

INTERDISCIPLINARY
QUICK
TALKS

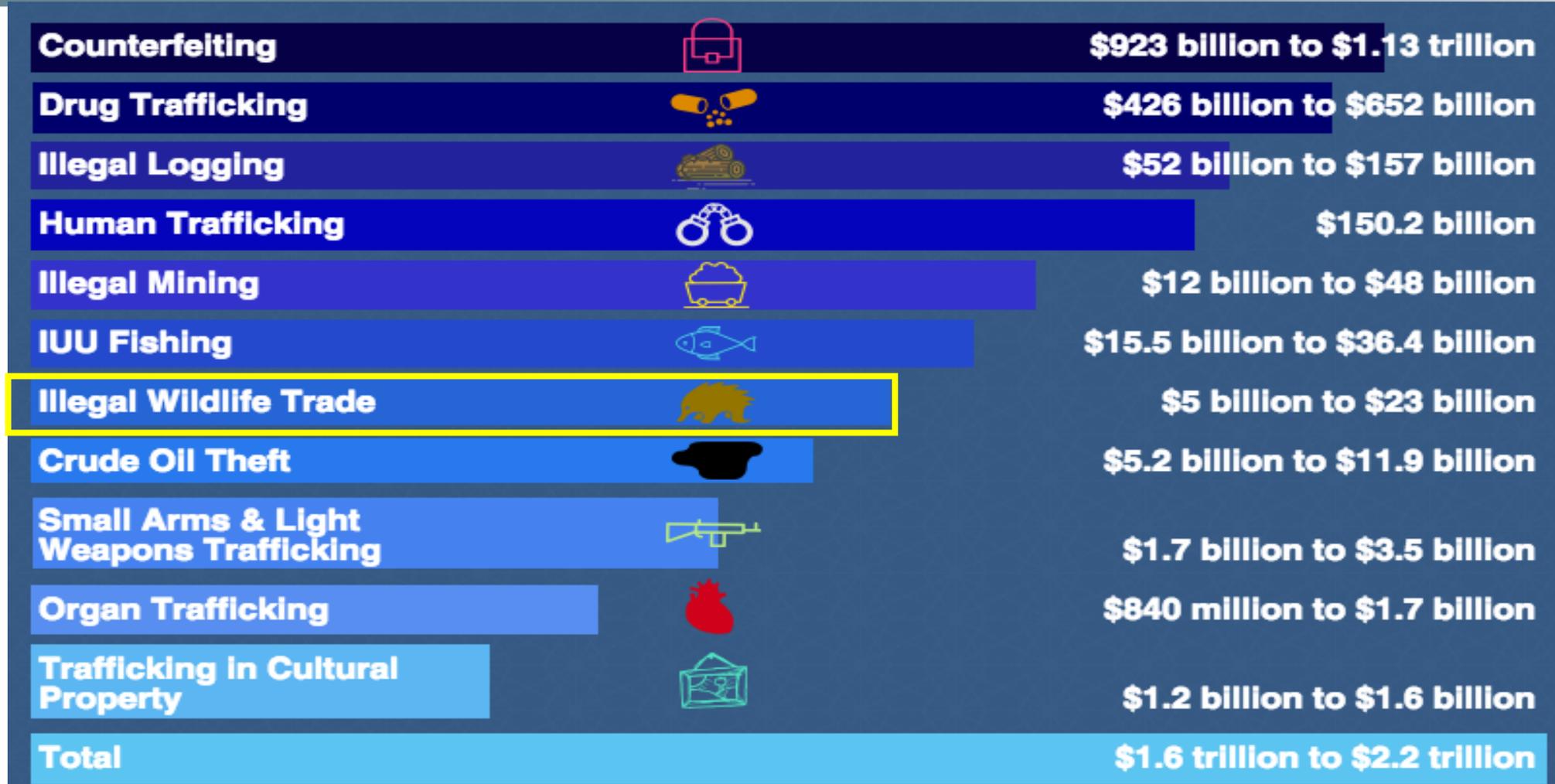
Animals Make a Better World

Conservation Forensics @ HKU

Dr David Baker
School of Biological Sciences
Swire Institute of Marine Science

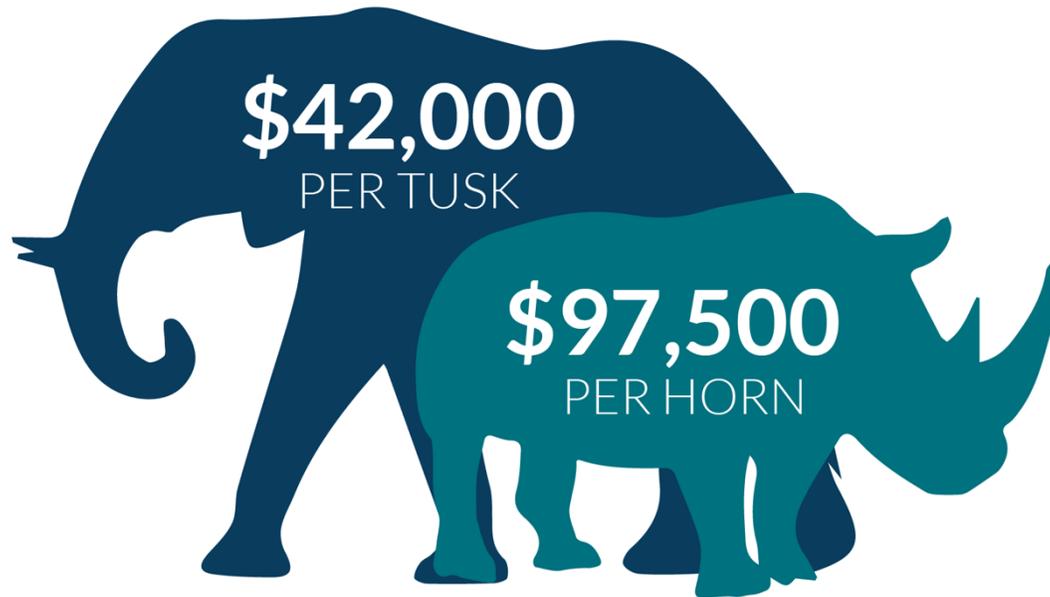
16 Jul 2019

Trans-national crime



Supply & demand

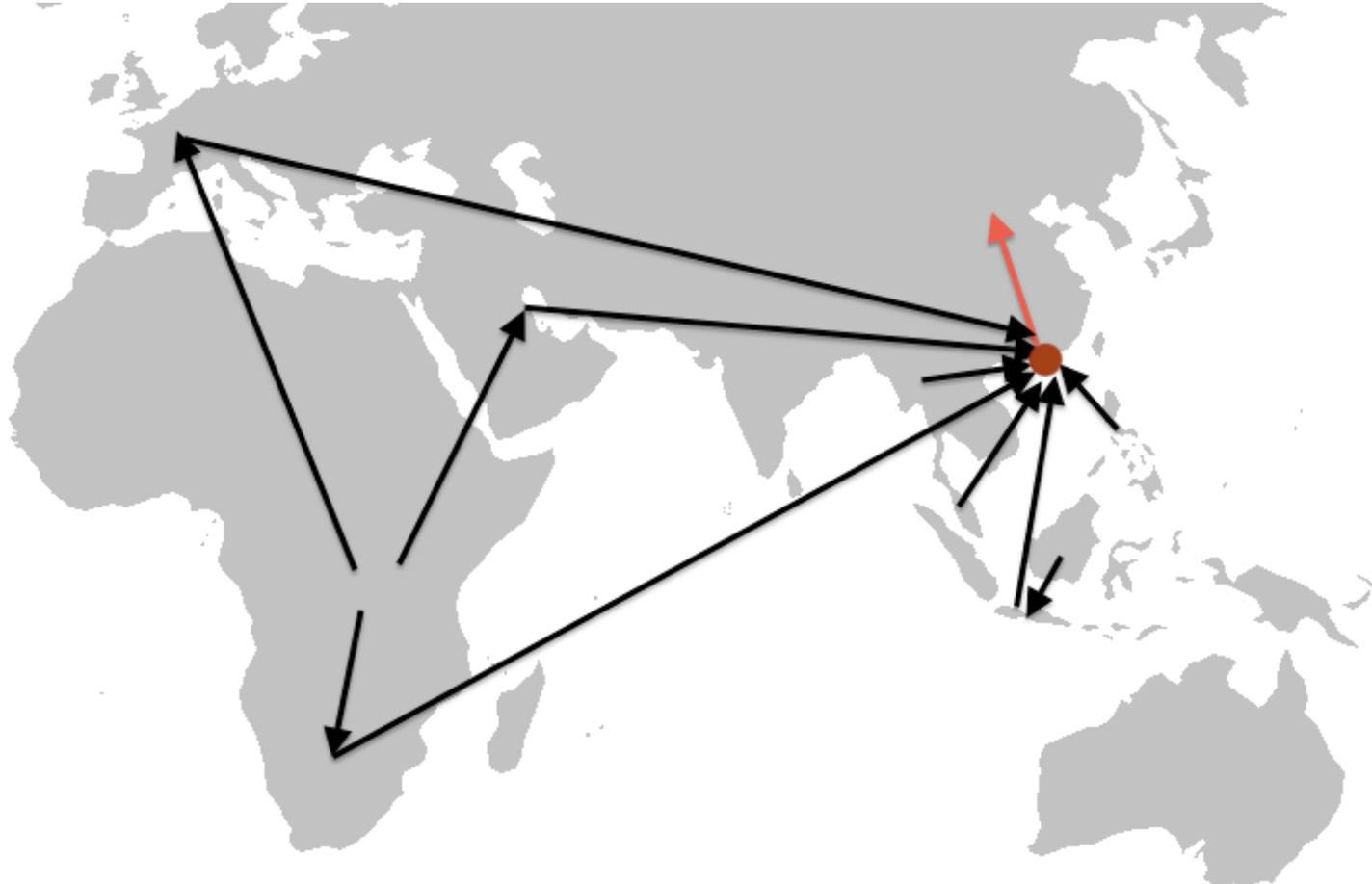
AVERAGE PRICES FOR
RHINO HORN & IVORY



\$5-\$23 BILLION
COMBINED ANNUAL ILLICIT
MARKET VALUE

- rare species = limited supply + unlimited demand = prices exceeding narcotics and precious metals
- profit margins are often huge; reward >> risk
- exploitation of impoverished people

Hong Kong is a wildlife trade hub



- Hong Kong is a **global epicenter** for wildlife trade.
