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Public Comments Processing
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I am writing on behalf of the Association of Zoos and Aquariums (AZA) and its Snake Taxon Advisory Group in response to the recent US Fish and Wildlife Service (FWS) proposed rule to list the boa constrictor, four python species and four anaconda species as injurious wildlife under the Lacey Act. An injurious wildlife listing would prohibit the importation into, or transportation between States, the District of Columbia, the Commonwealth of Puerto Rico, or any territory or possession of the U.S. without a scientific, medical, educational or zoological permit. AZA fully supports the control of invasive species—especially in critical conservation areas such as the Everglades. We also recognize that our accredited zoos and aquariums are not the problem and thus must not be unduly penalized by any regulatory remedy that the FWS develops. In fact, we may be part of the solution through our education, outreach and volunteer capabilities. Our concerns and recommendations are outlined below.

AZA and its member institutions are proud to work with Congress, the Federal agencies, conservation organizations, the private sector and the general public to conserve our wildlife heritage. With 180 million visitors to 221 accredited zoos and aquariums, AZA's focus on connecting people and animals provides a critical link to helping animals in their native habitats. Far-reaching conservation programs at AZA institutions have provided over $90 million per year over the past five years to support over 4,000 field conservation and research projects in more than 100 countries.

AZA members have a strong commitment to conservation education and research. AZA has pioneered and established the Species Survival Plan (SSP) program—a long-term plan involving genetically diverse breeding, habitat preservation, public education, field conservation and supportive research to ensure survival for many threatened and

endangered species from around the world. Currently, AZA members are involved in 110 SSP programs that include more than 160 species, including Virgin Island boa, Aruba Island rattlesnake, Eastern massasauga rattlesnake, and Louisiana pine snake. Over 175 AZA institutions hold one of more of the nine species addressed in the proposed rule. It is in this context that we submit the following comments.

While AZA does not argue that certain species of constrictor snakes have had a significant impact on native species in south Florida, we strongly believe that this is a Florida issue and should be treated as such through the State regulatory process. This listing could impact regulatory and law enforcement authorities in all 50 states when in reality, it appears that this should be addressed on a state by state basis as needed. In addition, AZA has serious concerns about the impact of this proposal on our accredited zoos and aquariums.

The USGS Report

The proposed listing of nine large constrictor snakes as injurious wildlife by US Fish and Wildlife Service is based primarily on the results of a risk assessment performed by the US Geological Survey, commissioned by USFWS and the National Parks Service (Reed, R.N., and Rodda, G.H., 2009, Giant constrictors: biological and management profiles and an establishment risk assessment for nine large species of pythons, anacondas, and the boa constrictor: U.S. Geological Survey Open-File Report 2009-1202, 302p.). The USGS risk assessment predicts that Burmese pythons (Python molorus) have the potential to invade much of the southern Continental United States based on comparisons of average monthly temperature and rainfall between the snakes' native range and the US. The risk assessment makes similar, if less alarming, predictions about eight other species of large constrictors. In addition to predicting current areas the snakes could invade, the authors extrapolate substantial northward range expansion by projecting the effects of global climate change scenarios over the next 90 years. By the year 2100, the authors suggest, Burmese pythons could range into parts of New York and Pennsylvania, across the Midwest, and into parts of Washington and Oregon.

Unfortunately, the USGS risk assessment does not represent the best available science and draws far reaching conclusions from narrowly chosen data sets. The predictions of the USGS risk assessment are contradicted by three important lines of evidence: an independent, published academic study using more rigorous methodology; the practical experiences of zoologists who have maintained and studied these snakes in captivity over decades; and the results of recent in situ weather events in the southeastern US.

A 2008 study by credentialed academic herpetologists evaluated the methodology used in the USGS risk assessment and found that the predicted range expansion of Burmese pythons is unlikely based on a more thorough analysis of the ecology of the species (Pyron, R.A., Burbrink, F.T., and Guiher, T.J., 2008, Claims of Potential Expansion throughout the U.S. by Invasive Python Species Are Contradicted by Ecological Niche Models. PLoS ONE 3 (8): e2931. doi:10.1371/journal.pone.0002931). Pyron, et al. show

that, within the Continental US, Burmese pythons are only likely to survive in the subtropical habitats of southern Florida (where they are already established) and extreme southern Texas. The study also projects significant contraction of the snakes' potential range (both in the US and in their native environment) under the 90-year climate change scenarios used in the USGS risk assessment.

