



International Trade in Amphibians:

A summary of the status, management, and trade in amphibians (*Amphibia* spp.) to support implementation of CITES Decision 19.197



By Jonathan Kolby and Orion Goodman



Origin and purpose of report

CITES Decision 19.197a on Conservation of amphibians (*Amphibia* spp.)

- a) conduct one or more interdisciplinary workshops for CITES Authorities and other relevant authorities and stakeholders about amphibian species in international trade, including but not limited to the following objectives:
- i) identify amphibian species that are in international trade and evaluate whether certain species or groups should be recommended for possible listing in the Appendices;
 - ii) share existing national legislation relevant to the trade in amphibians;
 - iii) evaluate whether current levels of trade are compatible with the conservation of these species in the wild;
 - iv) compile further data on harvesting levels of amphibians subject to high volumes of international trade;
 - v) explore the emerging threat of diseases to traded amphibians, including amphibian chytrid fungus and ranaviruses; and
 - vi) examine current enforcement efforts to deter and detect illegal and unreported trade and identify additional actions needed;



Structure of report

Section 1. Amphibian Trade Assessment: A Global Snapshot of International Trade in CITES and Non-CITES Listed Amphibians with the United States of America Between 2015 And 2020

Section 2. National Legislation Governing International Trade in Amphibians: Legislative Summary and Exploration of Potential and Confirmed Illegal Amphibian Trade Events

Section 3. Emerging Threat of Amphibian Diseases: Spread of Amphibian Pathogens Through the International Trade in Amphibians



Methods and main data sources

- United States Fish and Wildlife Service (USFWS) Law Enforcement Management Information system (LEMIS) data
- CITES Notification 2023/101 and questionnaire circulated on 18 August 2023
- TRAFFIC's Wildlife Trade Portal
- Literature review



Methods and main data sources

- United States Fish and Wildlife Service (USFWS) Law Enforcement Management Information system (LEMIS) data
- Study period: 1 January 2015 through 31 December 2020
- 14,663 recorded shipments
- 32,931 rows of LEMIS data



Section 1: Amphibian trade highlights

Number of species traded:

-At least 1,195 amphibian species internationally traded according to USFWS LEMIS records

-9.8% (117) are CITES-listed

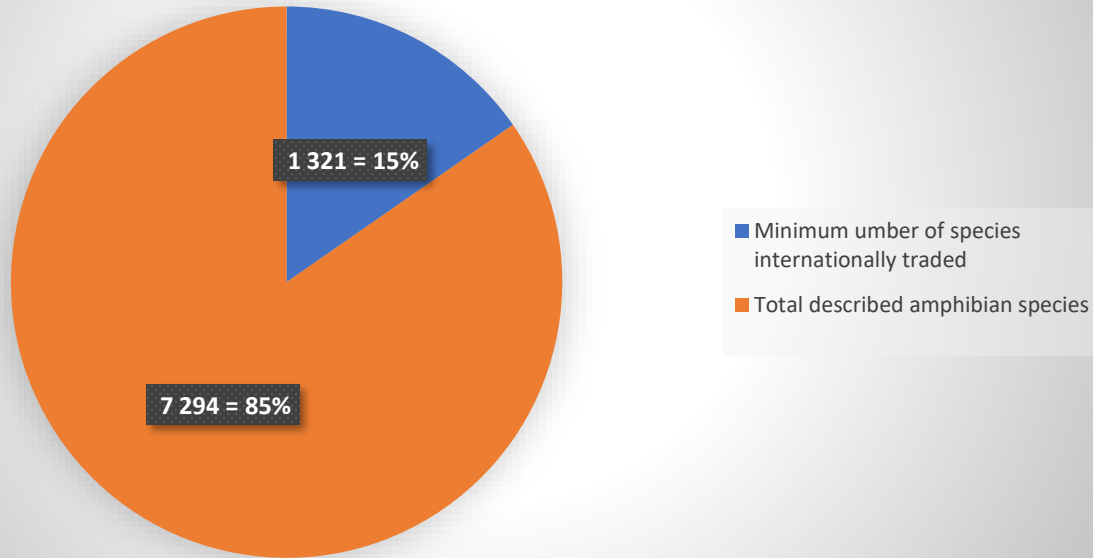
-LEMIS + literature review = at least 1,321 species internationally traded.

