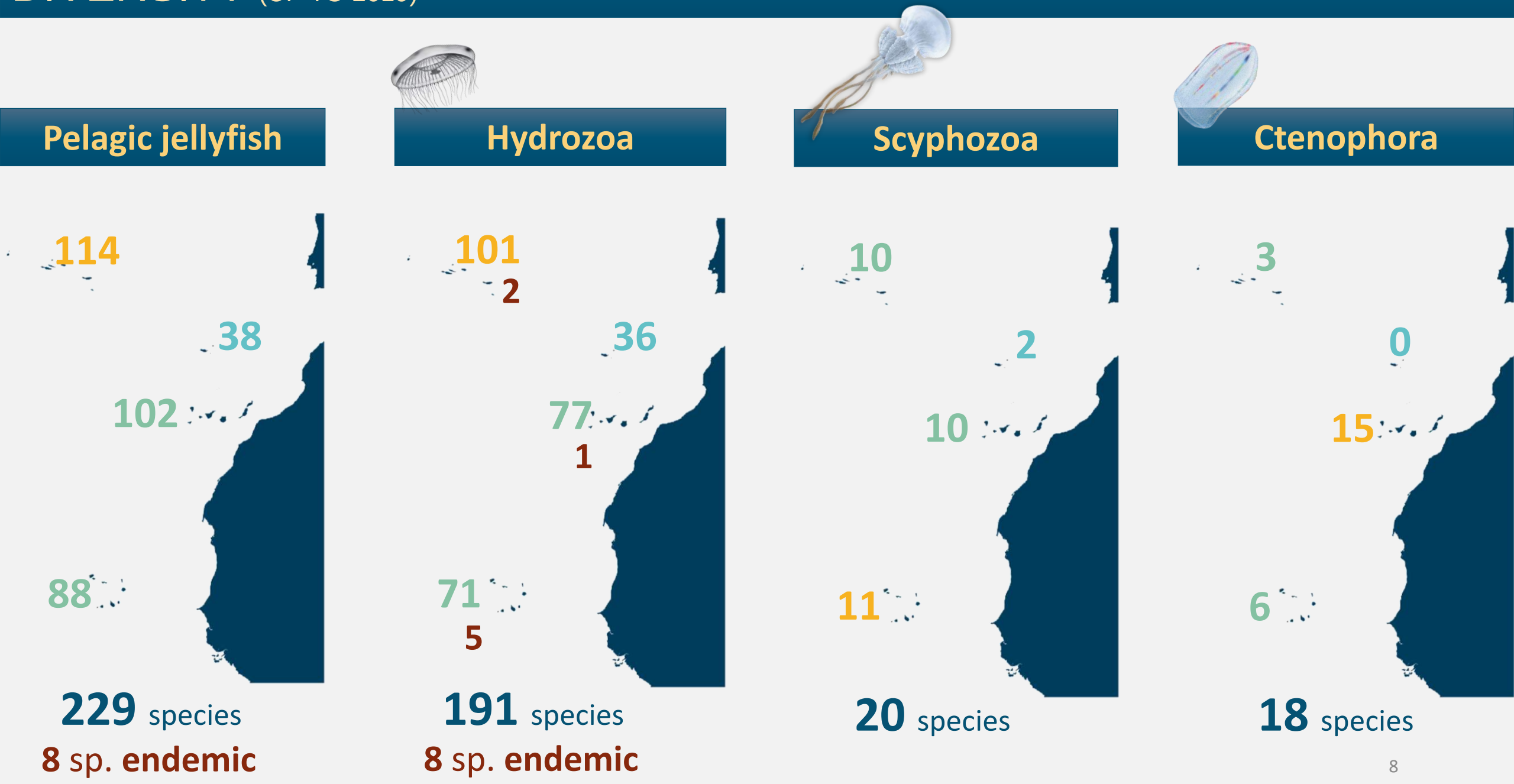
**KNOWLEDGE STATE IN “MACARONESIA” AREAS?**

