

AN ASSESSMENT OF NUDIBRANCH DIVERSITY IN THE COASTAL HABITATS OF MAURITIUS

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INTRODUCTION

The basic unit for studies on biodiversity and any related subjects, are species. Recent study have identified Mauritius and Reunion Islands as the most diverse in terms of nudibranch species, with a total of 48 species recorded (Yonow, 2012). Nudibranchs are commonly referred to as “sea slugs”. However, unlike other sea slugs, they have no shells and consequently rely on alternate defense mechanism which include camouflage, *de novo* synthesis and incorporation of chemical molecules. Based on their morphology, nudibranchs sea slugs are separated into two groups; dorids and aeolids. Striking difference is their gills plumage. The dorids are characteristics of naked gills plumage while the aeolids are covered with dorsal projections called cerata, replacing the gills. In addition of being exotic representatives of the Mollusca, they are also known for their potent pharmaceutical property and climate change indicators (Goddard *et al.*, 2011).

AIMS & OBJECTIVES

This study aimed at providing an inventory of nudibranch species from the lagoons of Mauritius.

Objectives include to collect sample along the coast of Mauritius and identify them morphologically

METHODOLOGY

- Samples were collected from October 2018 to February 2019 through snorkelling and scuba diving during daylight and night, at both low and high tides at a depth range of 0 to 18 m.
- 9 places have been surveyed (Figure 1)
- Once samples were collected, they were placed in bucket filled with seawater for morphological identification.
- Characters used for morphological identification are found in Table 1.

