

= Greater adjutant =

The greater adjutant (*Leptoptilos dubius*) is a member of the stork family , Ciconiidae . Its genus includes the lesser adjutant of Asia and the marabou stork of Africa . Once found widely across southern Asia , mainly in India but extending east to Borneo , the greater adjutant is now restricted to a much smaller range with only two small breeding populations ; one in India with the largest colony in Assam and the other in Cambodia . Populations disperse after the breeding season . This large stork has a massive wedge @-@ shaped bill , a bare head and a distinctive neck pouch . During the day , they soar in thermals along with vultures with whom they share the habit of scavenging . They feed mainly on carrion and offal ; however , they are opportunistic and will sometimes prey on vertebrates . The English name is derived from their stiff " military " gait when walking on the ground . Large numbers once lived in Asia , but have declined greatly , possibly due to improved sanitation , to the point of being endangered . The total population in 2008 was estimated at around a thousand individuals . In the 19th century , they were especially common in the city of Calcutta , where they were referred to as the " Calcutta adjutant " . Known locally as hargila (derived from the Sanskrit word for " bone @-@ swallower ") and considered to be unclean birds , they were largely left undisturbed but sometimes hunted for the use of their meat in folk medicine . Valued as scavengers , they were once used in the logo of the Calcutta Municipal Corporation .

= = Description = =

The greater adjutant is a huge bird , standing tall at 145 ? 150 cm (57 ? 59 in) . The average length is 136 cm (54 in) and average wingspan is 250 cm (98 @.@ 5 in) . While no weights have been published for wild birds , the greater adjutant is among the largest of living storks , with published measurements overlapping with those of the jabiru (*Jabiru mycteria*) , saddle @-@ billed stork (*Ephippiorhynchus senegalensis*) and marabou stork (*Leptoptilos crumeniferus*) . Juvenile greater adjutant storks in captivity weighed from 8 to 11 kg (18 to 24 lb) . For comparison , the heaviest known wild stork was a marabou stork scaling 8 @.@ 9 kg (20 lb) . The huge bill , which averages 32 @.@ 2 cm (12 @.@ 7 in) long , is wedge @-@ like and is pale grey with a darker base . The wing chord averages 80 @.@ 5 cm (31 @.@ 7 in) , the tail 31 @.@ 8 cm (12 @.@ 5 in) and the tarsus 32 @.@ 4 cm (12 @.@ 8 in) in length . With the exception of the tarsus length , the standard measurements of the greater adjutant are on average greater than that of other stork species . A white collar ruff at the base of its bare yellow to red @-@ skinned neck gives it a vulture @-@ like appearance . In the breeding season , the pouch and neck become bright orange and the upper thighs of the grey legs turn reddish . Adults have a dark wing that contrasts with light grey secondary coverts . The underside of the body is whitish and the sexes are indistinguishable in the field . Juveniles are a duller version of the adult . The pendant inflatable pouch connects to the air passages and is not connected to the digestive tract . The exact function is unknown , but it is not involved in food storage as was sometimes believed . This was established in 1825 by Dr John Adam , a student of Professor Robert Jameson , who dissected a specimen and found the two layered pouch filled mainly with air . The only possible confusable species in the region is the smaller lesser adjutant (*Leptoptilos javanicus*) , which lacks a pouch , prefers wetland habitats , has a lighter grey skull cap , a straighter edge to the upper mandible and lacks the contrast between the grey secondary coverts and the dark wings .

Like others storks , it lacks vocal muscles and produces sound mainly by bill @-@ clattering , although low grunting , mooing or roaring sounds are made especially when nesting . The bill @-@ clattering display is made with the bill raised high and differs from that of the closely related African marabou which holds the bill pointed downwards .