**IS THERE A PATTERN IN JELLYFISH  
BIOGEOGRAPHY?**

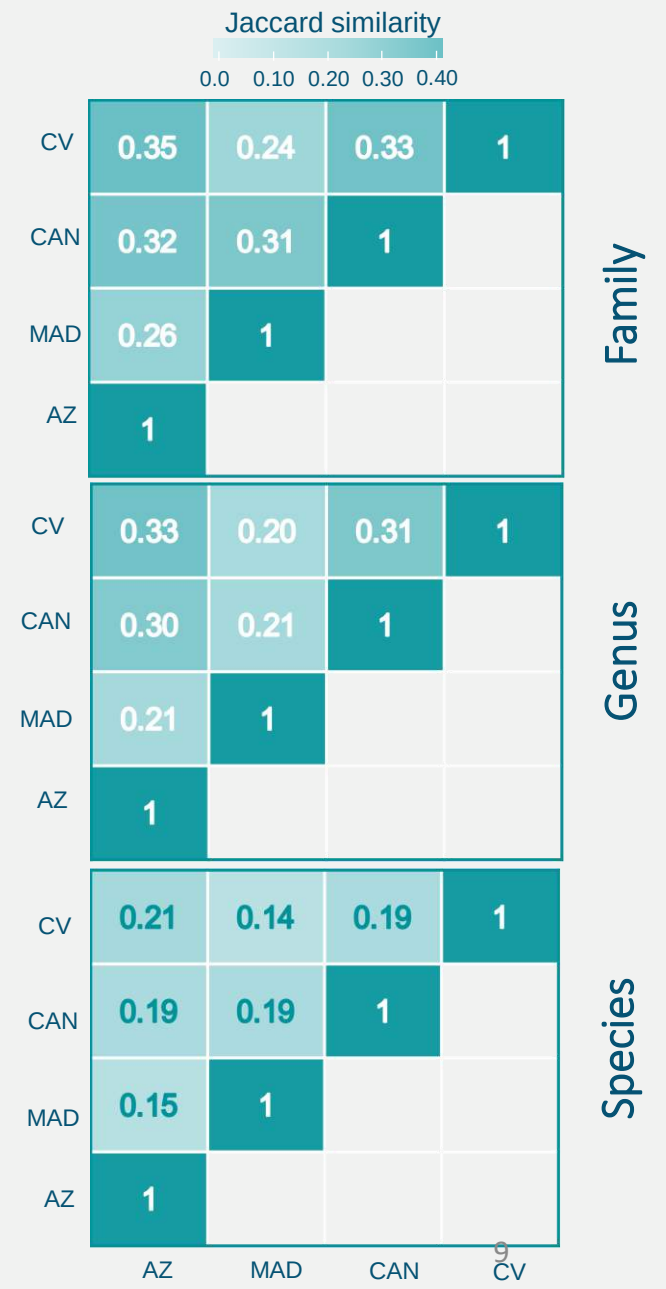
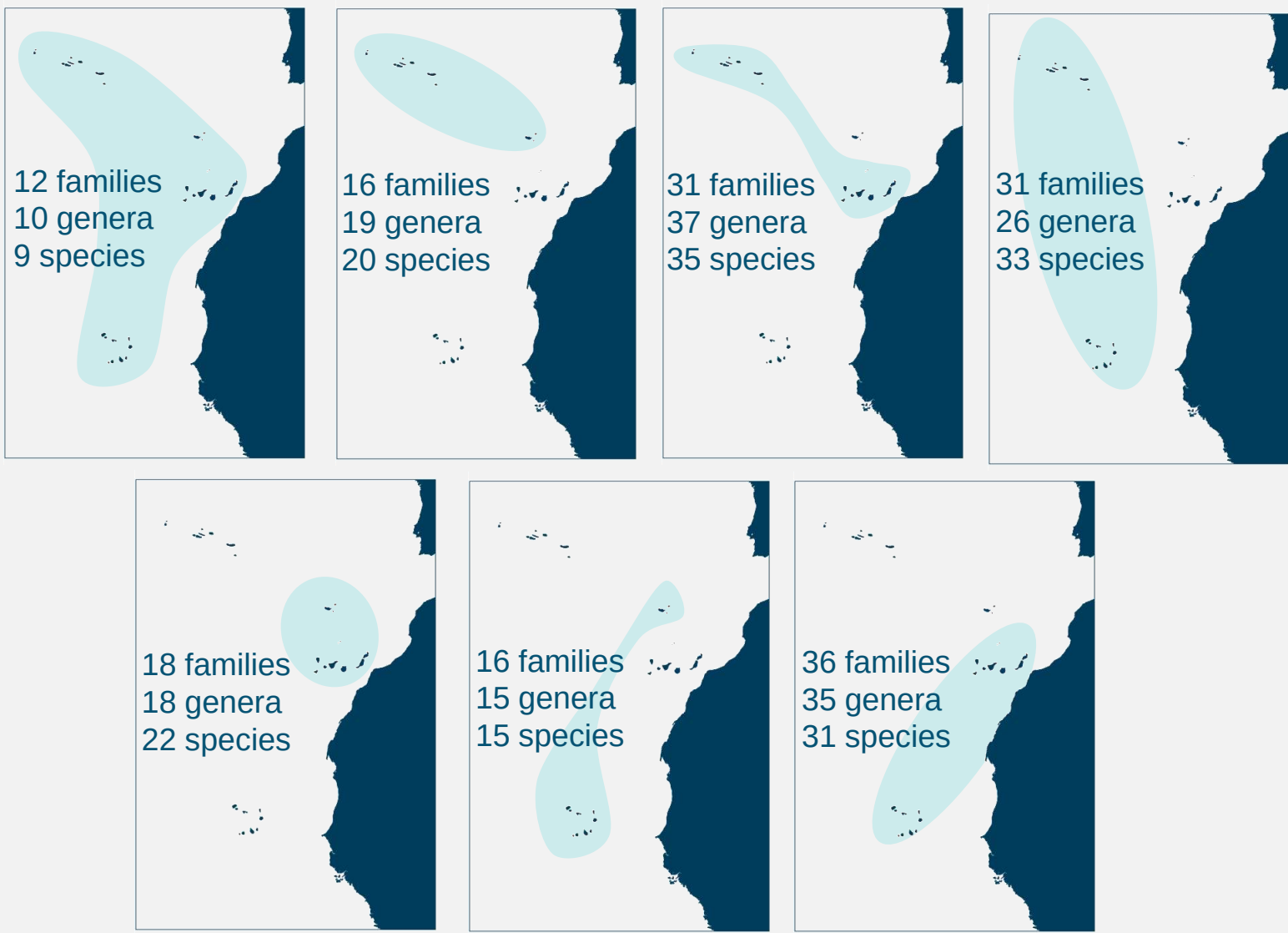








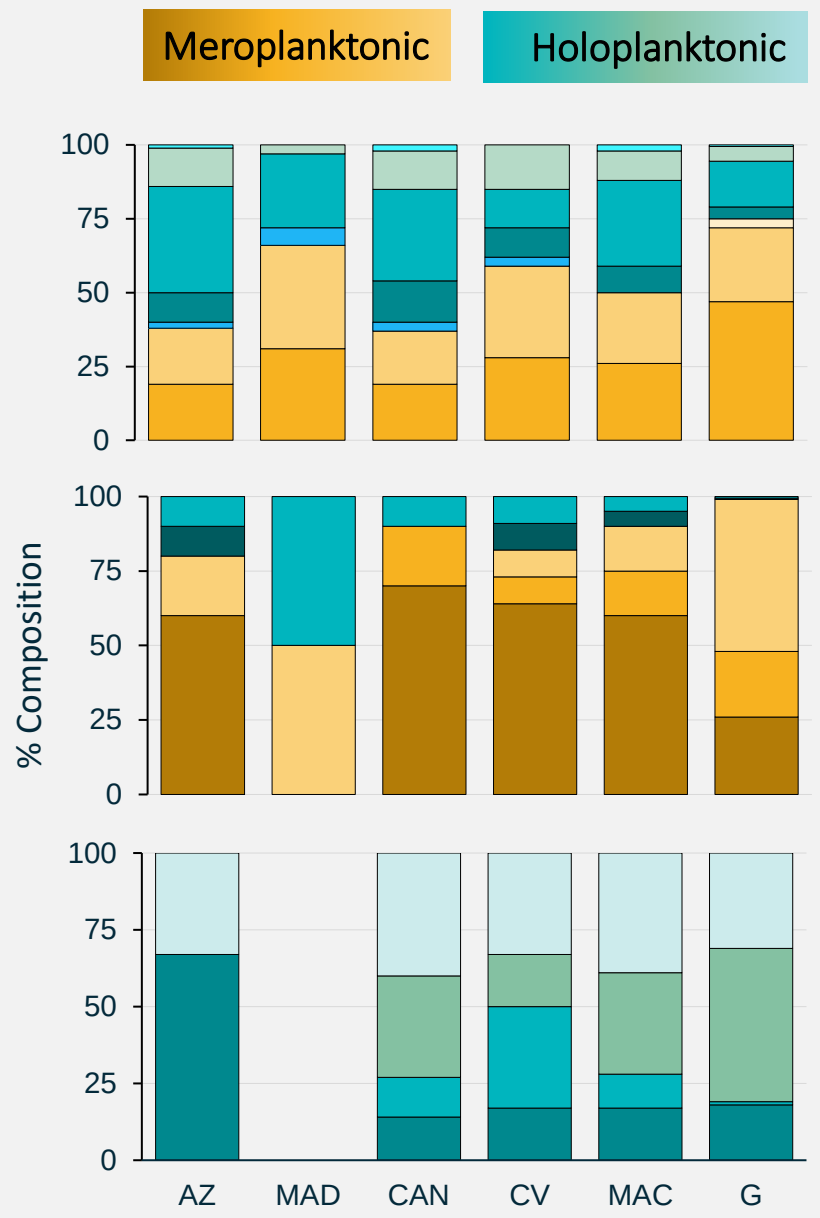
Shared taxa within the *Macaronesian* archipelagos





# TREND & PATTERN (UP TO 2019)

## Functional trait



## Hydrozoa

- Anthoathecata
- Leptothecata
- Limnomedusae
- Narcomedusae
- Siphonophorae
- Trachymedusae
- Anthoathecata holo.
- Limnomedusae holo.

