

STATUS OF THE LESSER ADJUTANT STORK (*LEPTOPTILOS JAVANICUS*) IN SINGAPORE

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INTRODUCTION

The lesser adjutant stork (*Leptoptilos javanicus*) (Fig. 1) belongs to the order Ciconiiformes, suborder Ciconiidae, family Ciconiidae, and tribe Leptoptilini (giant storks), which consist of six species in three genera—*Ephippiorhynchus*, *Jabiru*, and *Leptoptilos* (Elliot, 1994). The lesser adjutant stork is a large Asian stork, up to 129 cm tall (Robson, 2000), and is one of three large stork species in the genus, the largest member of the genus being the marabou stork (*Leptoptilos crumeniferus*) (Fig. 2) which can be up to 152 cm tall and weigh up to 8.9 kg (Elliot, 1994). The lesser adjutant stork's large size, and hunched appearance, combined with its black upperparts and wings contrasting with its white underparts, makes this species distinct. Additionally, it has a large, deep, horn-coloured bill, naked head with pinkish sides to face and naked, yellowish neck, and grey legs. In flight, *Leptoptilos* species keep their neck retracted in a heron-like manner (Fig. 3) (Wells, 1999).

The lesser adjutant stork is naturally distributed from the eastern Indian subcontinent and Sri Lanka, through Southeast Asia to the Greater Sunda Islands, with historical records from South China too (Wells, 1999). Collar (1994) classified the lesser adjutant stork as Globally Vulnerable, with an estimated population of 10,000 individuals, with the largest population residing in East Sumatra (Elliot, 1994). The global population of the lesser adjutant stork is declining mainly because of habitat loss, over-hunting, and human disturbance.



Fig. 1. The lesser adjutant stork on mud flats feasting on the remains of a fish. (Photograph by: Ingo Waschkies).



Fig. 2. The marabou stork is the largest in the genus *Leptoptilos*. (Photograph by: Mark Chua).



Fig. 3. The lesser adjutant stork in flight is a magnificent sight with its large wingspan and long legs. (Photograph by: Ingo Waschki).