Table 1: Morphological characters used for identification

Rhinophores (sensory organs)	
Gills plumage	
Dorsal pattern	

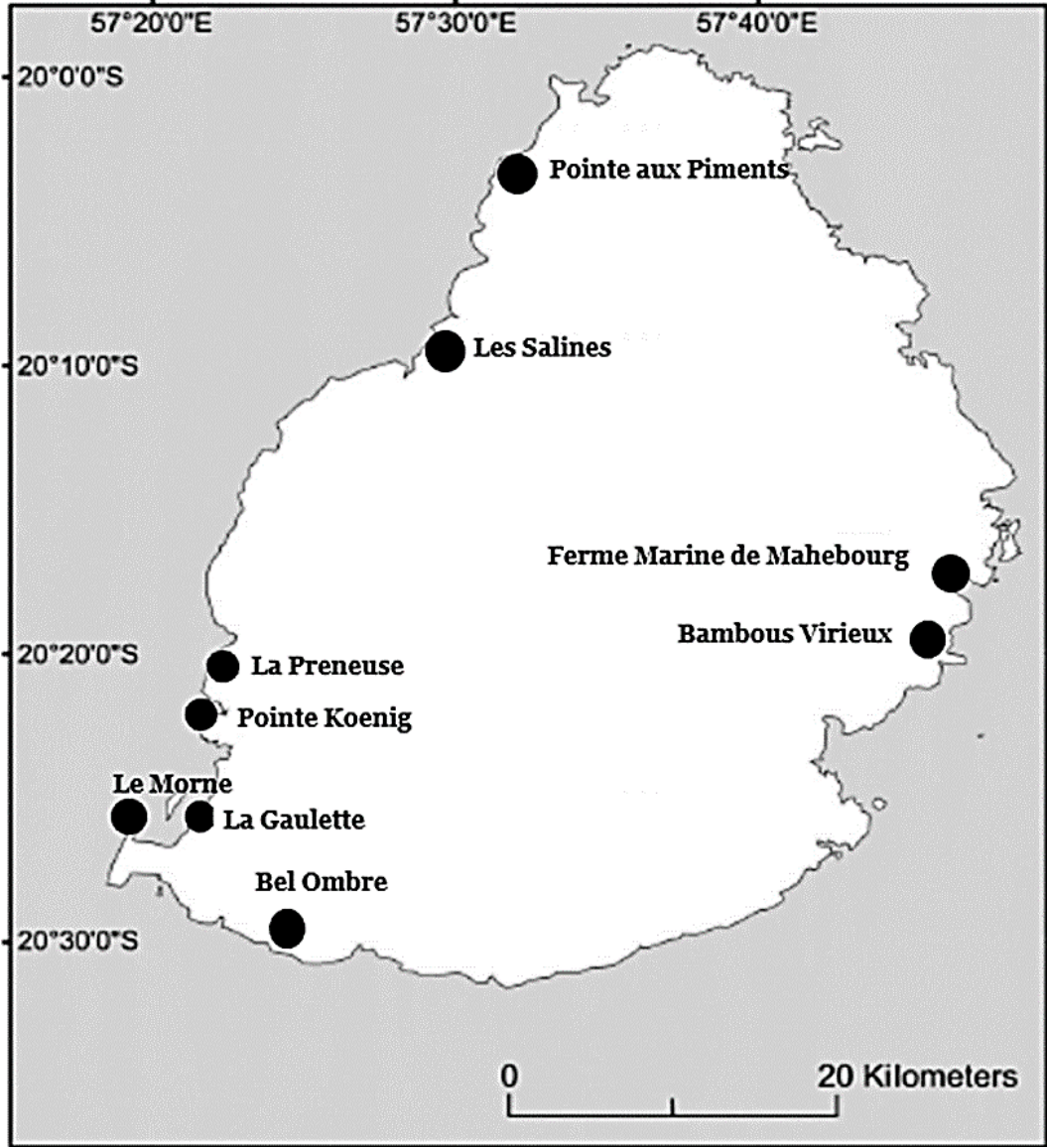


Figure 1: Sampling locations

RESULTS

A total of 65 sea slugs species have been reported in the present study.

