

Short Communications

An Urgent Need for Milky Stork Study in Malaysia

Ismail, A* and Rahman, F

Department of Biology, Faculty of Science, Universiti Putra Malaysia, 43400 Serdang, Malaysia

ABSTRACT

Milky Stork (*Mycteria cinerea*) once had a scattered distribution in the West coast of Peninsular Malaysia. The species later underwent a constant decline and it now has less than 10 individuals recorded in Matang Mangrove Forest. Among the problems are threats from the pollution of hazardous chemicals, habitat destruction, poaching by humans, high rates of predation and disturbance, and the lack of mature trees for nesting. Thus, identification of suitable habitats for Milky Stork routine activity is important and Matang Mangrove Forest has provided such an opportunity for the Milky Stork Conservation Programme. In addition, there is also a need for integrated studies from various disciplines to conserve the remaining Milky Stork in Malaysia from extinction.

Keywords: Malaysia, Matang Mangrove Forest, Milky Stork, population decline, conservation

INTRODUCTION

The Milky Stork (*Mycteria cineria*) can be found throughout Southeast Asia, with a status of rare to local residents in Peninsular Malaysia (Robson 2002). The birds once had a scattered distribution in the Peninsular, ranging from the coasts of Kedah, Perak, Selangor, Malacca and Penang (Robinson

& Chasen, 1936; Gibson-Hill, 1949). This species was also reported to have existed at least in East Malaysia with a rare status and much localised (Marioka & Yang, 1990). The population of Milky Stork, however, has undergone a constant decline since 1980s (Li *et al.*, 2006), suggesting the reduced number of breeding successes, increased predation rate and illegal hunting in the wild. The decreasing pattern in the wild population greatly affected two species of storks in Malaysia; namely, Milky Stork and Painted Stork, whereby both are listed as vulnerable and near threatened species,

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E-mail addresses:

aismail@science.upm.edu.my (Ismail, A), faidrahman@ymail.com (Rahman, F)

* Corresponding author

respectively (IUCN, 2010). The current population of wild Milky Storks in Malaysia is restricted to Matang Mangrove Forest Reserve near Kuala Gula, Perak. Mangrove forest is the most suitable habitat for Milky Storks. Since they are specialised in the mangrove forest, there are many biological and ecological aspects related to intertidal environment, mangrove ecosystem and birds' life history that need to be studied.

This paper highlights an important issue in the conservation of Milky Stork in Malaysia. The discussion is based on the limited literature review available and the researchers' personal involvement in research related to the breeding of Milky Stork programme in captivity, releasing them into the wild environment and other ecological aspects of the coastal environment, mangroves and habitat quality of coastal birds.

As highlighted by many authors, the pollution of hazardous chemicals is among the important issues in the conservation of wildlife, such as coastal birds, apart from the ecological (such as habitat changes, presence of natural predators, etc.) and human factors (such as forestry and fishing activities, and illegal hunting). Increased shipping activities and rapid development in the coastal areas of Peninsular Malaysia have increased the loads of pollutant inputs, such as Tributyltin (TBT), heavy metals, pesticides and nutrients (Ismail *et al.*, 2003; Monirith *et al.*, 2003; Sudaryanto *et al.*, 2004; Agusa *et al.*, 2005) into the coastal environment. The heavy metal contamination in the Malaysian coastal

environment is also well described (Ismail *et al.*, 1991, 1993; Ismail *et al.*, 1995; Shahrizad *et al.*, 2003), along with other pollutants such as plastic pellets (Ismail & Riak, 2003; Ismail *et al.*, 2009) that possess threats to the water birds. Meanwhile, bioaccumulation of the pollutants in sediments (Ismail *et al.*, 1993), fish (Agusa *et al.*, 2005) and prawns (Ismail *et al.*, 1995) also threaten Milky Stork as they biomagnified in the food webs system. As most of the Milky Stork foraging areas are along the coastal line, such species are in eminent danger of being contaminated by these pollutants. The effects of contamination on water birds (De Luca-Abbot *et al.*, 2004; Horai *et al.*, 2006; Ayas, 2007; Kim & Koo, 2007) include among others, thinning of eggshells, premature hatching, and deformities in their young. Such impacts are detrimental to the water birds population, particularly the Milky Stork species. Thus, analysis of those chemicals in the birds' habitat is important for the purpose of conservation since the data may reflect both the quality and health of their habitat.

Verheugt (1987) highlighted habitat destruction, timber exploitation and poaching by humans as the main threats responsible for the decline of Milky Storks in the wild in the 1980s. Ecologically, the lack of mature forest trees for nesting, high rate of predation and habitat disturbance are some other reasons behind the declining population of Milky Stork (Li *et al.*, 2006). Even though some trials have been conducted for rehabilitation and conservation of Milky Storks, such as the ones in Kuala Selangor in

1998 and Kuala Gula in 2006, the projects were not very successful at least at the time when this article was written. There are probably many reasons why the projects have failed and urgent attention is therefore needed.

