

**Rat (*Rattus rattus*) Surveys on  
Diego Garcia**

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Appendix I

## **Introduction**

Rats have presumably been on Diego Garcia for as long as European boats have been landing there. While it has been known anecdotally that rats are abundant on Diego Garcia, this is the first time that an attempt was made to quantify rat densities there.

## **Methods**

The usual method for estimating rat abundance is to trap at night in a grid pattern or on a transect line. The high densities of coconut crabs (~230 per hectare) on Diego Garcia, however, make trapping impractical due to crab interference with the traps. The rats on Diego Garcia were atypically visible during the day in addition to the night. For these reasons rats were sampled by transect lines in the forest utilizing a distance methodology. The perpendicular distance from the transect centerline to all rats observed was measured with a metric measuring tape. To facilitate the precise measurement of the distances, hip chain thread that measured the transect length was left up (~chest height) and used as the transect centerline.

Transects were located on the eastern arm of the island in the vicinity of the Minni Minni conservation area. Transects were slowly walked and both sides of the transect were monitored (Figure 1). One transect was walked at night, two were walked at dusk and one was walked at mid-day. Total combined length of the transects was 4400 meters.

The data was analyzed on program DISTANCE.

## **Results**

For the 4400 meters of transects walked, 56 rats were detected. DISTANCE estimated the population density at 25 rats per hectare with a 95% confidence interval of 17-37 rats per hectare.

There were no discernable differences in detection rates between the different survey times.

## **Discussion**

The estimated density is considered to be high for this species. However, we feel that this estimate is most likely low. One of the assumptions when utilizing distance methodology is that all target species (rats in this case) are detected in the center of the transect. This assumption was probably violated. Rats in burrows, under debris or high up in the trees would be missed by the observer. The number of non-detected rats cannot be estimated. So, even though the estimate is considered to be high (for a rat population) it is probably lower than what is actually there.

All rats observed appeared to be and are presumed to be *Rattus rattus*, however it is possible that other species occur there.

At this point it is difficult to say what environmental impact the rats are having on Diego Garcia. Certainly there are human health concerns with rat densities this high. Rats have also been the cause of numerous bird extinctions/declines on islands in the Pacific (Mcneill 1994, Williamson 1996). While it is also possible that rat densities can climb higher as a result of the cat control/eradication program, predator prey relationships are often more complex than “the predator controls the prey numbers”. This is not a valid argument for stopping the cat eradication program.

### **Recommendations**

Rat populations need to be monitored (method to be decided upon), quarterly or bi-yearly by existing Navy environmental staff.

Due to human health and environmental concerns rat eradication should be investigated. Work in New Zealand has proven that rat eradication on islands is very possible. Rat populations are being controlled on the inhabited side of the island and there is a feral cat control project, so the logistical and administrative infrastructure already exists for an eradication program.


### **References**

Mcneill, J.R. 1994. Of rats and men: a synoptic environmental history of the island pacific. *Journal of World History*. Vol. 5 No. 2 pp 299-347.

Williamson, M. 1996. *Biological invasions*. Chapman and Hall. 244 pp.



## Legend

 Rat Transects



0 0.5 1 2 Kilometers

0 0.25 0.5 1 Miles

**Figure 1. Rat Transect Lines**

Diego Garcia

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