

Some notable birds in both new National Parks are the lesser adjutant *Leptoptilos javanicus*, and wreathed *Rhyticeros undulatus*, rufous-necked *Aceros nipaensis* and great pied *Buceros bicornis* hornbills. Austen's brown hornbill *Anorrhinus austeni* and the pale-capped pigeon *Columba punicea* occur in Dihing-Patkai.

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The first confirmed pregnancy of a released Amazonian manatee

The Amazonian manatee *Trichechus inunguis* is a freshwater sirenian categorized as Vulnerable on the IUCN Red List. Since 2008, the Instituto Nacional de Pesquisas da Amazônia (National Institute of Amazonian Research) of Brazil with the support of the Associação Amigos do Peixe-boi (Friends of the Manatee Association) has been releasing rehabilitated manatees in the wild as a strategy for the conservation of this endemic species. The programme's indicators of success are: (1) exploration of the area by the released manatees, (2) selection of suitable habitats, (3) survival over at least one complete river flood pulse, (4) interaction with wild manatees, and (5) absence of contact with humans. Because of the difficulty of detecting manatees, breeding is not included in this evaluation.

During 2008–2019, a total of 35 rehabilitated manatees were released in the Brazilian Amazon. Twenty-two (63%) with a VHF transmitter were monitored by trained ex-hunters for up to 752 days; 74% of the monitored manatees adapted successfully to the wild. To evaluate the health of the released manatees, recaptures are attempted during the dry season, involving biologists, veterinarians and fishers. Individuals are located using the VHF signal and, if the location is suitable, such as a small, shallow lake, the individual is surrounded by specially designed nets. Once captured, the manatee is transferred on a stretcher to the margin of the lake for collection of biometric data and blood and faecal samples.

Four manatees have been recaptured 6–18 months after release (one in 2016, one in 2017, and two in 2019). They had a mean increase of 45 kg in body mass and 10 cm in total length. One of the manatees recaptured in 2019 was Baré, a female rescued as an orphan calf and kept in captivity for 16 years. After 18 months in the wild, she had increased by 12 cm in length and gained 106 kg. The large abdominal

volume and vulvar oedema suggested an advanced pregnancy, later confirmed by serum progesterone analysis. Baré's pregnancy, and the participation of local people in the protection and monitoring of the manatees, confirms the success of the programme.

The lessons learnt will support future management planning for Amazonian manatees. In July 2021, Instituto Nacional de Pesquisas da Amazônia and Associação Amigos do Peixe-boi released 13 rehabilitated manatees, the largest group to date. Our experience shows that a combination of releases and environmental education activities is an effective conservation tool for the Amazonian manatee.

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Discovery of an intercontinental trade in porcupine bezoars from the Republic of the Congo

Old world porcupines (family Hystricidae) are extensively hunted across the tropics for subsistence. Porcupine bezoars (undigested organic and inorganic material occurring in the stomachs of some individuals) are used in purported medicines in South-east Asia (Heinrich et al., 2020, *Global Ecology and Conservation*, 24, e01204). The African brush-tailed porcupine *Atherurus africanus*, a common bushmeat species in Central Africa, has not previously been identified as a source of bezoars for the Asian market. In September 2020, we discovered signs of the trade in the south-west Republic of the Congo through interviewing local bushmeat sellers along the RN1 national road near the town of Dolisie. The sellers confirmed the occasional presence of bezoars in porcupines and showed us one, offering it for USD 36 per g. They provided information about the supposedly Chinese purchasers of their stocks, who reside in Dolisie, where we later approached a group comprising one Congolese man and two male logging company managers of Malaysian citizenship (from Sarawak). They showed us bezoars of various sizes, the largest being c. 200 g. Bezoars are purchased by the men or their Congolese representatives in multiple villages, hunting areas and logging camps, and later hidden in their airline luggage and transported to



Porcupine bezoars photographed at the home of Malaysian traders in Dolisie, Republic of the Congo. Photo: Arthur F. Sniegón.

Malaysia, reselling to other traders or directly to medicine sellers. They allegedly sell for up to MYR 300 (c. USD 73) per g to traders in Malaysia, and the final price for customers can reach MYR 800 (USD 193) per g, with the white and green bezoars reportedly the most valued.

Our investigations up to June 2021, including searches and interviews with traders in the main market in Brazzaville, resulted in no further information about bezoars. However, in the coastal city of Pointe-Noire, we found a Congolese man offering bezoars in the market and via WhatsApp for USD 10 per g. In remote areas of northern Congo, in the Sangha region, we found that people were mostly unaware of the existence or value of bezoars. However, a few people confirmed that traders from Brazzaville occasionally visit villages, paying USD 9 for small and USD 18 for large bezoars. The porcupine is not categorized as a threatened species and has the lowest level of legal protection in the Congo. However, there is a lack of data concerning the wild population and the sustainability of porcupine hunting practices. The trade in bezoars does not appear to have been noticed by local authorities, and is not considered illegal. If not monitored and regulated, we fear this increasing trade could become a stimulus for hunting and potential overexploitation of the African brush-tailed porcupine.

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Liberian pangolins during the COVID-19 pandemic: market surveys for live animals, bushmeat and scales

Three species of pangolins occur in Liberia, the Endangered giant *Smutsia gigantea* and white-bellied *Phataginus tricuspis* and the Vulnerable black-bellied *Phataginus tetradactyla*. All can be found alive and as raw or smoked meat in bushmeat markets. To gain an improved understanding of the availability of these species in the markets of Liberia, and to document the growing trade in scales, we carried out a survey of bushmeat markets during August 2020–February 2021.

We surveyed 110–130 vendors at 10–18 markets per month in the three most densely populated Liberian counties of Montserrado, Bong and Nimba. The primary trade corridor in Liberia runs through these counties from coastal Monrovia to the borders of Guinea and Côte d'Ivoire. Although numerous species were commonly available in all markets, no pangolins were observed in Monrovia markets, perhaps because of checkpoints into the city. Pangolins were, however, for sale in markets elsewhere, and most common in Bong County, which is accessible to hunters and vendors from the forested Lofa and Gbarpolu counties. Overall, 8–10% of markets had pangolins for sale, typically as butchered or smoked meat. We did not observe the giant pangolin. The white-bellied accounted for c. 75% of pangolins, and 80–90% of the scales were from the black-bellied pangolin. Scales were sold to Ganta City wholesalers and moved across the border into Guinea. Key informants claimed that three pangolins produce 1 kg of scales. We typically observed a total of 30–100 kg of scales in the markets each month.

The number of live and butchered pangolins, and scales, for sale diminished as the study proceeded, with availability lowest during the November dry season. By the end of February, the number of pangolins in the markets had fallen by 55% from that in August and scale prices had dropped from USD 30 per kg to USD 5 per kg towards the end of the survey. The main factors in the reduced occurrence of pangolins by February were the impact of the COVID-19 pandemic on bushmeat sales and prices, deteriorating currency exchange rates, and declining markets for the export of scales. Small-scale entrepreneurs in the informal market shifted their trade to other goods such as banknotes or cocoa, where the profit margin was higher.

Surveys of the larger, intact forest blocks of south-east Liberia would enhance our understanding of the market for pangolin meat in the country. Although pangolins occur throughout intact forests and a large supply of animal species from the south-east enter the Monrovia markets, pangolins were absent there, although we did