

DISTRIBUTION PATTERN OF ASIAN OPENBILL (*Anastomus oscitans*) IN PENINSULAR MALAYSIA

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The Asian openbill (*Anastomus oscitans*) is characterised by its greyish-white body, relatively small body stand (68-81 cm), and distinguishable from other large waterbird species of Asia by having a space between the mandible of its greyish bill (Robson, 2000, 2002). This stork is commonly found foraging in paddy fields across Southeast Asia and feeds on mollusc particularly golden apple snails, small fishes, and frogs (Robson, 2000, 2002). They belong to the Order Ciconiiformes and Family Ciconiidae (Roy & Sah, 2013). *A. oscitans* is categorised as Least Concern by the IUCN Red List due to the population decline (Sharma, 2007). Based on historical data, *A. oscitans* had a widespread distribution across the mainland Southeast Asia and Indian subcontinent (Robson, 2000, 2002). It is native to India, Pakistan, Nepal, Bangladesh, Bhutan, Sri Lanka, Nepal, Laos, Myanmar, Thailand, Cambodia, and Vietnam (BirdLife International, 2014). However, in response to weather changes and food availability, this species have a long dispersal route from their native range to the other countries in Southeast Asia (Roy & Sah, 2013).

In 2008, *A. oscitans* was documented for the first time in Peninsular Malaysia in Chuping, Perlis (Lim *et al.*, 2008). However, in the subsequent years after the first sighting, the stork was not observed or recorded along the west part of Peninsular Malaysia. In 2012, birdwatchers claimed that they observed many flocks of *A. oscitans* along the west coast of Peninsular Malaysia in Penang, Melaka, Johor, and Singapore as the birds flew from north to south of the peninsula (Tan & Murali, 2013). Recently in early 2013, up to 1000 individuals were reported in Kuala Gula, Perak, before approximately 250 individuals were reported in

Batang Tiga, Melaka and later sighted in Muar, Johor in the subsequent days (Chuah, 2013). After two weeks of the initial sighting in Perak, the storks were observed in Singapore making it the first record of *A. oscitans* occurrence in Singapore (Low *et al.*, 2013). Since then, the movement of *A. oscitans* down south towards the Peninsular Malaysia was well monitored by birdwatchers, with birds commonly observed in Penang, Melaka, Johor and Singapore (Tan & Murali, 2013). Thus, the objective of this research was to ascertain the distribution pattern of *A. oscitans* in Peninsular Malaysia.

In this study, the occurrences of *A. oscitans* in Peninsular Malaysia were recorded through field surveys conducted throughout the month of January of 2013. During the field surveys, the coordinates and land use of the surveyed sites were recorded. Reviews of published and unpublished reports, articles, blogs, and newspapers were also conducted. Additionally, locals and several officers from the Department of Wildlife and National Parks were interviewed. The field surveys were conducted in seven states namely Perlis, Kedah, Penang, Perak, Selangor, Melaka and Johor with a total of 32 survey sites from 14 districts (Table 1). Twenty eight out of 32 survey sites were located at paddy fields. During the survey, almost all sites that failed to record any sighting of this bird were characterised by dried paddy fields whereas paddy fields at sites that recorded with bird presence were still flooded. Thus we conclude that the presence of *A. oscitans* in some survey sites might be influenced by the flooded condition of paddy field, as flood level also influence the abundance of its prey (golden apple snails). Sawangproh *et al.* (2012) stated that, the abundance of golden apple snail at most flooded paddy field in Thailand is positively correlated to the abundance of *A. oscitans*.

Spatial distribution pattern of *A. oscitans* along the west coast of Peninsular Malaysia was determined through the analysis of Geographic Information System (GIS) as illustrated in Figure 1. Distribution sites illustrated in Figure 1 are cumulative between historically reported sites and the current study. The exact locations of these points are relatively far from the shoreline because this species prefers inland flooded field and less commonly found along the tidal mudflats (Roy & Sah, 2013). These points are likely to form several clusters within the respective states. The clusters are slightly crowded at the northern part compared to the southern part of the west coast and gaps were observed at the central region of the west coast of peninsula. No occurrence of *A. oscitans* been recorded at the eastern part of peninsula. Compared to the eastern coast of the peninsula, the west coast region consists of many areas of wetlands, shorelines, marshes, mangroves and agricultures (paddy) which are the common habitat preferred by most of the waterbirds (Wetland International, 2002). Similarly,

Table 1 Sighting records of *A. oscitans* during the field surveys conducted in the seven states of Peninsular Malaysia.