- Serves as a **link** between different parts of Asia.
- An **importer** and **re-exporter** to markets into demand countries e.g. China, Japan, Korea.
- TCM, exotic pets, seafood, ornamental trade...

Illegal trade: seizures

Three arrested after Hong Kong customs seizes 7.2 tonnes of ivory from 'frozen fish' container in record HK\$72 million bust

Male proprietor and two female staff members of trading company in Tuen Mun nabbed

PUBLISHED : Thursday, 06 July, 2017, 2:29pm

COMMENTS: 10



NEWS, ANIMALS, ENVIRONMENT

CUSTOMS SEIZE 7.2 TONS OF SUSPECTED PANGOLIN SCALES, WORTH HKD4.6 MIL., SMUGGLED FROM NIGERIA

By Coconuts Hong Kong May. 31, 2017



More than 580 people arrested, HK\$53 million in illicit goods seized by Hong Kong customs over Lunar New Year

The confiscated items ranged from counterfeit products to drugs and wildlife parts from endangered species

PUBLISHED : Thursday, 22 February, 2018, 7:01am



HK\$2.7 million worth of ivory seized by Hong Kong customs in joint operation with mainland Chinese authorities

Eight people are arrested including alleged mastermind of the scheme

PUBLISHED : Wednesday, 04 July, 2018, 7:31am
UPDATED : Wednesday, 04 July, 2018, 8:31am

COMMENT: 1



quantity

Easy to launder



Difficult to
monitor and
enforce laws



Capacity building - HKU

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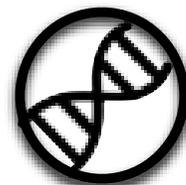