## Scyphozoa

- Coronatae
- Rhizostomeae
- Semaeostomeae
- Coronatae holo.
- Semaeostomeae holo.

## Ctenophora

- Beroida
- Cestida
- Cyddipida
- Lobata

### Hydrozoa

Trachymedusae

Siphonophorae

Narcomedusae

Limnomedusae (exception Geryoniidae)

Anthoathecata (2 exceptions)

Leptothecata

### Scyphozoa

Semaeostomeae

Rhizostomeae

Coronatae

Exception

*Pelagia noctiluca*

*Periphylla periphylla*

### Ctenophora

Lobata

Cydrappida

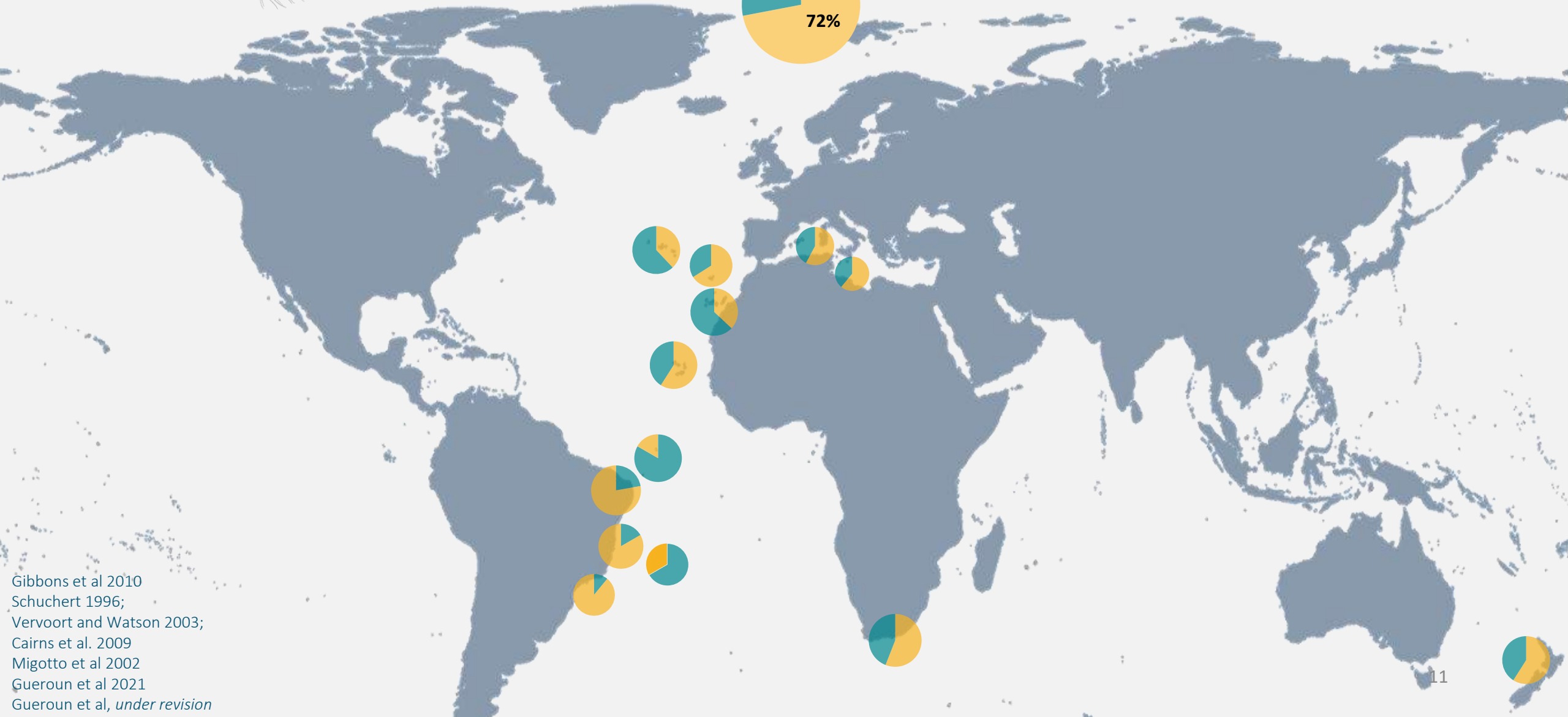
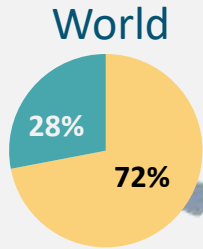
Cestida

