

Searching for two endemic plants on Nusakambangan Island (Indonesia) last collected more than a century ago

Nusakambangan is a small island of 210 km² on the southern coast of Cilacap Regency, Central Java Province, Indonesia, with high flora diversity and various types of forests from mangrove to limestone hill forests. There are > 750 plant species known from the island, including two endemic species *Lagerstroemia vanosii* W.J.de Wilde & Duyfjes (Lythraceae) and *Piper mucronulatum* Blume (Piperaceae). *Lagerstroemia vanosii* is a tree species known only from herbarium specimens, last collected by Koorders on 4 March 1902. *Piper mucronulatum* is a woody climber known from a single herbarium specimen collected before 1826. To our knowledge, these two endemic plants have not been observed for more than a century, are not known to be present in any ex situ conservation areas, and their conservation status has not been assessed.

In January 2022, we surveyed the only two protected areas in Nusakambangan Island, West and East Nusakambangan Nature Reserves, and one unprotected area between the Reserves. We attempted to survey a wide range of vegetation types, including mangrove, coastal, lowland and limestone hill forests across altitudes of 0–190 m. Despite intensive searches, we were unable to locate either species.

Habitat conversion and invasive plants are potentially the two main threats to these endemic species and the most likely reasons for our failure to relocate them. Many forested areas on the island have been converted into settlements, agriculture fields and limestone mines. The invasive palm, langkap *Arenga obtusifolia* Mart., is a serious threat to the island ecosystem in general. Once it dominates a forest stand, other plants struggle to survive because of both vertical and horizontal constraints related to canopy shade, roots and competition.

We recommend that both endemic species should be categorized as Critically Endangered on the IUCN Red List under criteria A2c; i.e. a population decline of > 80% in the last three generations (A2) based on a decline in area of occupancy, extent of occurrence, and habitat quality (c). We recommend additional surveys for these two species in other locations on Nusakambangan. Conservation interventions are required to halt the ongoing conversion of forest and the domination of the invasive palm.

ENGGAL PRIMANANDA (orcid.org/0000-0002-1197-3815, enggal.primananda@brin.go.id), DIPTA SUMERU

RINANDIO (orcid.org/0000-0001-8938-9574) and

IYAN ROBIANSYAH (orcid.org/0000-0002-0503-458X)

Research Center for Plant Conservation, Botanic Gardens and Forestry, National Research and Innovation Agency, Bogor, Indonesia

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GlobalTree Portal: visualizing the State of the World's trees

Simultaneously with the release of the State of the World's Trees report in September 2021 (bgci.org/news-events/bgci-launches-the-state-of-the-worlds-trees-report), Botanic Gardens Conservation International released the GlobalTree Portal (bgci.org/resources/bgci-databases/globaltree-portal), a hub for the data collected during the Global Tree Assessment. This is the first portal dedicated to tree conservation information and is a vital source of information for prioritization of action to prevent the extinction of any of the world's c. 60,000 tree species.

The initial results of the Global Tree Assessment, a project bringing together data from experts worldwide to assess the conservation status of the world's tree species, revealed that at least 30% are threatened with extinction. The GlobalTree Portal is a response to the need to help prioritize conservation action for those species at highest risk of extinction.

The GlobalTree Portal displays information on a species at both country and global levels. It covers conservation status, both on the IUCN Red List and BGCI's ThreatSearch database (tools.bgci.org/threat_search.php), and conservation action information, both in situ and ex situ. At the country level, checklists of native tree species, detailing endemism and IUCN Red List status, can be downloaded. The species-level search features the Conservation Action Tracker, showing information on conservation actions that are already in place. It also allows conservation practitioners to contribute and update information on conservation actions for any tree species.

The GlobalTree Portal is a global resource for tree conservation, providing data that have hitherto been unavailable. It can be used to identify gaps in conservation at various levels, facilitating policy change and direct action. This resource demonstrates that conservation action is not in place for many of the most threatened tree species, and these are therefore a priority for protection.

EMILY BEECH (orcid.org/0000-0002-1107-254X, emily.beech@bgci.org), RYAN HILLS (orcid.org/0000-0002-7192-7941) and MALIN RIVERS (orcid.org/0000-0001-9690-1353) Botanic Gardens Conservation International, Richmond, Surrey, UK

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Online trade threatens even inconspicuous wildlife

The option of selling online, and next-day deliveries, have made available specialized consumer markets that were previously not large enough to be profitable. This includes

threatened wildlife offered for sale as exotic or novelty pets. The pink-headed fruit dove *Ptilinopus porphyreus* is endemic to montane forests on the Indonesian islands of Sumatra, Java and Bali. It is categorized as Least Concern (decreasing population) on the IUCN Red List. Seldom seen—the species is shy, silent and inconspicuous (although colourful, especially males), so amongst foliage in tall trees it is difficult to detect—and we have limited information on the species' conservation needs or of any specific threats.

