A comparative study of distribution and diet in two sympatric false vampire bat species, *Megaderma lyra* and *Megaderma spasma* in Sri Lanka and an investigation of the social behaviour of *M. lyra* in natural conditions.

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M.R.M.P.Nandasena
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Abstract

Among the Sri Lankan microchiropterans, semi-carnivorous false vampire bats (*Megaderma lyra* and *Megaderma spasma*) play a significant role in the ecosystem. However, their detailed ecological studies have not been carried out previously in Sri Lanka. Therefore, this study was designed to investigate the morphometric characters, distribution, and ecological variations of false vampire bats in Sri Lanka, with special reference to the social behaviour of *M. lyra*.

The study was carried out in Southern, Western, Northwestern and North central provinces of the island during the periods 2000 to 2005. Behaviour study of *M. lyra* was focused on the stable colony at Baddegama (BR) in the Southern province. Morphometric characters and distribution data has been collected through the field survey. The dietary composition of Baddegama roost has been studied by the combination of three methods (faecal analysis, prey remain analysis and direct observations) during the period of 14 months. Except direct observation, combination of other two methods was used to determine the dietary composition of Lunuwila and Galapatha roosts during the period of 14 months.

During the distribution survey 24 roosting sites were recorded. The results showed that *M. lyra* and *M. spasma* are partial sympatric species with respect to their area of occurrence and they are macrosympatric species with respect to the habitat and other resources. The morphometric analysis showed that *M. lyra* and *M. spasma* are morphometrically dissimilar species and the habitat selection and diet selection may vary with their body size. *M. lyra* preferred abandoned buildings while *M. spasma* preferred occupied buildings. The main invertebrate diet of *M. lyra* and *M. spasma* were coleopterans and the main vertebrate diet was amphibians. This study revealed opportunistic feeding of fish and Chilopoda by *M. lyra* and devouring of reptiles by *M. spasma* for the first time in Sri Lanka. They have displayed full time selective carnivore and insectivore habit. However, according to Morisita's index the dietary composition of *M. lyra* overlapped with the dietary composition of *M. spasma*. However, *M. lyra* preferred to consume large coleopterans such as *Leucopholis lepidophora*, while *M. spasma* preferred to consume smaller green beetles such as *Anomala dussumieri*. The vertebrate composition in the diet was higher in *M. lyra* while invertebrate composition was higher in *M. spasma*. The resources partitioning mechanism which avoids interspecific competition among sympatric species was described through morphology, habitat and dietary variations of false vampire bats in the present study.

Behaviour study on *M. lyra* was poorly documented within the natural condition. During the study period there were 24 behavioural activities that were observed in day time. *M. lyra* formed clusters during low temperature conditions. Young *M. lyra* pups which were not more than 23 days old were left at a night roost (park) very close to day roost during their two to three foraging bouts during the night. On several occasions' infanticide was observed when the pup was left alone and the attacker was identified as another female of the colony. In previous studies, siblicide behaviour was observed in captive conditions but the attacker was not identified. During the present study it was observed that one third of the new born pups died due to infanticide. Therefore, this is the first time that infanticide of *M. lyra* was recorded in natural conditions.