Biodiversity and biogeography of marine benthic diatoms from coral reefs. Molecular and traditional approach

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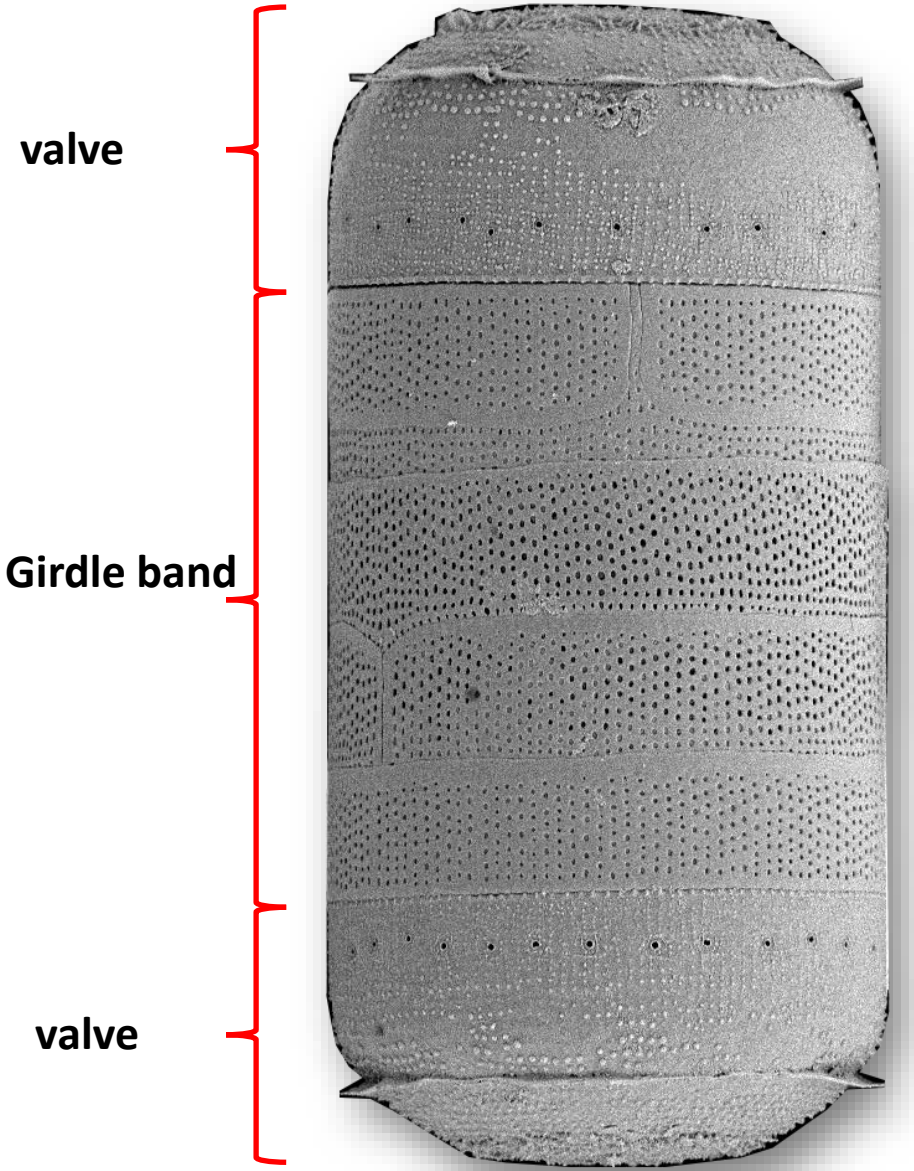
Diatom Team

