



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.

ARTHUR SNEGÓN ([orcid.org/0000-0002-4820-6011](https://orcid.org/0000-0002-4820-6011))  
Save-Elephants, Třinec, Czech Republic  
E-mail [arthur.f.sniegon@gmail.com](mailto:arthur.f.sniegon@gmail.com)

MARKĚTA SWIACKÁ Czech University of Life Sciences, Prague,  
Czech Republic

DANIEL J. INGRAM ([orcid.org/0000-0001-5843-220X](https://orcid.org/0000-0001-5843-220X))  
University of Stirling, Stirling, UK

This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence [CC BY NC SA 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/).

## 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

encounter live pangolins for sale on the streets. We presume that pangolin is a preferred meat and therefore consumed nearer source localities. Our survey suggests that pangolins are under significant pressure domestically despite efforts by the Forestry Development Authority to curb the trade.

DICKARMIEN DEEMIE *Society for Nature Conservation in Liberia, Monrovia, Liberia*

RICHARD A. NISBETT (ORCID [orcid.org/0000-0002-2560-6311](https://orcid.org/0000-0002-2560-6311))  
*University of Liberia, Monrovia, Liberia*  
E-mail [ranisbett@gmail.com](mailto:ranisbett@gmail.com)

REGINALD A. HOYT *Delaware Valley University, Doylestown, USA*

*This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/).*

## Resumption of natural reproduction of the Adriatic sturgeon in the River Po

The Critically Endangered cobice or Adriatic sturgeon *Acipenser naccarii*, endemic to the Adriatic basin, declined drastically in the latter half of the 20th century, and with no natural reproduction was on the brink of extinction by 1990. Recovery activities, mainly in the Po basin, have been implemented almost annually for 40 years, with the release of hundreds of thousands of individuals, mostly juveniles. All are descendants from a single stock held by a farmer, Giacinto Giovannini, who saved the species from extinction.

The life cycle of the Adriatic sturgeon can exceed 50 years, and the effects of conservation measures are therefore only expected after several decades. In recent years there have been increased sightings of large individuals, many of which have been genetically verified as released individuals, but no evidence of reproduction. Fingerlings of a size that suggest they are not reintroduced individuals have been reported in the River Ticino (a tributary of the River Po) and the River Livenza (which flows into the North Adriatic) but never in the River Po mainstream.

However, on 26 June a young Adriatic sturgeon, c. 4 cm long, was accidentally caught, and photographed and released, by a fisher (MG), in a stretch of the River Po sufficiently far from the River Ticino to indicate that reproduction must have occurred in the mainstream of the Po. The most recent reintroduction there was in 2020 and the size of the individual caught indicated it could not be one of the reintroduced individuals. The length indicates the individual was c. 2 months old, which suggests reproduction earlier than in captivity, where the species reproduces in late May or June.

This finding provides the first evidence that the River Po remains suitable for the reproduction of the Adriatic

sturgeon and that the long-term conservation efforts for this species may be successful. The potential success of this reintroduction demonstrates the need for continuous and long-term support for the conservation of individual species.

LEONARDO CONGIU (ORCID [orcid.org/0000-0002-9293-9837](https://orcid.org/0000-0002-9293-9837))  
*Department of Biology, University of Padova, Padua, Italy, and Sturgeon Specialist Group, IUCN Species Survival Commission. E-mail [leonardo.congiu@unipd.it](mailto:leonardo.congiu@unipd.it)*

ELISA BOSCARI (ORCID [orcid.org/0000-0001-8881-9907](https://orcid.org/0000-0001-8881-9907))  
*Department of Biology, University of Padova, Padua, Italy*

SAMUELE PAGANI *International Marine Centre, Oristano, Italy*

MARCO GAZZOLA *Private collaborator, Italy*

PAOLO BRONZI (ORCID [orcid.org/0000-0001-7662-6673](https://orcid.org/0000-0001-7662-6673)) *World Sturgeon Conservation Society, Oggebbio, Italy, and Sturgeon Specialist Group, IUCN Species Survival Commission*

*This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/).*

## New Global Center for Species Survival launches programme of work

In August 2021, the Global Center for Species Survival initiated its work plan in support of the IUCN Species Survival Commission (SSC) network. The Global Center is a new partnership between the Indianapolis Zoo and SSC, with the aim of accelerating the global conservation work of the SSC network. This network consists of more than 10,500 volunteer experts in 173 countries and is organized into more than 160 Specialist Groups, Conservation Committees, Red List Authorities and Task Forces. Global Center staff include seven Conservation Coordinators (Amphibians & Reptiles, Birds, Invertebrates, Mammals, Plants & Fungi, Freshwater, and Marine) as well as a Public Relations Specialist. In 2022, a Behaviour Change Coordinator will be added to the team to focus on the human dimensions of conservation.

After launching in early 2021, the Global Center met with SSC groups to assess the priorities and needs of the network. Working with the SSC Chair's office, the Global Center has developed a workplan that involves activities to support each step of the SSC Species Conservation Cycle: Assess, Plan, Act, Network and Communicate. The Global Center activities will include accelerating the ability of the SSC network to assess species and develop and implement conservation plans, assisting the network with responses to urgent threats, expanding communication of conservation progress and efforts, increasing communication across the network,