

# ASPECTS OF THE ECOLOGY OF *CLEONUS CONICIROSTRIS* (COLEOPTERA: CURCULIONIDAE) ON SELVAGEM GRANDE

By C. PHILIP WHEATER<sup>1</sup>

With 1 figure

**ABSTRACT.** *Cleonus conicirostris* is a common species on the plateau of Selvagem Grande and has recently been recorded on Madeira. Some aspects of the ecology and distribution of a population of this species were examined in a typical area of scattered *Suaeda vera* bushes on Selvagem Grande.

The results indicate that individuals tend to move towards the bushes and are found in higher numbers and are more aggregated near to, compared with further away from, these plants. It appears that the species may be using this vegetation for shelter or food.

## INTRODUCTION

*Cleonus conicirostris* (OLIVER 1807) ssp. *jekelii* (WOLLASTON 1862) is a widespread species in the Madeiran and Canary Islands. It appears to be spreading within the Atlantic Islands, especially in dry, sandy areas having only recently been recorded from the Madeiran Peninsula (ERBER & WHEATER 1987, ERBER & HINTERSEHER 1988). It was first discovered on Selvagem Grande in 1938 by Mendoneo (UYTTENBOOGAART 1940). It should be stated that the possible expansion of this species onto Madeira may require verification, since no specimens were discovered in the summer of 1991 during a survey of the areas of the peninsula where the species had been previously observed.

Selvagem Grande is the most northerly of the Selvagem Islands lying 290 km south of Madeira. It is 3.5 km<sup>2</sup> with steep cliffs surrounding a sparsely vegetated central plateau at 80-154 m above sea level. During an Expedition to the Selvagem Islands from Manchester

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<sup>1</sup> Department of Environmental and Geographical Sciences, The Manchester Metropolitan University  
Manchester M1 5GD, England, UK.

University, this species was found to be very common around bushes of *Suaeda vera*. Clumps of this species of shrub are clustered around the plateau of the island and it was within one of these clusters near Pico da Atalaia (figure 1) that a population was examined.

## METHODS

The study site chosen was a typical stony area, with a scattering of *S. vera* bushes. Stones near to (within 20 cm) and further away from the bushes were examined separately. Sampling took place over a period of seven days, animals found under stones were caught, individually marked (using flexible cellulose paint) and released. Recaptures on subsequent days were examined and the distance from the previous position recorded where appropriate.

Population estimates and survival rates were calculated using the methods developed by FISHER & FORD and JOLLY (BLOWER, COOK & BISHOP, 1981). The orientation of the animals' movements was examined using circular statistics (BASCHELET, 1981) and the distribution of the animals under stones was compared to a truncated Poisson distribution.

## RESULTS AND DISCUSSION

During the sampling period 111 individuals were caught. Calculation of survival rates (0.86 and 0.72 obtained using the methods developed by FISHER & FORD and JOLLY respectively) suggested that the population was fairly mobile. This was supported by the fact that of 41 recaptures only 8 were from the original stone.

The mean distance moved between capture events was 1.47 m (standard deviation = 1.62), although some animals were not found and presumably moved outside the sampling area. The distances moved by individuals found under stones near to (within 20 cm) and far away from *S. vera* bushes were not significantly different ( $t = 0.17$ ,  $p > 0.05$ ). However, there were differences in the direction of the movement. Using circular statistics it can be seen that animals originating from stones near to the bushes showed random movement ( $U = -1.55$ ,  $p = 0.94$ ,  $N = 25$ ), even when examined in relation to the bushes. Those individuals under stones further away from the vegetation showed significant movements towards the *S. vera* bushes ( $U = 1.68$ ,  $p = 0.047$ ,  $N = 8$ ).

In addition, the animals under stones near to the bushes appear to be present in aggregations (ie. the distribution differs significantly from a truncated Poisson distribution -  $X^2_{28} = 129.9$ ,  $p < 0.001$ ) whilst those further away are evenly distributed ( $X^2_{28} = 4.5$ ,  $p > 0.995$  - using the Chi-squared test as a two tailed test). The mean number of individuals found under stones near to the bushes (mean = 2.96, S.D. = 3.78,  $N = 20$ ) was significantly higher than that (mean = 1.17, S.D. = 0.48,  $N = 50$ ) under stones further away ( $t = 4.57$ ,  $p <$

0.01). No significant relationships were found between the number of animals found under each stone and either the size of the stone or the size of the nearest bush.

Overall the results suggest that the animals may be using the plants as a resource (eg. for food, shade, or moisture). Further investigations may reveal which combination of factors is important. Since this species may be expanding its range, such information may reveal further details regarding the likely spread on islands such as Madeira.

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Figure 1 - Selvagem Grande showing the sampling site.