Tracing the Illicit Wildlife Trafficker through Wildlife Forensic: Lessons learned from Thailand

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Thailand

Bangkok
Illegal Wildlife Trade

Transit country

The trafficking network

Guardian graphic | Source: The IUCN Red List of Threatened Species

Illegal Wildlife Trade
Illegal wildlife trade: Caseworks of DNP
Mission of DNP

“Sustainable conservation and protection of natural resources”

1. Wild Animal Reservation and Protection Act, B. E. 2535
Why is a wildlife DNA forensics laboratory necessary?

"Forensics"

To apply the forensic process as the tools for allowing the evidential results to be used in a legal context

Reducing illegal wildlife trade in Thailand
DNP-WIFOS laboratory was established about 8 years ago, since December 15, 2010.
Development of DNP-WIFOS Laboratory

Present (2018)

Laboratory
Aims

- To encourage the use of forensic techniques in wildlife crime and confiscated animals investigation.
- To establish DNA database & DNA bank of wildlife in Thailand.
- To do the techniques development research for supporting wildlife forensics laboratory.
Samples and Cases of DNP-WIFOS Lab (past 5 years)

Total
235 Cases
4,352 Samples
Elephant DNA database
(Year 2017)
Total Wild Elephants: ~3,000 – 3,700 indv.
Total Captive Elephants: ~4,000 indv.
Problem:
The wild were brought into captivity.

Solution:
1. Domestic elephant registration database
2. Asian elephant DNA parentage system
Captive elephant’s genetic database in Thailand

DNA Registers can...

- control illegal movement of the wild into domestic elephant market.
- control captive breeding and identify activity that may contribute to combat the illegal wildlife trade.
SNPs & microsatellites markers analysis

**Methods**

1. **16 SNPs markers** (Individual identification)

2. **13 Microsatellite markers** (Parental testing)
Wildlife DNA investigation
1. Species / Subspecies Identification

2. Individual / Parentage Identification
Apply to confiscated animal’s investigation

Genetic marker: Cytochrome b gene

Universal primers

L14724 (Forward) = 5’- CGAAGCTTGAGATGAAAAACCATCGTTG -3’
H15149 (Reverse) = 5’- AAACTGCGAGCCCTCAGAATGATATTGTCTTCA -3’

Mammals

- Lorisidae
- Bovidae
- Cervidae
- Felidae
- Hystrisidae
- Dugongidae
- Sciuridae
- Canidae

Elephant
Rhino
Bear
Wild boar/Pig
## Rhino horn cases in Thailand

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Source</th>
<th>Destination</th>
<th>Item</th>
<th>DNA Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mar 23, 2011</td>
<td>South Africa</td>
<td>Laos</td>
<td>6</td>
<td>White Rhino</td>
</tr>
<tr>
<td>2.</td>
<td>Jan 10, 2013</td>
<td>Africa</td>
<td>Vietnam (Mr. Pham Quang Loc)</td>
<td>6</td>
<td>White Rhino0</td>
</tr>
<tr>
<td>3.</td>
<td>Jun 24, 2013</td>
<td>(Mr. Doukoure N' Fally : Guinea)</td>
<td></td>
<td>8</td>
<td>White Rhino / Black Rhino</td>
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<tr>
<td>5.</td>
<td>May 11, 2016</td>
<td>?</td>
<td>? (Mr. Suwatchai : Thai)</td>
<td>1</td>
<td>White Rhino</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>6 cases</strong></td>
</tr>
</tbody>
</table>
Casework: Rhino horn

“Smuggling technique”
Thailand seizes 21 rhino horns worth $5 million in biggest haul for years.

# March 14, 2017
# Tiger cases in Thailand

<table>
<thead>
<tr>
<th>No.</th>
<th>Year</th>
<th>Number of cases</th>
<th>Number of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2012</td>
<td>13</td>
<td>87</td>
</tr>
<tr>
<td>2.</td>
<td>2013</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>3.</td>
<td>2014</td>
<td>5</td>
<td>119</td>
</tr>
<tr>
<td>4.</td>
<td>2015</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>5.</td>
<td>2016</td>
<td>5</td>
<td>215</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>30 cases</strong></td>
<td><strong>450 samples</strong></td>
</tr>
</tbody>
</table>
Getting to the Truth Behind Thailand’s Infamous Tiger Temple

More than 500 officers from Thailand’s Department of National Parks (DNP) swooped on the Tiger Temple, in the town of Kanchanaburi, a couple of hours’ drive west of Bangkok, on May 30, following years of allegations of illegal breeding and trafficking in the endangered cats.

40 dead tiger cubs were found in a freezer during a police raid on Tiger Temple, a tourist attraction that has faced repeated allegations of animal trafficking.

RESULTS

1. Subspecies Identification
   * Siberia (the most)
   * Malayan
   * Indochinese

2. Parental Testing
   187 individuals were analyzed by 19 microsatellite markers.
   * Not related offspring were found.
Black Panther case

Question?

1. “Black panther” species or not?
2. These animal parts are the same individual or not?
3. What is its sex?
## Elephant / Ivory cases in Thailand

<table>
<thead>
<tr>
<th>No.</th>
<th>Year</th>
<th>Number of cases</th>
<th>Number of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2012</td>
<td>21</td>
<td>285</td>
</tr>
<tr>
<td>2.</td>
<td>2013</td>
<td>20</td>
<td>245</td>
</tr>
<tr>
<td>3.</td>
<td>2014</td>
<td>15</td>
<td>277</td>
</tr>
<tr>
<td>4.</td>
<td>2015</td>
<td>20</td>
<td>661</td>
</tr>
<tr>
<td>5.</td>
<td>2016</td>
<td>21</td>
<td>282</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>97 cases</strong></td>
<td><strong>1,750 samples</strong></td>
</tr>
</tbody>
</table>
Result:

**ELEPHANT IVORY:**
- Savannah African Elephant
- Forest African Elephant
- Asian Elephant
- Mammoth

**FAKE IVORY:**
- Hippopotamus
- Camel
- Etc.
Two male suspects were arrested when officials found 24 elephant tusks and 16 elephant tails hidden in their pick-up truck’s cargo bed in Tak’s Mae Sot district on 14 March, 2018.

Result:

1. “Asian Elephant”
2. It found the samples of elephant tail and ivory were matched as the same individual.
3. Not matched with the Thailand’s captive elephant DNA database.
SAVING WILDLIFE WITH FORENSICS

Thank you.