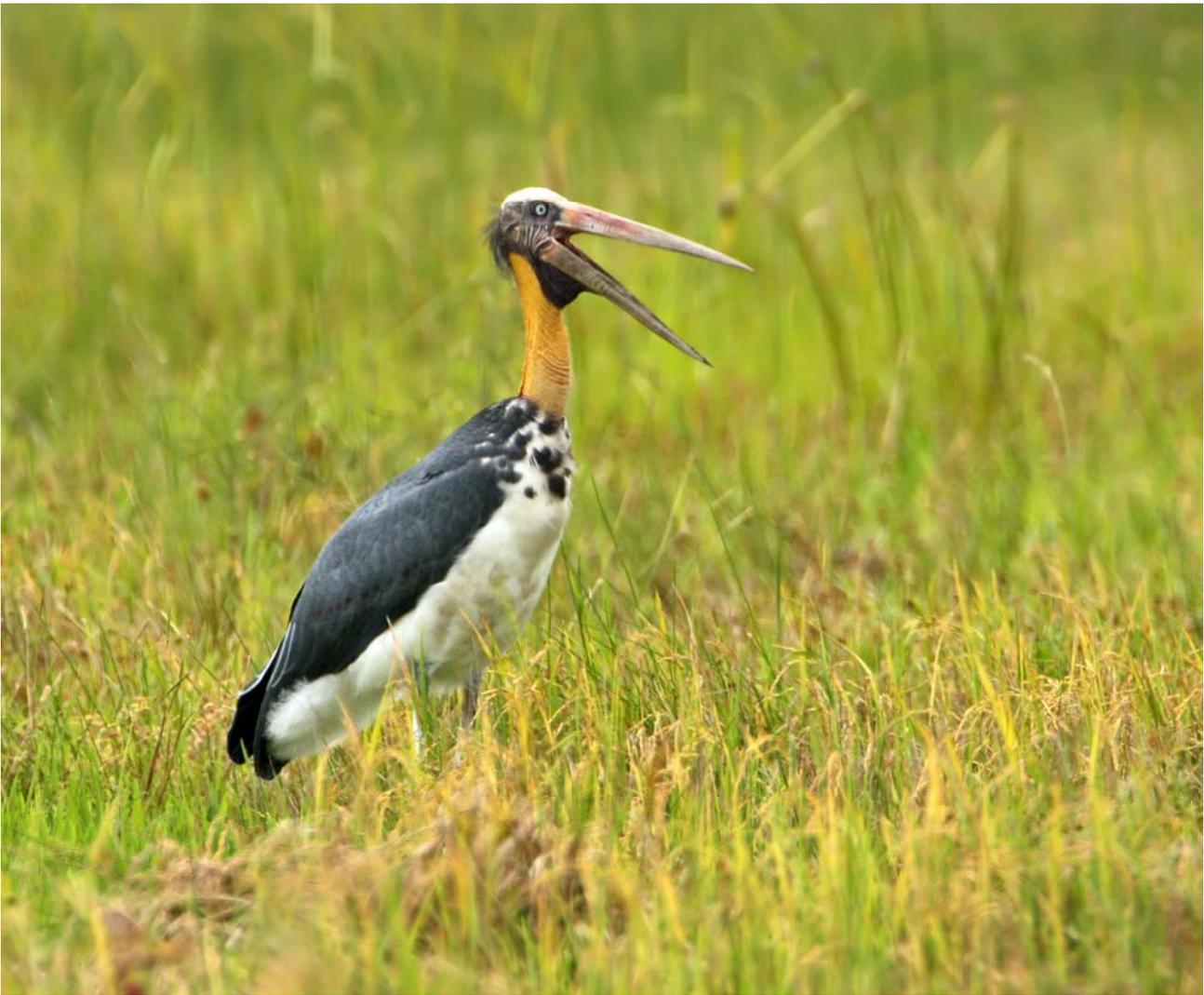


Fig. 4. The lesser adjutant stork in the padi fields at Sungei Balang, Johore, Malaysia. (Photograph by: Ingo Waschkies).

In a Riau province in 1990, at least 47 individuals were killed for food in a single day (Elliot, 1994). Elsewhere, this species is found in small groups all over India (Kaziranga, Assam, Sundabans, and Keoladeo). In Sri Lanka, 100 pairs have been recorded, with 200 birds in Bangladesh while 50 individuals have been counted in Vietnam. Effective protection of this species and habitat is essential and this species has been recommended for placement into Appendix I of CITES.

The lesser adjutant stork is usually found in mangrove forests, mudflats, coastal swamps and marshes (Elliot, 1994) although it has also been found in wetlands, pools in forest, rice paddies, and sometimes in agricultural fields and grasslands (Fig. 4). However, in Southeast Asia and the Greater Sunda Islands, this is primarily a bird of mangrove and coastal mudflats. Within the Thai-Malay Peninsula, Wells (1999) estimated the population to be about 220–250 individuals.

Lesser adjutant storks feed mainly on fish, especially on mudskippers from the genus *Periophthalmus*, but have also been recorded eating frogs, reptiles, crustaceans, locust, rats, and carrion (Elliot, 1994). Mudskippers are usually caught in the shallow water through walking and probing. On mudflats, feeding is usually done along the water's edge, with individual birds spread out every 50 m or so.

The closest populations to those in Singapore are in west Johore. In 1983, an aerial census counted 25 at the Benut mangrove forest and 37 were recorded there in 1988 (Wells, 1999). However, Wells did mention that not all habitats were searched and Jeyarajasingam & Pearson (1999) stated that the species is found down to the Kukup Mangrove Forest Reserve. Birds were also found at Parit Jawa in the 1990s, by a number of birdwatchers. Today a healthy population thrives at Parit Jawa (Fig. 5) and the nearby Sungei Balang area (Fig. 4). Lesser adjutant storks have been regularly encountered in the south-west corner of Johore, between Kukup and Tanjong Piai, with maximum flocks of eight birds. Tuas, in south-west Singapore Island, is within sight of Tanjong Piai. Villagers at Kampong Pendas, near the Second Link, also reported at least two birds in the area.



Fig. 5. A group of lesser adjutant storks gathering near a boat wreck at Parit Jawa, Johore, Malaysia. (Photograph by: Johnny Wee).

PAST AND PRESENT RECORDS

Historically, the only Singapore records of the lesser adjutant stork are of a resident pair in the Tanglin area in 1882 (Kelham, 1883), and of unconfirmed breeding reports from the outskirts of town, in 1938 (Gibson-Hill, 1949). There were no records of the species for the next 45 years, though limited data were available from this period.

On 5 Jun.1983, a single lesser adjutant stork was encountered along the coastal bund of Poyan Reservoir, in the Western Catchment. Despite prolonged views of this very distinct stork, no good photos were obtained and many dismissed the sighting. Then, on 21 Jun.1986, Richard Ollington and Richard Lansdowne encountered another lesser adjutant stork at Serangoon (mistakenly reported as Punggol in Wang & Hails, 2007). This bird was wing-clipped, and obviously a bird that had escaped from either the then adjacent Agri-Food and Veterinary Authority of Singapore (AVA) quarantine station, or a released pet from one of the fish farms. This remains the only sighting of this stork from the eastern part of Singapore.

Four years later, on 25 Nov.1990, Richard Ollington observed an individual perched on a tree at Cutforth Swamp, at the south side of the Kranji Reservoir. Once again, this record was not taken seriously, partly because of the 1986 escapee record.

There are four other records of lesser adjutant storks mentioned in Wang & Hails (2007). These were of free-flying birds, numbering between one and 11, seen between 1987–1990 at Senoko, Upper Peirce and Upper Seletar Reservoirs. All these records were apparently quoted from Singapore Avifauna 1(3): 25 (1987); 1(6): 19 (1987); 2(10): 37 (1988); 4(3): 27 (1990). However, these were obvious mistakes made by Wang & Hails (2007), as a check on those Singapore Avifauna issues show those specific dates, numbers and locations for free-flying painted storks (*Mycteria leucocephala*), from the zoo and not lesser adjutant storks.