Beroida

# TREND & PATTERN \_ HYDROZOA LIFE CYCLE STRATEGY (UP TO 2019)

Meroplanktonic

Holoplanktonic

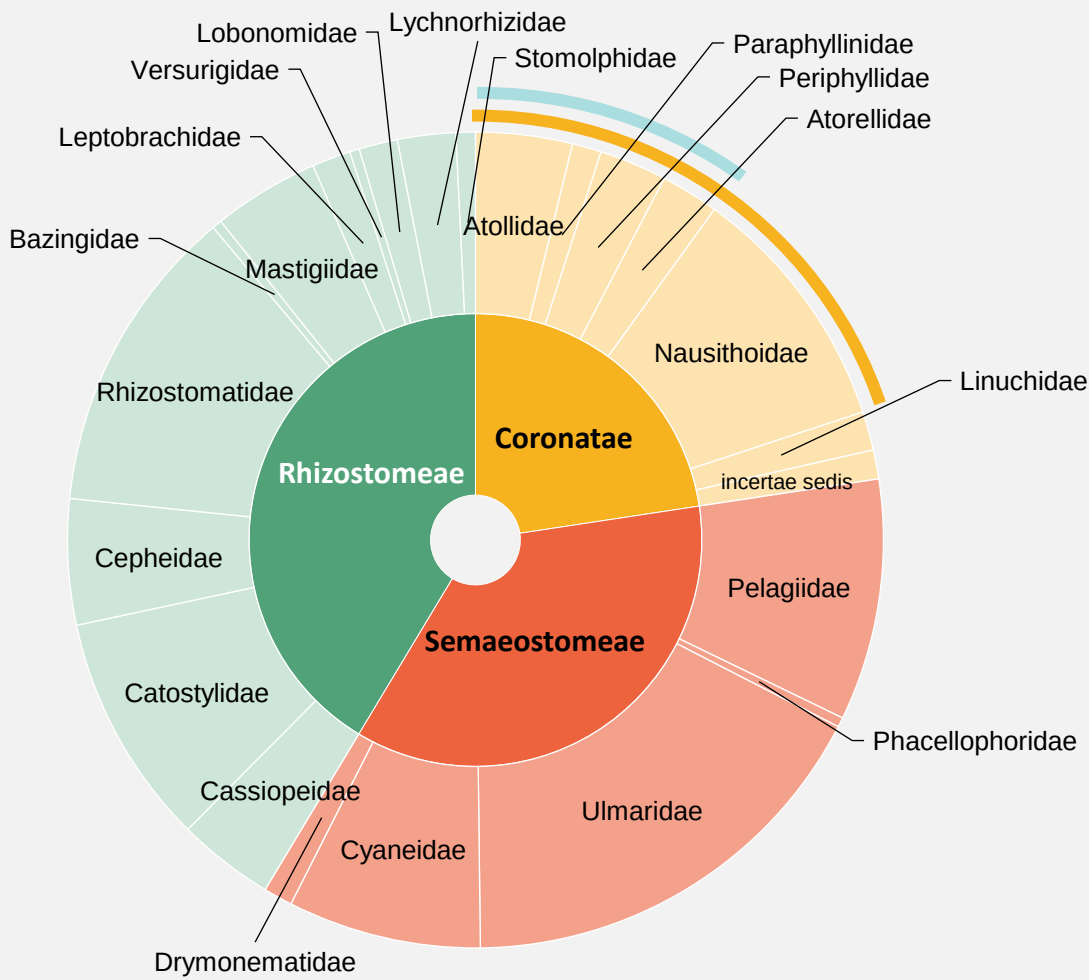


Gibbons et al 2010  
Schuchert 1996;  
Vervoort and Watson 2003;  
Cairns et al. 2009  
Migotto et al 2002  
Gueroun et al 2021  
Gueroun et al, *under revision*