CENTRE FOR
**CONSERVATION
FORENSICS**
THE UNIVERSITY OF HONG KONG

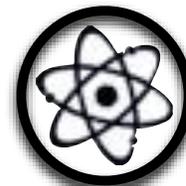
Started ~3 years ago

Academic and forensics research

Contract work



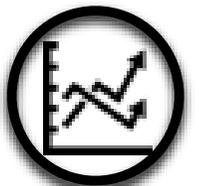
genetics



isotopes



elements



data analysis

Case Studies



Glass eels



Pangolins



Helmeted hornbills



Live Reef Food Fish



Yellow Crested-Cockatoos



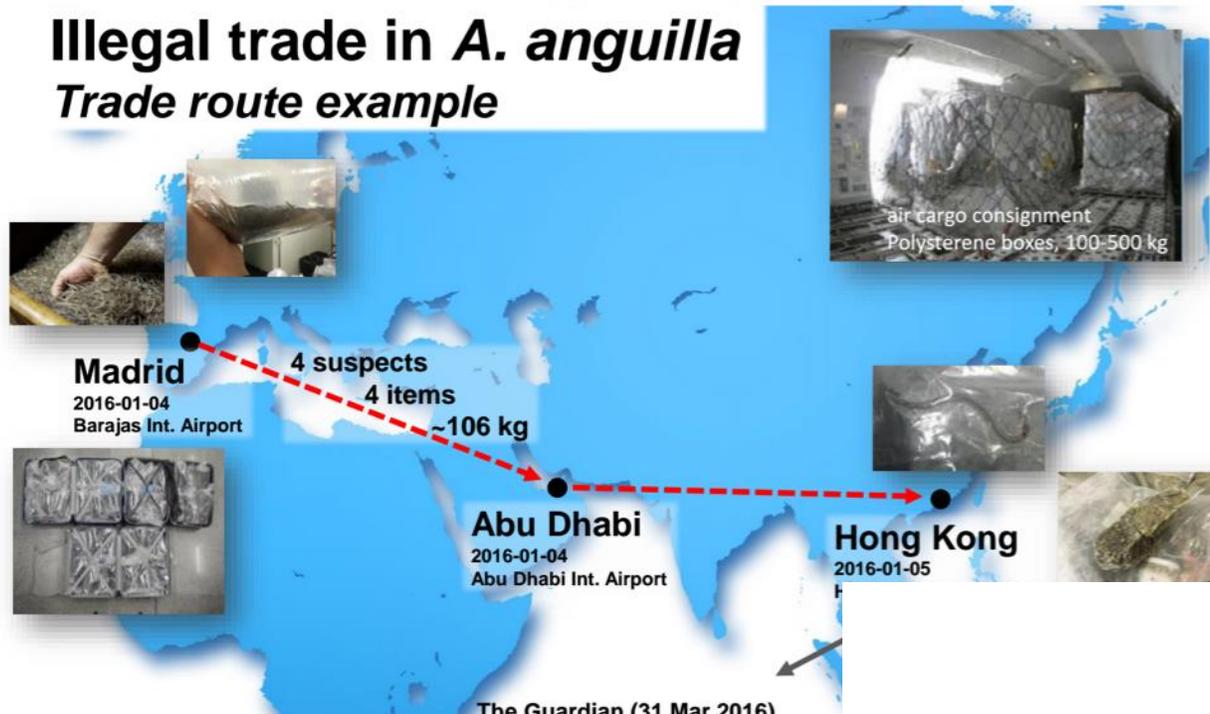
Hippo teeth



Shark fin

European eels

Illegal trade in *A. anguilla* Trade route example



Critically
Endangered
European eels
(*Anguilla anguilla*)
in glass eel stage

theguardian

Illegal eel: who is pilfering Europe's catch?

In part two of the eel saga, I take a more detailed look at how the pieces of the trade fit together, and what's being done to combat it.

Emma Bryce

Thursday 31 March 2016 13.21 BST

This is my second blog about the illegal trade of eel between Europe and Asia. In the first I wrote about the ecological plight of the eel and the scale of the trade. You can read that post here.

[Conservation Genetics Resources](#)

pp 1-5

First genetic evidence of illegal trade in endangered European eel (*Anguilla anguilla*) from Europe to Asia

Florian M. Stein, Jane C. Y. Wong, Victoria Sheng, Calton S. W. Law, Boris Schröder, David M. Baker

ENFORCEMENT

➔ Leading to 40
arrests in the EU

How much of the eel sold in HK supermarkets is *A. anguilla*?

COI barcoding

~50% were *A. anguilla* (> official import statistics)

Mislabeling

Potential infiltration of commercial market with black-market



ENFORCEMENT → Trafficking can be targeted, as all supermarkets were under one of two suppliers in HK

Where does it come from?