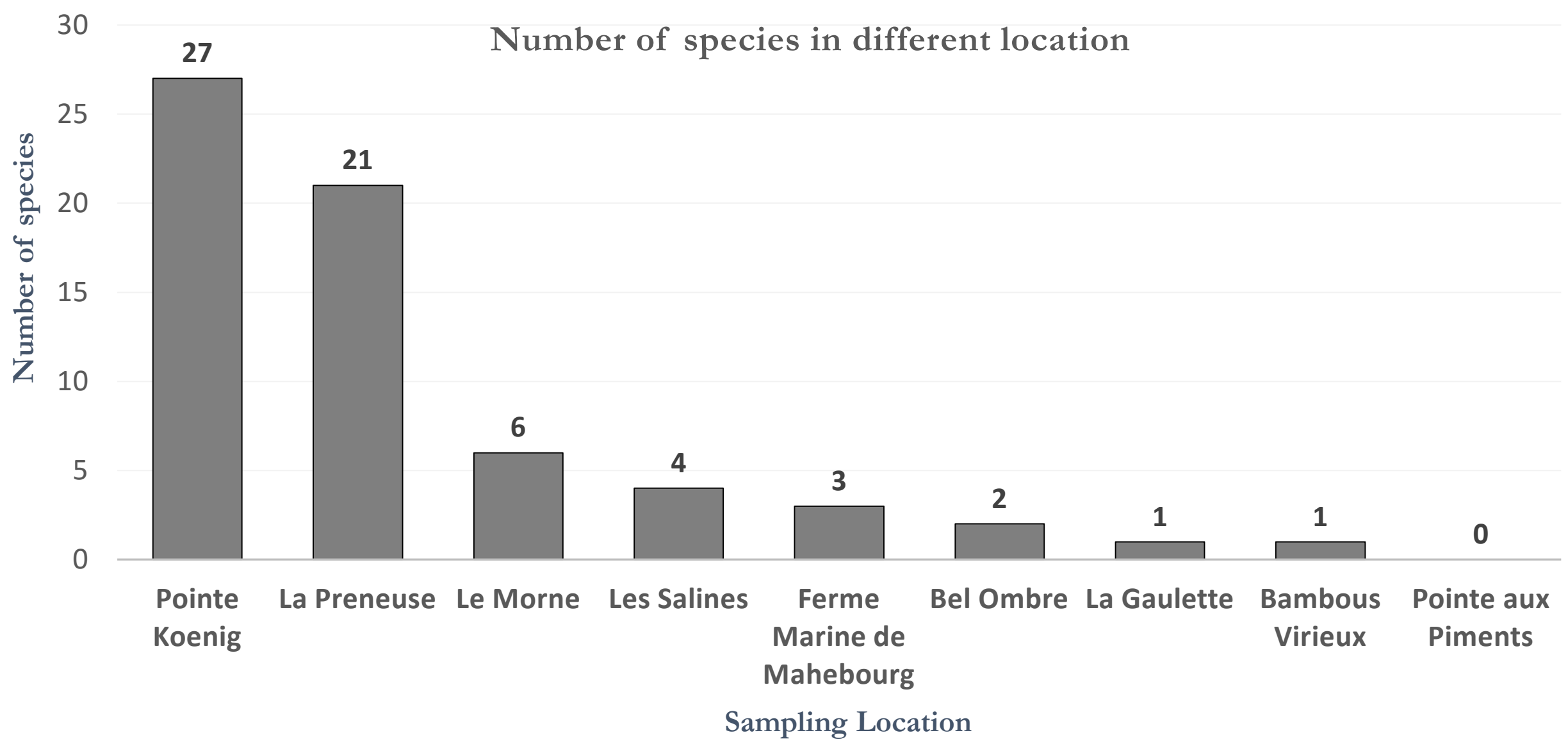


Figure 2: Number of sea slugs at different sampling locations

Higher number of species was recorded at Pointe Koenig, followed by La Preneuse and Le Morne. No species was found at Pointe aux Piments.