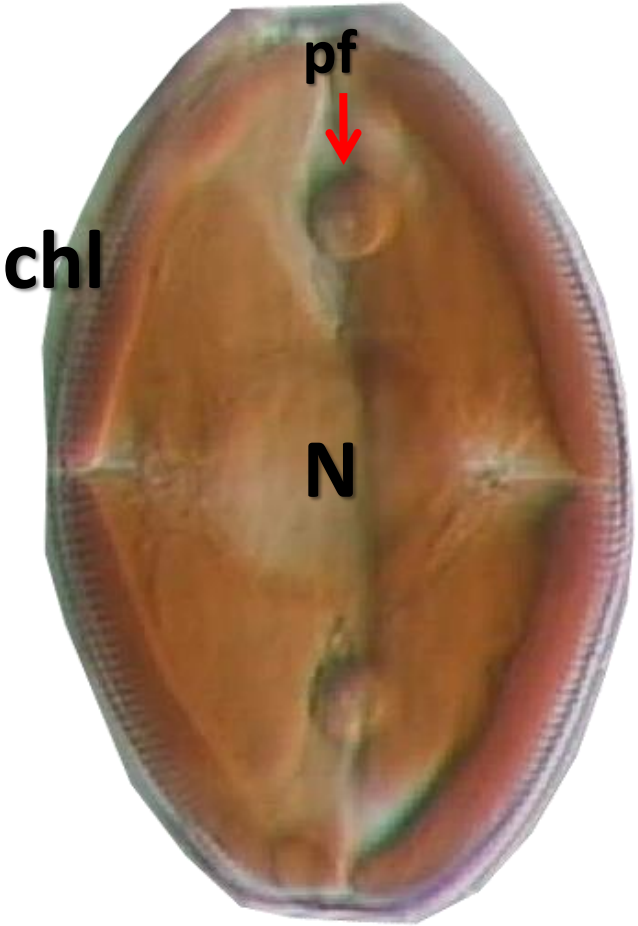

Szczecin
Warsaw

diatom valve

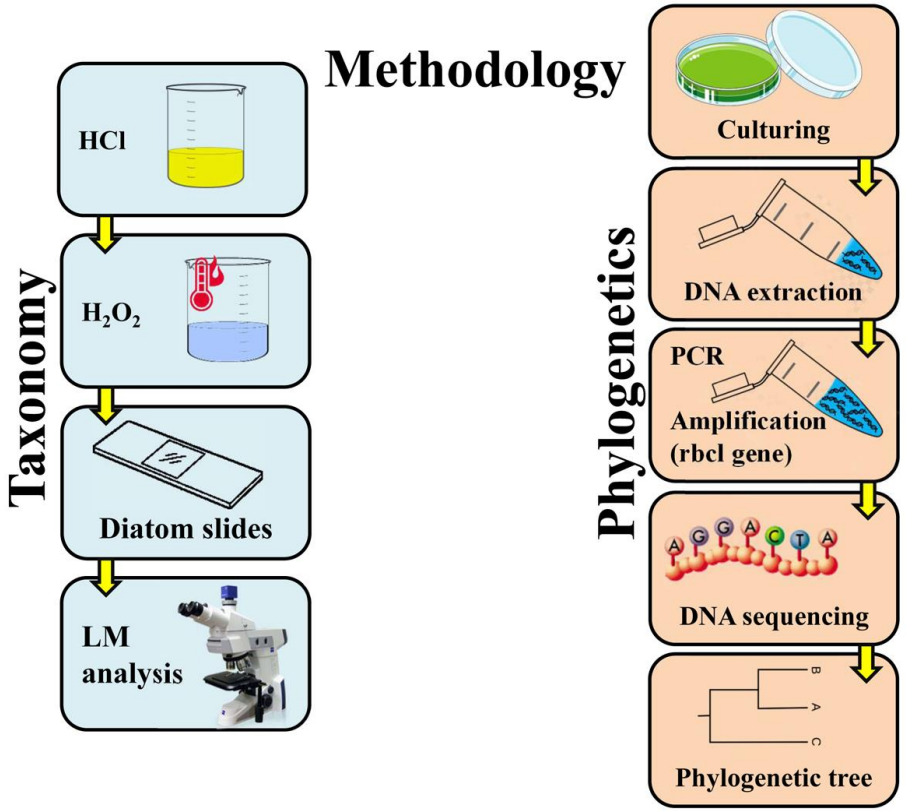


living cel

- nucleus (N)
- chloroplasts (chl)
- Products of photosynthesis (pf)



METHODS



Taxonomic survey

- LM (counts) and SEM + micrographs including
- Single cell isolation and culturing

Statistical analysis

- (S) Species richnes - number of species present in the assemblage
- (RA) Dominance - their relative abundances in %
- Biodiversity indices:
  (H) Shannon Diversity Index
  (D) Simpson Diversity Index
  (E) Evenness
- Hierarchical clustering - Bray-Curtis similarity index
- Rank abundance curve

Kryk et al. (2020)

THE BIODIVERSITY OF MARINE DIATOMS of coral reefs

Systematics and Biodiversity (2020), **18(2)**: 161–180

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Research Article

Check for updates

Marine diatom assemblages of the Nosy Be Island coasts, NW Madagascar: species composition and biodiversity using molecular and morphological taxonomy

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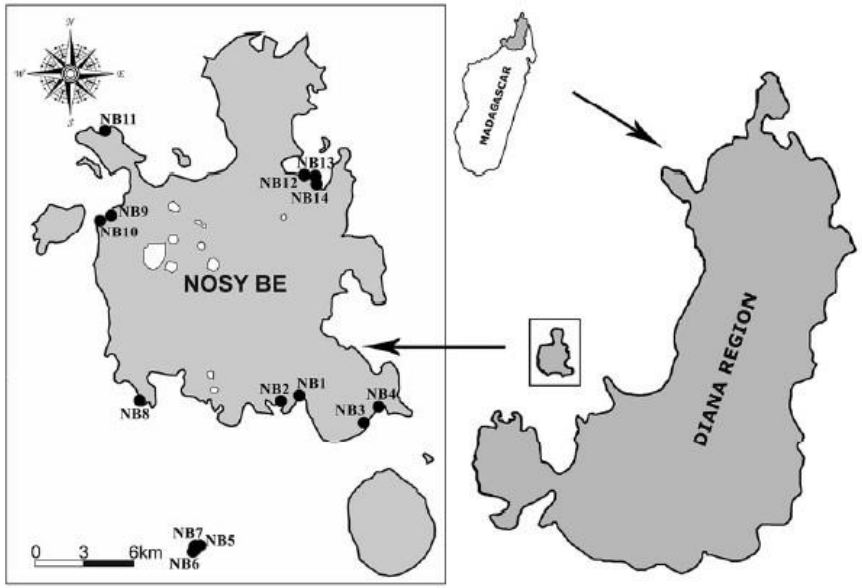


Fig. 1. Location of sampling sites on the Nosy Be and Nosy Tanikely islands.

