

HERMIT CRAB ABUNDANCE AND SHELL USAGE ON ARIDE ISLAND

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1. INTRODUCTION

There has been a general study on the crustaceans of Aride (Anderson 1994) which touched on hermit crabs and their ecology, a further study is much needed to estimate numbers and behavioural ecology of hermit crabs on the island.

Anderson (1994) discovered three species of terrestrial hermit crab on Aride all from the Coenobitiidae family.

Coenobita rugosus – This species is typified by small whitish to grey individuals.

Coenobita brevip manus – These crabs are large and purplish in colour. It is possible that this may in fact be *Coenobita violascens*, but for the sake of this study it will be called *C. brevip manus*.

Coenobita perlatus – These are white and can have a range of orange colouring.

This report aims to look at temporal and spatial presence of the three species and also shell usage by the three species of hermit crabs.

2. TIMES AND LOCATIONS

2.1 Method

Four sites were chosen that were 5m by 5m square. Site 1 was in front of the volunteers' house. Site 2 was in the middle of the western beach path, site 3 was at the far western end of the plateau and site 4 was under the banyan tree near the generator.

At two hourly intervals from 0800 to 2000 the sites were visited and crabs present were counted. This was done on five separate days. The results are presented for the three crab species as an average of each day.

2.2 Results

In site 1, near the volunteers' house there *C. rugosus* was found throughout the day, peaking at 1600 and 1800 hours (figure 1). *C. brevip manus* was found in small numbers during the day but numbers peaked at 2000. *C. perlatus* was only found in small numbers at 2000.

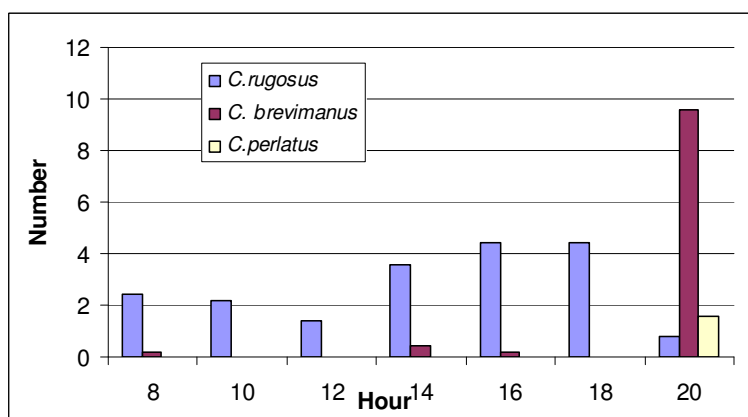


Figure 1. Average numbers of hermit crabs over time in site 1

At Site 2, on the western beach front path *C. rugosus* was found throughout the day (figure 2). Numbers peaked at 1800.

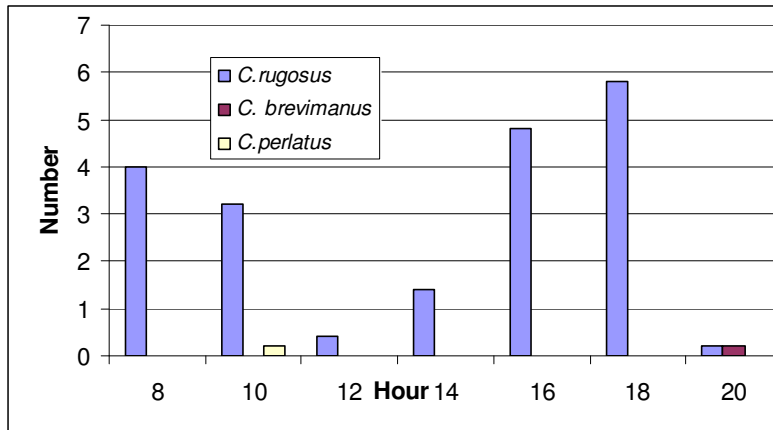


Figure 2 Average numbers of hermit crabs over time in site 2

At site 3, *C. rugosus* was found throughout the day except at 2000. Numbers peaked at 1600 (figure 3). *C. brevimanus* were found at low numbers at various times of the day.

