

Maleo

Macrocephalon maleo

Family: *Megapodes*, Genus: *Macrocephalon*

Recognized Subspecies: 0, Monotypic

Conservation status: Endangered

Wild Pop. Trend: Decreasing

CITES Appendix I

USFWS: Listed Endangered

Range: Sulawesi and Buton Islands, Indonesia.

Conservation Concern: The IUCN Red Data account for this species reports that by 2002 “of the 142 known nesting grounds, 48 have been abandoned, 51 are severely threatened, 32 are threatened, 7 are of unknown status, and only 4 are not yet threatened” (Baker, 2003). While the IUCN classified the Maleo as Threatened in 1988, from 1994 through 2000 it was listed as Vulnerable, and since 2002 it has been designated Endangered. As of 2016, the population was estimated to be no more than 7,000 breeding pairs, with a total population of 21,000 birds at most. As with many other Sulawesi endemics, loss of forest habitat due to deliberate destruction and fires contributes to its endangered status.

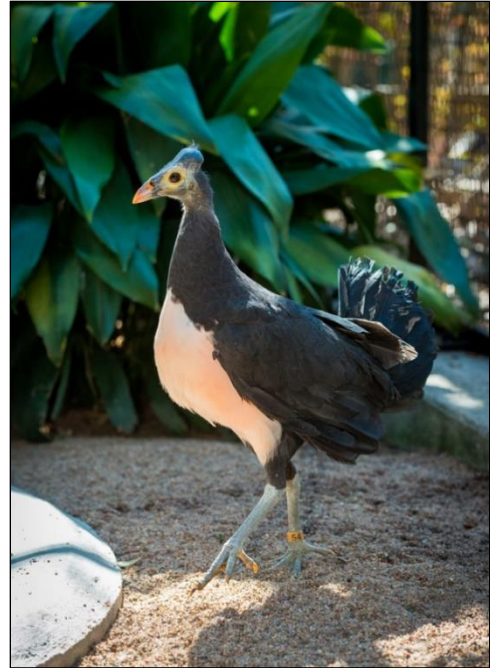


Photo credit: Houston Zoo

The reproductive biology of this bird has made it a special target for exploitation. The natural incubation period of its eggs can be two to three months and the chicks emerge capable of flight. This is made possible by the fact that the yolk of a freshly-laid Maleo egg constitutes more than 60% of its contents. Coupled with the enormous size of the egg (more than 15% of the body weight of the hen, which lays eight to twelve per clutch), this adaptation has made Maleo eggs a highly valued food item.

The Government of Indonesia has given this species full protection since 1972, and extensive field conservation work has been conducted in the 21st century, resulting in the elimination of egg poaching in some areas, with significant improvement of nesting successes. The Wildlife Conservation Society has been very actively involved in *in situ* Maleo conservation programs for more than fifteen years, including the protection of four nesting sites visited by more than 1,200 pairs, and the construction and maintenance of hatcheries for wild-laid eggs, resulting in roughly 10,000 chicks.

Species Account: In common with other members of the Megapode family, Maleos display remarkable reproductive behavior, burying their eggs to hatch unattended. In contrast to most other megapodes, which utilize composting vegetation, Maleos communally bury their eggs in sand like sea turtles, where incubation is performed by geothermal or solar heat. This bird furthermore combines bright colors with a “prehistoric” appearance and a rather imposing size to dramatic effect.

This Indonesian endemic was unknown to science until 1846. It first entered captivity not long after that, as the ornithologist Philip Lutley Sclater (who was Secretary to the Zoological Society of London, 1860-1902) observed in 1871, that London Zoo's first specimen had arrived "many years before." Three more specimens arrived at London, in 1871, 1876, and 1877, but all had died by 1878 (Garrod, 1878, Sclater, 1871 & 1883).

In 1930, two recently fledged birds were received by Gerard H. Gurney (1880 - 1934), the heir of a powerful banking family, the son, grandson and father of ornithologists, and one himself. In the summer of 1931, one escaped from the aviary full of budgies in which the two had been kept at Keswick Hall, Norwich, UK, and remained at large in the woods and was never recaptured (Gurney, 1933, Martin, 1931).

