ILLEGAL AND UNSUSTAINABLE TRADE OF REPTILES AND AMPHIBIANS GUIDANCE FOR STATE WILDLIFE ACTION PLANS 2024

ASSOCIATION of FISH & WILDLIFE AGENCIES

Background Information

Amphibian and reptile populations are declining worldwide due to habitat loss, climate change, disease, invasive species, and overcollection. Over 40% of amphibian species and > 20% of reptile species are currently threatened with extinction (Cox et al. 2022; Luedke et al. 2023). While habitat loss and degradation remain primary threats, addressing the declines requires tackling other significant issues such as disease, overexploitation, illegal trade, and climate change (Cox et al. 2022; Luedke et al. 2023). This document highlights the need to combat the illegal trade in reptiles and amphibians.

Trade in wildlife is widely acknowledged as a major driver of biodiversity loss and a significant factor increasing species extinction risk, globally (Maxwell et al. 2016). Reptiles rank among the most heavily exploited and widely traded species worldwide (Janssen 2021). Historically, overcollection has driven severe declines or extinctions in diverse taxa such as tortoises, freshwater turtles, sea turtles, and crocodilians. Species with delayed maturity and high adult survival rates, such as turtles and certain snakes, and those that are rare are typically the most at risk of population declines due to illegal collection and exploitation (Altherr and Lameter. 2020; Marshall et al. 2020). Although federal and international regulation frameworks like the U.S. Endangered Species Act (ESA) and Convention on the International Trade of Endangered Species (CITES) regulate legal trade for some species, only a small fraction of species are regulated (Hughes et al. 2023) and management gaps persist. Today, over 35% of all extant reptile species globally are legally traded online, with the majority of those animals being sourced from the wild; among those traded reptile species, 79% are not regulated by CITES (Marshall et al. 2020). In the amphibian realm, around 17% of described species are legally traded, 2.5% of which are regulated by CITES, and more than 20% are vulnerable to extinction, endangered, or critically endangered (Hughes et al. 2021). Adding to legal trade pressures, a study of 54 illegal turtle trade cases in the United States reported in the media revealed that at least 24,000 freshwater turtles from 34 species were trafficked between 1998 and 2021 (Easter et al. 2023). This illegal trade spanned 43 US states and six countries, with box turtles (*Terrapene* spp.) being the most commonly traded (Easter et al. 2023). Hence, under-regulated legal reptile trade, coupled with illegal trade present significant threats to U.S. reptile populations.

Illegal and legal wildlife trade also pose significant risks of pathogen transfer, contributing to global biodiversity loss and human health crises. Trade of amphibians has yielded disease spread to wild populations. For example, *Batrachochytrium dendrobatidis* (*Bd*) and *Batrachochytrium salamandrivorans* (*Bsal*) are two fungal pathogens that have been spread through legal trade routes (e.g., Schloegal et al. 2009 documented *Bd* spread through bullfrogs; Nguyen et al. 2017 documented *Bsal* spread in salamanders). Furthermore, many confiscated

herpetofauna are found dead in transit or in poor health due to inhumane conditions and require urgent veterinary care. To prevent transmission of diseases, such as ranavirus—which recently caused the deaths of 100 eastern box turtles in a single seized shipment—confiscated animals may require quarantine care. Quarantine often requires individual animals to be held separately from each other, disease testing, long-term care, and treatment; these are all costly endeavors that are needed to improve conservation outcomes for seized wildlife (Tuberville et al. 2024).

For wildlife that are confiscated, repatriation outcomes can be enhanced by using genetic research. However, genetic databases for North American herpetofauna are needed to improve accuracy and to reduce cost and time associated with repatriating confiscated animals. Genetic analyses also can be used to identify poaching hotspots and to help with prosecutions. Therefore, leveraging genetic tools not only enhances the effectiveness and efficiency of repatriation efforts for confiscated wildlife but also plays a critical role in combating illegal wildlife trade.

Overall, funding shortfalls, capacity shortages (staffing, housing, etc), and lack of consistent data continue to be the overarching barriers in addressing the illegal and unsustainable trade of reptiles and amphibians (Christman et al. 2024; Sevin et al. 2022; Wixted and Christman 2022; Wixted 2024). Most jurisdictions lack dedicated resources for population and disease monitoring, enforcement, confiscation, genetic analysis, and post-release monitoring (Wixted and Christman 2022; Wixted 2024). When animals are confiscated, most agencies have to absorb these costs within existing budgets or seek alternative funding. For confiscated herpetofauna, expenses can be substantial, including medical care, health assessments, and long-term housing until screenings are completed. Additionally, evaluating reptile welfare is challenging due to their subtle indicators of stress or disease, further straining resources (Baker et al. 2013). Addressing illegal and under-regulated trade is essential to mitigating significant threats to herpetofaunal species of greatest conservation need and ensuring their long-term survival.

IUCN Threat Statements

5. Biological Resource Use
Threats from overharvesting biological resources for commercial, recreational, food gathering, research, or cultural purposes; including both deliberate and unintentional harvesting beyond sustainable levels.