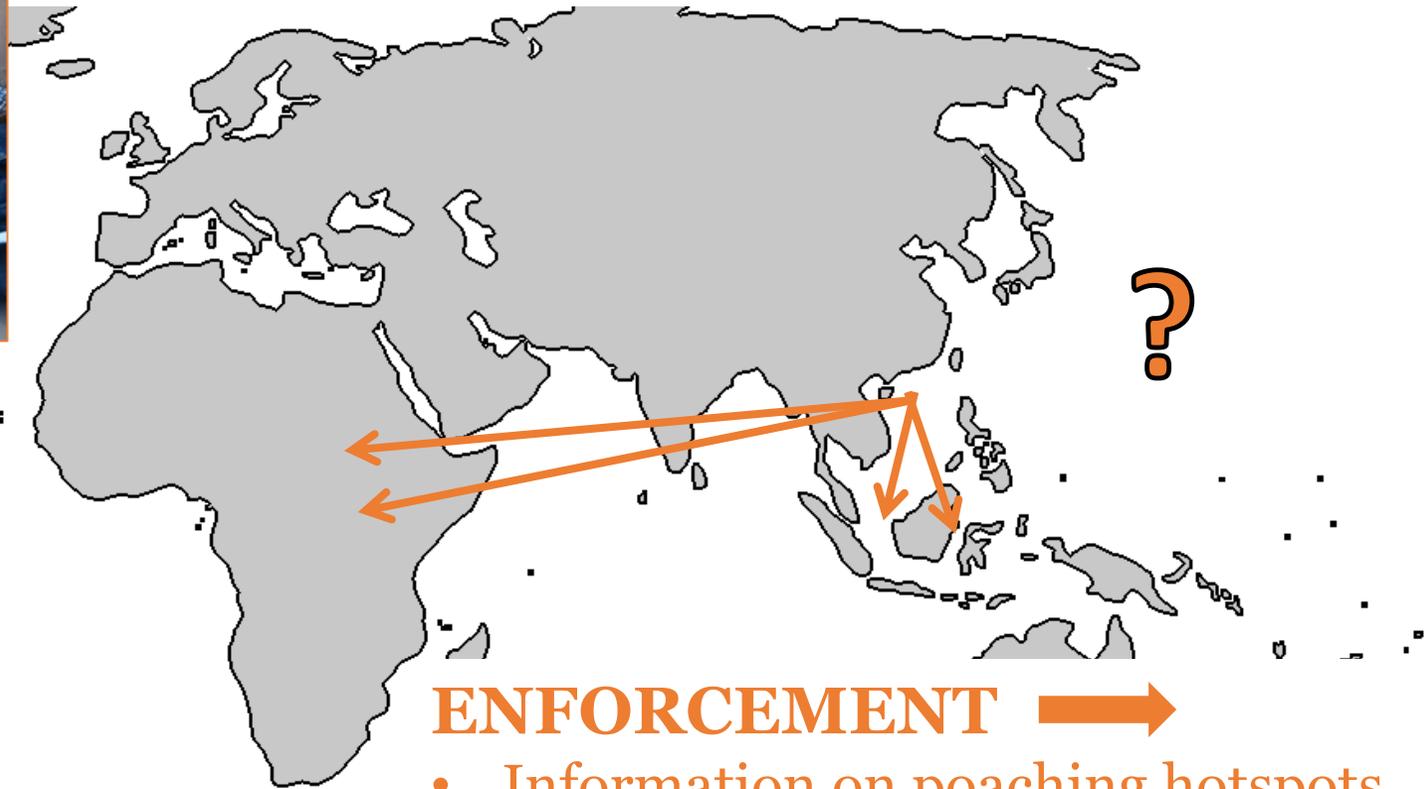
Ornamental Trade:

Helmeted hornbill
casques



Traditional Chinese Medicine:

African pangolin
scales



- Information on poaching hotspots
- True origin of seized products
- Trade routes

Live reef fish – wet markets

- Isolate eDNA from wet market drains
- Amplify using MiFish primers
- Sequence and screen for illegal/protected species



ENFORCEMENT →
non-invasive screening for illegal spp.

Captive bred or wild-caught?