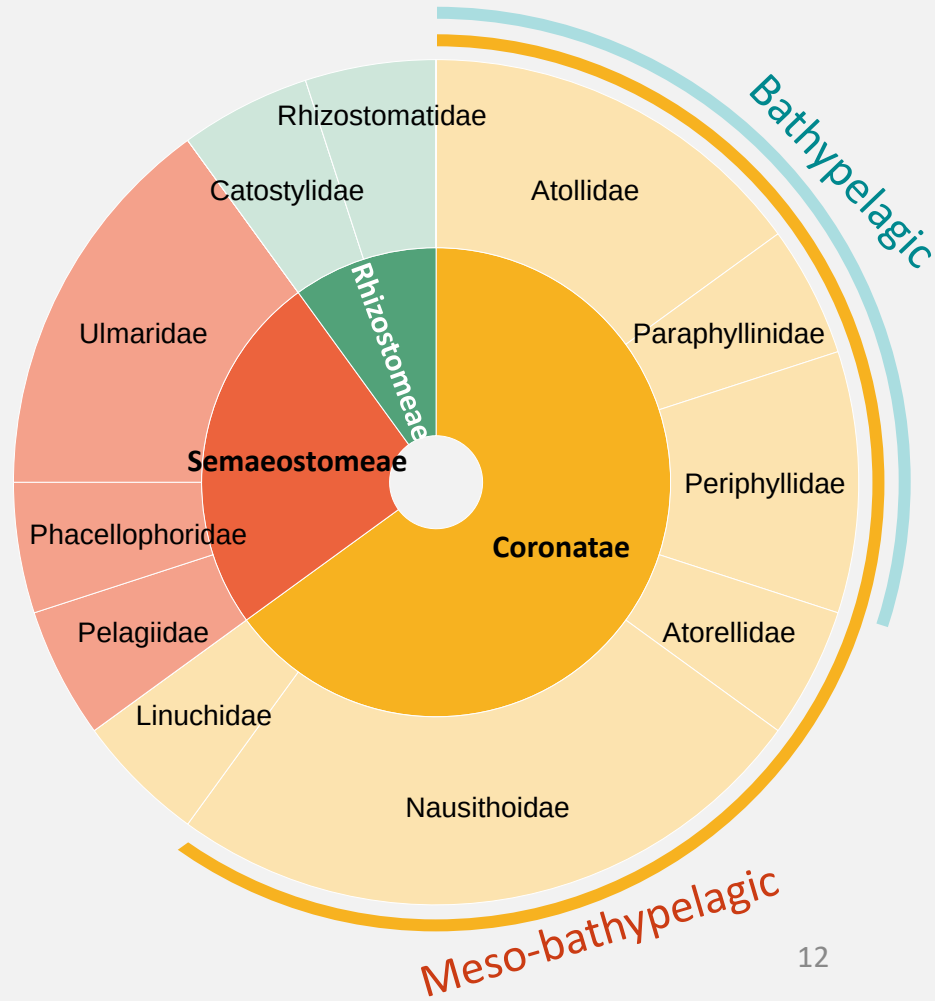
# Scyphozoa



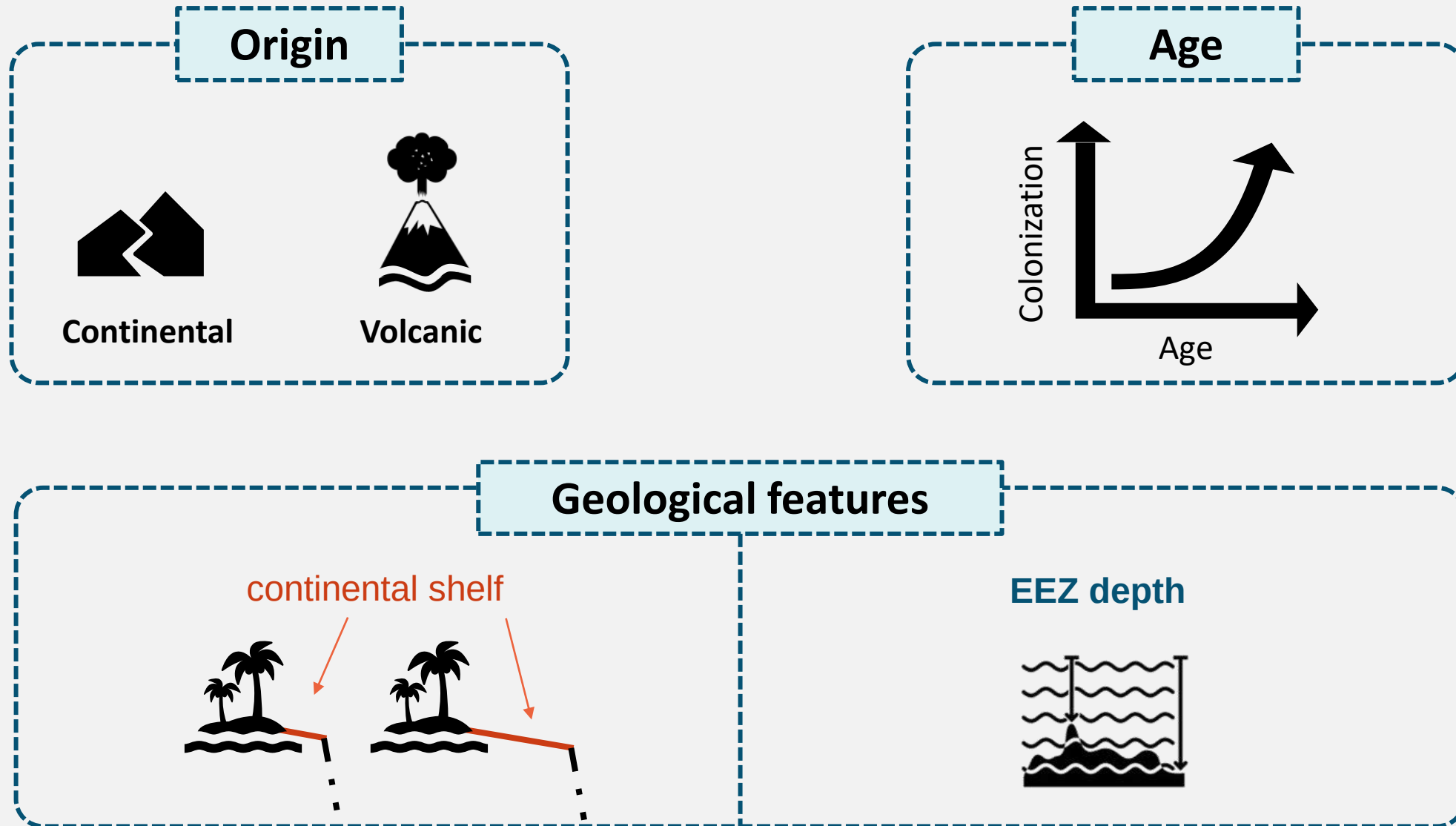
## World



## Macaronesia



## HOLOPLANKTONIC DOMINANCE & MESO-PELAGIC SPECIES



**Holoplanktonic dominance**  
**Meso-pelagic species**



Oceanic island systems

Geological properties:

- restricted continental shelf
- deep sea dominance
- island origin: volcanic or derived from a continent (ex. New Zealand)
- island age

**Species with a strict affinity**  
(Temperate, subtropical,  
tropical, cosmopolite...)



## Biogeographic units

Azores – Madeira – Canary Islands



**Temperate**  
**Subtropical - Tropical**

Cape Verde



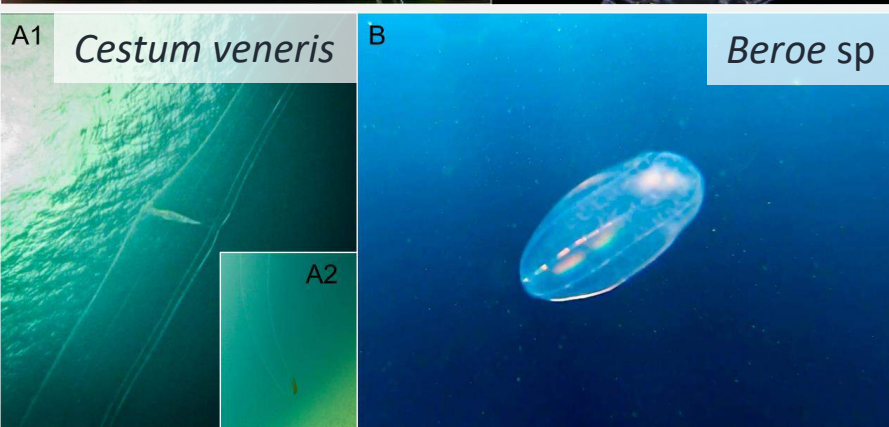
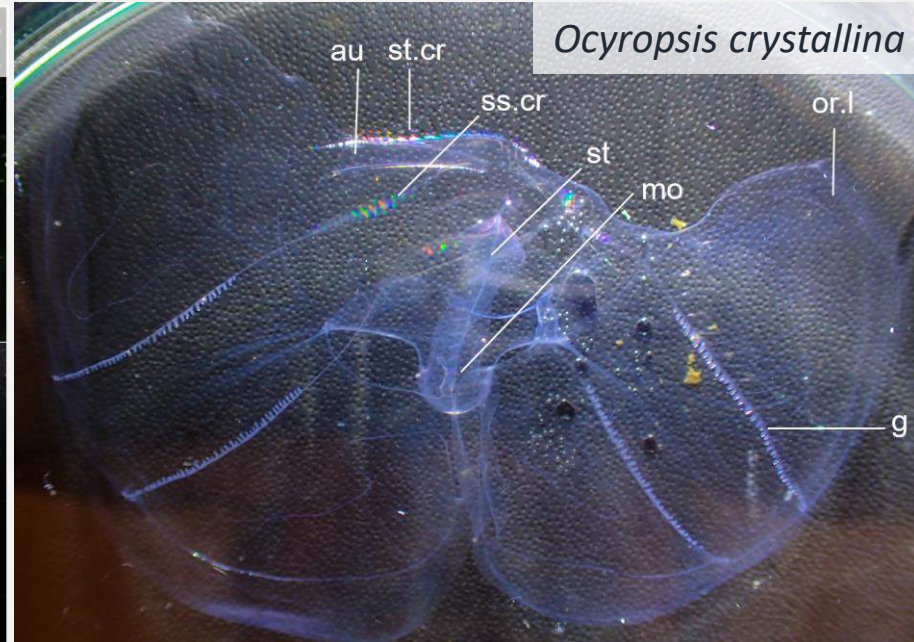
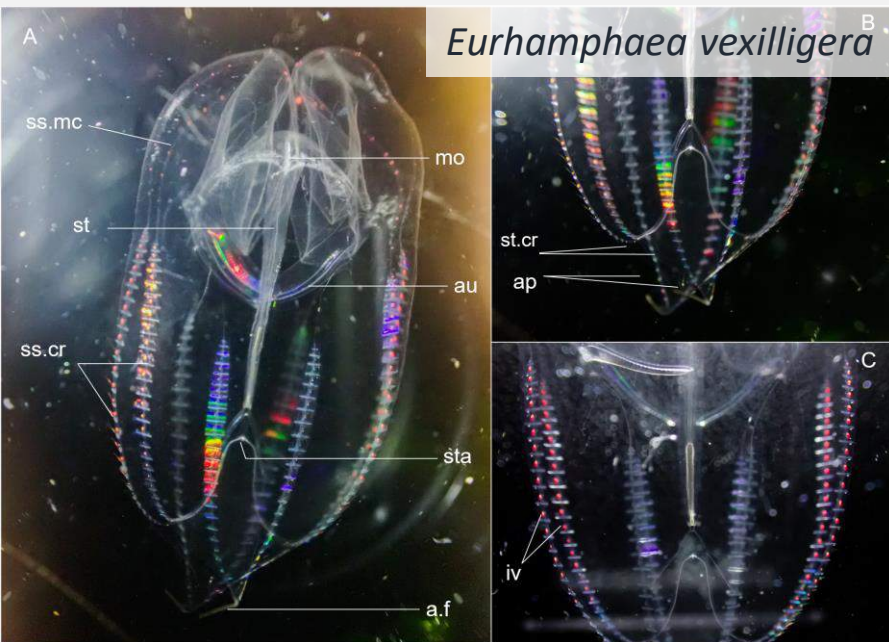
**Subtropical - Tropical**  
**Tropical**