The discrepancies between the USGS risk assessment and the study by Pyron, et al. are dramatic and reflect more than a difference of opinion—they reflect a difference in scope and precision. The USGS risk assessment considered only two environmental parameters—average monthly temperature and average monthly rainfall—in matching the snakes' native range in Southeast Asia with the climate in the US. Predicting a species' potential range based on such narrow parameters and using averages, rather than extremes in these parameters, is a significant departure from modern practices in ecological modeling. Ecological models based on few climatic parameters are inherently imprecise, since a species' survival in new territory is limited by many factors (extremes in temperature, seasonal water cycles, vegetation type, available refugia, availability of prey, presence of competitors etc.) The study by Pyron, et al. evaluated the potential range of Burmese pythons using widely accepted methods of ecological niche modeling, and included a broad range of environmental parameters. The researchers used 19 climatic variables—including average temperature and rainfall, extremes in those values, and seasonal variations—to create a climatic model that more precisely predicts where Burmese pythons could survive. Their results show that the USGS range predictions are based on a simplistic climate model, which appears to drastically overestimate the potential range of Burmese pythons in the Continental United States.

The experiences of zoo professionals offer decades of observational insight into the cold tolerance of Burmese pythons, which contradict the range predictions in the USGS risk assessment. Herpetologists who have kept Burmese pythons (as well as the other eight species of snakes under consideration) have long known that the animals are vulnerable to cold temperatures. Empirical observations suggest that these tropical snakes are not equipped to thermo-regulate during cool spells, and Burmese pythons have been observed lying in cold areas of large enclosures when warm basking sites were available nearby. Without intervention, these snakes quickly develop respiratory infections and die. Brief exposure to temperatures below 40 degrees F and extended exposure to temperatures below 70 degrees F are generally fatal in captivity. The vast majority of the Continental US experiences seasonal drops in temperature well below these thresholds.

The winter of 2009-2010 was particularly cold in the southeastern US, providing an unplanned in situ test of the hardiness of invasive Burmese pythons. Although some pythons survived in the Everglades, the invasive population was hit hard. Researchers from Miami Metro Zoo observed dead pythons hanging in trees and lying on open ground, apparently naïve to cold survival tactics—cold-adapted snakes typically retreat to water or burrows. The fact that a substantial number of Burmese pythons succumbed to cold in the Everglades suggests that this is near the northern extent of the species' potential range. Incidentally, the Everglades marks the northern extent for many tropical

species, including American crocodiles, which also suffered substantial die-offs over the winter.

Researchers at the Savannah River Ecology Laboratory conducted a practical experiment through the winter of 2009-2010 to test the ability of Burmese pythons to survive outdoors in central Georgia (well within the current predicted range of the USGS risk assessment). The investigators housed a group of pythons in naturalized outdoor enclosures and provided underground burrows and access to water to mimic natural refuges. The results of the experiment are being formally withheld pending publication, but it is widely known among herpetologists that the outcome contradicts the USGS risk assessment predictions.

Potential Impacts of Injurious Wildlife Listing

We are troubled that under the "Required Determinations –Regulatory Planning and Review" section (FR Vol.75, No. 48; pp 11826-11827), the proposed rule states that OMB has determined that the action **is** significant (largely due to economic factors) yet the proposal states that information is not available on values such as impact on consumers, producers, and society and thus "a quantitative comparison of benefits and costs [of the proposal] is not possible." Additionally, the proposal states that the USFWS used an input-output model in an attempt to estimate the secondary or multiplier effects (job impacts, job income impacts and tax revenue impacts) of the rulemaking. However, the Service readily admits that given the paucity of data and the "uncertainty associated with the appropriateness of using an input-output model," they would only present preliminary results in the regulatory impact analysis. In the same section of the proposal, however, the Service concludes that this proposal is **not** a major rule under the Small Business Regulatory Enforcement Fairness Act because: 1) it would not have an annual effect on the economy of $100 million or more; 2) it would not cause a major increase in costs or prices for consumers or industries, governments or regions; and 3) it would not have significant adverse effects on competition, employment, investment or U.S. competition. These seemingly contradictory findings have created tremendous confusion among AZA institutions and highlight the need for more complete economic data collection and analysis before making critical cost-benefit determinations.

The nine (9) species of boas and pythons under consideration are staple exhibit and outreach animals for U.S. zoological institutions and the economic impact of listing them as injurious wildlife would be substantial. Educational outreach is a priority for many zoos, aquariums, natural history museums and science centers. Thousands of live animal programs are presented annually to schools, universities and environmental groups, often featuring large constrictors. These programs constitute a major source of revenue and allow educational institutions to extend their interpretive reach beyond the immediate metropolitan area—often across state lines.