= = Taxonomy and systematics = =

John Latham wrote about the bird found in Calcutta based on descriptions in Ives 's Voyage to India

published in 1773 and included an illustration in the first supplement to his General Synopsis of Birds . The illustration was based on a drawing in Lady Impey 's collection and Latham called it the gigantic crane and included observations by an African traveller named Smeathman who described a similar bird from western Africa . Johann Friedrich Gmelin used Latham 's description and described the Indian bird as *Ardea dubia* in 1789 while Latham later used the name *Ardea argala* for the Indian bird . Temminck used the name *Ciconia marabou* in 1824 based on the local name used in Senegal for the African bird and this was also applied to the Indian species . This led to considerable confusion between the African and Indian species . The marabou stork of Africa looks somewhat similar but their disjunct distribution ranges , differences in bill structure , plumage , and display behaviour support their treatment as separate species .

Most storks fly with their neck outstretched , but the three *Leptoptilos* species retract their neck in flight as herons do , possibly due to the heavy bill . When walking on the ground , it has a stiff marching gait from which the name " adjutant " is derived .

= = Distribution = =

This species was once a widespread winter visitor in the riverine plains of northern India , however their breeding areas were largely unknown for a long time until a very large nesting colony was finally discovered in 1877 at Shwaygheen on the Sittaung River , Pegu , Burma and it was believed that the Indian birds bred there . This breeding colony , which also included spot @-@ billed pelicans (*Pelecanus philippensis*) , declined in size and entirely vanished by the 1930s . Subsequently , a nest site in Kaziranga was the only known breeding area until new sites were discovered in Assam , the Tonle Sap lake and in the Kulen Promtep Wildlife Sanctuary . In 1989 , the breeding population in Assam was estimated at about 115 birds and between 1994 and 1996 the population in the Brahmaputra valley was considered to be about 600 . A small colony with about 35 nests was discovered near Bhagalpur in 2006 .

During the non @-@ breeding season , storks in the Indian region disperse widely , mainly in the Gangetic Plains and sightings from the Deccan region are rare . Records of flocks from further south near Mahabalipuram have been questioned . In the 1800s , adjutant storks were extremely common within the city of Calcutta during the summer and rainy season . These aggregations along the Ghats of Calcutta however declined and vanished altogether by the early 1900s . Improved sanitation has been suggested as a cause of their decline . Birds were recorded in Bangladesh in the 1850s , breeding somewhere in the Sundarbans , but have not been recorded subsequently .

= = Behaviour and ecology = =

The greater adjutant is usually seen singly or in small groups as it stalks about in shallow lakes or drying lake beds and garbage dumps . It is often found in the company of kites and vultures and will sometimes sit hunched still for long durations . They may also hold their wings outstretched , presumably to control their temperature . They soar on thermals using their large outstretched wings .

= = = Breeding = = =

The greater adjutant breeds during winter in colonies that may include other large waterbirds such as the spot @-@ billed pelican . The nest is a large platform of twigs placed at the end of a near @-@ horizontal branch of a tall tree . Nests are rarely placed in forks and an unobstructed top canopy allows the birds to fly easily from and to the nests . In the Nagaon nesting colony in Assam , tall *Alstonia scholaris* and *Anthocephalus cadamba* were favourite nest trees . The beginning of the breeding season is marked by several birds congregating and trying to occupy a tree . While crowding at these sites , male birds mark out their nesting territories , chasing away others and frequently pointing their bill upwards while clattering them . They may also arch their body and hold their wings half open and drooped . When a female perches nearby , the male plucks fresh twigs

and places it before her . The male may also grasp the tarsus of the female with the bill or hold his bill close to her in a preening gesture . A female that has paired holds the bill and head to the breast of the male and the male locks her by holding his bill over her neck . Other displays include simultaneous bill raising and lowering by a pair . The clutch , usually of three or four white eggs , is laid at intervals of one or two days and incubation begins after the first egg is laid . Both parents incubate and the eggs hatch at intervals of one or two days , each taking about 35 days from the date of laying . Adults at the nest have their legs covered with their droppings and this behaviour termed as urohidrosis is believed to aid in cooling during hot weather . Adults may also spread out their wings and shade the chicks . The chicks are fed at the nest for about five months . The chicks double in size in a week and can stand and walk on the nest platform when they are a month old . At five weeks , the juveniles leap frequently and can defend themselves . The parent birds leave the young alone for longer periods at nest at this stage . The young birds leave the nest and fly around the colony when about four months but continue to be fed occasionally by the parents .