-10.7% (142) are CITES-listed

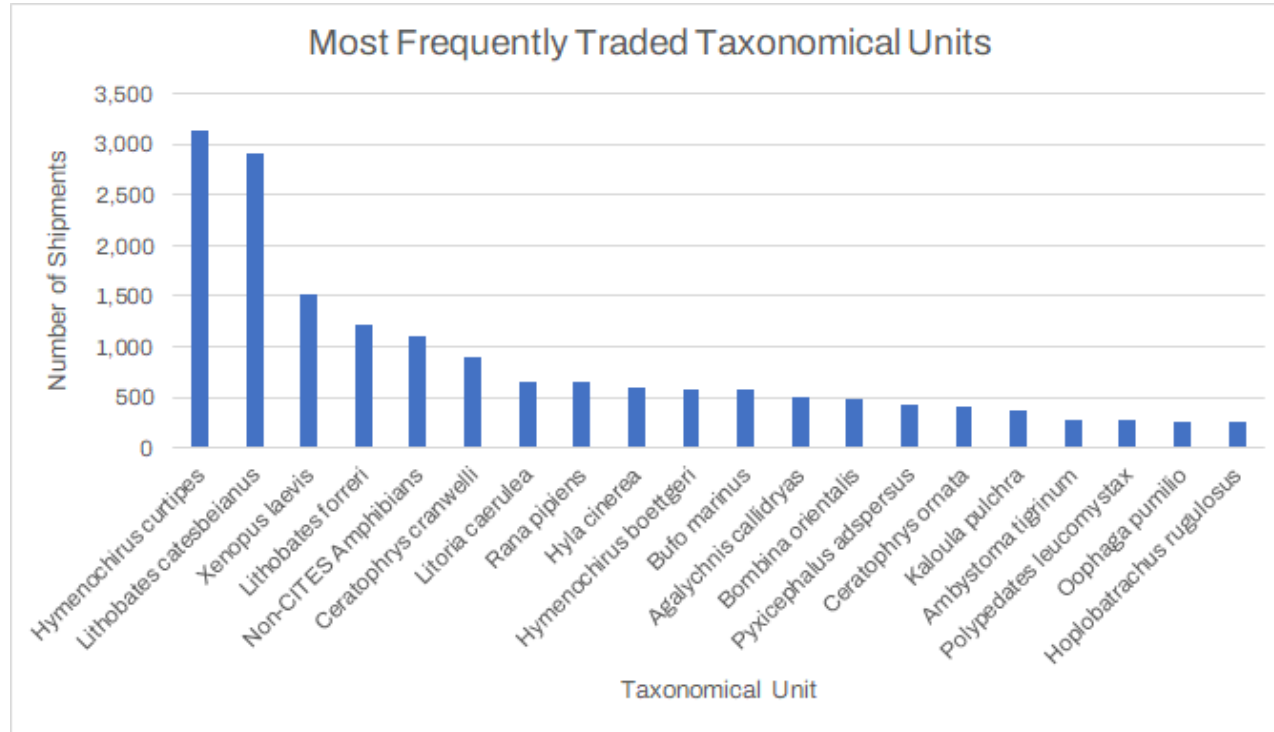


Section 1: Amphibian trade highlights

Proportion of described amphibian species traded internationally

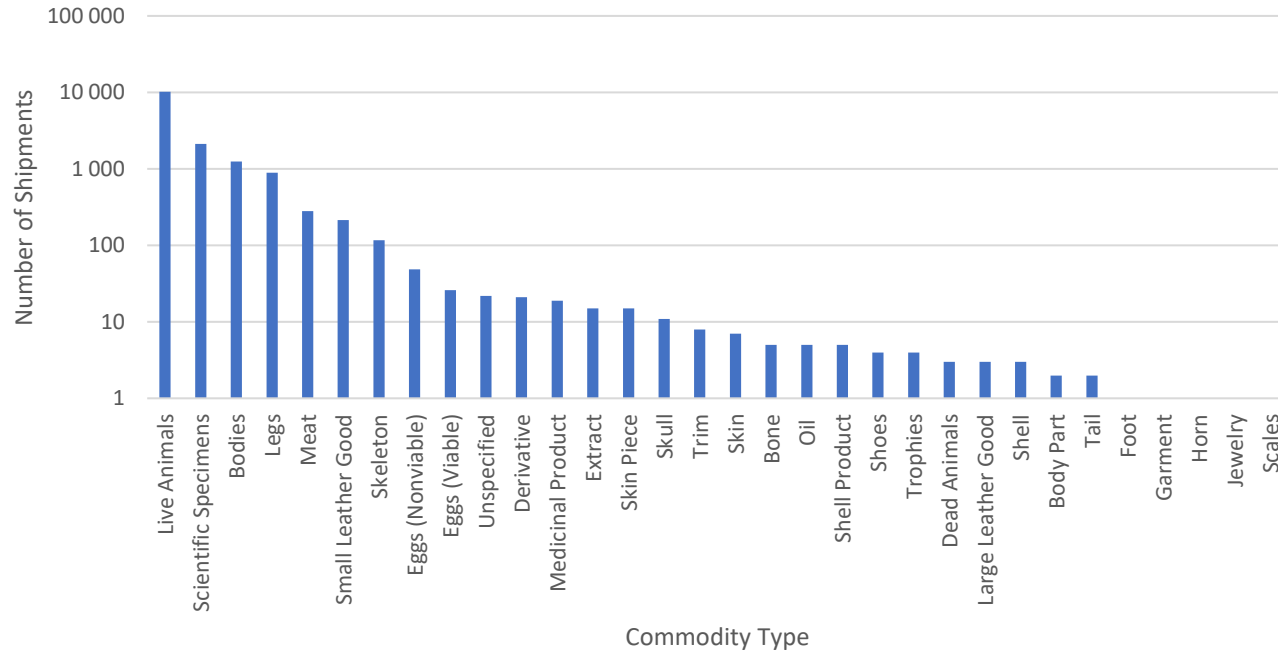


Section 1: Amphibian trade highlights