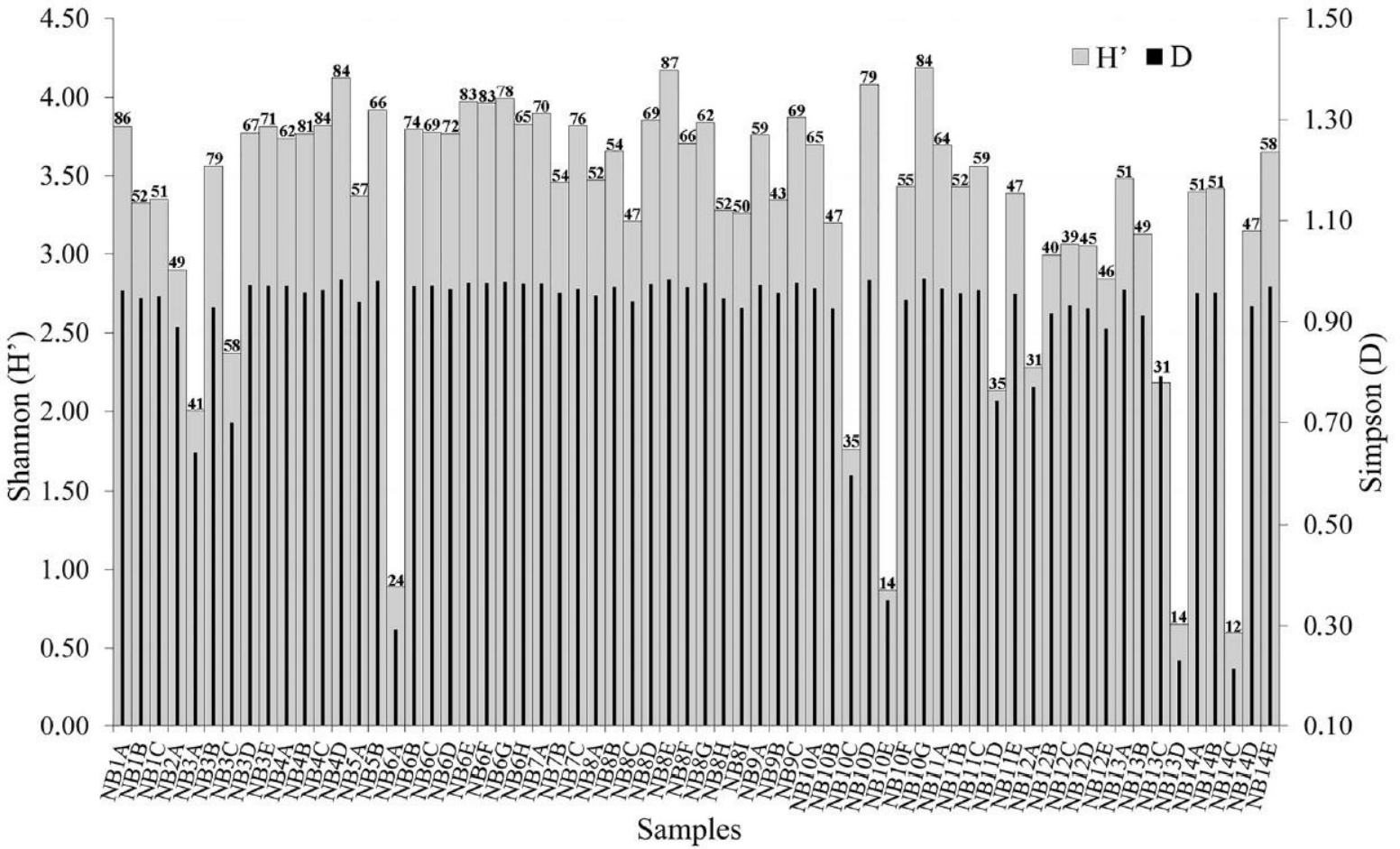
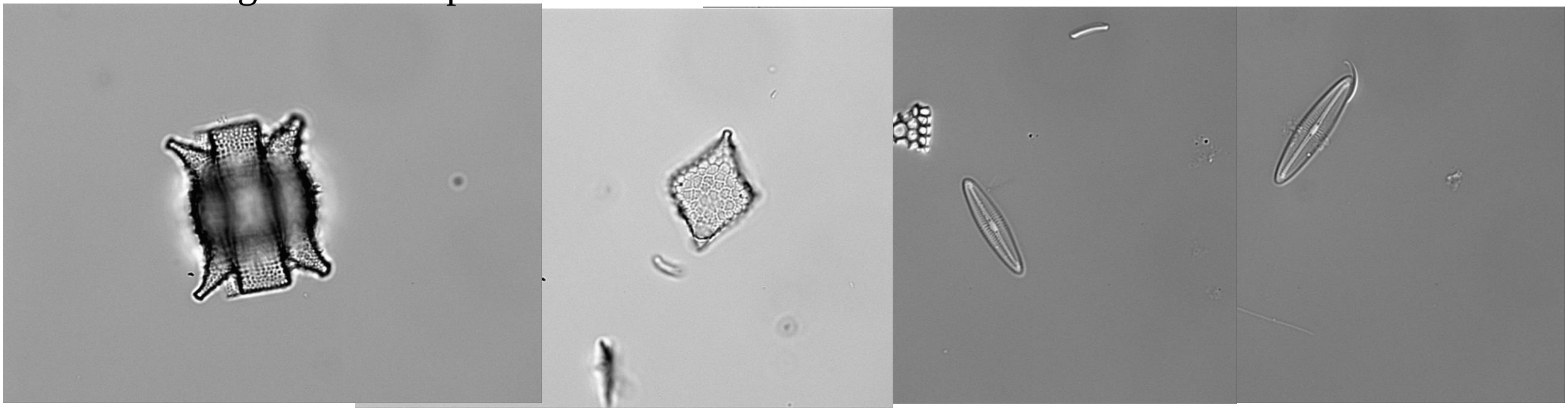


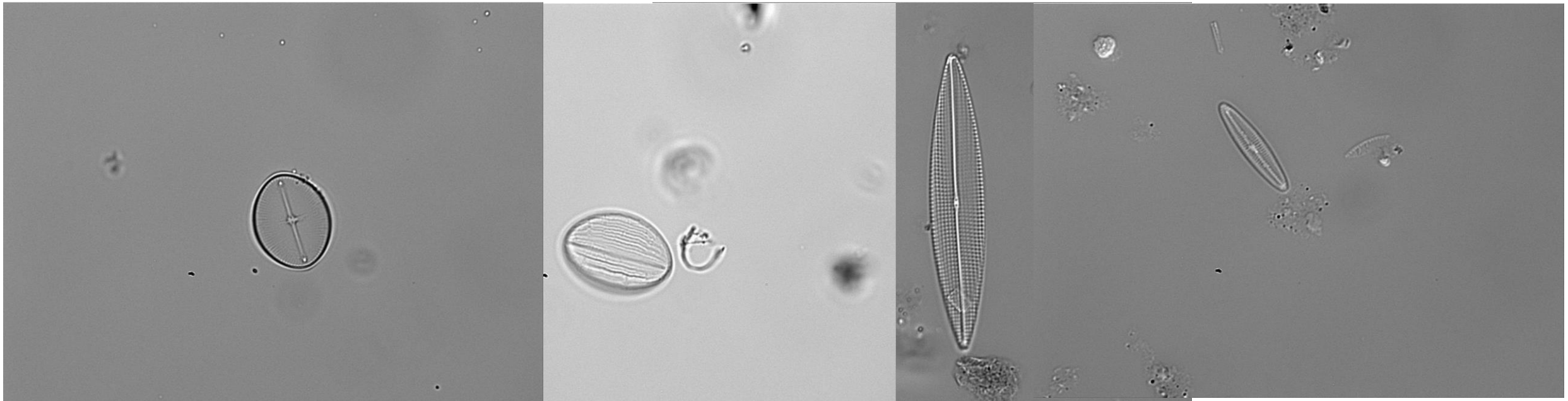
Fig 131. Number of identified taxa (given above bars) and calculated values of biodiversity indices: Shannon index (H′), Simpson index (D) for each analysed sample.