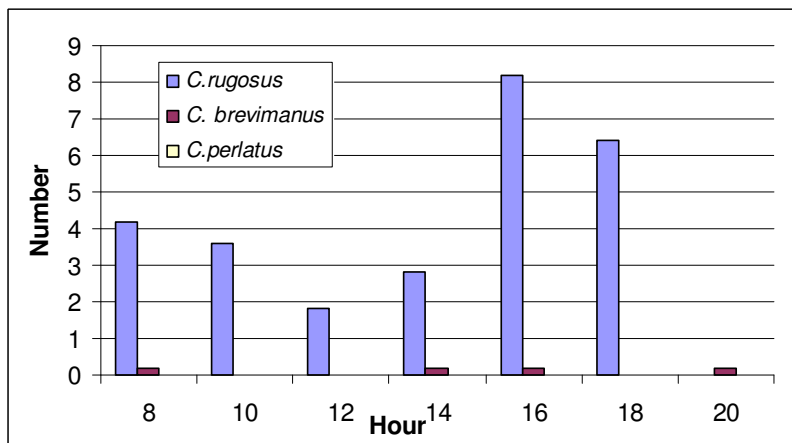


Figure 3. Average numbers of hermit crabs over time in site 3

At site 4, near the generator on the back path, no *C. rugosus* or *C. perlautus* were found and *C. brevimanus* were found mainly at 2000 (figure 4).

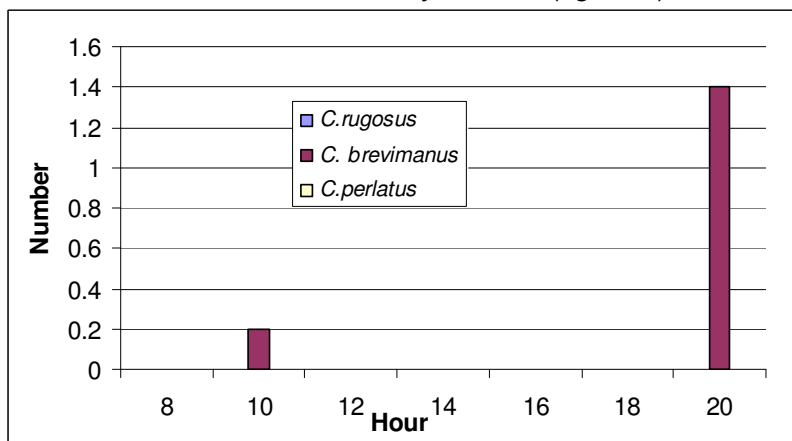


Figure 4. Average numbers of hermit crabs over time in site 4

2.3 Conclusion

C. rugosus appears to be active in the day, particularly late afternoon. This species is found mainly in the beach front sites.

C. brevimanus was mainly nocturnal with a few found active during the day. They are found mainly in the sites away from the beach front and particularly in front of the volunteers' house. This may be because they are attracted to the waste food at this location.

C. perlatus was also mainly nocturnal and found almost exclusively in site 1. Anderson (1994) suggests that they are mainly found on the beach. This survey did not include a beach site, but it is odd that not more were found on the beach front sites.

Given the nocturnal habits of *C. brevimanus* and *C. perlatus*, it would be useful to extend this study through the night to establish the pattern of activity through 24 hours.

3. SHELL USAGE

3.1 Methods

Hermit crabs were caught in sites 1 to 4. Hermit crabs can be identified by shield length (this is the anterior portion of the carapace in hermit crabs). Also measured was the host-shell length at its longest part. The shell type was identified.

3.2 Results

Shells used by crabs were: *Nerita undata*, *Nerita plicata*, *Nerita polita*, *Septa gemmata*, *Pleuroploca trapezium*, Turbinidae sp., Thais sp.

C. rugosus uses a variety of shells, but the main shells used are Thais and Turbinidae shells, followed by *N. undata* (figure 5).

