

SUMMARY

As concern over the rapid destruction of tropical rainforests and threats to their rich biodiversity mounts, many studies have reported that endemic species are facing higher rates of extinction than widespread, non-endemic species. The broad aim of this project was to investigate the effects of anthropogenic disturbance on the survival of the endemic and non-endemic small mammal fauna inhabiting the rainforests of Sri Lanka. I specifically attempted to determine whether the endemics and non-endemics differ in their vulnerability to habitat destruction and alteration and, if so, to identify the underlying cause(s) of this disparity.

Surveys of small mammals were conducted across a disturbance gradient in the Sinharaja Man and Biosphere Reserve. These surveys revealed that the endemic species richness of the endemics decreased dramatically as the magnitude of forest disturbance increased while the species richness of the non-endemics was nearly constant across both forest and non-forest habitat types.

Two hypotheses were used to explain the observed differences in distributions. Hypothesis One proposed that non-endemics are able to tolerate wider habitat conditions than endemic species, hence their ability to occupy wider habitat ranges and withstand habitat disturbance. Hypothesis Two suggested that the differences in distribution patterns are mediated by interspecific competition. These two hypotheses were tested using a pair of murids one of which was an endemic (*Srilankamys ohienensis* and *Mus mayori*) and the other a non-endemic (*Rattus rattus* and *Mus cervicolor*).

Detailed investigations were conducted into the ecology and behaviour of the selected murids, involving a range of methodologies, both in the field (including radio-tracking) and under captive conditions. The restricted distribution of the endemics in general and the significantly larger home range size of the endemic rat *Srilankamys ohiensis* compared to the two subspecies of the non-endemic *Rattus rattus* in the same locality, and its greater microhabitat selectivity and lower diet tolerance, suggest that endemics exhibit greater macrohabitat and microhabitat specialization than non-endemics, providing evidence in support of the first hypothesis. The patterns of occurrence of *Srilankamys ohiensis* and *Rattus r. kandianus* and the significant negative correlation between these two species in forest habitats suggest that one species is competitively excluding the other species from shared sites. The captive experiments confirmed the existence of competition and showed that the non-endemic *R. r. kandianus* was competitively superior to the endemic *S. ohiensis*, thus supporting the second hypothesis.

These findings indicate that, because endemics are more ecologically specialized than non-endemic species, the impact of habitat loss and modification on these species will be more severe than on the non-endemics that are usually habitat generalists. Furthermore, the adverse impact on the endemics can be further aggravated if forest disturbance facilitates the invasion of non-endemic species, especially if they are of the same general morphology and body size, as was the case with the rat species in this study.

Two papers based on this work are currently being prepared.