Light microscope – identification and counts - Nusantara

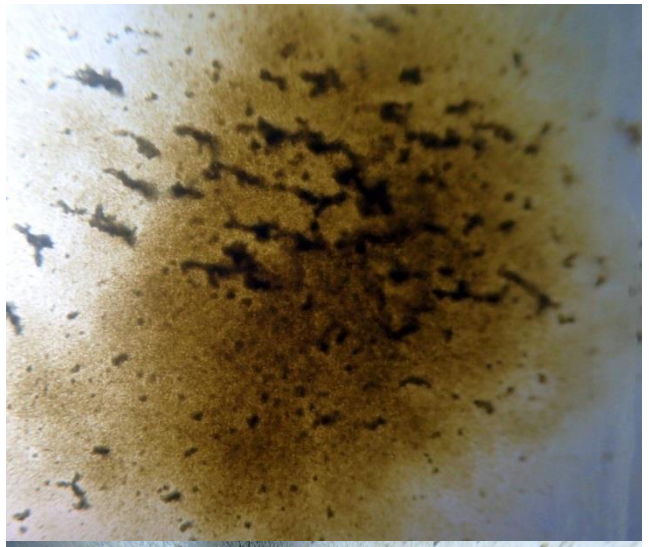


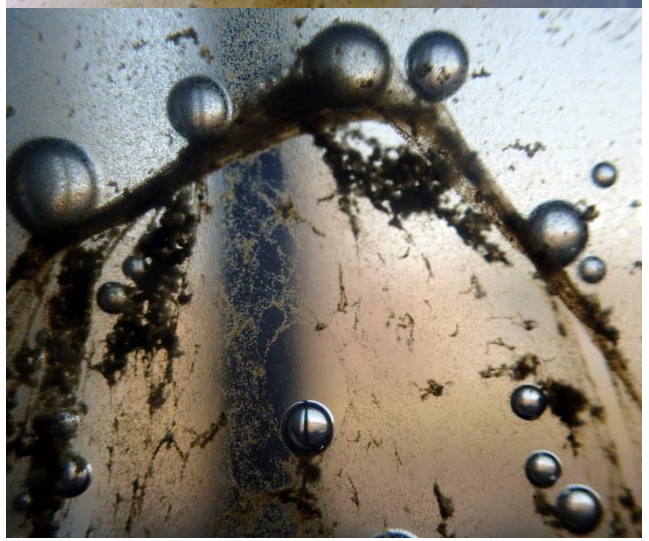
Cosmopolitan common in Oceans

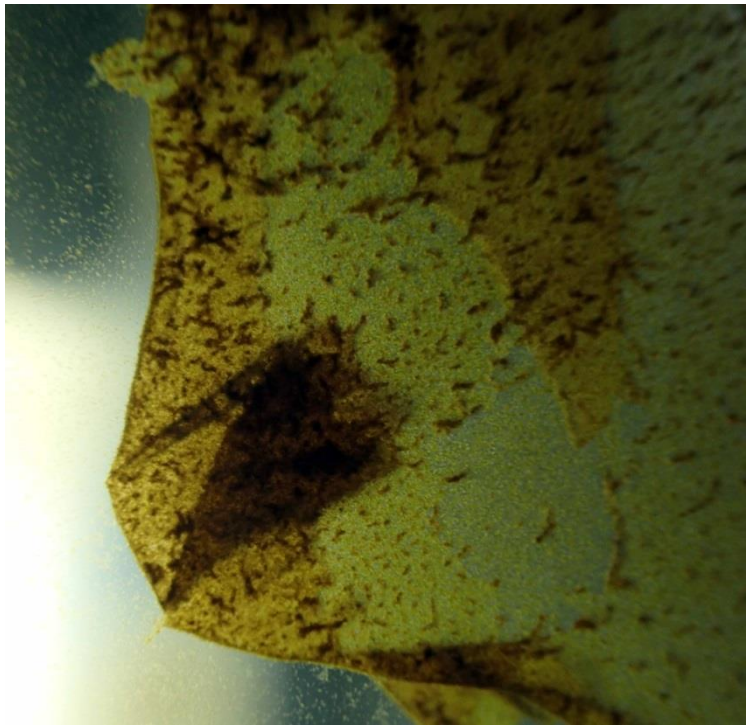
Species new to science



Szczecin Diatom Culture Collection (SZCZ)