Trade has not hitherto been considered a threat to the species. During 1978–2003 Van Balen & Nijman (*Bird Conservation International*, 2004, 14, 139–152) observed a total of eight individuals for sale in Denpasar, Bali, in 1989, 1993 and 2003. During 2012–2020 our team observed nine in 2018 (in Denpasar and Jakarta) and one in 2019 (Bandung). I have not found any other records of the species in trade.

On 2 January 2022 I searched four dedicated fruit-dove (*punai*) Facebook pages and three online platforms (Tokopedia, Shopee, Bukalapak) for the sale of pink-headed fruit doves (search terms walik ungu and punai ungu). On Facebook I found seven traders (two in Denpasar, and one each in Jakarta, Surakarta, Kediri, Jember and Pemogas) with a total of 33 birds for sale. No prices were given, and prospective buyers were directed to contact sellers via instant messaging services. On the online platforms I found adverts from five traders in Jakarta, Kediri, Ngawi and Surabaya, with at least 23 birds available. On average online traders had slightly more birds on offer than traders in traditional markets ($4.0 \pm \text{SD } 3.4$ vs $2.6 \pm \text{SD } 1.3$). I saw only adult-sized birds, and all must have been taken from the wild. Prices were USD $19.71 \pm \text{SD } 3.72$ for single birds (16 quotes) and USD $105.19 \pm \text{SD } 49.58$ for established pairs (two quotes). Online traders specify that payments will only be accepted via RekBer (an abbreviation for rekening bersama; i.e. the bank account of a trusted third party). Sellers and buyers do not have to meet in person, payments can be processed online, and birds are shipped directly to the buyer's address using motorcycle taxis for short distances, and trains and domestic planes for buyers in more distant locations. In the absence of harvest quotas, this trade is illegal and violates the terms and conditions of these online platforms.

That a 1-day online search for pink-headed fruit doves for sale resulted in evidence of 56 birds, three times the number recorded in physical bird markets over the last 4 decades, is disconcerting. It also demonstrates that even inconspicuous birds—which in the past would have been overlooked—are now traded in sufficient numbers that this could impact wild populations.

VINCENT NIJMAN (orcid.org/0000-0002-5600-4276, vnijman@brookes.ac.uk) Oxford Wildlife Trade Research Group, Oxford Brookes University, Oxford, UK

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Observation of twins in hippopotamus in Nigeria

The large hippopotamus *Hippopotamus amphibius* is categorized as Vulnerable on the IUCN Red List. In West Africa, threats to the species are exacerbated by high human population densities and significant habitat degradation and loss. In Nigeria, Africa's most populous nation, many hippopotamus populations occur outside protected areas, in lakes, inland rivers and reservoirs; the largest populations yet recorded occur in large reservoirs in the country's northern region (Baker et al., 2020, *Aquatic Conservation*, 30, 1996–2003).

In October 2021, we conducted a census of hippopotamuses at the 300 km² Dadin Kowa Dam Reservoir, on the Gongola River in northeastern Nigeria. Most of the reservoir lies in Gombe State, with smaller areas in Yobe and Borno States. As part of the survey, funded by The A.G. Leventis Foundation, we investigated reports from local farmers of several sightings of a 'mom and two babies'. On two occasions, we observed a single adult female with two calves in flooded farmland along the western side of the reservoir; we also captured the trio in a drone video. On the second visit, one calf was initially resting under a tree c. 150 m from the female and second calf, both of which were mostly submerged in aquatic grasses. At the time of our study, the area around the reservoir was widely covered by farmland, notably guinea corn *Sorghum bicolor*. Local farmers reported observing the trio leave the water to forage in farmland during the day. We did not observe other hippopotamuses in proximity to the female and two calves.

Twins are rare in hippopotamuses. According to data from the Association of Zoos and Aquariums (AZA), of the 561 recorded births among hippopotamuses in AZA institutions from 1880 to 2021, only 6 (1%) were twins. In European zoos from 1850 to 2020, twins were reported < 1% of the time: 11 twins in 1,562 births (data from the European Association of Zoos and Aquaria). Given the precarious status of hippopotamuses in Nigeria, our observation of twins is encouraging. The most recent reports received from local people, in mid December 2021, indicated that both calves had survived, but that the trio may have moved elsewhere because of receding water levels.

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ADAMU USMAN Kupto Community, Gombe State, Nigeria.
SARAH M. FARINELLI Department of Environmental Science and Public Policy, George Mason University, Fairfax, USA.
LYNNE R. BAKER (orcid.org/0000-0001-7646-8521, lynnerbaker@yahoo.com) IUCN Species Survival Commission Hippo Specialist Group, and Institute for Development, Ecology, Conservation and Cooperation, Rome, Italy

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