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NO LONGITUDINAL SPECIES DIVERSITY GRADIENT IN RED MILLIPEDES *CENTROBOLUS* COOK, 1897

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Abstract

The genus of red millipedes Centro bolus is distributed in southern Africa between -17 to -35° S. Species richness is negatively related to latitude. In this paper, I check for a correlation between species richness and longitude. Species richness was not significantly related to longitude (r=0.14, Z score=0.21, n=22, p=0.42) although over half the species (12) occurred between 30-34°E. The absence of a longitudinal gradient in species richness serves as a control for the latitudinal gradient already known in species richness.

Keywords: *millipedes, Centro bolus, Species, Longitude*

INTRODUCTION

A forest genus of diplopods belonging to the Order Spirobolida found along the eastern coast of southern Africa was the subject of this study. The millipede genus *Centro bolus* is found in the temperate South African sub region, its northern limits on the east coast of southern Africa being about -17° latitude S [1-91]. It occurs in all the forests of the coastal belt from the Cape Peninsula to Beira in Mozambique. While the coastal forests of the South-West and Eastern Cape are mist belt temperate forests, those of the Transkei, Natal, Zululand, and Mozambique are somewhat different, being best described as East Coast Bush, they are developed almost entirely in a narrow strip of the littoral on a dune sand substratum, and are more tropical in aspect and composition than those to the west of them. There is a summer rainfall of 762-1016mm, a uniform temperature, and an absence of frost; the component trees of the coastal bush with their abundant creepers and lianes, while not usually reaching a height of more than 11 meters, provide a dense covering with abundant shade and humidity at ground level. As essentially shade-loving Diplopod, the members of the genus are especially well represented in these littoral forests of the eastern half of the subcontinent [1, 91].Species richness is tested with longitude in the pachybolid millipede genus *Centro bolus* Cook, 1897.

MATERIALS AND METHODS

22 valid species were identified as belonging to the genus *Centro bolus* Cook, 1897 [2]. Millipede-type localities were obtained from a checklist of southern African millipedes [3]. Global Positioning System coordinates were obtained from Cooper (2022) [22]

Species richness and longitude were checked for correlations using the Pearson Correlation Coefficient calculator (https://www.gigacalculator.com/calculators/correlation-coefficient-calculator.php).

RESULTS

The mean longitude for the distribution of *Centro bolus* was 28.20477±4.85099° E. The range in distribution was from 18.348° E to 34.394° E (16.046°). These can be broken down into 5 classes of 4° (Figure 1). Species richness was not significantly related to longitude (r=0.14396315, Z score=0.20501892, n=22, p=0.41877870) although over half the species (12) occurred between 30-

34°E. Species richness was also not significantly related to copulation duration (r=0.42), mass (r=0.44), sexual shape dimorphism (r=-0.53), female size (r=0.70), male size (r=0.76), copepod spine length (r=0.76), copepod spine number (r=-0.61), or stibnite prominence (r=0.62).

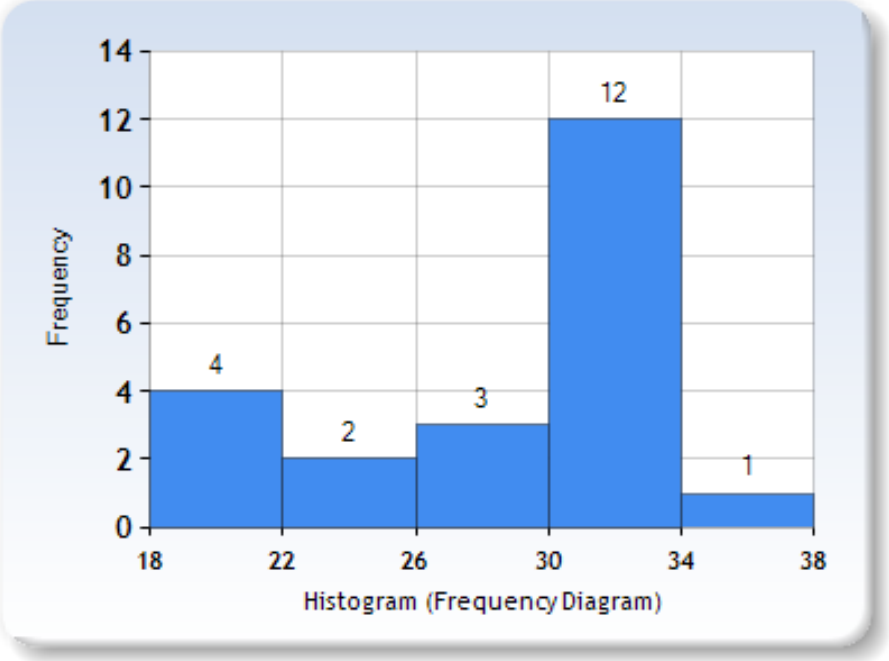

Figure 1. Histogram showing species distribution across longitude for Centro bolus Cook, 1897.

DISCUSSION

There was no significant relationship between species richness and longitude although over half the species (12) occurred between 30-34°E. *C. promontories* is the western-most species (18.348° E) while *C. immaculate* is probably the easternmost species (34.394° E). This study serves as a control for the variation found with latitude-species richness [22].

CONCLUSION

No significant relationship between species richness and longitude was found but half the species (12) occurred between 30-34°E. *C. promontories* is the western-most species (18.348° E) while *C. immaculate* is probably the easternmost species (34.394° E).

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