On 3 Apr.1999, a lesser adjutant stork was observed soaring above the Sungei Buloh Wetland Reserve (SBWR), by the first author and Lim Kim Chuah. Good views were obtained through a telescope. This was then followed by reported sightings of an individual at the SBWR, between 27 Jun.1999 to 9 Aug.1999, by a number of birdwatchers, including Alfred Chia.

Four years later, on 6 Jan.2004, Koh Lian Pin saw a lesser adjutant stork along this coast while conducting a survey for the National University of Singapore (NUS). The first author then encountered a soaring individual over the coastal mangrove at Murai Reservoir, on 30 Mar.2004, while conducting a terrestrial survey for the National Parks Board (NParks).

The following year, on 20 Sep.2005, along the Western Catchment Area coastline, the first author encountered seven lesser adjutant storks feeding on the mudflats at and adjacent to Pulau Pergam. Two individuals were still present the next day.

Finally, while conducting a bird survey of the Western Catchment Area reservoirs on 12 Aug.2008, we observed a lesser adjutant stork walking on a coastal dyke at Poyan Reservoir, on 12 Aug.2008. Then, a month later, on 9 Sep.2008, an individual was observed on the same coastal dyke near the Tanjong Skopek sluice gates of the Public Utilities Board (PUB) (Fig. 6).

The most recent record was made on 14 Jan.2009, by Ng Ting Hui and us of two birds in freshwater marsh in the Pergam Channel which lies between the Murai and Poyan Reservoirs (Fig. 7).

CONCLUSIONS

Lesser adjutant storks take advantage of the exposed areas of mudflats, throughout the western shores of Peninsular Malaysia, to forage for food. This has been observed at many bird watching points, including the Kuala Gula Sanctuary in Perak, Kuala Selangor Reserve in Selangor, and Parit Jawa, Kukup, and Tanjong Piai in Johore.

A belt of mangrove forest stretches from Kukup and Tanjong Piai, in the south-west corner of Johore, up north, along the southern shoreline of Peninsular Malaysia. This stretch of mangrove forest ends around the area across the Straits of Johore from the Poyan and Murai Reservoirs area in the west of Singapore Island. Just north of that, a large area of land has been cleared for what appears to be new resort development. We know that lesser adjutant storks are found along this stretch of mangrove forest between Kukup and Tanjong Piai and also in mangroves to the north of Tanjong Piai. From the Second Link, we have also seen this stork feeding on the mudflats at low tide on the Johore side.



Fig. 6. A lone lesser adjutant stork on the coastal dyke adjacent to Poyan Reservoir near the PUB Tanjong Skopek sluice gates on 9 Sep.2008. (Photograph by: Subaraj Rajathurai).



Fig. 7. A lone lesser adjutant stork on freshwater marshes at the Pergam Channel linking Murai and Poyan Reservoirs on 14 Jan.2009, after another individual few inland. (Photograph by: Subaraj Rajathurai).

Based on recent observations in Singapore, it now appears that these storks also take advantage of good mudflats exposed during low tide around Pulau Pergam and much of the shoreline adjacent to the Western Catchment Area. While there is no evidence that they nest along the west coast of Singapore Island, a pair of birds do seem to roost near Poyan Reservoir, as we have encountered birds there just after dawn before vehicular activity along the dykes, which caused them to retreat to more inaccessible areas.

While we have records of lesser adjutant storks visiting the west coast of Singapore since 1983, the records have been rather sporadic. This however could be due to the difficulty in accessing these areas, as much of the western coast is used for military training, which includes the Poyan area.

In fact, it is possible that lesser adjutant storks have been visiting the western coastline even before our first sightings of them there. Up to the 1970s, much of the western coastline was still covered by mangrove and freshwater swamp forests, with four river systems running through the area. Although there were villages and agricultural areas around, much of this area was still rather inaccessible. As such, it was largely unexplored by naturalists in the 1960s and 1970s. Eventually, the damming of the four rivers and construction of coastal dykes for the construction reservoirs for portable water made this area more accessible.

At the moment these birds are in no imminent danger, as the local habitats of these globally vulnerable birds are located within the military training areas of Singapore. However these narrow mangrove forest belts are too small to sustain healthy lesser adjutant stork populations and any development such as reclamation of the west Johore mangroves could cause them to be displaced. Also we have noticed that the narrow mangrove forest belts along the Western Catchment Area dykes are often trimmed back by the PUB and the Singapore Armed Forces, probably to facilitate surveillance of the Johore Straits. We believe that this practice should be avoided as the narrow mangrove belt could be critical habitat for attracting lesser adjutant storks to the Singapore side.

We would also like to add that the masterplan by the National Parks Board (NParks) to link and improve mangrove forests in the north-west, east and west of the SBWR, is a step in the right direction to providing suitable habitats for many mangrove and mudflat specialists, such as the threatened lesser adjutant stork. Hopefully, these areas can then be

linked, with proper planting and enhancement, to the sensitive coastal habitats of the Western Catchment Area, to provide an even larger continuous mangrove habitat, which is today an extremely threatened habitat in Singapore.

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