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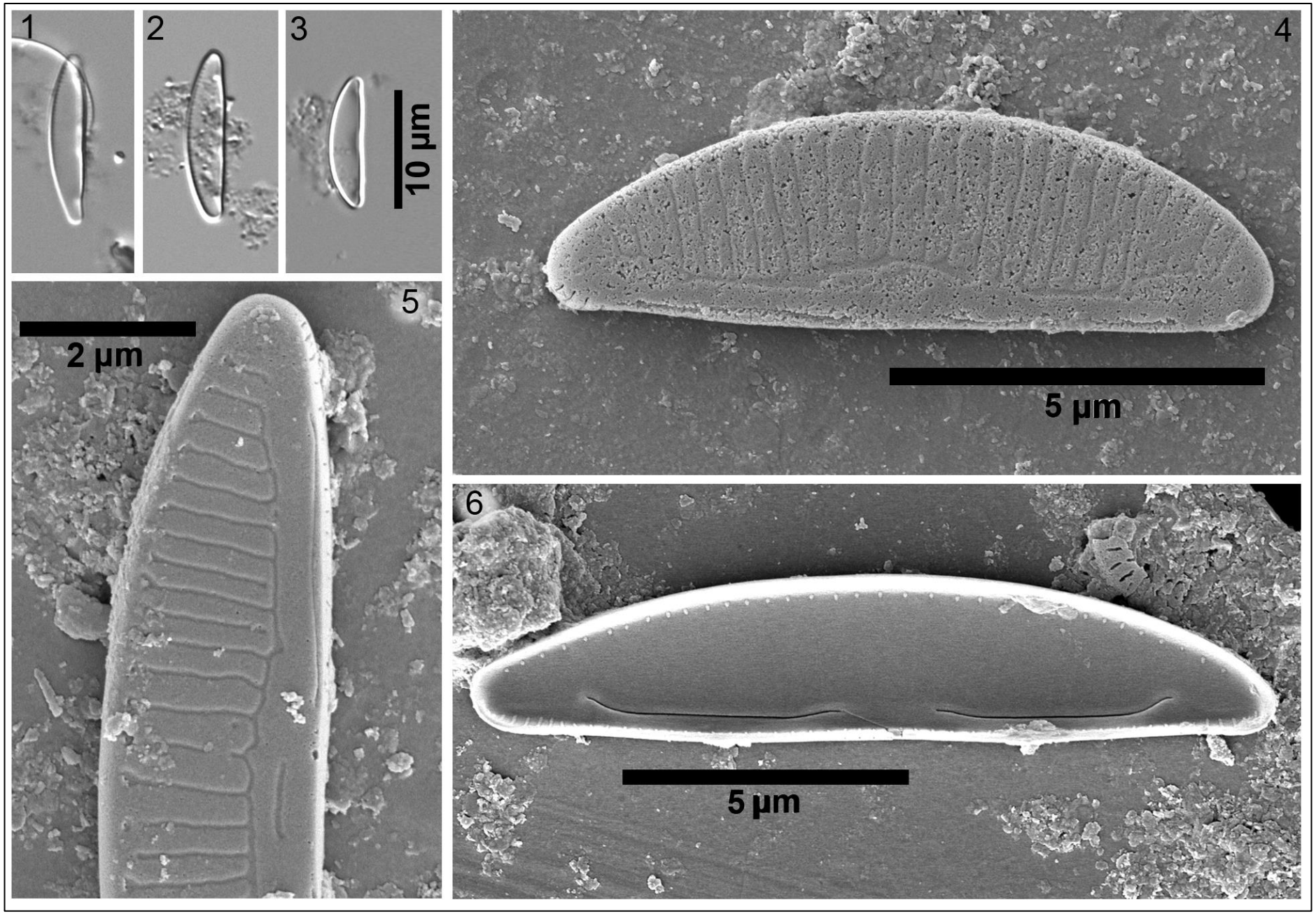
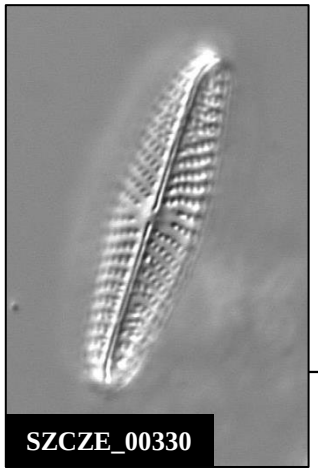
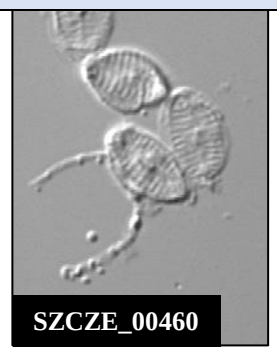
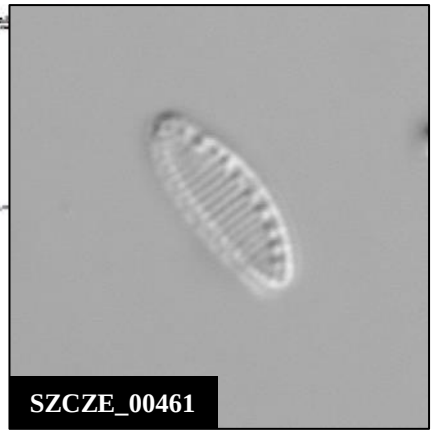
***Catenula javanica* Witkowski, Kryk, Risjani & Yunianta sp. nov.**