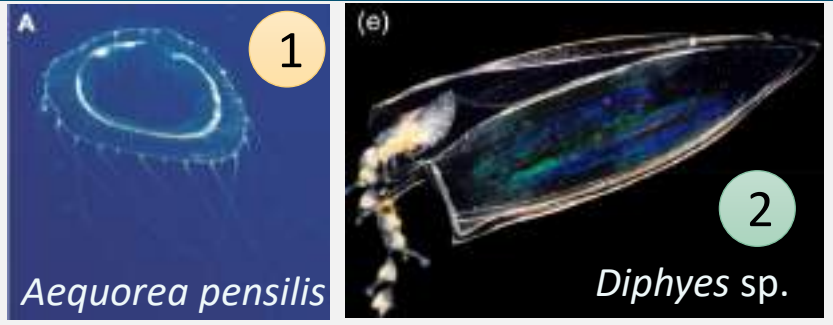
# DIVERSITY, THE NEW ARRIVALS (AFTER 2019)

## CTENOPHORA

New records for Madeira Archipelago (Gueroun et al 2021, Zootaxa)



HYDROZOA



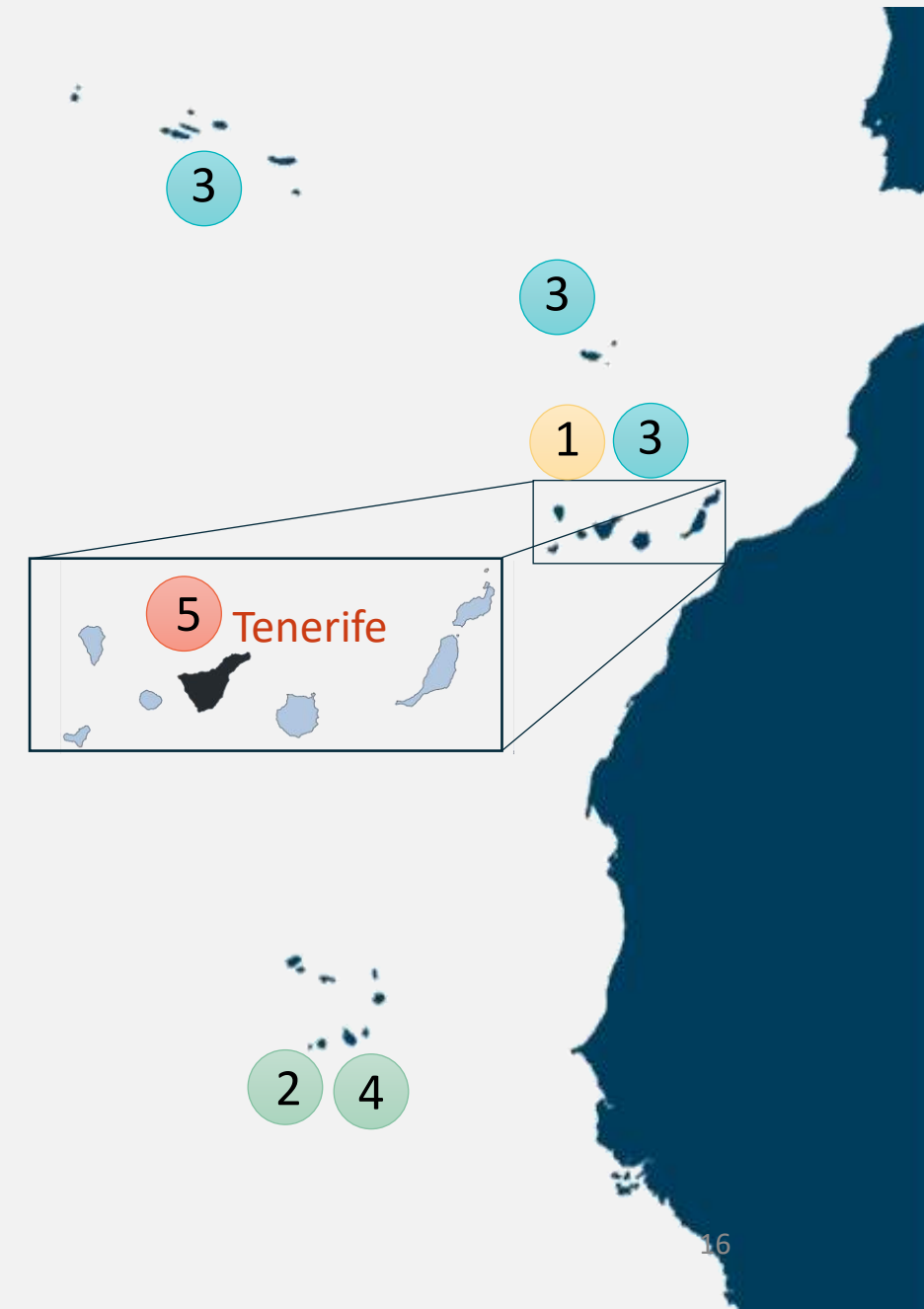
SCYPHOZOA



CUBOZOA

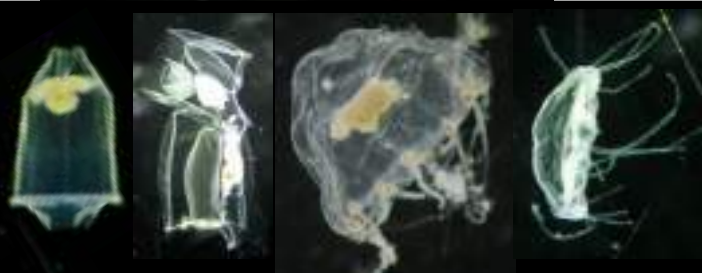
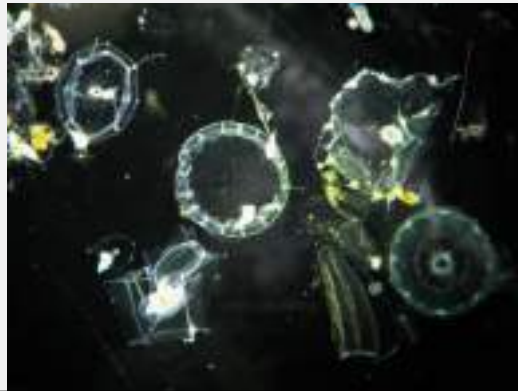


Rocky/coral reef  
*Sargassum* sp.



