

Animal DNA Samples Can Pinpoint Hotspots of Illegal Wildlife Trade Routes





White-bellied pangolin for sale by local vendor in Liberia – SWNS

Tiny samples of DNA taken from a wide variety of animal sources can pinpoint hotspots of the illegal wildlife trade, utilizing a new research technique—and eventually lead to dismantling lucrative poaching networks.

The study focused on pangolins—with their scales prized for traditional medicine. One of the most poached species, they account for almost a third of recorded international seizures in recent years.

Genetic data can be valuable for tracing trafficked animals to their place of origin, but the method has been hindered by difficulties in obtaining genetic samples of pangolins.

In the new study, French scientists overcame that barrier by employing a gene-capture method to recover usable genomic information from degraded pangolin samples.

The team sequenced DNA from more than 700 samples of pangolins from international trade seizures, museum collections, bushmeat markets, and in the wild.

Using the genetic data from samples of known geographic origin in museum and field specimens, the researchers built a genomic “reference map” which helped them to trace each trafficked pangolin back to its likely origin.

“We’ve shown that it’s possible to trace trafficked pangolins back to their geographic origin with remarkable precision—sometimes to within just a few kilometers,” said [Dr. Sean Heighton](#) of the University of Toulouse.



Pangolins produce one pup every 1-2 years, making them even more vulnerable – SWNS

The data revealed several hotspot locations of illegal pangolin collection, including south west Cameroon, Myanmar, and several locations across Africa.

The genetic record also tracks major trade routes for the three pangolins types studied—Sunda, Chinese, and white-bellied—which cross the borders of China and between Indonesian islands.

The findings, [published in the journal PLOS Biology](#), also pinpointed wild populations that are exploited for both domestic and international trade, revealing the interconnectedness of the markets.

The team says their sampling technique has “great potential” for tracking the illegal wildlife trade, but genetic material remains limited.

They propose that a more detailed DNA database of trafficked animals could be developed with the establishment of standardized genetic sampling protocols, shared tools, and greater data integration between wildlife trade tracing initiatives worldwide—for pangolins as well as other trafficked species.

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“Integrating archival museum material with newly collected field and seizure samples enabled us to bridge long-standing gaps in geographic coverage and strengthen the accuracy of pangolin trade tracing,” said the University’s Dr. Philippe Gaubert.

“This enables more efficient, intelligence-driven conservation by directing limited resources toward key poaching hotspots, whereby a range of targeted interventions can be employed to disrupt illegal trade networks.

“One of the most exciting aspects of this work is that we developed a single gene-capture kit that works across all eight pangolin species and on degraded museum specimens, making genomic tracing more accessible, scalable, and practical for real-world pangolin conservation and forensic use.”

Dr Gaubert added: “One of the most striking findings was that domestic pangolin trade is largely local, but it overlaps with the same sourcing regions that supply international trafficking—revealing a connected supply chain rather than separate markets.”

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