**Oriental pied hornbill (Anthracoceros albirostris)**
**Family Bucerotidae**
Hornbills are known as “farmers of the forest”. The oriental pied hornbill plays important roles in the ecosystem. They are key in seed dispersal.

Description: “Male 70-85, female 60-65 cm. Male 680-907 g; female 500-879 g. Medium sized hornbill; black with white underparts. White on outer tail tips and trailing wing edges show in flight. The male has a large creamy bill with large black base on lower mandible; the casque is large, cylindrical with projecting compressed anterior part marked black. The female’s bill and casque are smaller, marked with black, and without the anterior blade; the lower mandible has a dark red spot. Both sexes have pale blue bare skin around the eyes and on the throat. Juvenile is less glossy black, bill is smaller and pale with undeveloped casque.”

Easily identified by their large pale yellow bill, with black tipped casque. Species is sexually dimorphic, where males are larger, and have a larger, more pronouncedly horned casque. They are vocal birds and make loud calls which go “*kleng-keng ….kek-kek-kek-kek”*.
Distribution: This bird can be found throughout the Oriental region, from northern India and south Nepal, south-east Tibet, to parts of China, and across Southeast Asia.

These birds do not require a primary forest habitat. They can be found in closed forests, but also forest edges, open woodlands, coastal and riverine scrub and cultivation. In Southeast Asia, they can be found in near forested areas with fruiting trees, which they would feed on. In Singapore, they are present in wooded areas, forest edges, gardens and parks, including Pasir Ris Park, Changi, Bishan Ang Mo Kio Park, Pulau Ubin, Central Catchment Nature Reserve and Sungei Buloh Wetland Reserve. This species is tolerant to urban environments.

Diet: The oriental pied hornbill is mainly frugivorous, feeding mostly on fruit. These may include *Knema globularia*, figs (contains carbohydrates and high calcium), palms, bananas, papaya, tamarind, Syzygium spp., Knema spp., Nephelium spp. Besides fruits, they may also feed on small animals as well to supplement their diet, especially during breeding season. For example, they may feed on small birds, eggs, lizards, snakes, bats, squirrels, crabs, snails, cicadas, other arthropods). They may choose to feed on food that has high nutrients, is abundant and easily accessible.

Breeding/reproduction: Hornbills have unique nesting/breeding methods. They are generally monogamous. During their breeding season, after courtship, copulation and suitable nest selection, the female would seal herself up inside a tree hole. She lays and incubates her eggs (26 to 28 days) in this hole and will only emerge once the young are full fledged (47 to 54 days). This period lasts up to a few months. Soil would be used to seal up the hole of the nest, with most of the hole being covered except for a vertical slit that is just wide enough for the male hornbill to pass food through.

Males forage more intensely, and return with food more frequently as the chicks grow. More animals may be brought back as they grow, since the chicks require more protein. In some

cases, due to competition for food, the youngest chick (being the weakest) may die, or may be killed by the female (infanticide). Infanticide cannibalism may occur, where the chick killed by the female is fed to the other chicks. The dead chick may also be consumed by the mother.

Threats: General threats that hornbills face may include habitat loss and destruction. Lack of suitable nesting spots may also affect their populations, particularly in mainland Singapore.

Conservation: Considered Least Concern (LC) by the IUCN due to their stable populations. Native to Singapore (subspecies *Anthracoceros albirostris convexus*), it is considered Near Threatened (NT) in Singapore Red Data Book 3.

Captive breeding programmes and reintroductions have also been attempted in other parts of the world, such as in Khao Kheow Open Zoo, Thailand, with aims to increase their population size in natural habitats.

The oriental pied hornbill was once considered to be extinct in Singapore. They disappeared in the mid 1800s, possibly due to hunting and habitat loss. After around 140 years, a pair of wild hornbills was spotted in Pulau Ubin in 1994. They have since been reintroduced and successfully reinvaded Singapore. This was done through the aid of the Singapore Hornbill Project, which was initiated in 2004 by Marc Cremades and naturalist Professor Ng Soon Chye. This project works in collaboration with the National Parks Board and Wildlife Reserves Singapore.

**Singapore Hornbill Project**
Studies the nesting ecology of the oriental pied hornbills and aims to increase population and distribution of this bird which is locally endangered. It is the first project worldwide to document the breeding ecology of wild hornbills in the nest.

Natural tree holes are limited in the wild, which would affect the oriental pied hornbills. Through this project, artificial nest boxes were designed and set up, with the aim of simulating natural tree holes, to allow these birds to nest. This has been successful, with successful breeding having been observed. In Singapore, the annual nesting cycle of the oriental pied hornbill has been observed to begin in November/December, and lasts until early April to late May. Through the programme, this species has established populations in various parts of Singapore including Bukit Timah, Pulau Ubin and Singapore Botanic Gardens within a few years.

A study has shown that oriental pied hornbills can exhibit full object permanence (ability to mentally represent objects even when they are not directly accessible to the senses), suggesting that it is a highly cognitive avian species.