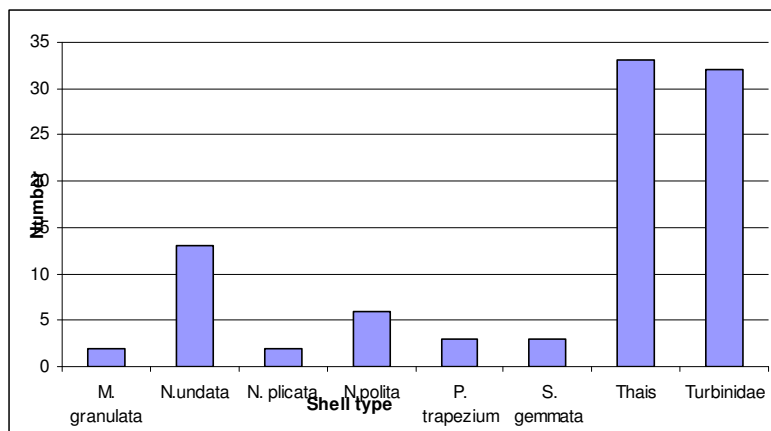


Figure 5. Shell usage by *C. rugosus*

C. rugosus range in shield size from 6mm to 24mm and they use shells that range in length from 20mm to 68mm. In general larger crabs use longer shells. Shell usage changes as the crab increases in size (figure 6). Small crabs use *N. plicata* and *N. polita*. Thais and *N. undata* are used by medium sized crabs and Turbinidae are used by the larger crabs.

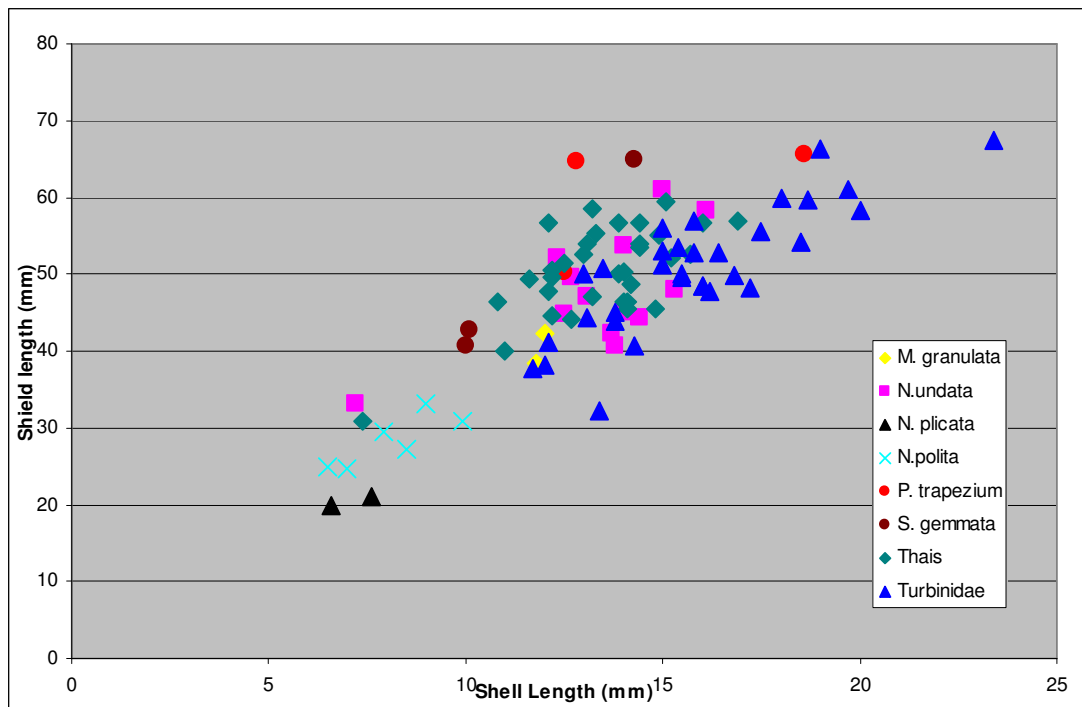


Figure 6. Shield length against the shell length inhabited in the species *C. rugosus*

C. brevimanus range in shield size from 10mm to 30mm and they use shells that range in length from 25mm to 120mm. *C. brevimanus* use Turbinidae shells in the majority and larger crabs use larger Turbinidae. However, *P. trapezium* shells are used occasionally and whilst these shells are larger and presumably heavier than Turbinidae, are not used by larger crabs. *N. polita* was found being used by a *C. brevimanus*. There maybe other examples of smaller shells being utilised by smaller crabs that were not found in this study.