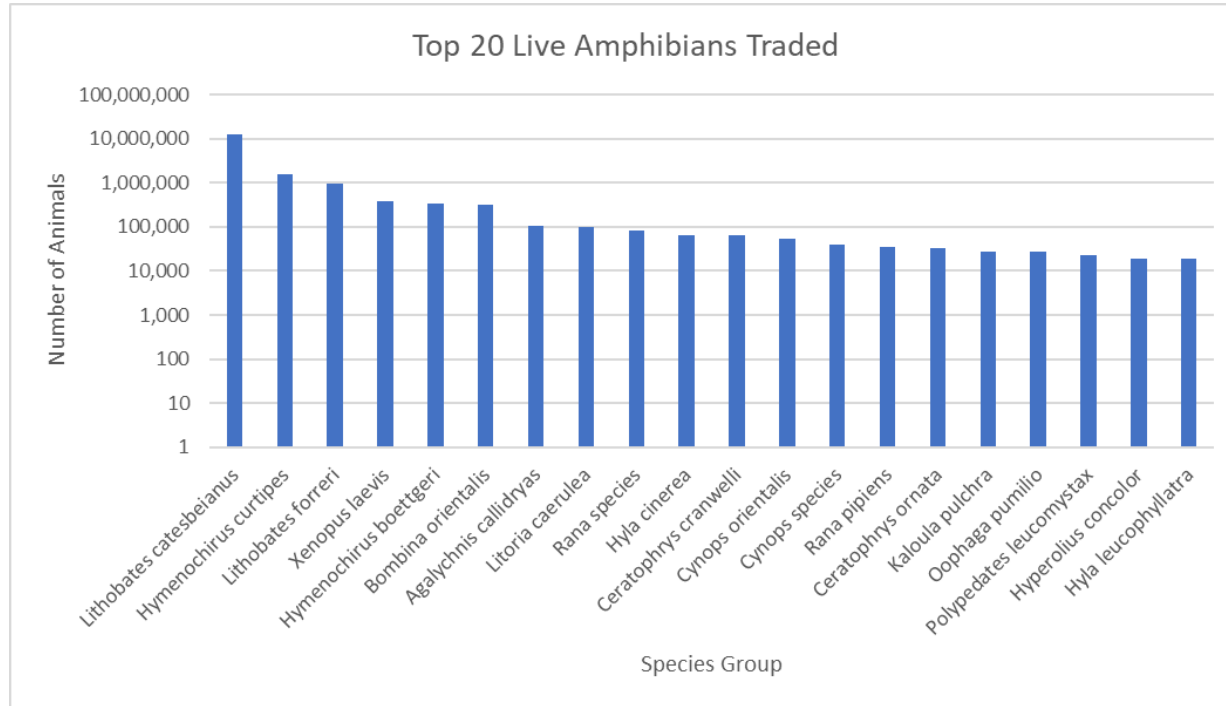


Section 1: Amphibian trade highlights

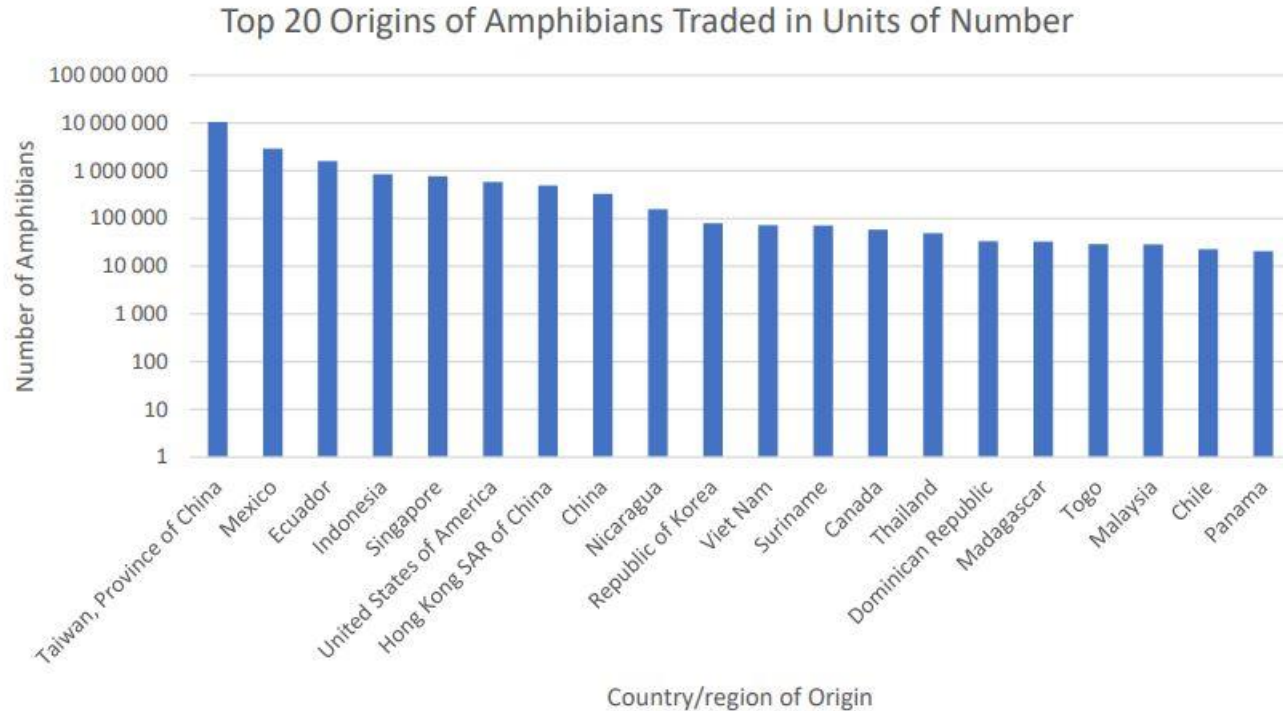
Most Frequently Traded Commodity Types



Section 1: Amphibian trade highlights



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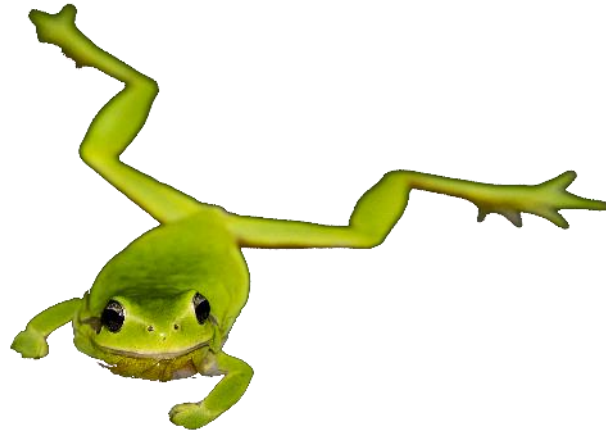


