RELATIONSHIP BETWEEN MALAYSIAN PLOVER OCCURRENCE AND COASTAL VEGETATION AT PANTAI TANJUNG RESANG, MERSING, JOHOR

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By

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A Project Report Submitted in Partial Fulfillment of the Requirements for the Degree of Bachelor of Forestry Science in the Faculty of Forestry Universiti Putra Malaysia

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SPECIALLY DEDICATED

TO MY BELOVED PARENTS,

M.THEVENTHIRAM AND R.R. KANNIAMMAL

MY BROTHERS,

T. RUBENTHIRAN

T. DARSHENTHIRAN

SUPERVISOR,

DR PUAN CHONG LEONG

FRIENDS,

ONG KANG WOEI

LIM YEONG SHYA

APRILNISSA

KUMETRA ACHUTAN

ABSTRACT

The Malaysian Plover, *Charadrius peronii* is a threatened shorebird species found in Southeast Asia and mostly at the southwest coast of Peninsular Malaysia. A sandy beach and coastal vegetation is a crucial habitat for the shorebird. This study aimed to assess the influence of coastal vegetation and other environmental variables on the Malaysian Plover occurrence at Pantai Tanjung Resang, Mersing, Johor. Point sampling was conducted from July to early of August, 2018. Based on logistic regression model, only vegetation cover was statistically significant in influencing the Malaysian Plover occurrence ($p=0.014$) compared to other variables. Increasing vegetation cover was associated with a decrease in the occurrence of Malaysian Plover. Breeding location and environment variables were counted not statistically correlated due to a low number of breeding Malaysian plovers. However, this study found that breeding pairs were preferred vegetation cover of at least 76% even though the relationship was non-significant. Results from this study showed that vegetation cover is an essential habitat factor for the Malaysian Plover.

ABSTRAK

Rapang Pasir, *Charadrius peronii* merupakan burung pantai yang hampir terancam yang ditemui di sepanjang Asia Tenggara dan kebanyakannya ditemui di pantai Barat Daya Semenanjung Malaysia. Pantai berpasir dengan tumbuhan pantai adalah habitat kepada burung tersebut. Kajian ini bertujuan menilai hubungan tumbuhan pantai dan pembolehubah persekitaran terhadap kehadiran Rapang Pasir di Pantai Tanjung Resang, Mersing, Johor. Teknik persampelan titik telah dijalankan dari bulan Julai hingga awal bulan Ogos, 2018. Berdasarkan model regresi logistik, hanya litupan tumbuhan adalah signifikan dalam mempengaruhi kehadiran Rapang Pasir ($p = 0.014$) berbanding dengan pembolehubah lain. Peningkatan litupan tumbuhan dikaitkan dengan pengurangan dalam kehadiran Rapang Pasir. Lokasi pembiakan dan pembolehubah persekitaran adalah tidak berkolerasi secara statistik disebabkan oleh bilangan Rapang Pasir yang rendah. Litupan tumbuhan sebanyak 76% adalah digemari oleh pasangan Rapang Pasir walaupun hubungan tersebut adalah tidak signifikan. Hasil daripada kajian ini menunjukkan bahawa litupan tumbuhan adalah faktor habitat yang penting kepada Rapang Pasir.

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APPROVAL SHEET

I certify that this research project entitled “Relationship Between Malaysian Plover Occurrence and Coastal Vegetation at Pantai Tanjung Resang, Mersing, Johor” by Yogasunthari A/P Theventhiram has been examined and approved as a partial fulfillment of the requirements for the degree of Bachelor of Forestry Science in the Faculty of Forestry, Universiti Putra Malaysia

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Date: Januari 2019

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

IUCN	International Union for Conservation of Nature

PUBLICATION OF THE PROJECT UNDERTAKING

This is to certify that I have no objection to publish the project entitled "Relationship between Malaysian Plover Occurrence and Coastal vegetation at Pantai Tanjung Resang, Mersing, Johor" by the supervisor in a joint authorship. However, it has to be evaluated by the Faculty of Forestry, Universiti Putra Malaysia and published in the form approved by the Faculty.

