

EXPLOITATION



The leading cause of amphibian decline
By: Stephen Jones

Outline

- What is exploitation?
- How are amphibians being exploited?
- Exploitation for food
- The pet trade
- Implications
- Is exploitation the leading cause of amphibian decline?

What is exploitation?

- Food
- Pets
- Medicine
- Education and Research
- Fishing Bait



Exploitation for food

- In the past India and Bangladesh were the leading exporters of frog legs – Collapse of Green pond frog (*Euphlyctis hexadactylus*) and Indian bullfrog (*Hoplobatrachus tigerinus*) populations
- Current leading exporters: Indonesia, China, Taiwan, and Vietnam

Exploitation for food

- Indonesia: 15.4 Tons of wild caught frogs exported
- Vietnam: 2400 tons of wild caught frogs
- Main frogs being consumed: Giant javan frogs(IUCN red list- listed as vulnerable), asian brackish frogs, american bullfrogs
- Estimated 180,000,000- 1,000,000,000 frog harvested each year

Exploitation for food




Importation

- European union: From 2000-2009 51000 tons of frog legs
- United states 47000 tons in the last decade
- 1 kg may represent 20-50 individual frogs: meaning that the EU may have imported 920 million -2 billion frogs
- The US is not far behind
- Between the US and the EU 1,800,000- 4,000,000
- Frogs in 10 years.

Chinese Giant Salamander (*Andrias davidianus*)

- Largest living amphibian
- Most wild populations are threatened and many are already extinct
- Harvested for the luxury food industry
- Is currently protected but individuals are still being poached for food.



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Where might exploitation for food be an issue?

<input type="checkbox"/> Thailand	<input type="checkbox"/> Argentina
<input type="checkbox"/> Vietnam- 6 species	<input type="checkbox"/> Brazil
<input type="checkbox"/> Madagascar	<input type="checkbox"/> Peru and Bolivia -Marbled water frog, critically endangered
<input type="checkbox"/> China 39 species, 12 in rapid decline	<input type="checkbox"/> Iticaca water frog
<input type="checkbox"/> Malaysia	<input type="checkbox"/> Uruguay - American bullfrog introduction
<input type="checkbox"/> Indonesia 14 species, American bullfrog introduction	
<input type="checkbox"/> Africa- Endangered Goliath frog, 4 other species	
<input type="checkbox"/> Chile- Chilean helmeted bullfrog	
<input type="checkbox"/> Mexico- Northern leopard frog	
<input type="checkbox"/> Cuba	

Negative impacts

- Loss of biodiversity
- Loss of pest control species: mosquitoes and agricultural pests- observed in India and Bangladesh in the 1980s
- Farming is not an ecologically safe alternative due to the spread of diseases such as Batrachochytrium dendrobatidis ,Ranavirus, and Salmonella
- Introduction of non-native species

Pet trade

- Majority are harvested for food but many species are also collected and sold in the pet trade

Most frequently traded amphibians, from 1998-2002

Imported

- *Hymenochirus curtipes* -2,376,647
- *Cynops orientalis* -1,635,362
- *Bombina orientalis* -1,016,579

Exported

- *Hymenochirus curtipes* -188,622
- *Cynops pyrrhogaster* - 112,901
- *Hyla cinerea* - 87,536
- *Bombina orientalis* -78,606
- *Hymenochirus spp.* -72,832

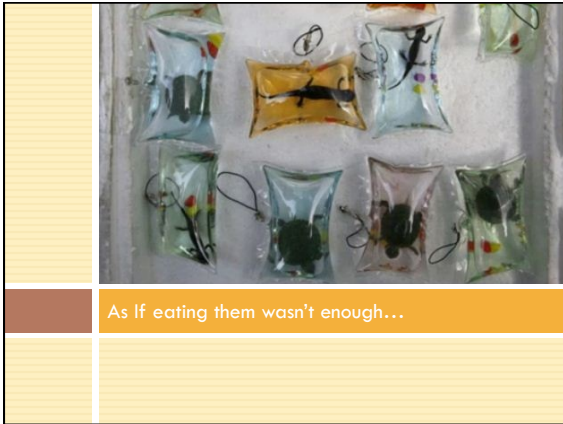
Total : 5,569,085 from 1998- 2002 alone

Pet trade

- A species rarity can increase its demand
- Direct correlation between species rarity and demand
- Can lead to a cycle of overexploitation
- Goliath frogs (*Conraua goliath*), IUCN listed as endangered. largest frog in the world, found only from a few rivers in West Africa. Sold for around \$3,000 in America.
- Study done on green pythons (*Morelia viridis*)

Shows positive correlation between rare desired snakes from certain localities and demand

"Traders of green pythons from Kofiau Island claimed that despite snakes becoming increasingly rare, their high price meant they continue to be targeted." Lyons, J and Natusch D.



As If eating them wasn't enough...

Exploitation issues

- Not properly documented: 13% of wild caught amphibians imported between 1998-2002 (2,611,251 individuals) were recorded above the species level.
- Frog legs being imported arrive already skinned making identification nearly impossible
- Of the 25 most commonly traded species, not one is protected by CITES or the ESA

References

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Lyons, Jessica A.; Natusch, Daniel J. D. **Effects of Consumer Preferences for Rarity on the Harvest of Wild Populations within a Species.** *Ecological Economics* 2013, Vol. 93 pages: 278-283

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IUCN red list, Giant Juvon frog. <http://www.iucnredlist.org/details/58351/0>

Amphibweb, over exploitation: <http://amphibiaweb.org/declines/exploitation.html>

Questions?

A photograph of a bright green tree frog with white underparts, sitting on a large green lily pad. The frog is facing left. The background is a soft-focus green, suggesting a pond or swamp environment.