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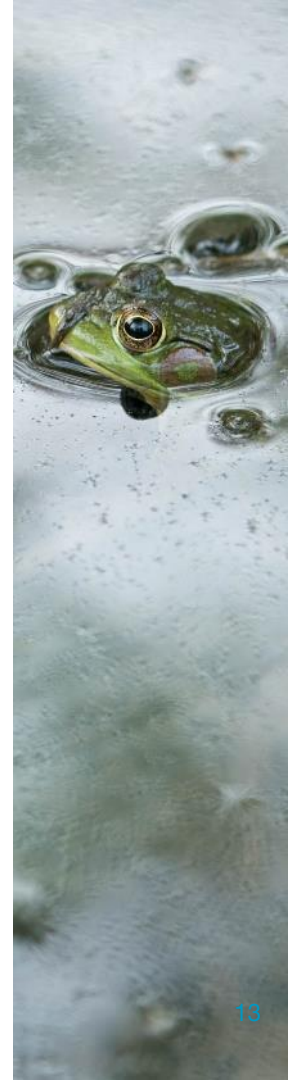
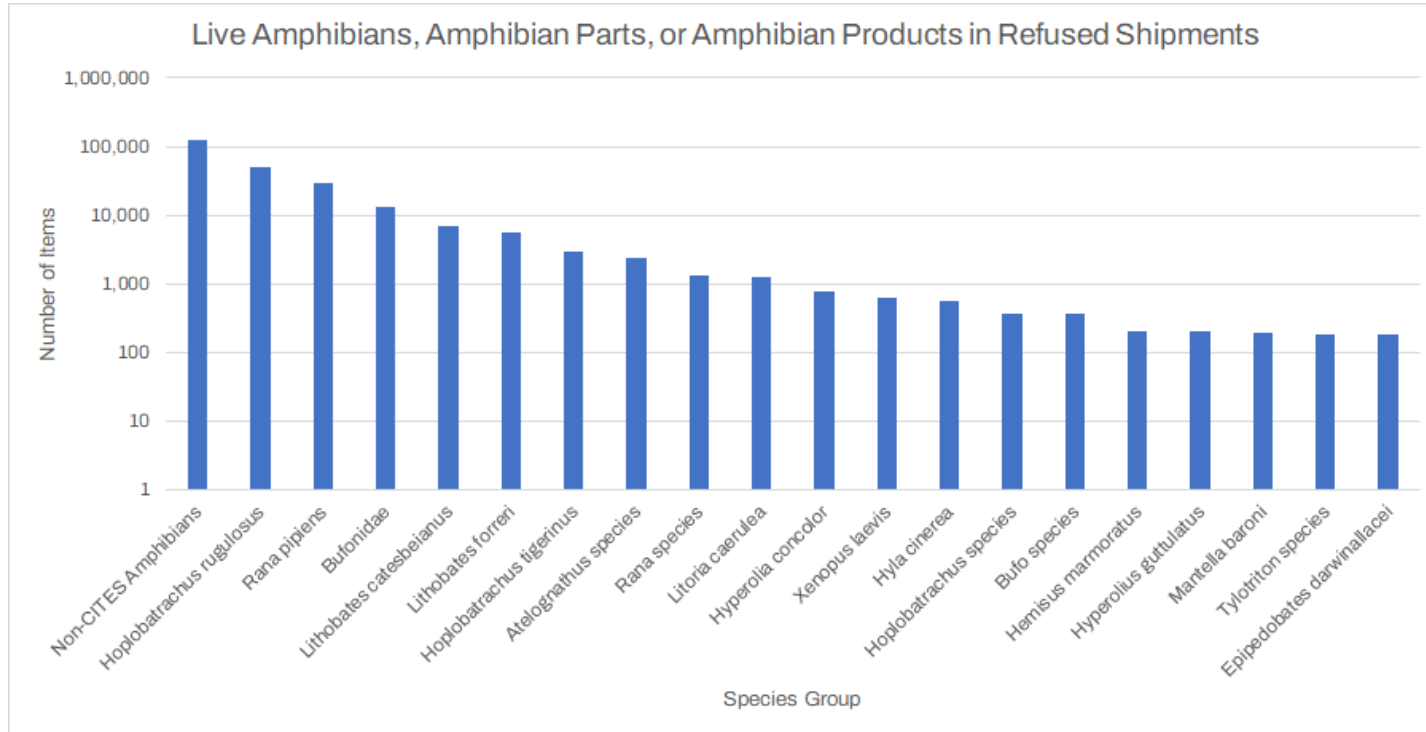
Legal versus illegal amphibian trade

-Top legally traded live amphibians coincided with those most frequently traded illegally.

-Illegal trade primarily involved species assessed as Least Concern in the IUCN Red List.