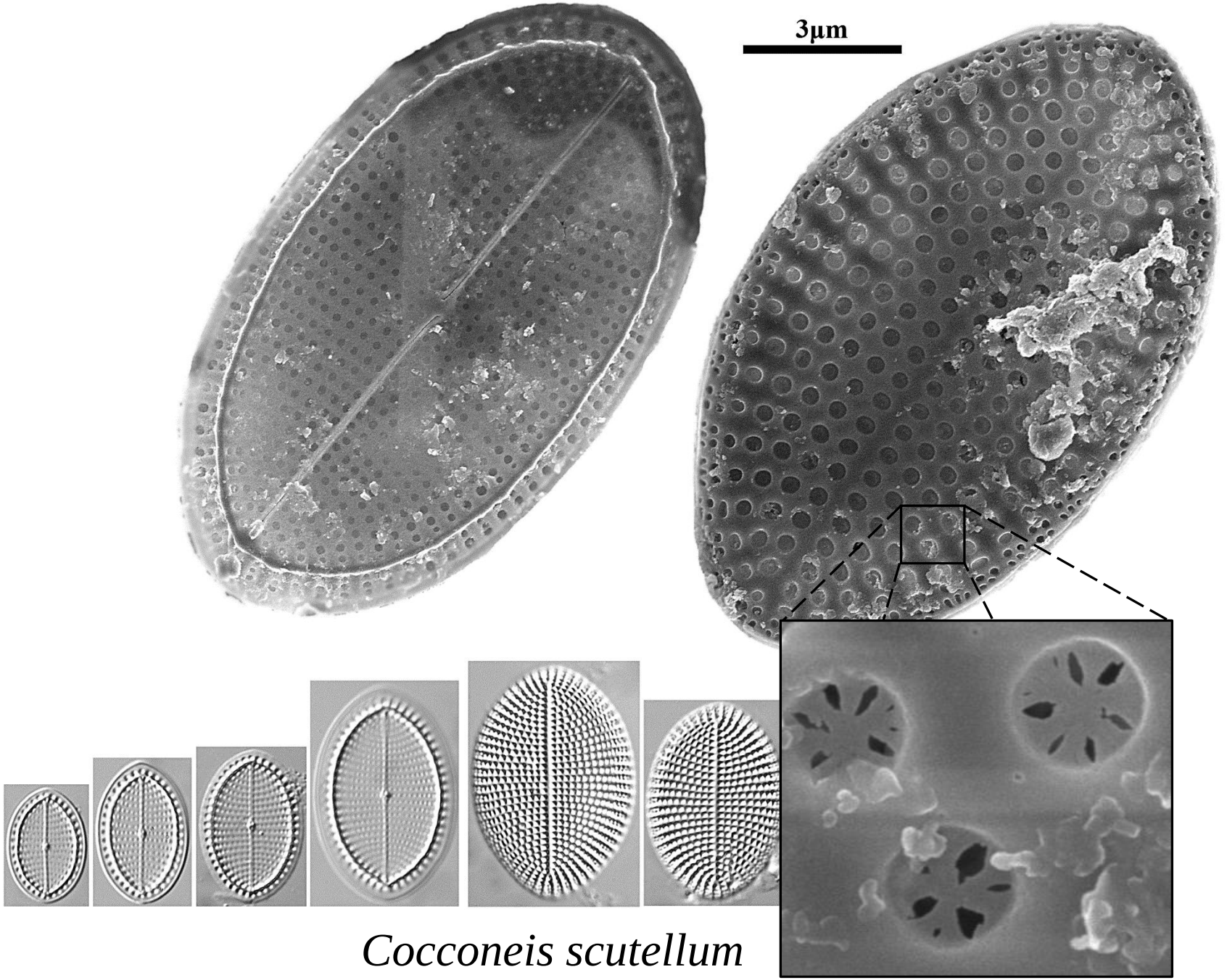
Phylogenetic approach







Navicula_sp_SZCZCH99
Navicula_sp_SZCZCH100
Navicula_perminuta_TA413
Navicula_perminuta_TA441
Navicula_ramosissima_TA439
Navicula_ramosissima_TA316
Navicula_ramosissima_C87
Navicula_sp_SZCZE_00460
Navicula_gregaria_TA289
Navicula_gregaria_D06_122
Navicula_agatkae
Navicula_tripunctata
Navicula_flagellifera
Navicula_sp_SZCZCH703
Navicula_cryptocephala_UTEX_FD109
Navicula_cryptocephala_AT-114Gel08c
Navicula_cryptocephala_AT-176Gel05
Navicula_trivialis
Navicula_salinarum_TA402
Navicula_salinarum_f_minima
Hippodonta_sp_SZCZE_00330
Hippodonta_capitata
Navicula_sp_SZCZCH965
Gyrosigma_acuminatum_JAR52_RNALater_3GRun9
Gyrosigma_acuminatum_UTEXFD317
Gyrosigma_limosum
Pleurosigma_sp
Pleurosigma_stuxbergii
Meuniera_membranacea
Nitzschia_paleacea
Nitzschia_acicularis
Nitzschia_palea
Nitzschia_lembiformis
Nitzschia_filiformis_UTEX_FD267
Nitzschia_varelae
Psammodictyon_constrictum
Psammodictyon_panduriforme
Nitzschia_dubiiformis_SH366
Nitzschia_sp_SZCZE_00461
Denticula_kuetzingii
Nitzschia_frustulum_CCMP558
Nitzschia_cf_frustulum_TCC521
Cylindrotheca_closterium
Nitzschia_longissima
Tryblionella_gaoana
Tryblionella_apiculata
Nitzschia_dissipata_SZCZCH845
Achnanthes_coarctatum
Achnanthes_sp_SZCZCH113
Achnanthes_sp_SZCZM11
Nitzschia_lorenziana
Bacillaria_paxillifer



Cocconeis scutellum

Quick results

Indonesia

Mean: 61 taxa/sample
Min: 7 taxa in 26986 (SW Celebes)
Max: 118 taxa in 26956 (Borneo)

Shanon:
Mean : 3.3
Min: 0.3 in 26986 (SW Celebes)
Max: 4.2 in 26956 (Borneo)

Simpson:
Mean : 0.912
Min: 0.143 in 26986 (SW Celebes)
Max: 0.978 in 26959 (Borneo)

