

Abstract

In Sri Lanka, bats represent approximately one third of the total number of terrestrial mammals. However, detailed information on the biology and the ecology of bats in the island are scarce. Bats are one of the least studied mammalian groups in the island where previous studies were based on occasional or opportunistic collections. As such, it is imperative to reevaluate the present status of Sri Lankan bats based on a systematic survey. Therefore, in this study an island wide survey was carried out from 1995 to 1998, to investigate the present status of Sri Lankan bats using current information on diversity, distribution population data and to supplement the ecological and biological data, such as roosting, breeding and migration.

Results of the present study indicates major changes with regard to the status of the Sri Lankan bat fauna. Although it is claimed that there are 30 species of bats in the island, only 19 species (approximately 63%) were recorded during this study. Our analysis in assessing the threatened status indicates that of these nineteen, 13 species are threatened which accounts to approximately 68% of bats recorded during this study. Further, it is evident that the numbers of megachiropterans are increasing with a wide distribution where as some species of microchiropterans are decreasing in numbers and some species have a restricted distribution. All three species megachiropterans (*Pteropus giganteus*, *Rousettus leschenaulti* and *Cynopterus* spp.) inhabited all six bio-climatic zones. On the contrary, any species of microchiropterans were not recorded in all six bio climatic zones of the island.

A majority of bats are selective in choice of a day roost and often showed an affinity towards a particular type of roost, which could be Phytophilous, Lithophilous or Anthropophilous. In contrast, several species of bats were non-selective in their roost selection and were found in more than a single type of roost.

Specific studies were undertaken to investigate the migratory pattern and reasons influencing the migration of cave dwelling species, *M. schreibersii*. By banding bats and subsequently capturing these bats, the results of this study has proved beyond doubt that bats from Wavul-Galge (Wellawaya) are migrating to Wavulpena cave (Ambilipitiya). Results also indicate that migration is aimed at exploiting the favorable microclimatic

conditions in the maternity cave and perhaps the availability of food in the foraging habitats.

Three types of breeding patterns (aseasonal, seasonal monoestrous or seasonal dioestrous) were recorded among 14 species of bats belonging to eight families. Three of the observed species showed aseasonal breeding cycles while eleven had seasonal breeding cycles. Of the seasonal breeding species, ten have monoestrous seasonal breeding cycles while a single species was observed to have a seasonal di-oestrous breeding cycle. Breeding period of *Kerivoula picta* was recorded only once during the study period. Hence, the breeding period of this species could not be determined. Two main patterns were observed in the species that showed seasonal monoestrous breeding cycles. In some species all stages of the reproduction (pregnancy, parturition & lactation) were seen only during a specific time of the year, throughout the island. Reproduction of these species did not depend on the geographic location of the site. In contrast, in two species of seasonal monoestrous bats (*Hipposideros speoris* & *Rhinolophus rouxii*), the breeding period depended on the geographical location of the colony. Consequently, different periods of parturition were recorded for these two species. However, in a given location breeding always occurred at a specific time of the year. All seasonal monoestrous bats had a single parturition per year. Further, it appears that the rainfall is the single most important determinant of the timing of reproduction among seasonal breeding species. In all of these species the breeding period coincided with the prominent rainy season in the area exploiting food availability.

Finally, a simplified key was developed using external morphological characters to identify the 19 species of bats observed during the study. This key was devised using measurements of large numbers of individuals captured during this study. Thus, this key will be useful to identify Sri Lankan bats with ease and accuracy.