Section 1: Amphibian trade highlights



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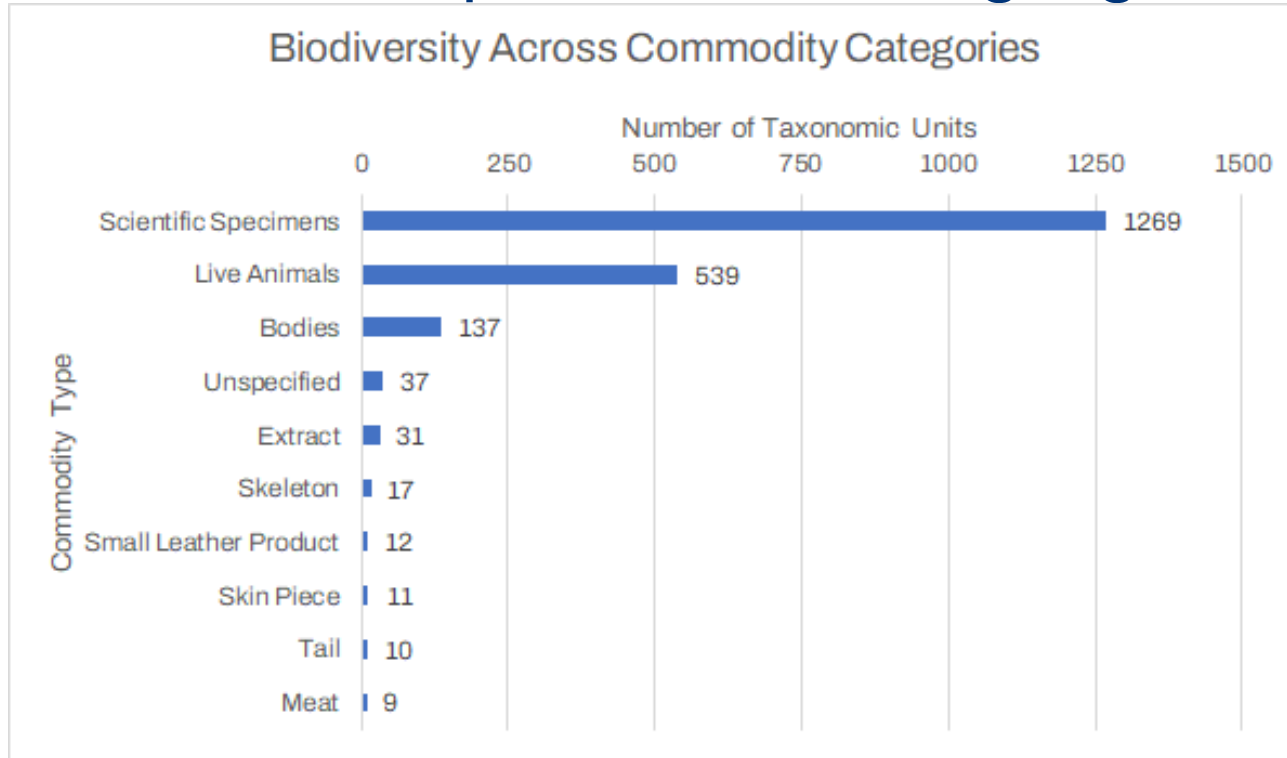
Trade scientific specimens

-The trade in live amphibians represented the largest cumulative quantity of amphibians traded by number of animals.

-The trade in amphibians reported as scientific specimens affected the highest diversity of species among all reported categories of trade.



Section 1: Amphibian trade highlights



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Trade in amphibians as frog legs

-The international trade in frogs for human consumption occurs at much greater volumes than that for all other purposes combined, although it involves relatively few species.

-Species traded as frog legs are often traded under incorrect scientific names as demonstrated through DNA testing of imported frog meat.

-The trade in frogs as frog legs conveys both direct and indirect threats to amphibian conservation.



Section 1: Amphibian trade highlights

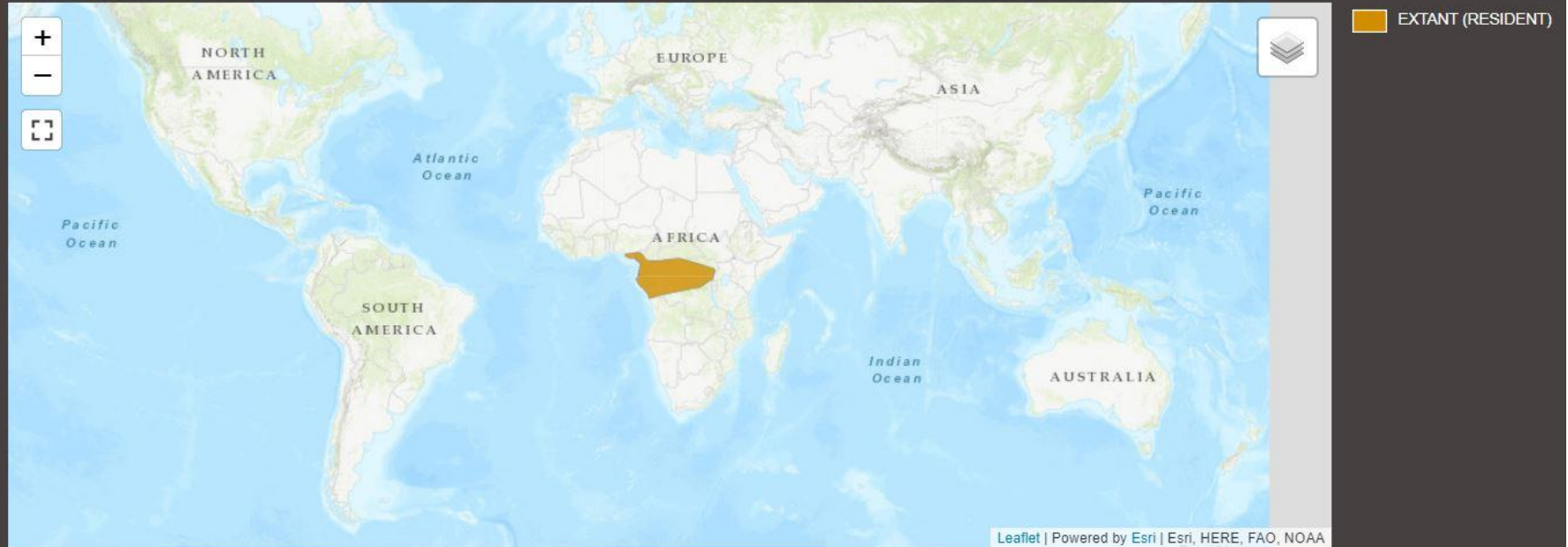
Anomalous reported origins and/or sources of traded amphibians

- Certain combinations of reported origins and source codes were not biologically possible.
- At least 12.7% (1,855) of shipments of live amphibians were affected.