109 samples = 929 taxa

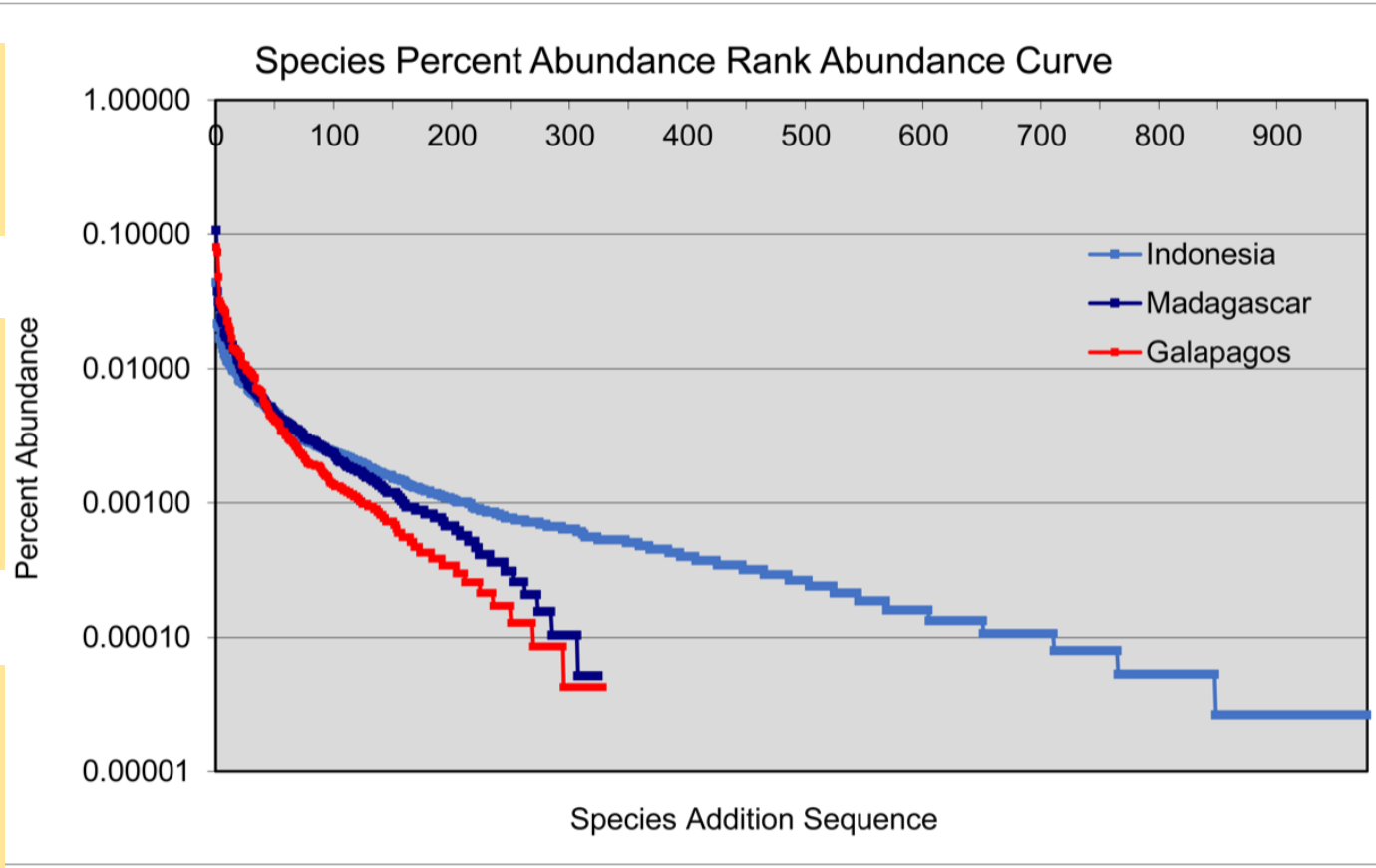
Madagascar

Mean : 57 taxa/sample
Min: 12 taxa in NB14C
Max: 87 taxa in NB8E

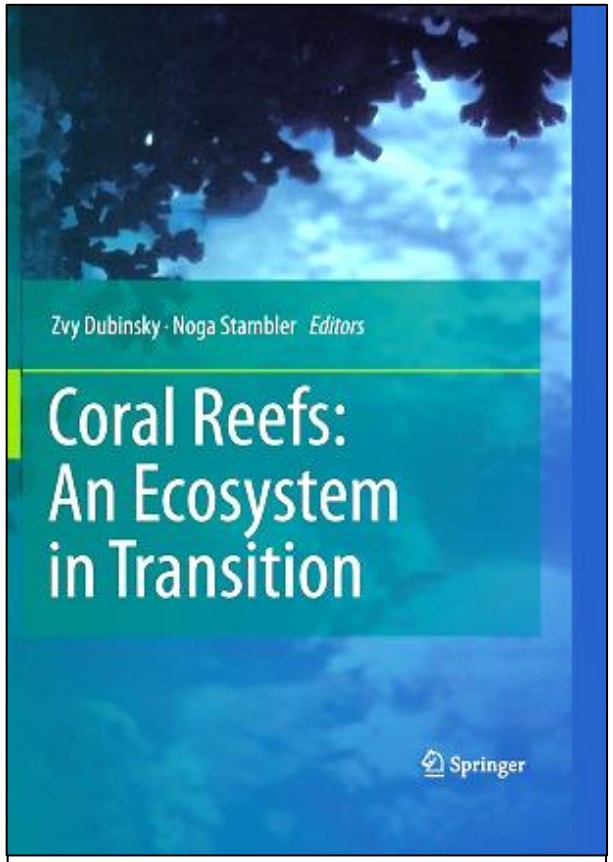
Shanon:
Mean : 3.3
Min: 0.6 in NB14C
Max: 4.2 in NB10G

