



**UNIVERSITI PUTRA MALAYSIA**

***THE ACTIVITY PATTERN OF BARN OWLS IN URBAN AREA AS  
BIOLOGICAL CONTROL AGENTS OF RATS***

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CONTROL AGENTS OF RATS**

**BY**

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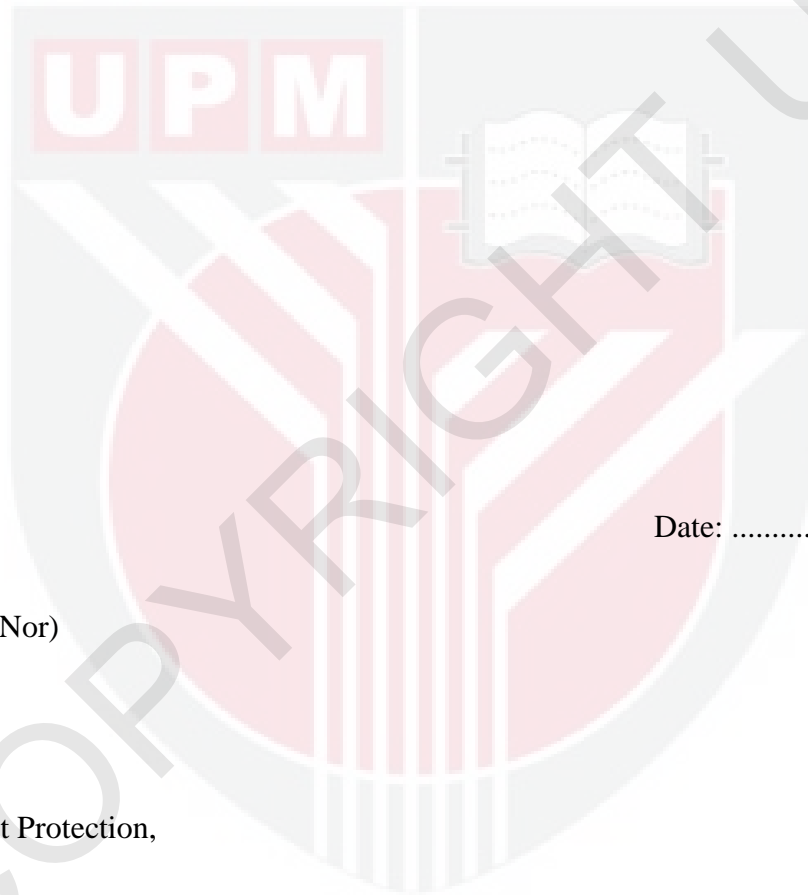
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## Abstract

Barn owl has been established as a biological control agent of rats in oil palm plantations and rice fields. In view of the serious rodent infestation in urban areas, an initiative has been launched to introduce barn owl in a city environment. Serdang has been designated for the pioneer project of the barn owls release for this purpose. To investigate the ranging and foraging activity of the barn owl, radio telemetry is employed. The objective is to draw up the activity pattern of the barn owl in a city perimeter. The activity pattern of male and female over a time period will be investigated. Two females will be tagged with radio transmitters and followed from 1800 hours to 0600 hours daily for a total of ten days until sufficient radio locations obtained. If the owls remain in the same area, the activity patterns will be compared from month to month dictated by circumstances. The locations of the owls will be determined at hourly intervals or for as frequent as possible over the night. The distance travel from one radio locations to the next is a measure of the level of activity for the respective hourly interval. The mean distance moved over several nights indicates the level of activity for each hourly interval. The Biotas software will be used to analyse home ranging parameters of each owl and the nightly activity profile. It is anticipated that males are more active since they engaged in more exploratory foraging behaviour.

# INTRODUCTION

## 1.0 Introduction

In this study we attempt to determine the home range size and core area of female barn owl in a newly translocated area. We investigate female behaviour in a newly exploratory area. The problem statement in this project is due to the serious rat problem in the urban areas pest control operators and residents are prompted to resort to rodenticide that will harm the environment. Therefore it is pertinent to switch to an alternative method to control rats so as to avoid the negative effects. We attempted to apply biological control using barn owl in an urban area for the first time in Malaysia.

Barn owl (*Tyto alba*) has been established and naturally encouraged to breed in oil palm plantation and ricefields for the purpose for biological control for rats. The preferred prey of the barn owl is rat. Work by Glue (1971) substantiated the claim the species of rodents represented in Barn Owl pellets is proportional to the relative abundance of the corresponding prey. Similarly, Mikkola (1983) concluded that the barn owl is a nonselective predator, whose diet reflects the abundance of small nocturnal mammal species within its hunting territory. In Malaysia, barn owl is commonly found in oil palm plantation and in paddy fields and feed mainly on indigenous *Rattus* species (Iain Taylor, 1994).

Thus, barn owl is being seriously considered as an alternative for controlling rats in urban areas. Initial efforts of translocating barn owls from rice field and oil palm plantations to selected urban areas are currently underway. Subang Jaya and Serdang are the two urban centres that have chosen for the initial release as these areas have a typically high rat infestation, as are anticipated in most urban areas in Malaysia and elsewhere.



Rat infestation in urban areas are becoming serious nowadays due to the population explosion of rats in urban areas attributed to many factors especially the rapid increase in human population in the city. Gratz (1984) claimed rodents that stay in the vicinity of humans while sharing places of refuge, food resources, water supply are threats to the public health as they have the potential to transmit about 40 disease. In Peninsular Malaysia, the prevalent rodent species in Kuala Lumpur are *Rattus rattus* and *Rattus norvegicus* (Lee, et.al, 2006).

The effort of translocating the barn owl is part of the scheme to overcome rat infestation in an environmentally safe approach by reducing the application of chemical rodenticides and invariably potential for disease transmission.

The observation involved in the process of releasing barn owl at the initial stage called for the use of radio telemetry. Radio telemetry is relied upon to investigate the locations the birds flown to, the foraging ground or the home range as well as the daily activity profile of the barn owl.

A transmitter of unique radio frequencies was attached to each barn owl upon release using the back-pack method. The radio receiver with a yagi antenna attached by a wire cable is used to detect the signal and based on the strength of the loudest signal the ground location of the owl can be identified on a map prepared for this purpose. The behavioural data obtain by the radio telemetry consist of the amount of time the barn owls had spent at a particular locations, the distance moved and the size of the home ranges. According to McShane et al. (1998), radio tracking is often the only way to collect data systematically on movement behaviour of unseen animals such as the barn owl.

The barn owl has to be acclimatized before release so that they adapt faster to the urban environment. They were also trained and fed in an aviary set up at the Universiti Putra Malaysia.

The barn owl was sexed before release. This is usually determined based on the plumage pattern. Plumage is often the most obvious way to tell the difference between male and female because the former often have bright and colourful plumage. In contrast female birds generally have a typically drab and dull coloured plumage (Hill 1993). The barn owl (*T. alba*) follows the general trend in that females are larger than males, but there can be overlaps, which often makes sex determination difficult (Amadon, 1975).

### **1.1 Objectives:**

1. To investigate the activity pattern of barn owl in urban area.
2. To investigate the changes of activity pattern over time.
3. To compare between male and female activity pattern.

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