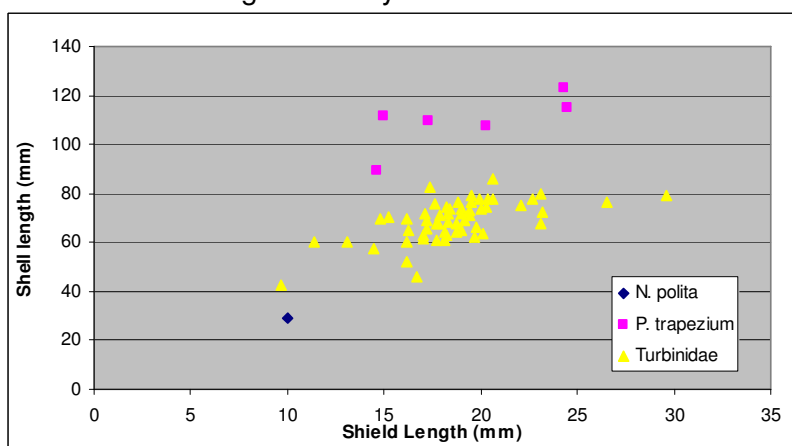


Figure 7. Shield length against the shell length inhabited in the species *C. brevimanus*

C. perlatus range in shield size from 12mm to 30mm and they use shells that range in length from 45mm to 75mm. *C. perlatus* used Turbinidae shells and as the shield length increased the shell length increased. A small *C. perlatus* was found housed in a *S. gemmata* shell; it is likely that smaller members of this species utilize other shell types than Turbinidae.

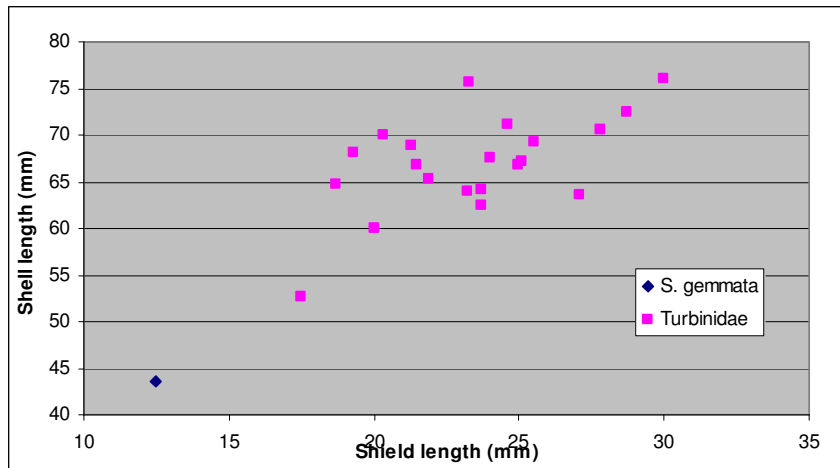


Figure 8. Shield length against the shell length inhabited in the species *C. perlatus*

3.3 Conclusion

C. rugosus used the largest variety of shells. Its smaller size means it can fit into a wider variety of shells. *C. perlatus* and *C. brevimanus* use nearly exclusively Turbinidae shells. This might also explain the use of other shells by *C. rugosus*; there is too much competition for Turbinidae. In general increase in shield size leads to an increase in shell size across all species.

Reference

Anderson, C. (1994) Decapod crustacean species of Aride Island, Seychelles. *Phelsuma*, **2**, 35 -49.