State	District	Site	Land use	Presence of bird
Perlis	Kangar	Kampung Behor Cicar	Rice field	None
Perlis	Chuping	Kampung Titi Tampang	Rice field	None
Kedah	Kota Setar	Jalan Langgar	Rice field	Presence
Kedah	Kota Setar	Pumpong Alor Setar	Rice field	Presence
Kedah	Dato' Kumbar	Taman Ariff Jaya	Rice field	Presence
Kedah	Kota Setar	Kampung Gerigis	Rice field	Presence
Penang	Central of Seberang Perai	Permatang Nibong	Rice field	None
Penang	Central of Seberang Perai	Penanti	Oil Palm	None
Penang	Central of Seberang Perai	Penanti	Oil Palm	None
Penang	Central of Seberang Perai	Permatang Pauh	Rice field	Presence
Penang	Central of Seberang Perai	Permatang Pauh	Rice field	Presence
Penang	North of Seberang Perai	Tasek Gelugor	Rice field	Presence
Penang	North of Seberang Perai	Air Hitam Dalam Educational Park	Recreational park field	Presence
Penang	South of Seberang Perai	Mukim 10	Rice field	Presence
Penang	South of Seberang Perai	Sungai Acheh	Rice field	None
Penang	North of Seberang Perai	Pinang Tunggal	Rice field	None
Penang	North of Seberang Perai	Bumbung lima	Rice field	Presence
Perak	Kerian	Pandak Putih	Rice field	None
Perak	Kerian	Bagan Tiang	Rice field	Presence
Perak	Kerian	Simpang Lima	Rice field	None
Perak	Kerian	Parit Buntar	Oil Palm	None
Perak	Kerian	Sungai Bakau	Rice field	None
Perak	Hilir Perak	Kampung Chui Chak	Rice field	None
Perak	Hilir Perak	Sungai Manik	Rice field	Presence
Perak	Perak Tengah	Kampung Gajah	Rice field	None
Perak	Perak Tengah	Seberang Perak	Rice field	None
Selangor	Kuala Selangor	Tanjung Karang	Rice field	None
Melaka	Central Melaka	Bukit Rambai	Rice field	Presence
Melaka	Central Melaka	Bachang	Rice field	None
Melaka	Central Melaka	Bukit Lintang	Rice field	Presence
Johor	Muar	Telok Rimba	Rice field	None
Johor	Ledang	Sawah Sungai Ring	Rice field	None

the bird surveys conducted by the Asian Waterbird Census (AWC) from 1987-2007 in Malaysia demonstrated the preferences of many waterbirds to fly and occupy the areas along the west coast region of Malaysia instead of east coast (Mundkur *et al.*, 2009).

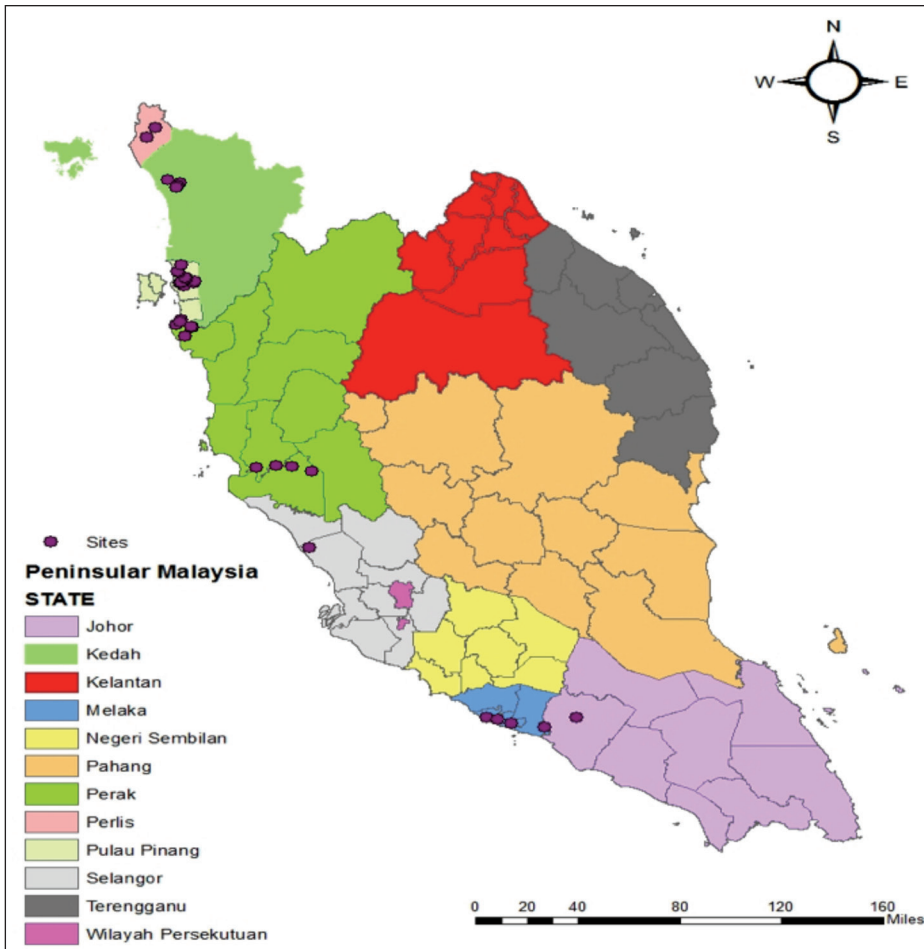


Figure 1 Distribution sites of *A. oscitans* in seven states along the west coast of Peninsular Malaysia.

A. oscitans is considered as one of the most useful indicator to measure environmental health due to its ecologically versatile nature in utilising various types of habitats to survive and respond to the rapid changes in their habitat (Miller & Spoolman, 2009). This species also plays a role as biological control

agent as it feed on golden apple snail, a major pest in paddy agriculture as well as other snails common to the rice fields (Sin, 2003). Thus, the existence of *A. oscitans* in Peninsular Malaysia has to be maintained and protected for the ecological benefit and ecotourism. We propose that *A. oscitans* should be protected under Wildlife Conservation Act 2010 [Act 716]. Interestingly during the survey, this bird was observed foraging within its own group without interfering other waterbirds species. Thus, we suggest that future monitoring and survey activities to be continued to investigate further into their influence towards other waterbirds species and their role in ecology and agriculture sector.

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