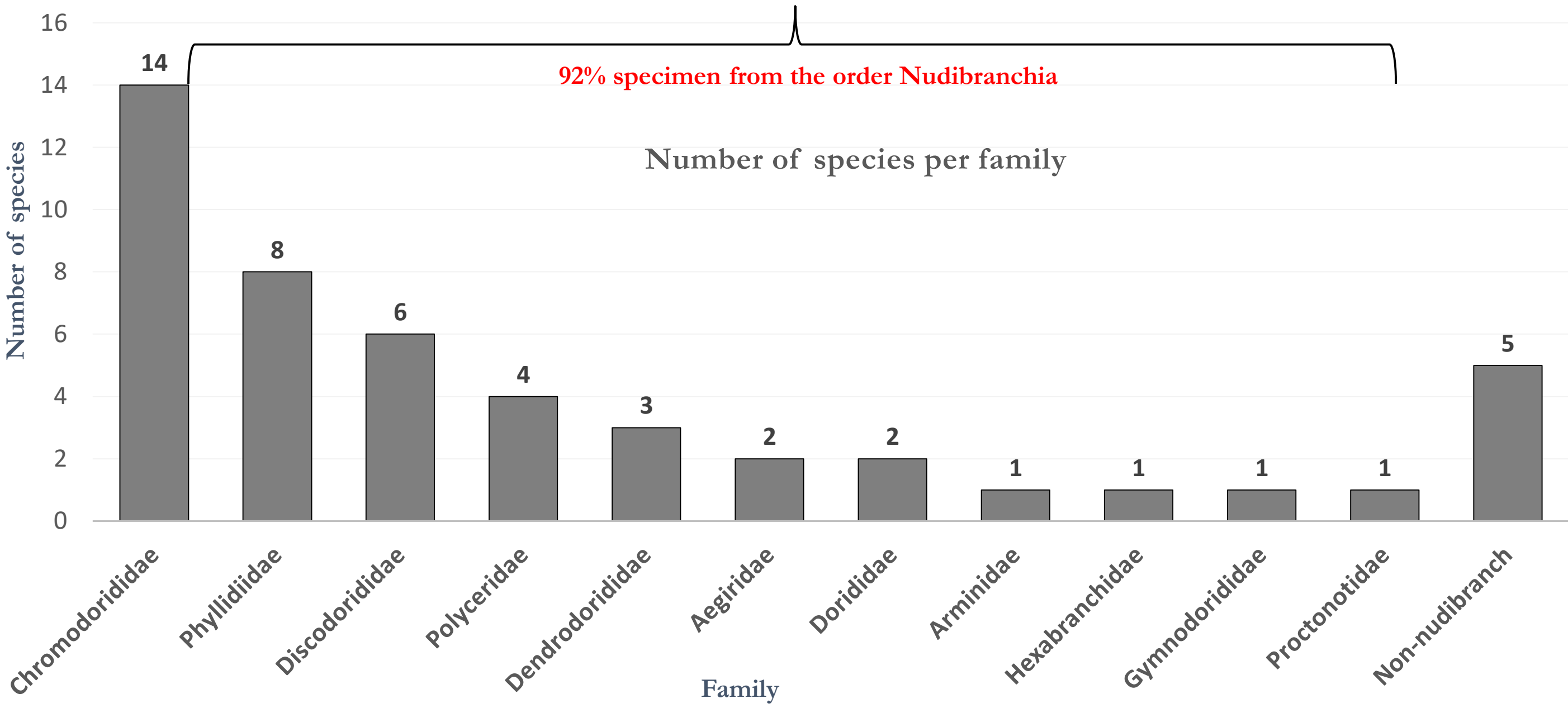


Figure 3: Number of sea slugs per family

Among the nudibranchs, the Chromodorididae (33%) and Phyllidiidae (19%) were the top 2 speciose family in the southwest region of Mauritius Island.

Table 2: Number of species collected and specimen representative of each family

Order	Family			Total
Nudibranchia				14
	Chromodorididae	Phyllidiidae	Discodorididae	8
				6
Non-nudibranch				5
	Plakobranchidae	Aglajidae	Pleurobranchidae	

RESULTS

Hexabranchus sanguineus
Janolus sp2
Asteronotus cespitosus
Doridoida sp. 2
Roboastrea luteolineata
Hypselodoris infucata
Dendrodoirida nigra
Goniobranchus conchylatus
Goniobranchus albopunctatus
Goniobranchus cavae
Elysia marginata
Pleurobranchus forskalii
Phyllidiella cf. meandrina
Tambja morosa
Tambja limaciformis
Doriopsis granulosa
Tambja affinis
Tubulophilinopsis gardineri
Tubulophilinopsis pilsbryi
Phyllidia alyta
Platydoirida scabra
Phyllidia varicosa
Phyllidiopsis gemmata
Phyllidiella meandrina
Phyllidia ocellata (Varian)
Phyllidia marindica
Thuridilla vatase
Dendrodoirida sp. 1
Doris sp 1
Notodoris citrina
Hypselodoris maridadiulus
Cadinella ornata
Gymnodoris striata
Phyllidiopsis loricate
Notodoris minor
Glossodoris hikuerensis
Chromodoris aspersa
Haigerda formosa
Hypselodoris pulchella
Glossodoris cf. cincta
Peltodoris murrea
Hypselodoris maculosa
Chromodoris strigata
Dermatobranchus rubidus
Haigerda sp. 1
Doriprismatica atromargina
Glossodoris pallida
Jorunna funebris