Clyde Peeling's Reptiland, an AZA accredited zoological park in Pennsylvania, offers an example of how severe the economic impact of this proposal could be to small

institutions. In addition to operating a permanent zoological facility, Reptiland designs, builds, and manages a fleet of educational exhibitions that are hosted by zoos, natural history museums, and science centers throughout North America. These exhibitions include pythons, boas, and other live animals under the care of the zoo's professional staff. Reptiland also conducts wildlife lecture programs (all of which include large boas and pythons) for organizations nationwide. If the proposed listing is adopted, it will dramatically affect Reptiland's ability to conduct off-site exhibitions and lectures, which account for fully two-thirds of its revenue. While it may be possible for zoos to get injurious wildlife permits under the Lacey Act, a separate permit would be required for each interstate or international move (and Reptiland makes 50 or more interstate moves each year). Federal wildlife permits are often slow in coming—AZA institutions have waited as much as nine months—and the process is cumbersome. Even if permits took only 90 days, as published by the US Fish and Wildlife Service, contracting with schools or natural history museums to provide date-certain exhibitions or lectures would be a practical impossibility. Very often exhibition and lecture contracts are made with little lead time. Moreover, Reptiland currently employs 40 people. The loss of off-site exhibition and lecture income would require that the institution eliminate at least 15 full-time positions in an area already beset by job loss.

In addition to simple economics, this proposal threatens to impact informal education—a critical vehicle for influencing the environmental sensitivity of the population. Any long-term solution to invasive species depends on responsible, educated citizens. Connecting people with wildlife and environmental issues is what zoos and aquariums do best. No medium, outside of nature itself, offers a better conduit to inspiring environmental curiosity—particularly in children—than interpretation with live animals.

AZA believes that adding these nine species of snakes to the list of injurious wildlife would only create additional work for the USFWS permitting office resulting in increased processing delays. This could delay necessary interstate and international animal transfers that need to be made in order to pair up animals identified in AZA Species Survival/Population Management Plans. If these animals are not moved in a timely manner, significant delays could result in significant reproductive problems for these species.

Possible Alternatives

Invasive species are a global environmental concern, but the threats they pose are often region-specific, mitigated by differences in local climate, topography, and biota. An alternative to adopting the USFWS proposal, which applies sweeping Federal regulation and significant economic hardship nation-wide, is to support a coordinated regional response to Florida's pythons, and invasive species in general. Florida has now adopted a legal framework that makes sense for the peculiar vulnerabilities of the state—holders of large pythons and other species of concern must apply for permits, permanently identify animals with micro chip implants, demonstrate appropriate containment, and plan for emergencies and natural disasters. What is needed in Florida immediately is increased funding for python eradication in Everglades National Park.

AZA supports a multi-pronged approach to invasive species. We recommend the following:

- A national educational program, equivalent to the US Forest Service *Smokey Bear* campaign, could be developed to bring the risks of invasive species to a broad audience and emphasize responsible pet ownership and gardening practices.

- Increased support and coordination is needed for state and local early detection/rapid response/eradication efforts, including organized volunteer invasive species corps to help protect local ecosystems.

- Guidelines should be developed to help states evaluate and manage the particular invasion risks in their region, including improved data collection and record-keeping, containment facility standards, and legitimate methods for unwanted pet disposition.

If this proposal were to go forward in its current form, AZA requests the opportunity to work with the Service to ensure that our members can continue to engage in their important education, outreach and breeding programs without delays and red tape. This would require an intensive examination into ways to streamline the injurious wildlife permit process using multi-year, multi-institution and multi-species blanket permits to increase efficiency and effectiveness.

As USFWS continues to formulate future policies to address wildlife resource management issues such as invasive species, I strongly encourage the agency to call upon the informational resources and expertise of the AZA and its member institutions as an essential source of public review and comment. The professional zoo and aquarium community continues to act as a strong partner with USFWS on numerous conservation programs and in reaching millions of Americans every year about the importance of protecting wildlife and wildlife habitat for future generations.

Thank you for the opportunity to comment on this very important proposal. **We understand that the comment period for this proposal may be re-opened after the official filing of these comments. We respectfully request the opportunity to update and/or amend our comments (before the new deadline) should this be the case.**

Sincerely,

Steve Olson
Vice President of Government Affairs