Section 1: Amphibian trade highlights

GEOGRAPHIC RANGE



IUCN (International Union for Conservation of Nature) & Conservation International. 2014. *Hymenochirus boettgeri*. The IUCN Red List of Threatened Species. Version 2022-2

Geographic range in detail



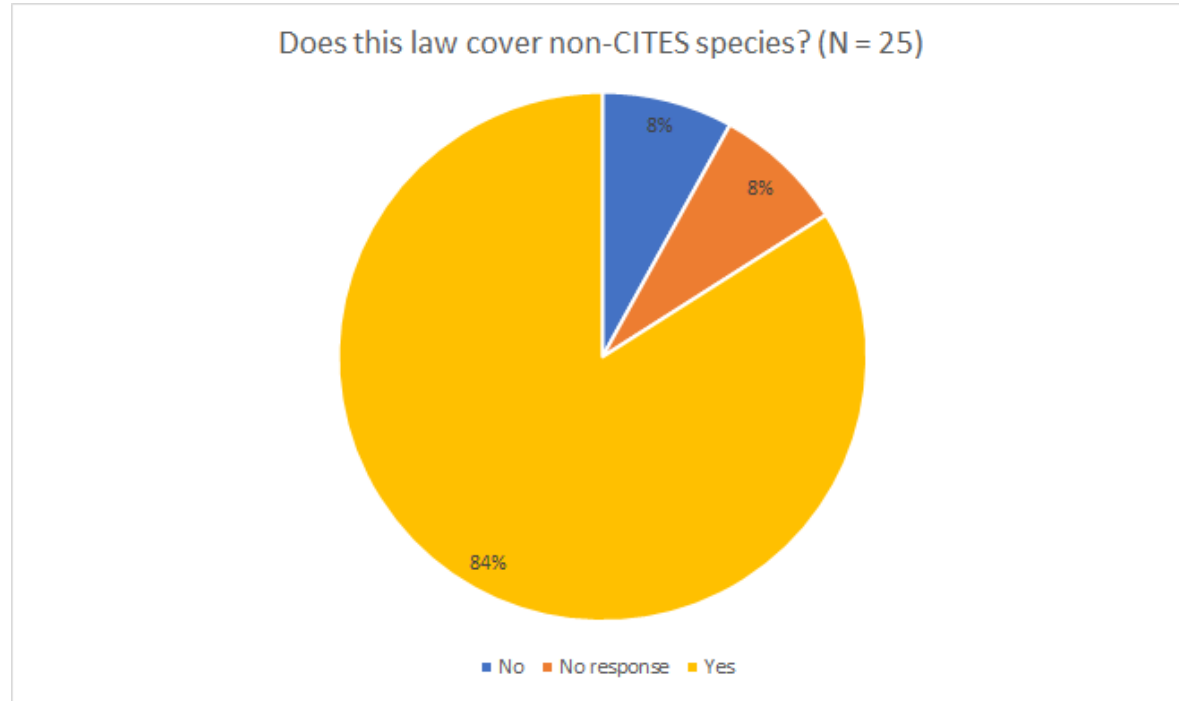
Section 2: National legislation highlights

Amphibian trade legislation

-Most respondent countries noted the presence of national legislation that governs either the trade in amphibians specifically, or trade in wildlife more broadly.