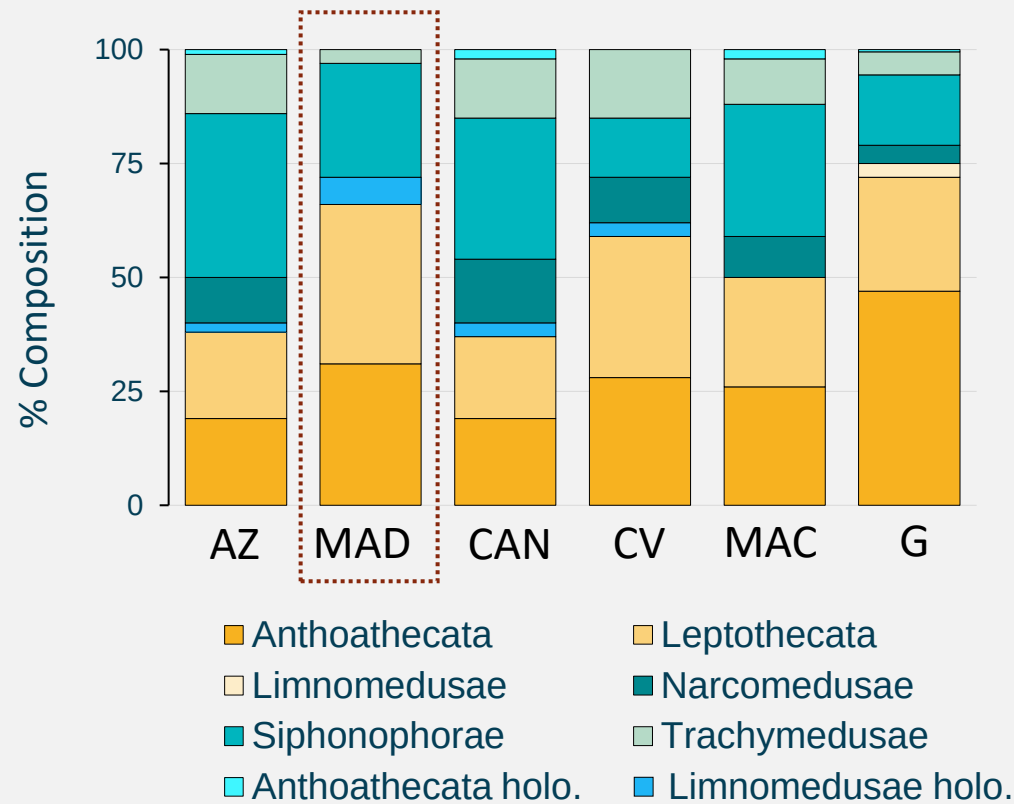


## UNMASKING JELLYFISH COMMUNITY IN MADEIRA ISLAND



13 new records (ongoing ...)

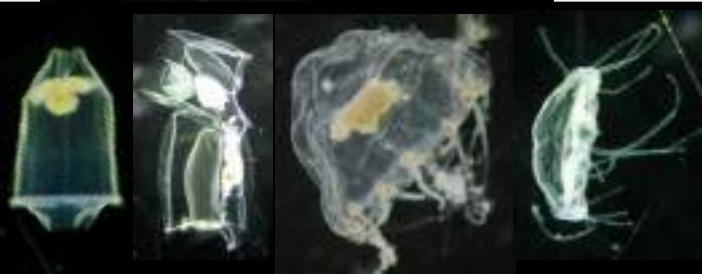
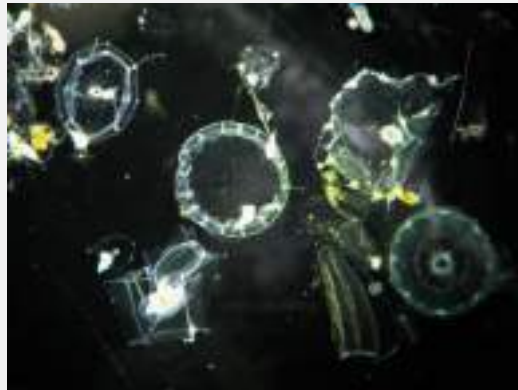
© Sonia KM Gueroun



Madeira

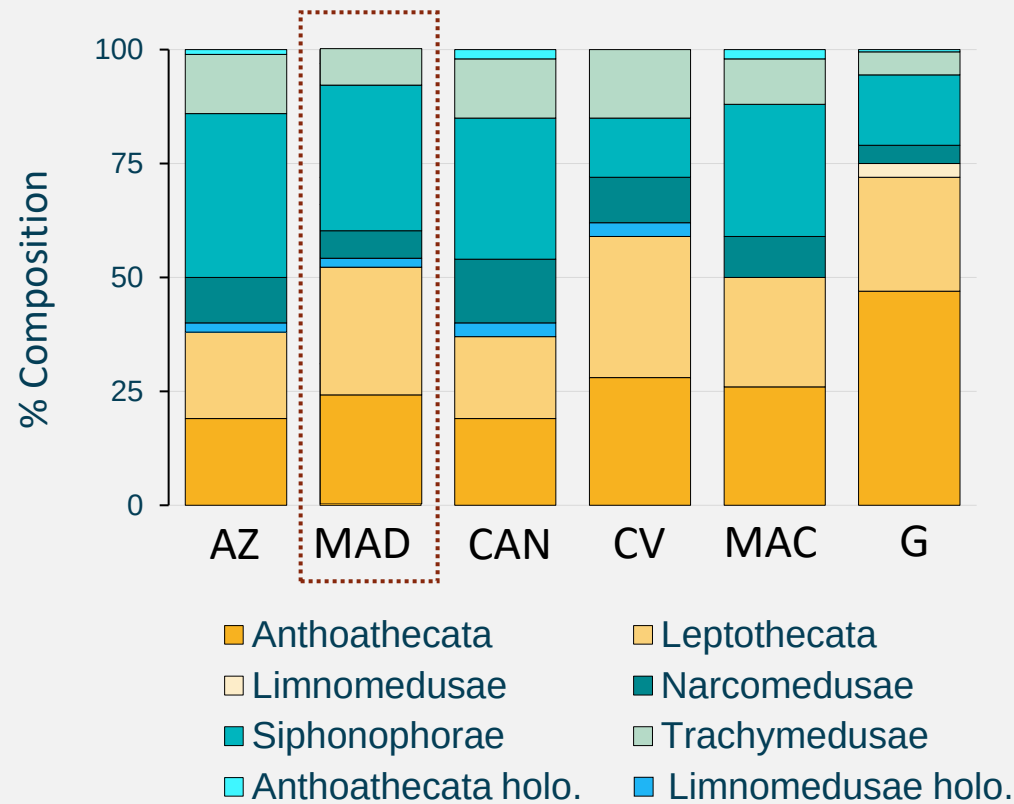


## UNMASKING JELLYFISH COMMUNITY IN MADEIRA ISLAND



13 new records (ongoing ...)