Among the important reasons why the initiatives are not thriving are the lack of information on the ecology and behaviour of Milky Stork in the wild, their ability to adapt in the wild environment, and public support, as well as conservation awareness and understanding. Therefore, immediate actions taken to gather information relevant to ecological, biological and sociological factors, along with studies on Milky Storks in Malaysia and the neighbouring countries (Indonesia, Vietnam, Cambodia and Thailand) and public education, are important and urgently needed.

Recently, the government of Malaysia, through the Department of Wildlife and National Parks (PERHILITAN) and international agencies, has shown great care and awareness towards the conservation of Milky Storks in Malaysia. Pulau Kelumpang is an important site associated with Milky Storks in Malaysia. The area is the last known place where wild Milky Storks sightings have been recorded. For example, Siti Hawa (1989) reported that 130-150 Milky Stork individuals in Pulau Kelumpang between 1984 and 1989. In addition, a number of Milky Stork nests were also recorded at the time of that survey. Rahmah *et al.* (2007) also reported that nesting attempts were observed in the area, but these were to no avail. Nonetheless, the

failure of the birds' nesting attempts was not well described. A review of the Milky Stork status by Li *et al.* (2006) highlighted that there were less than 10 wild individuals Milky Stork observed at Matang Forest Reserve, particularly in Pulau Kalumpang. Moreover, the information gathered showed that the population had undergone a decline of more than 90% over the last 20 years. If this report is true, the population status of the Milky Storks in this country is extremely critical. In a recent study between August and December 2009, less than five individuals were observed in the wild around Pulau Kalumpang and Pulau Terong (Ismail *et al.*, 2010).

Malaysia is very lucky because there are still a large number of Milky Storks in captivity. The status of the captive breeding programme in Zoo Negara has been summarized by Ismail *et al.* (2011). Up to 2005, about one hundred Milky Storks are living and breeding in captivity at Zoo Negara in Hulu Kelang, Selangor. They are a very important colony and have a great potential in the conservation programme. Malaysian Zoological Society, Zoo Negara, Wildlife Department Malaysia and Universiti Putra Malaysia are trying very hard to conserve and increase the number of Milky Storks in the wild, particularly in Kuala Gula. Nonetheless, the breeding programme in captivity may also face a few problems. Among the problems are incorrect feeding method to chicks, collapses of nest trees, as well as weakening of pair bond through egg manipulation and storm damages (Yaacob, 1994). However,

all these problems have been gradually overcome by the management of Zoo Negara who has been able to increase the birds' population since 1987.

Meanwhile, the Wildlife Department of Malaysia and Universiti Putra Malaysia conducted a brief study on the adaptability of the released Milky Storks in to their natural environment at the mangrove forest in Kuala Gula, Perak, which is located about 300 kilometres north of Kuala Lumpur. This brief study has suggested that a few modifications and adaptations be done in order to ensure the survival of the birds released into the wild. These include improvement of the cage area and the surrounding environment, modification of the feeding technique used for captive birds and some ecological aspects that need to be looked into (Ismail *et al.*, 2010). Based on the current issues related to the population of Milky Storks, some previous studies conducted and government's concern, there is an urgent need to study all the aspects of the Milky Stork biology, ecology and habitat, both in the wild and in captivity. Among other, the integrated approaches involving biologists, ecologists, foresters, educationists and sociologists are urgently needed before the Milky Stork species becomes totally extinct in its own environment.

In order to establish an integrated study on Milky Storks, a potential site is needed. Matang Forest Reserve is one of the ideal locations to study and conserve Malaysian Milky Storks. This forest reserve is currently managed by the

Forestry Department and the trees in each compartment are felled in a 20-30 years cycle. If this condition is strictly followed, the trees would have matured enough to reach the height required by Milky Storks to build their nests. Furthermore, the area is 53 kilometres in length and 13 kilometres in width, and it is located near Kuala Gula Bird Sanctuary, which is well-managed and protected; this condition is enough to support a small population of the wild Milky Storks and protect them from extinction. As they are specialised in mangrove forest, they can therefore be a key species for the mangrove ecosystem. Their existence in the mangrove ecosystem may reflect the ecosystem stability and balance in several aspects, including the stability of the mangrove trees, as well as the tropic levels and the ecology of the mangrove forest. An integrated research on the ecology and biology of birds, the ecology of mangrove forests, intertidal mudflat ecosystem, fisheries, as well as benthos ecology and pollution status in this specific location are needed to ensure that the conservation of Milky Storks in Malaysia is promising. Therefore, an urgent action from various disciplines of science, active participation of the local and foreign scientists and a special budget are all needed in order to support the conservation of Milky Storks in Malaysia. Considering the dire situation of the wild Milky Stork population in Malaysia, a permanent and suitable site is very important for the purpose of their conservation. In addition, systematic actions must be taken to rehabilitate the species in the identified

area to ensure the survivorship of the local Milky Storks.

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