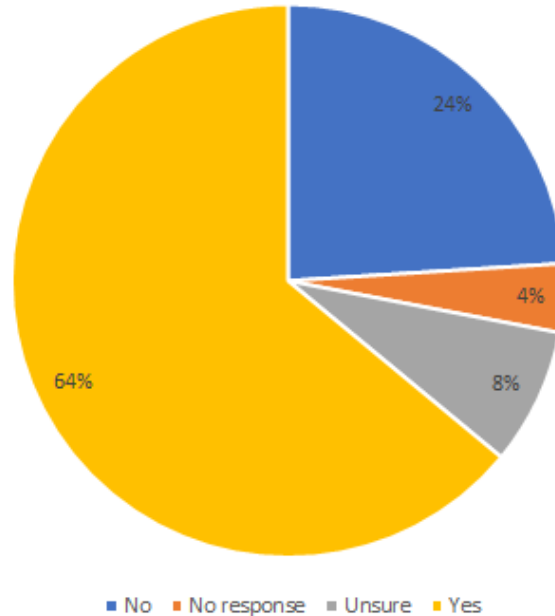


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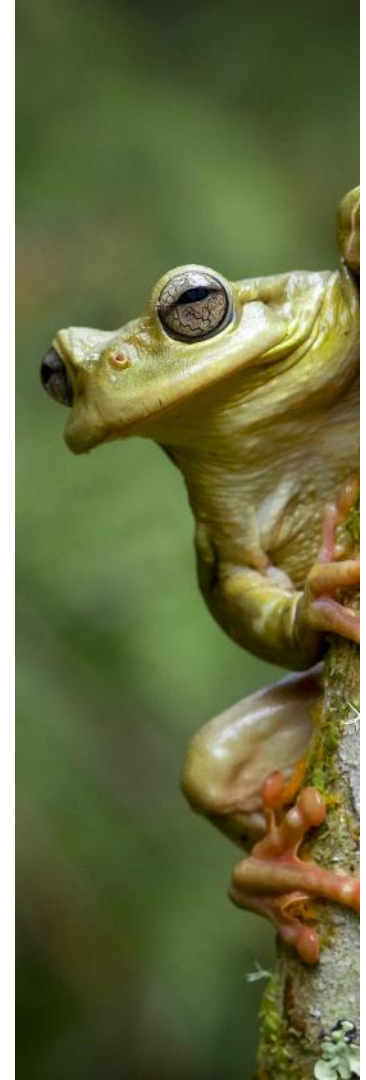
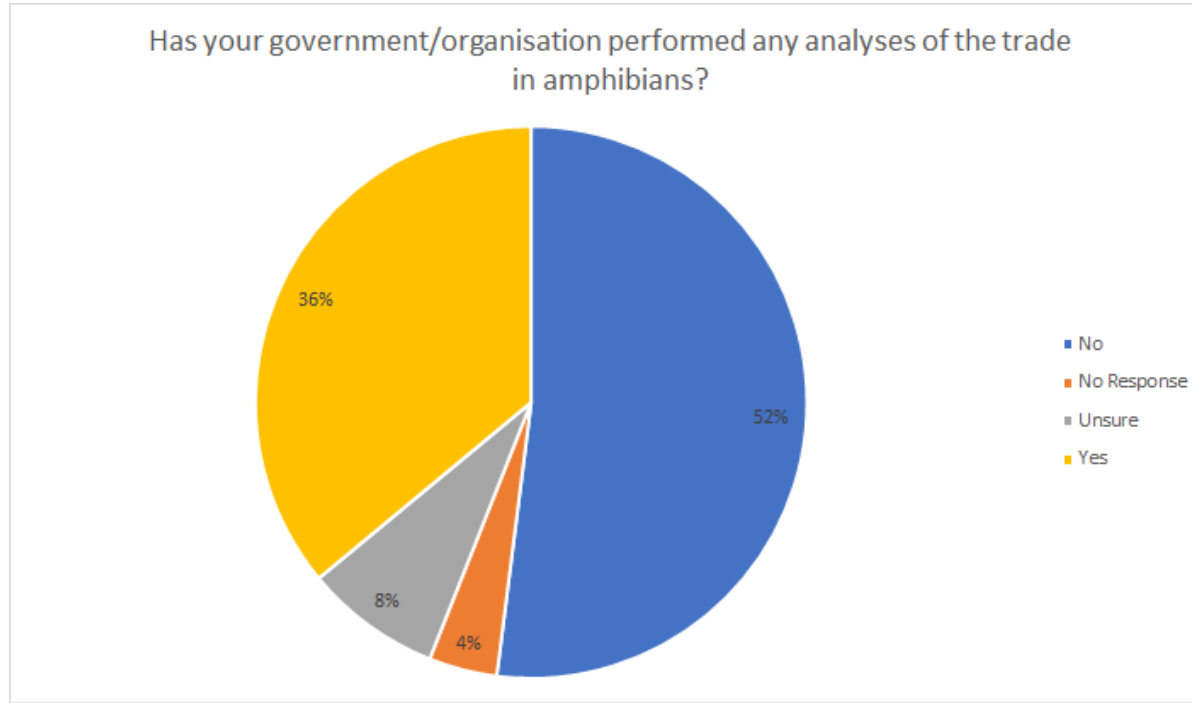


Section 2: National legislation highlights

Has your country identified amphibian species in trade? (N = 25)



Section 2: National legislation highlights



Section 2: National legislation highlights

Amphibian trade legislation & enforcement

-Among illegal wildlife trade data captured by TRAFFIC's Wildlife Trade Portal for events that occurred from 2015-2020, there were 29 different taxonomic units of amphibians associated with illegal trade across 27 countries.

-The low level of detail generally provided with illegal amphibian trade records inhibited identification of laws violated and whether the cause occurred at the country of origin, export, or import.



Section 2: National legislation highlights

Amphibian trade legislation & enforcement

- Analyses of LEMIS data compared against government responses to the CITES Notification survey.
- Multiple instances identified where violations might have occurred.
- Can provide insight to Parties about exports that might warrant follow up and discussion.



Section 3: Amphibian disease and international trade highlights

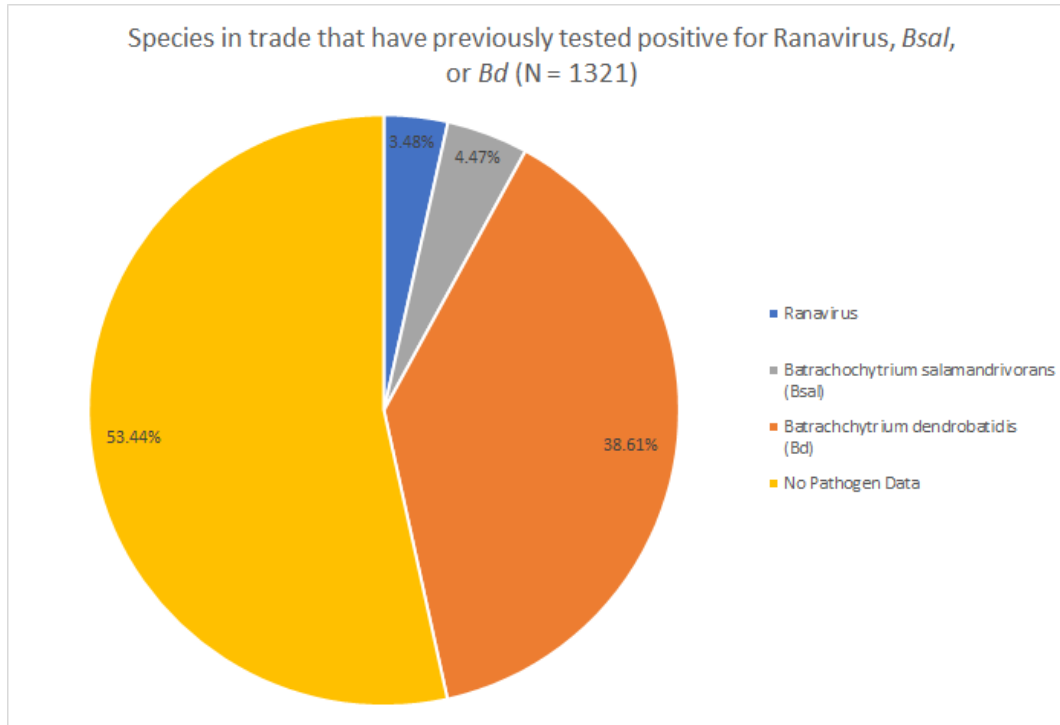
Spread of Pathogens Through the International Trade in Amphibians