Simpson:
Mean : 0.892
Min: 0.211 in NB14C
Max: 0.998 inNB10G

65 samples = 332 taxa

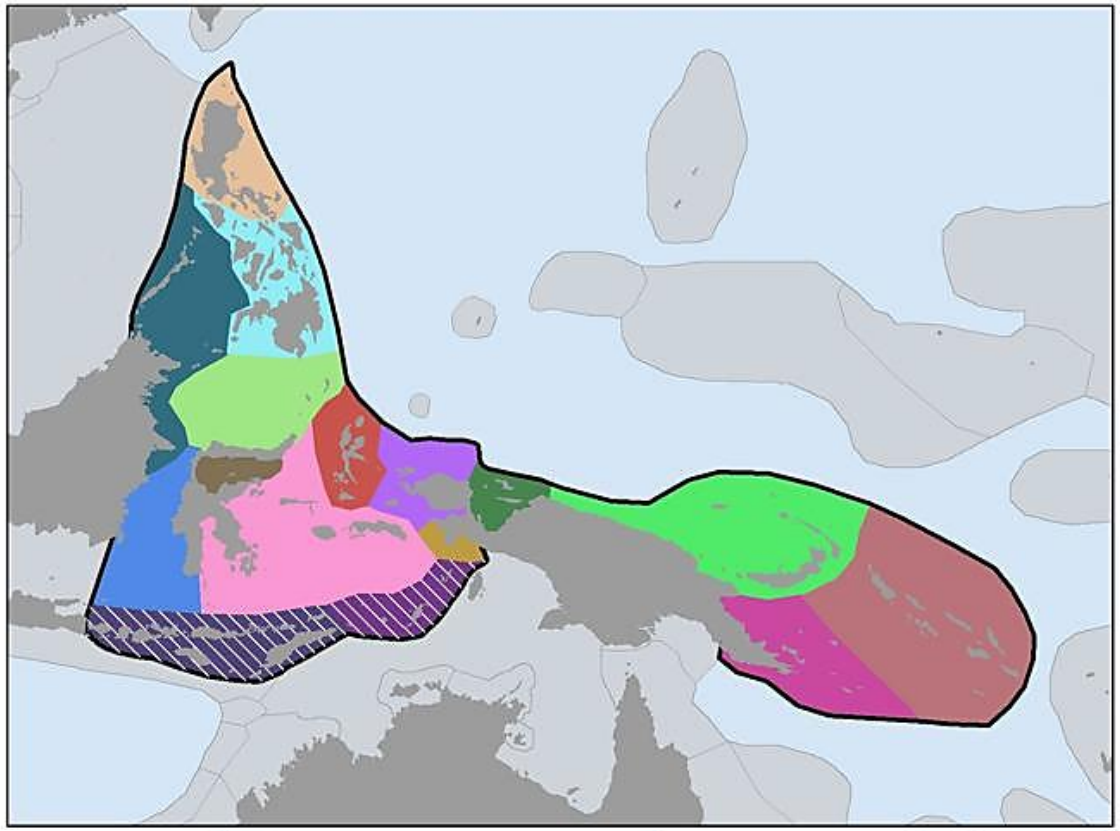


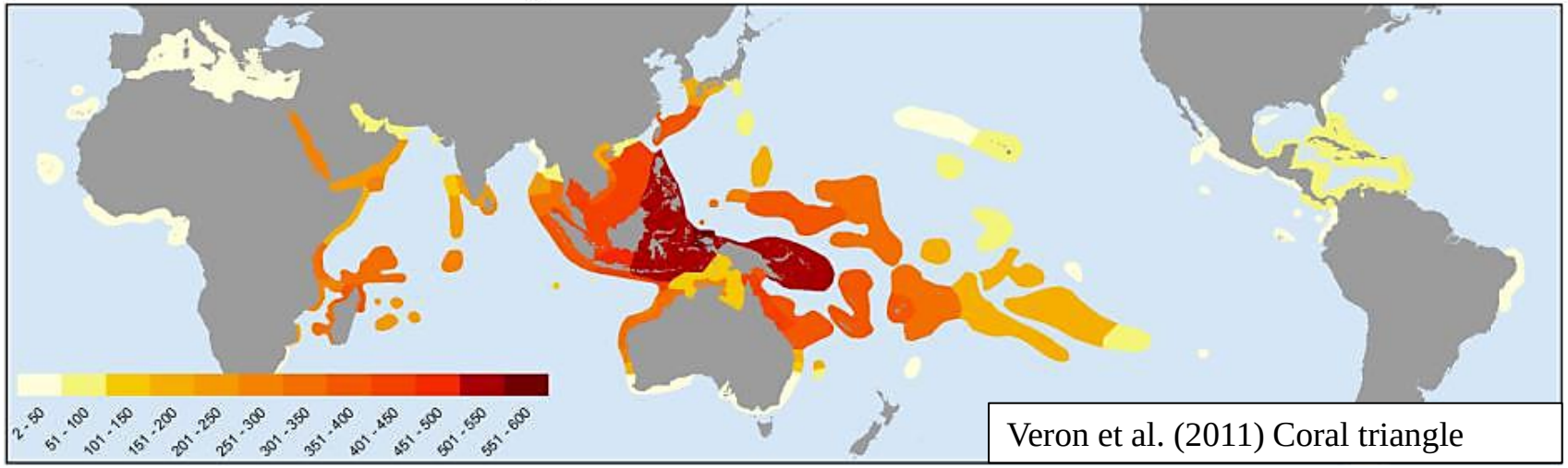
Coral Triangle (CT)



Coral Reefs:
An Ecosystem in Transition
(Dubinsky & Stambler 2011)

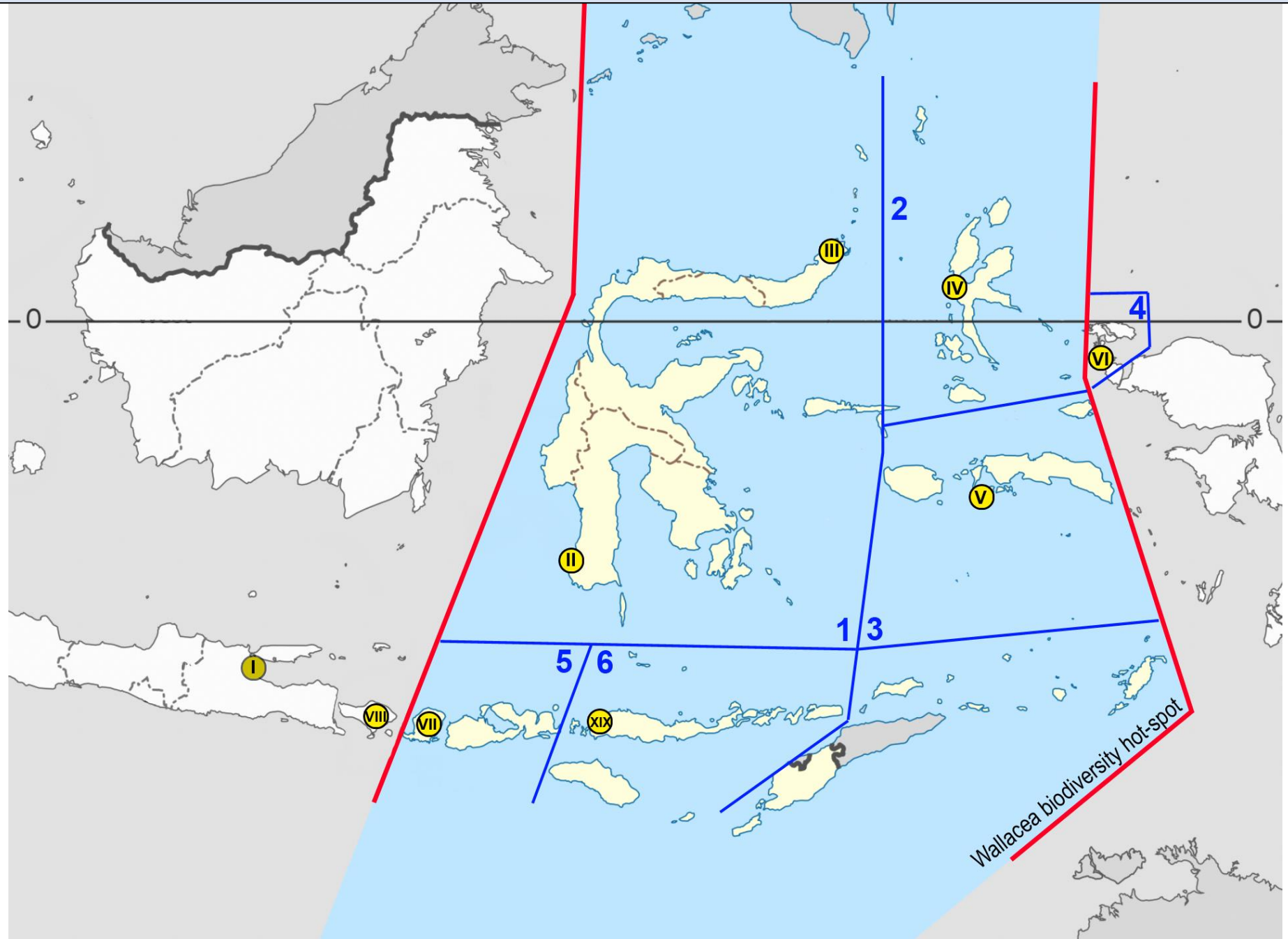
Pattern of tropical marine species richness. This pattern has been reported from numerous groups (Bellwood & Meyer 2009)





Veron et al. (2011) Coral triangle

Future plans



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Thank you

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GHaNA
Genus Haslea, New marine resources for Aquaculture