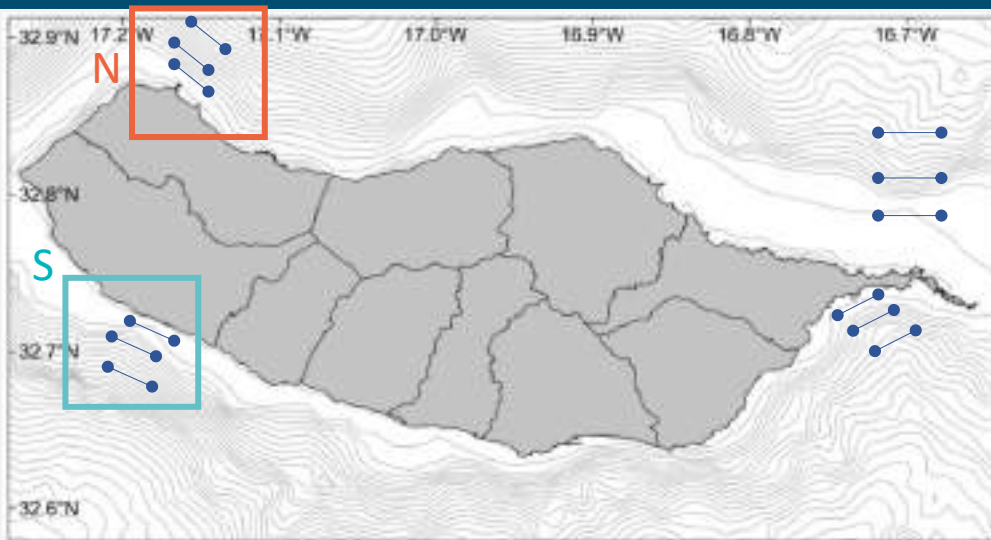
© Sonia KM Gueroun



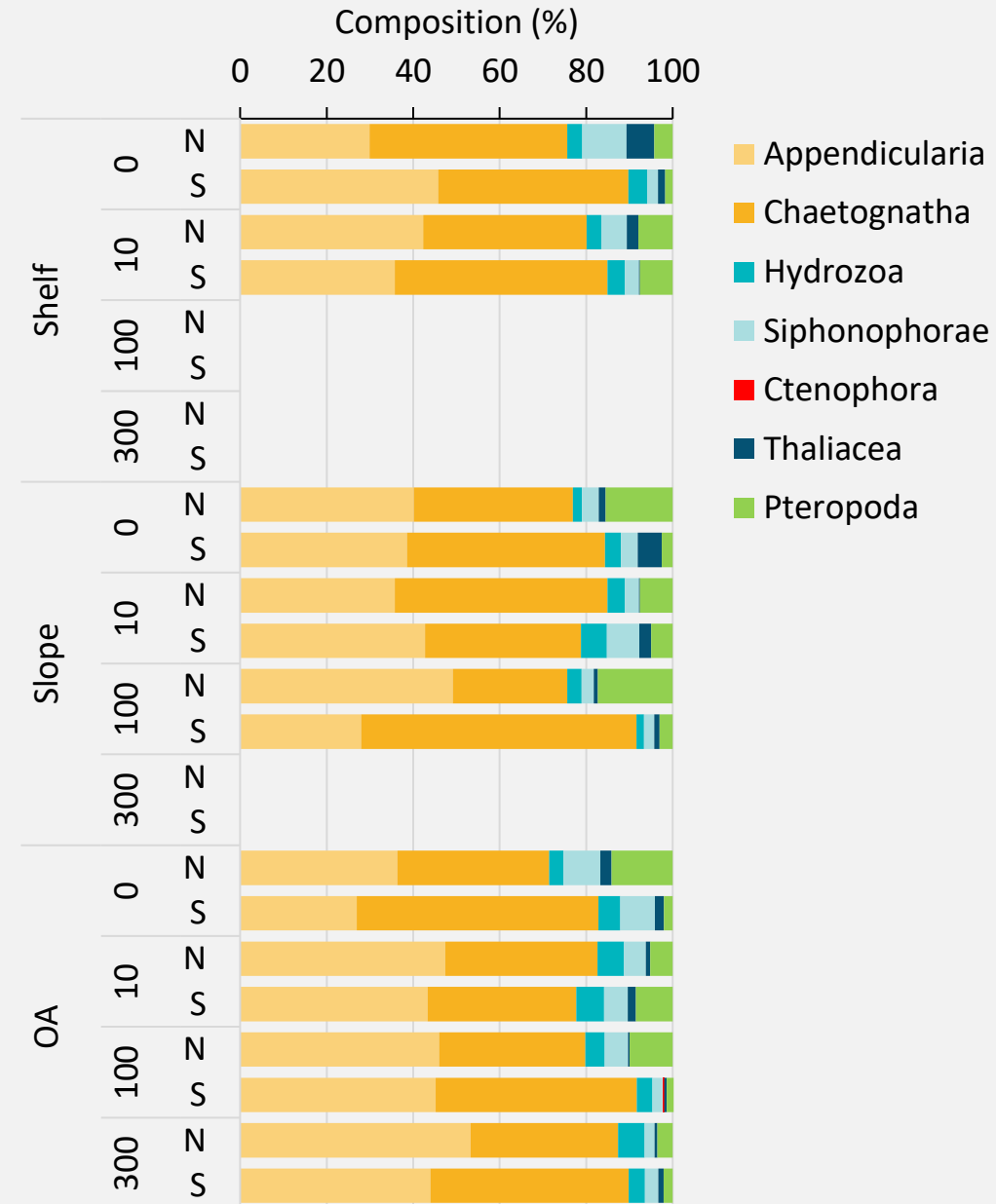
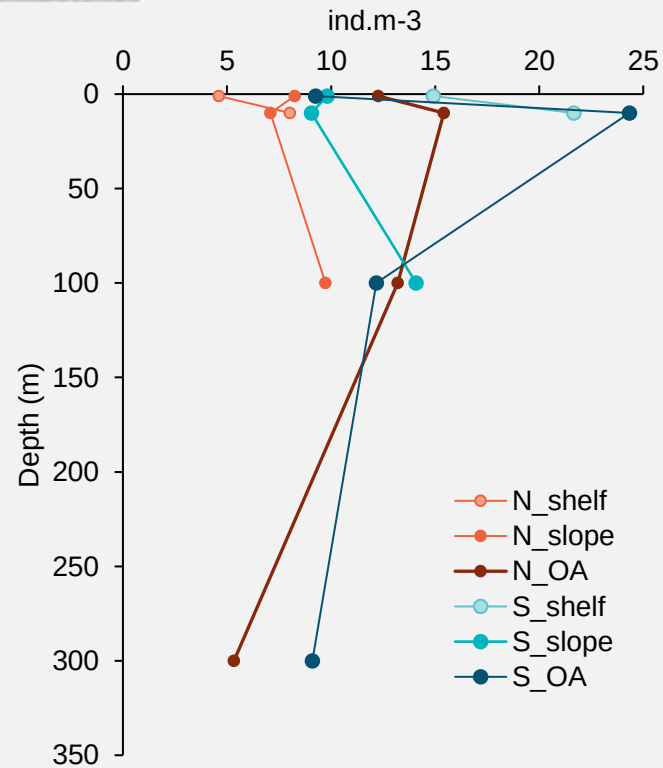
Madeira



# MADEIRA, ONGOING (FIRST LOOK)



- Summer & fall
- Coast to offshore
- -0.5 to -300m





**Oceanic island systems' characteristics drive the jellyfish diversity pattern**

**Urgent need for updates on the jellyfish diversity knowledge in  
ALL the *Macaronesian* Oceanic island systems**



- 1. Potential first signals of change in the jellyfish community**
- 2. NIS detection**



**Change in the plankton compartment**



**Ecosystem services**



# THANK YOU / OBRIGADA



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