ECOLOGY AND BEHAVIOUR OF *Tarsius syrichta* IN BOHOL, PHILIPPINES: IMPLICATIONS FOR CONSERVATION

By

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TABLE OF CONTENTS

page

LIST OF TABLES

LIST OF FIGURES

page

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DEDICATION

To Niccolo and Marco
and the rest of the younger generations…
may you always hold in wonder, awe and respect the treasures of this beautiful planet
and embrace the opportunity to work for its preservation in your own time

DECLARATION

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I give consent to this copy of my thesis, when deposited in the Department of Applied and Molecular Ecology thesis collection following examination and correction, being available for loan and photocopying. Any reference of this thesis or the information contained therein must be fully acknowledged in any publication.

Irene Neri-Arboleda

ABSTRACT

The Philippine tarsier *Tarsius syrichta* is a small, nocturnal, insectivorous prosimian that is distributed in the islands of Leyte, Bohol, Samar, Maripipi, Dinagat, Siargao and Mindanao. It was first described in the late 17^{th} century by J. G. Camel and the description was later published by Petiver in 1705 (Hill, 1955). The Philippine tarsier was described as a 'small monkey with big, round eyes that never or rarely closed; hairless ears; mouse-like fur and a tail and hindfeet as long as the rest of its body'. Its primary mode of locomotion is through vertical cling and leap, and the species is arboreal and cryptic in habits. There is limited knowledge of the species in captivity and very insufficient data on its ecology and behaviour in the wild.

The IUCN/SSC Primate Specialist Group has given *T. syrichta* a Conservation Priority rating 4, which defines the species as highly vulnerable (Eudey, 1987). The IUCN Red Data Book (2000) has further classified it under the Data deficient category. It was only in 1997 that *T. syrichta* was protected by law in the Philippines (PTFI, 1997). In order to implement an effective conservation plan for *T. syrichta*, a species whose landscape is becoming increasingly fragmented, it is important to understand its spatial and habitat requirements. In order to achieve this objective, a radio-tracking study was conducted in Corella, Bohol. The principal objectives of this study were: 1) to determine home range sizes and configurations and from which social group characteristics can be inferred from patterns of home range use; 2) to describe movements and activity patterns of the animal; 3) to examine habitat associations using vegetative cover and land use patterns; and 4) to evaluate conservation prospects of the species.

Home ranges, spatial movements and habitat utilisation patterns were determined for four male and six female Philippine tarsier *T. syrichta* in Corella, Bohol from early March-October 1999. The field site was a 174 ha area that has been proposed as a sanctuary for the Philippine tarsier and being developed for ecotourism activities. The forest itself forms a mosaic of different successional stages and adjacent to it are flat lands cultivated for agriculture. This was the first radiotracking study of the Philippine tarsier that included both breeding adult males and females. Home ranges were calculated using the Geographic Information Systems (GIS)/ Arcview 3.2 program extension Animal Movement Analyst

softwarc packagc (Hooge and Eichenlaub, 1997). Home ranges averaged 6.45 ha for males and 2.45 ha for females (average for MCP and Kernel 95%), allowing for a density of 16-41 tarsiers per 100 hectares. The home range of one male overlapped extensively with that of one female and to a lesser extent that of a second female. Male home ranges (Kernel 95%) showed little overlap (2.71%) and the same had been observed among the females (3.35%). Nightly travel distance averaged 1,636 m for males and 1,119 m for females. Individuals were observed to forage and sleep solitarily. *T. syrichta* form groups of one adult male and one or two adult females and their offspring.

The study suggests that the social organisation of *T. syrichta* is polygynous, supported by the following factors: The overlapping home ranges between males and females, and the fact that paired males and females foraged apart and did not share the same sleeping site indicated opportunities for extra pair matings. No paternal care was observed during the study and males not investing in parental care duties can expend increased time and energy on intrasexual competition for resources and mates. Morphometric data indicated dimorphism in body size between males and females; there was a significant difference between male and female body weights, with males being larger than females (two-sample t-test, $P = 0.019$). Larger males increase their reproductive success by defending a larger territory that overlaps with that of multiple females, thereby maximizing the frequency of matings. The fragmented forest and the propensity of the tarsiers to forest edges suggested uneven spatial distribution of resources (arthropods) that encourages polygamy, as some individuals gain control over a larger quantity or better quality of resources.

The habitats utilised are primarily located in secondary lowland rainforest in early to mid succession stage, but individual tarsiers readily traversed narrow grassland areas to move in between forest patches. They also utilised shrubs, palm and bamboo. However, the tarsiers avoided, residential areas, adjacent clearings and agricultural plantations. The preference of *T. syrichta* for regrowth forest in early to mid succession stage indicates the importance of maintaining the cycle of regrowth of tropical rainforest in areas where tarsiers are known to inhabit, to provide adequate habitat for the species. This habitat preference further suggests that tarsier conservation is not incompatible with regulated exploitation of the forests' resources.