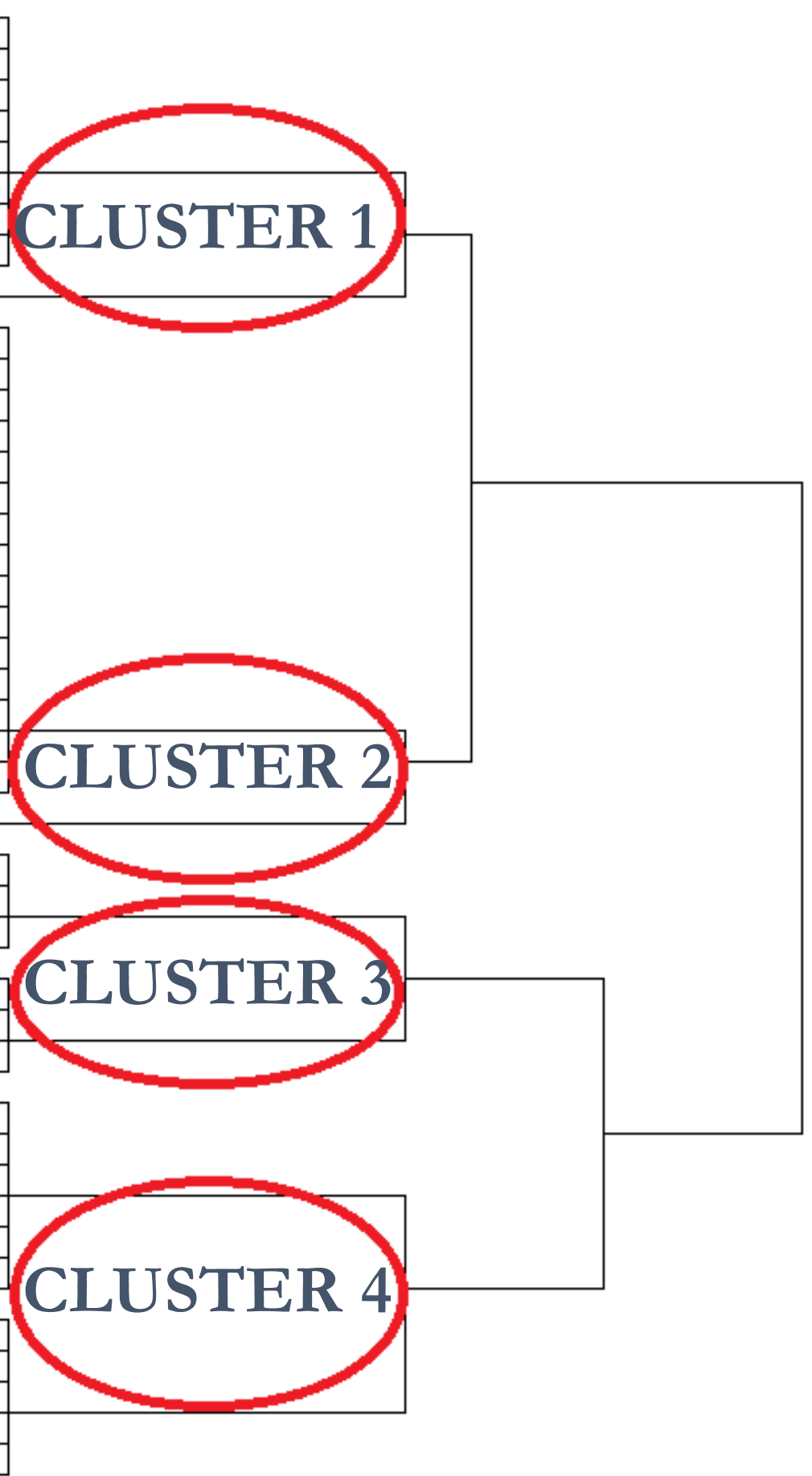


Figure 4: Cluster analysis of nudibranch species

- Species collected have been clustered in terms of depth (<3 m and >3 m), time (day/night) and substrate on which it was found (silt/rubble).
- Most species from CLUSTER 1 were found on silt, in shallow water (<3 m) and during the day.
- Species from CLUSTER 2 shared different habitat from those in CLUSTER 1; they were found on rubble.
- Most of the phyllidiids species (Cluster 2) were found during the day which is characteristic of their high activity.
- CLUSTER 3 and 4 contains species found during the night, demonstrating their nocturnal nature, at depth greater than 3 m.

DISCUSSION

- Previous studies in 1991 reported 23 species of nudibranchs (Yonow & Hayward. 1991). The present study identified a total of 43 nudibranchs species.
- Even though, Chromodoridid species were the most diverse (14 species), the phyllidiids were more frequently encountered.
- Phyllidiids are generally exposed during the day which might explain their frequent occurrence on and under dead corals (Su *et al.*, 2009)
- Nudibranchs occupies a diversity of habitats. The present study reports species from both silt (25 species) and rubble (23 species).
- Nudibranchs were highly diverse in shallow water in the region of Pointe Koenig, La Preneuse followed by Le Morne where food resources are abundant (live corals, sponges and algae).
- However, most species belonging to the family Chromodorididae were found in water exceeding 3 m depth (Figure 4).

CONCLUSION AND FUTURE WORKS

- To conclude, Mauritius is very diverse in term of nudibranch species.
- Pertaining to their nocturnal activities, this study gives only an incomplete and partial view of nudibranchs inventory from Mauritius Island.
- There remains many more species to be recorded around the coastal habitats of Mauritius. Hence, night snorkeling or diving should be encouraged.

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