

DNA sleuths target ivory poachers

October 26 2020



Credit: CC0 Public Domain

Professor Adrian Linacre at Flinders University is part of a team that focuses on developing forensic DNA technology to thwart a thriving global black market in exotic animals—and the significance of this new test working so effectively on such a difficult substance as ivory is especially significant, showing the power and accuracy of this investigation technique.

Ivory, which is essentially a form of tooth structure, has only tiny amounts of DNA contained within it, yet Professor Linacre says the new test procedure can work with only a tiny amount of connected DNA to return results of perfect accuracy.

Elephant populations have been greatly reduced, mainly due to illegal poaching for their [ivory](#). While the trade in elephant products is protected by national laws and CITES agreements to prevent further population declines, ivory poaching and [illegal trade](#) in ivory persists. For instance, in Thailand, it is illegal to trade ivory from African [elephants](#); however, the law allows possession of ivory from Asian elephants if permission has been obtained from the authorities. It has been difficult to determine the necessary differences by tests alone.

"This means the enforcement of legislation needs to classify the legal status of seized ivory products," explains Professor Linacre. "Many DNA-based techniques have been previously reported for this purpose, although these have a limit of detection not suitable for extremely degraded samples. Now, this new technique has made a great leap forward."

Historically, the tiny amounts of DNA contained in tusks has made tracking the origins of ivory goods very difficult—and why much of the poached ivory is shipped to Asia and swiftly broken down into tiny pieces, primarily for jewelry and trinkets that can be easily resold and does not allow easy or accurate DNA tracing.

However, the new process can confirm the legal or illegal status of seized ivory samples, even where it is assumed that the DNA will be highly degraded.

The results of the testing—"Discrimination of highly degraded, aged Asian and African elephant ivory using denaturing gradient gel

electrophoresis (DGGE)," by Nitchakamon Suwanchatree, Phuvadol Thanakiatkrai, Adrian Linacre and Thitika Kitpipit—have been published in the *International Journal of Legal Medicine*.

In these tests, DNA from aged ivory was tested for reproducibility, specificity, and, importantly, sensitivity. Blind testing of 304 samples resulted in 100% identification accuracy. It also resulted in correct assignment in the [legal status](#) of 227 highly degraded, aged ivories within the [test](#) cohort, thus underlining the high sensitivity of the process.

The result of these successful tests will have international implications for the illegal trafficking and poaching of ivory, says Professor Linacre.

"This research output—which is part of our continuing analysis of forensic DNA technology to accurately analyze smaller amount of DNA—will be beneficial to help analyze ivory casework samples in wildlife forensic laboratories, and ultimately help to identify [ivory poaching](#) hotspots."

More information: Nitchakamon Suwanchatree et al. Discrimination of highly degraded, aged Asian and African elephant ivory using denaturing gradient gel electrophoresis (DGGE), *International Journal of Legal Medicine* (2020). [DOI: 10.1007/s00414-020-02414-w](https://doi.org/10.1007/s00414-020-02414-w)

Provided by Flinders University

Citation: DNA sleuths target ivory poachers (2020, October 26) retrieved 5 May 2024 from <https://phys.org/news/2020-10-dna-sleuths-ivory-poachers.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is

provided for information purposes only.