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(YOGASUNTHARI A/P THEVENTHIRAM)

Date: January 2019

CHAPTER ONE

INTRODUCTION

1.1.Background

Malaysia has a high diversity of ecosystems, flora and fauna. In term of fauna, birds play an important role in an ecosystem. Birds can be normally categorized into different types such as forest birds and shorebirds. Most shorebirds have small body size with long and skinny legs for wading. Some shorebirds are generally known as migratory birds and can found along coastlines. To survive the migration journey, an important thing is adequate stopover points. Some shorebird species migrate thousands of miles between breeding and wintering grounds and survive their migration journey. The main thing for their survival is adequate stopover points which provide resting and foraging sites for the shorebirds to re-energize throughout their long journey. Shorebirds act as an essential part of coastal food webs, as they are major consumers of invertebrates. Shorebirds play a vital role in maintaining a balance in biogeographical region communities and nutrient deposition, by depositing excretory product and food remains which influence the expansion of plants, particularly for the island ecosystems. Shorebirds play a task within the dispersal of seeds from the ground to islands.

In Southeast Asia, almost half of the shorebird species were threatened. Malaysia Plover is a resident shorebird species found in Malaysia. The geographical range of the Malaysian Plover covers Brunei, Cambodia, Indonesia, Malaysia, Philippines, Singapore, and Thailand. The Malaysian Plover is mostly found at southwest coast of Peninsular Malaysia. It frequents quiet sandy bays and coral sandy beaches. The main habitat of Malaysian Plover is sandy beaches and it usually does not interact with different waders.

Sandy beaches dominate most temperate and tropical coastlines where they represent its recreational assets and buffer zones against the ocean. Many sandy coastal ecosystems are severely damaged in the tropics because of their locations which are close to the ocean that being ideal spots for business enterprise and recreation. It provides environmental services to people in terms of buffer zones against storm surges and recreation areas. Seaside resorts cause multiple loss such as environmental disturbance, damage of the coastal ecosystem and coastal wildlife extinction.

Coastal vegetation provides various ecological functions. Although these important services usually are not appreciated by people. Coastal vegetation structure is different from forest vegetation. Untawale and Banerjee (1994) stated that coastal vegetation provided merchandise and services to billions of individuals. It acts as an ecological entrepot consists a variety and high of economic values. The Malaysian Plovers spend their time on sandy beaches, specifically on coastal vegetation such as for roosting, breeding and hiding from predators. Coastal vegetation at sandy beaches is vital for the Malaysian Plover as habitat and breeding area.

Tourism is the second highest earner of foreign currency every year, showing a growth of 7.3% (comparing the months of July 2004 and 2005) and the fastest growing sub-sectors among commercial enterprise where foremost optimistic projections show the global growth in tourism at 30%(CEDM,2016). Beach tourism development and human pressure will disturb the habitat structure. Moreover, tourism on beaches will vary from high-density resort development to small-scale bungalow and this leads to permanent or temporary changes to the natural coastal vegetation, the biological community on shores and closed ecosystems of sandy beaches. Other than rapid beach tourism development, poorly managed beach business enterprise will eventually decrease the quality of natural resources.

Management methods such as limitation number of tourists visiting beaches are essential to maintain the ecological services of beaches. However, in some developing countries, beach development increase while does not associate adequate assessment of carrying capacity of tourists or accumulative impacts of various styles of activities. This includes the management interventions to manage negative impacts on coastal vegetation which is important as habitat for the Malaysian Plover.

Other than that, beach erosion is one of the causes of coastal vegetation degradation. When higher-level development occurs at sandy beaches the removal of natural coastal vegetation will often cause severe erosion level. This erosion is making the beaches to unsuitable habitat for shorebirds especially the Malaysian Plover. Tourism will cause the development of marinas, seawalls, breakwaters, jetties, and groins. These structures create sand accretion and slowly turns into sand erosion where breeding habitat for shorebirds is being effected.