-At least three major emerging infectious pathogens of amphibians are spreading through the international trade in amphibians:

- 1) Amphibian chytrid fungus (*Batrachochytrium dendrobatidis*)
- 2) Salamander chytrid fungus (*Batrachochytrium salamandrivorans*)
- 3) Ranavirus



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Regulation of Pathogens in the International Amphibian Trade

-72% of government responses answered that they do regulate amphibian trade to prevent the spread of pathogens by traded amphibians.

-High volumes of pathogen-positive amphibians might still be traded without protective measures uniformly implemented.



Section 3: Amphibian disease and international trade highlights

Biosecurity measures can help reduce the spread of amphibian pathogens through trade

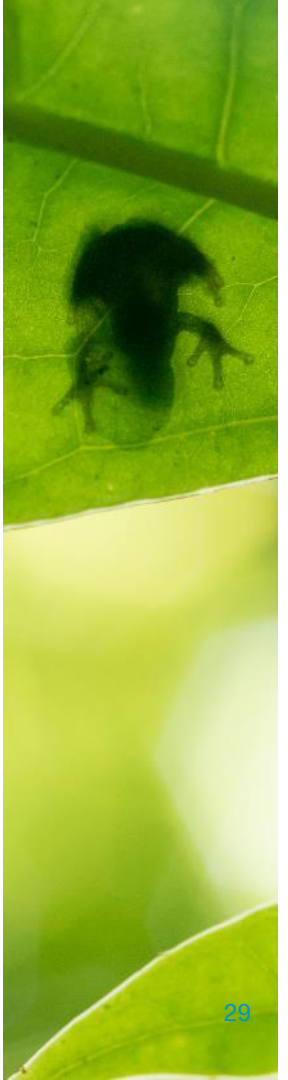
- Diagnostic testing upon import/export
- Maintaining closed system amphibian breeding operations
- Packing animals in lower densities to reduce pathogen transmission
- Disinfection of shipping materials to prevent spreading infectious material through water, cartons, containers, and substrates



Research Challenges

Identification of traded species

- Lack of customs harmonised system codes for amphibians (and to species).
- Do any other countries record their international trade in non-CITES listed amphibian species?
- Among LEMIS data, many amphibians have been recorded as “Non-CITES amphibian” or at other higher levels than species.

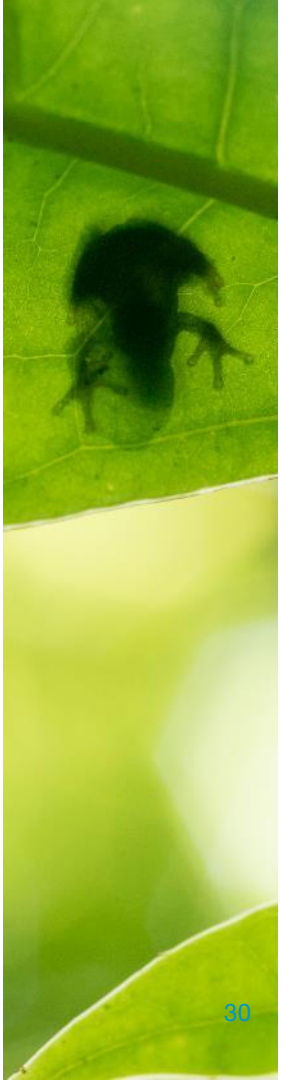


Research Challenges

Causes of Illegal Trade & Strengthening Enforcement

-Illegal trade can be caused and interpreted in many different ways, and important details are often absent from records of illegal trade.

-Information about which specific national law was violated could help identify actions needed to improve compliance and strengthen enforcement.

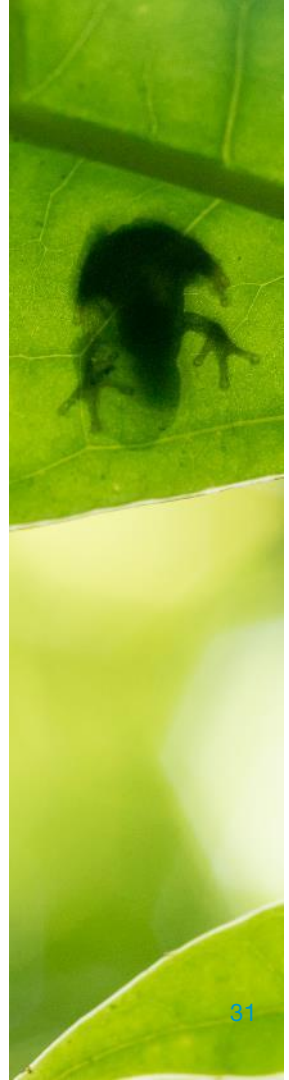


Conservation Challenges

-Evaluation of impact of collection on amphibian populations is often unavailable.

-Cumulative pressures from climate change, disease, habitat loss, pollution, invasive species, and exploitation act together and make it difficult to identify the role of trade in population trends.

-Frog farms may exert an outsized negative impact on amphibian species globally due to the spread of deadly diseases.



Questions?