In 1952 or 1953, the celebrity animal catcher Peter Ryhiner collected 3 pairs and four eggs in Gorontalo, but the birds were confiscated in Manado, the capital city of north Sulawesi, because a previously-issued permit from Jakarta had been revoked. The eggs did not hatch (Ryhiner & Mannix, 1958, 237-241).

The first birds in the US were an adult male and female sent from the Surabaya Zoo to the San Diego Zoo on 13 September 1967 (Lint, 1967). This pair, which lived until 12 July 1998, and 23 November 2004, produced their first offspring in 1988 at the Wildlife Conservation Society's Species Survival Center on Saint Catherine's Island, off the coast of Georgia. (The pair had been transferred from San Diego to the Bronx Zoo in 1968 and sent from there to Saint Catherine's Island in 1979).

AZA Role: Since 2005, all U.S. propagation of Maleos has occurred at the Bronx Zoo. The second of the two 1988-hatched birds, a female, still living and reproductively active, was paired with a sibling hatched in 1994, also at St Catherine's Island. Since 2000 this pair have produced 45 offspring, of which 22 are living as of March 2017.

It is only with the last five years that a method of artificial incubation was developed which resulted in consistent chick survival. Of the current U.S. population of 24 birds, 19 have hatched since 2013. The Bronx Zoo received the AZA's Edward H. Bean award for this achievement in 2016. A husbandry manual is near completion.

Although the AZA population descends from a limited founder base the Bronx Zoo is working with Jurong Bird Park a member of SEZA (Southeast Asian Zoo Association) which includes the Zoos in Indonesia. Together (Bronx and Jurong) are investigating partnerships that could increase the long-term sustainability of this species.

TAG Monitored Goals: The Maleo is the only species within the family Megapode to have any sort of population. This species serves as a husbandry model for species of Megapode that have unknown husbandry requirements and are of high conservation concern. The U.S. Maleo population is now growing steadily, and recruiting further participants is needed in maintaining this conservation-significant, highly interesting bird.

Education Emphasis

- Megapode nesting habits
- Island endemic species

AZA Connections: The following table is not a guide of what the Maleo can be housed with (although many of these are a possibility) but instead, it is meant to show the range connections between other AZA recommended program species.

Maleo <i>Macrocephalon maleo</i> recommended species by other TAGs within species range				
Common name	Scientific name	TAG	AZA Program	Conservation status
Hooded Pitta	<i>Pitta sordida</i>	PACCT TAG	Red SSP	Least Concern
Grosbeak Starling	<i>Scissirostrum dubium</i>	PACCT TAG	Candidate	Least Concern
White-breasted Wood Swallow	<i>Artamus leucorhyn</i>	PACCT TAG	Candidate	Least Concern
Black-naped Fruit Dove	<i>Ptilinopus melanospilus</i>	PACCT TAG	Yellow SSP	Least Concern
Emerald Dove	<i>Chalcophaps indica</i>	Columbiformes TAG	Yellow SSP	Least Concern
Nicobar Pigeon	<i>Caloenas nicobarica</i>	Columbiformes TAG	Yellow SSP	Least Concern
Yellow-crested Cockatoo	<i>Cacatua sulphurea</i>	Parrot TAG	Candidate	Critically Endangered
Milky Stork	<i>Mycteria cinerea</i>	Ciconiiformes TAG	Red SSP	Endangered
Spotted Whistling Duck	<i>Dendrocygna guttata</i>	Anseriformes TAG	Red SSP	Least Concern
Indian Pygmy-goose	<i>Nettapus coromandelianus</i>	Anseriformes TAG	Red SSP	Least Concern

**Disclaimer: this information was collected in 2017. If you have interest in any of these species, contact the perspective TAGs. All range overlap information was determined using the IUCN Red List range maps.

Conservation priority species that share the same range.

- North Sulawesi Babirusa *Babirusa celebensis*
- Sulawesi crested Macaque *Macaca nigra*
- Mountain Anoa *Bubalus quarlesi*

If your institution is supporting a field project in Sulawesi with one of these species, check if your conservation partner is seeing the Maleo in their study/field site. If your Zoo displays one of the following species, the addition of an aviary for Maleo further illustrates the diversity of Indonesia at your institution and highlights an endangered bird.



Photo Credit: Pierre de Chabannes