1.2. Problem Statement

Referring to IUCN, the Malaysian plover is classified as a near threatened species. The decline in the number of Malaysian Plovers happened due to the rapid development of beach tourism and human disturbance which cause coastal vegetation degradation.

Despite nearly 40% of red-listed waders breed in tropical areas but there are only a few studies had been done on shorebirds in tropics. (Baillie, Hilton-Tayler & Stuart 2004). Yasue Dearden (2016) stated that a high level of human activities on coastal habitats leads to the global population decline in waders. This is because sandy beaches in the tropic have a high economic value which promotes beach tourism development causing the structural changes of coastal vegetation.

Coastal vegetation acts as a habitat for the Malaysian Plover species along coastlines. Conversion of multi-structured, shrubby dune vegetation of coastal into monoculture Casuarina trees alters the habitat structure of the Malaysian Plover. This conversion happens because tourist who are seeking cool shelter or protection from the sun as provided by the planted Casuarina trees. Dekker & Ydenberg (2004) stated that tall trees could give perch sites for predators and probably increase the predation risk for shorebirds. This will cause habitat loss for the Malaysian Plover, with respect to the loss of breeding sites and roosting activities at sandy beaches get disturbed.

According to the IUCN red-list, under species assessment, human disturbance is listed as one of the factors that are linked to the 6 out of the 9 tropical coastal shorebirds extinction. Human disturbances such as tourists and vehicle on beaches will create disturbance in the habitat of coastal vegetation which is a significant habitat for the Malaysian Plover. Nowadays, increasing beach tourism and development coincide with breeding season of shorebirds. These activities will affect the breeding success and survival of shorebird species. Key threats such as vehicles on beaches, trample of nests by people and livestock may result in eggs being destroyed or nest disturbed.

1.3. Justification

The presence of bird watchers, bird watching tours and activities shows that shorebirds are contributing economic, recreational, tourism and aesthetic values.

Table 1: Wader counts at Mersing/Tenglu Laut, 1984 -1986.

	1	**2**	**3**	**4**
Little ringed Plover		3		
Kentish Plover	6	150	40	4
Malaysian Plover	1		1	1
Mongolian Plover	193	350	10	29
Greater Sandplover	3		380	76
Asian Golden Plover	10	5		20
Grey Plover	2	3	5	15
Great Knot	2			
Sanderling	1			3
Red-necked Stint	2			
Curlew Sandpiper			1	1
Bar-tailed Godwit	1			
Whimbrel	46		38	56
Eurasian Curlew		6		
Common Greenshank	35	9	22	28
Terek Sandpiper	90	50	150	50
Common Sandpiper	16	10	12	
Ruddy Turnstone	2	2	2	
Day Totals	413	585	681	263

Previous study by Howes et al., (1986), which was conducted from 1984 until 1986 showed the number of Malaysian Plovers is low (Table 1). Currently, this species nearly under vulnerable condition. Furthermore, human disturbance such as recreation, tourism and fishing activities indirectly threatened the population of Malaysian Plover at Mersing. This causes disturbances in terms of foraging and roosting activities of the Malaysian Plover and other shorebirds. To conserve this species, there is a need to study the behavior and habitat suitability of Malaysian Plover. This study of the habitat of Malaysian Plover will give the significant information with regard to the relationship between coastal vegetation and Malaysian Plover.

1.3 Objectives

The main objective of this study was to assess the relationship between Malaysian Plover occurrence and coastal vegetation at Pantai Tanjung Resang, Mersing, Johor

The other specific objectives were:

1) To examine the influence of vegetation cover and width of sandy beach on the Malaysian Plover occurrence.

2)To examine the Malaysian Plover occurrence on eroded sites and not eroded sites.

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