Live Reef Food Fish Trade: The Humphead Wrasse



CITES
App. II

Exotic Pet Trade: The Yellow-Crested Cockatoo



CITES
App. I

Digital fingerprinting

Individual facial
markings = fingerprint

Digital photo-ID

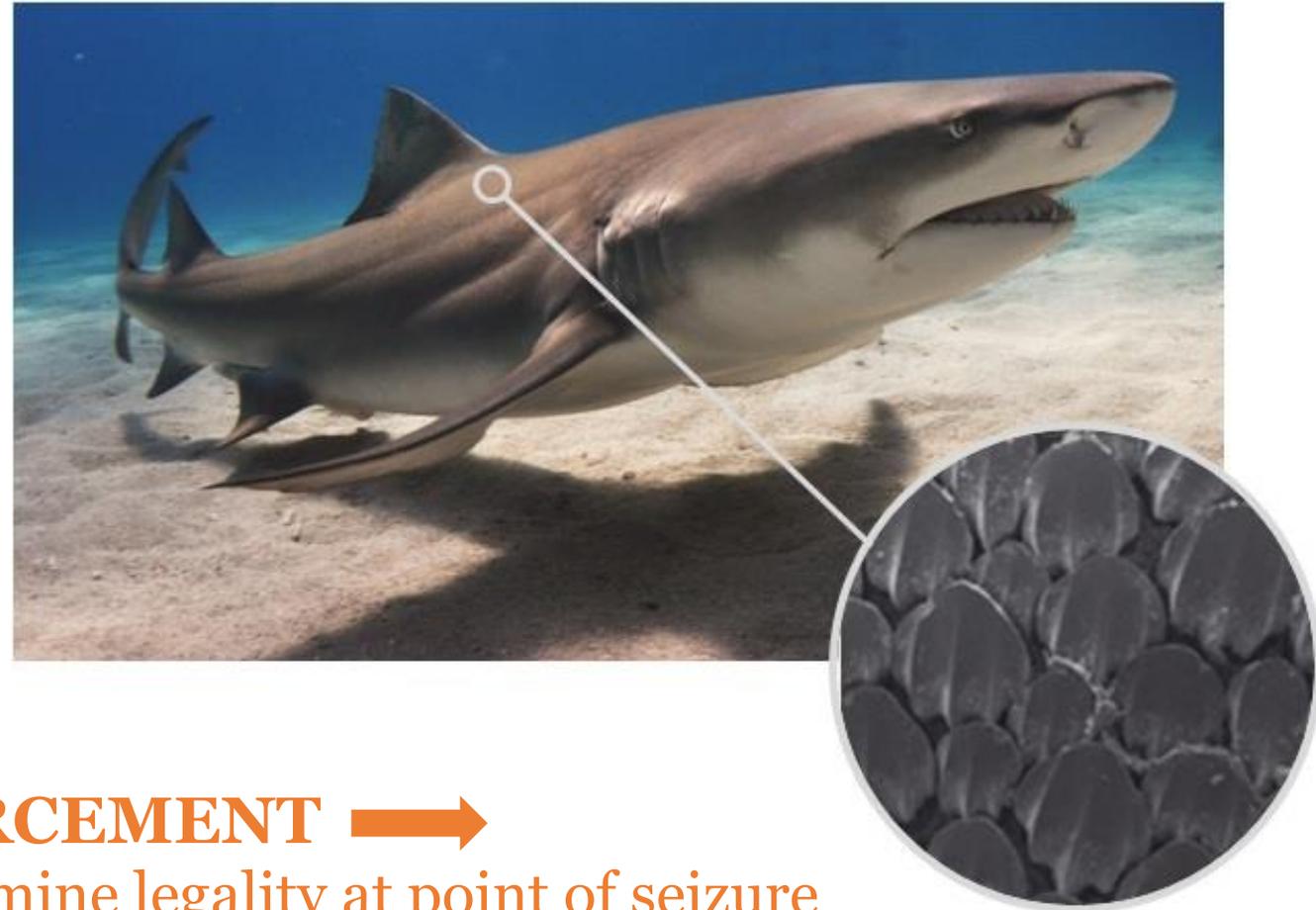
App for enforcement
officers

ENFORCEMENT →
Trade monitoring and
inspections



Rapid screening - shark fins

- Shark fins: morphological differences before bleaching
- Machine learning algorithms: visual ID
- App for enforcement officers



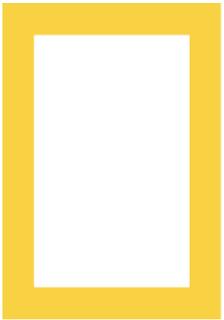
ENFORCEMENT ➔
To determine legality at point of seizure

Contract work, collaborators, funders

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漁農自然護理署
Agriculture, Fisheries and
Conservation Department



NATIONAL GEOGRAPHIC



TRAFFIC
the wildlife trade monitoring network



Bureau of International Narcotics and Law Enforcement Affairs (INL)

THANK YOU