= = = Feeding = = =

The greater adjutant is omnivorous and although mainly a scavenger , it preys on frogs and large insects and will also take birds , reptiles and rodents . It has been known to attack wild ducks coming within reach and swallowing them whole . Their main diet however is carrion and like the vultures their bare head and neck is an adaptation . They are often found on garbage dumps and will feed on animal and human excreta . In 19th @-@ century Calcutta , they fed on partly burnt human corpses disposed along the Ganges river . In Rajasthan , where it is extremely rare , it has been reported to feed on swarms of desert locusts (*Schistocerca gregaria*) but this has been questioned .

= = = Parasites , diseases and mortality = = =

At least two species of bird lice , *Colpocephalum cooki* and *Ciconiphilus temporalis* have been found as ectoparasites . Healthy adult birds have no natural predators , and the only recorded causes of premature mortality are due to the direct or indirect actions of humans ; such as , poisoning , shooting , or electrocution when the birds accidentally fly into overhead electricity wires . Captive birds have been found to be susceptible to avian influenza (H5N1) and high mortality was noted at a facility in Cambodia , with two @-@ thirds of infected birds dying . The longest recorded life span in captivity was 43 years .

= = Status and conservation = =

Loss of nesting and feeding habitat through the draining of wetlands , pollution and disturbance , together with hunting and egg collection in the past has caused a massive decline in the population of this species . The world population was estimated at less than 1 @, @ 000 individuals in 2008 . The greater adjutant is evaluated as Endangered on the IUCN Red List of Threatened Species .

Conservation measures have included attempts to breed them in captivity and to reduce fatalities to young at their natural nesting sites . Nearly 15 % of the chicks are killed when they fall off the nests and die of starvation , so some conservationists have used nets positioned below the nests to prevent injuries to falling young and then raising these fallen birds in enclosures for about five months before releasing them to join their wild siblings .

= = In culture = =

Aelian described the bird in 250 AD in his *De Natura Animalium* as the kila , a large bird from India with a crop that looks like a leather bag . In Victorian times the greater adjutant was known as the gigantic crane and later as the Asiatic marabou . It was very common in Calcutta during the rainy season and large numbers could be seen at garbage sites and also standing on the top of buildings

. Its local name hargila is derived from the Sanskrit hadda @-@ gilla , which means " bone @-@ swallower " , and John Latham used it to give the species the binomial name , *Ardea argala* . At that time it was a belief that it was protected by the souls of dead Brahmins . Young British soldiers were known to harass these birds for fun , even blowing up birds by feeding them meat containing bones packed with a cartridge and fuse . The birds in Calcutta were considered to be efficient scavengers and an act was passed to protect them . Anyone who killed the bird had to pay a fine of fifty rupees . The old emblem of the Calcutta Municipal Corporation included two adjutant storks facing each other . Captured birds , probably from Calcutta reached menageries in Europe during this period .

The undertail covert feathers taken from adjutant were exported to London during the height of the plume trade under the name of Commercolly (from the place Kumarkhali , now in Bangladesh) or " marabout " .

An Indian myth recorded by the Moghul emperor Babur was that a magic " snake @-@ stone " existed inside the skull of the bird , being an antidote for all snake venoms and poisons . This " stone " was supposed to be extremely rare as it could only be obtained by a hunter with great skill , for the bird had to be killed without letting its bill touch the ground in which case the " stone " would evaporate instantly . Folk @-@ medicine practitioners believed that a piece of stork flesh chewed daily with betel could cure leprosy .