5.1 Hunting & collecting terrestrial animals
- 5.1.1 Intentional use (species being assessed is the target)
- 5.1.2 Unintentional effects (species being assessed is not the target)
- 5.1.3 Persecution/control

5.4 Fishing & harvesting aquatic resources
- 5.4.1 Intentional use: subsistence/small scale (species being assessed is the target)[harvest]
- 5.4.2 Intentional use: large scale (species being assessed is the target)[harvest]
- 5.4.3 Unintentional effects: subsistence/small scale (species being assessed is not the target)[harvest]
- 5.4.4 Unintentional effects: large scale (species being assessed is not the target)[harvest]
- 5.4.5 Persecution/control

8. Invasive & other Problematic Species, Genes & Diseases
Threats from introductions that have or are predicted to have harmful effects on biodiversity following their establishment, spread and/or increase in abundance.

8.1 Invasive non-native/alien species/diseases
- 8.1.1 Unspecified species
- 8.1.2 Named species

8.2 Problematic native species/diseases
- 8.2.1 Unspecified species
- 8.2.2 Named species

8.3 Introduced genetic material

Recommended Conservation Actions

Below is a list of conservation actions that will help to address illegal and unsustainable trade of reptiles and amphibians. Some of the actions below may also be applicable to other exploited species, so instead of referencing a specific species or taxa with the example action, you can substitute references to all Species of Greatest Conservation Need (SGCN), etc.

Capacity Building
- Increase support/capacity/training for law enforcement including providing training on handling, identification, biosecurity, and other best practices to more effectively respond to illegal collection and trade cases involving amphibians and reptiles.
- Identify funding sources for short and long-term maintenance of individuals in captivity and for repatriation efforts.
- Develop a list of facilities and establish a network that can house confiscated herpetofauna. Facilities can include wildlife rehabilitators, local zoos and aquariums, and nature centers.
- Establish partnerships, programs, and funding necessary to allow for diagnosis and tracking of wildlife diseases.

The Northeast Illegal Turtle Trade Workshop (2022) and Midwest Illegal Turtle Trade Workshop (2024) both highlighted key capacity-building needs to address gaps in herpetofauna handling, identification, and care among personnel involved in combating illegal wildlife trade. Furthermore, during both workshops, respondents expressed concerns over the ability to confiscate and hold seized turtles, despite most agencies holding more than 25 turtles per year (Wixted and Christman 2022; Wixted 2024).

Education and Awareness
- Educate the public on illegal wildlife trade and its implications for conservation.
- Continue to build public awareness of risks associated with illegal wildlife trade, including outreach about relevant state laws and regulations to encourage compliance.
- Communicate and outreach with state legislators and executive staff.

At the prosecution level, a lack of buy-in and education can lead to unsuccessful cases, while some enforcement staff also struggle with getting their peers and agencies to recognize the significance of illegal turtle trade. In some cases, a cultural shift in leadership mindset and legislative support is necessary to effectively address these challenges.

Research and Monitoring

- Contribute to the development of genetic libraries for high priority species.
- Utilize genetic testing to aid in repatriating confiscated herpetofauna and identifying poaching hotspots.
- Monitor websites, forums, and social media for indications of illegal trade of [state] wildlife.
- Establish wildlife health monitoring protocols and baseline wild population health (pathogen) information to aid repatriation and management decisions.
- Enhance surveillance efforts to better understand disease ecology and detect disease outbreaks.
- Develop response protocols for disease outbreak scenarios.

Development of genetic libraries can assist with repatriation efforts as well as to identify areas of concern for illegal take. During the Midwest Illegal Turtle Trade Workshop (2024), just under 30% of respondents noted that their agency has dedicated staff and resources to address cyber crime (social media, internet, etc.). Baseline health screening of wild populations will assist with repatriation efforts and will help with preventing disease outbreaks.

Law, Policy, and Planning

- Analyze current regulations for [priority herpetofauna] and revise if needed. Engage with policy-makers if revisions are needed.
- Continue to monitor and regulate [priority herpetofauna] harvest seasons and limits.
- Develop a confiscation response plan which identifies funding sources, protocols, and holding facilities for wildlife confiscations.
- In coordination with proper authorities, conduct inspections to ensure compliance of all relevant laws and regulations.

Significant variations exist in state regulations and enforcement regarding the commercial and personal harvest of wild turtles across the United States. In addition, there are no dedicated funding sources for the care of confiscated animals or resources needed to support repatriation (disease testing, genetic testing, post release monitoring). States, Provinces, and the U.S. Fish and Wildlife Service have to determine how to cover costs within existing budgets or pursue non-traditional means of funding (taxes, donations) or grants which could impact the ability to confiscate and enforce laws and to maximize conservation for our native U.S. turtles. Advance preparation for confiscations through development of a response plan and working with partner facilities for holding will assist with conservation outcomes for seized animals.

Species Management

- Prioritize data collection for species of greatest conservation need and heavily collected species.
- Develop species management practices to reduce inappropriate harvest, take, or by-catch of [insert species/sgcn/etc] and incorporate those into the species management plans.

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