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May 11, 2010

Division of Policy and Directives Management
U. S. Fish and Wildlife Service
Department of Interior
4401 N. Fairfax Drive - Suite 222
Arlington, VA 22203

Re: Proposed Listing the Boa Constrictor, Four Python Species, and Four Anaconda Species as Injurious Reptiles
Docket: FWS-R9-FHC-2008-0015

Lacey Act Listing Evaluation Team:

The Pet Industry Joint Advisory Council (PIJAC) submits herein its comments in response to the proposed rulemaking to "Listing the Boa Constrictor, Four Python Species, and Four Anaconda Species as Injurious Reptiles" under the Lacey Act (Docket: FWS-R9-FHC-2008-0015) dated March 12, 2010.

PIJAC is a national trade association representing all segments of the pet industry: importers/exporters, breeders, wholesale distributors, product manufacturers, retail outlets, affiliated hobby organizations, individual hobbyists, and pet owners. PIJAC is the largest nonprofit trade association representing the pet industry in the United States on live animal issues. Our members serve the 62% of the U.S. Households that care for and maintain a wide variety of animals, including the species proposed for listing under the Lacey Act.

PIJAC's mission is to promote responsible pet ownership and animal welfare, foster environmental stewardship, and ensure the availability of pets. For well over three decades, PIJAC has enjoyed a close working relationship with Federal and State agencies on invasive species issues through the Aquatic Nuisance Species Task Force (ANSTF) and associated regional panels, the National Invasive Species Council (NISC), and by serving on the Invasive Species Advisory Committee (ISAC) since its inception. We take the impacts of invasive species seriously and are committed to providing industry-wide leadership in efforts to prevent the introduction of non-native animals via pet ownership.

With this in mind, we have given careful consideration to the U.S. Fish and Wildlife Service's Proposed Rulemaking to list nine constrictor species as "injurious wildlife" under the Lacey Act. Our comments address issues raised not only in the 22-page Federal Register Notice, but also in the underlying documents referred to within the Notice. These include an eight-page "Initial Regulatory Flexibility Analysis for Listing;" a 56-page "Draft Economic Analysis;" a 47-page "Draft Environmental Assessment;" and the 302-page USGS "Large Constrictor Risk Assessment." Due to the time constraints for submission of comments, PIJAC's comments are not as comprehensive as we desire. For example, we would have liked to have provided more data on potential economic impacts of the proposed listing.

PIJAC, along with several other organizations, submitted a request for an extension of the time to submit comments on the proposed rule. In the event that the extension is granted or the comment period is reopened, PIJAC reserves the right to submit additional comments, including amending or modifying this submission as appropriate.

Preliminary Comments:

PIJAC has found the listing proposal is overly broad and replete with conclusions and findings that are not supported by science or other evidence warranting the ban contemplated by listing under the Lacey Act. Later in this submission, we provided detailed comments on the proposed rule. PIJAC's position is summarized as follows:

- There is no scientific-basis for listing any of the nine species of Python, Boa, or Eunectes as injurious wildlife under the Lacey Act. These species do not pose a national-level threat to wildlife, wildlife habitat, or humans.

- Despite the fact that many of these species have been in the US pet trade for more than 40 years, only two subspecies of large constrictors (*Python molurus bivittatus* and *Boa constrictor constrictor*) have been documented to have established feral populations (one each) in the United States, both in southern Florida.

- With the exception of predation by a *P. m. bivittatus* on Endangered Key Largo woodrats (*Neotoma floridana smalli*), there is no evidence of significant adverse environmental, human health, or economic impacts by these feral populations. Research is needed to assess the potential ecological and economic benefits of their presence.

- Relevant State and Federal agencies have been aware of these feral populations for nearly three decades. Florida, rather than impose a state ban of these species, implemented the most comprehensive regulatory mechanism for dealing with "Reptiles of Concern," (e.g. permit system, identification systems, record keeping, reporting requirements, caging and security standards, etc.). The Florida model could be a model for other states as well as the Federal Government.

- Neither the State nor the Federal government have made substantial investments in strategic programs for the eradication or control of *P. m. bivittatus* or *B. c. constrictor* on the lands they manage.

- The purported justification or evidence for the potential range expansion of each these species is questionable at best beyond southern Florida and most likely beyond its specific locality.

- Listing Python, Boa, or Eunectes species or subspecies under the Lacey Act will not help reduce or eliminate the extant feral populations of large constrictors. Depending on the species and scale of a listing, it could, however, cause significant economic losses to reptile- and reptile product-related businesses, losses which might result in the closing of many, if not most, of these companies.

- A blanket listing under the Lacey Act will result in a number of unintended consequences due to fact the Lacey Act has not been modernized to adequately deal with specimens of listed species which are owned in large numbers as pets and/or zoological specimens held in large numbers as privately owned animals. Limiting activity to intra-state movement is not sufficient. As a result, PIJAC anticipates that a Lacey Act listing could actually:
    - *facilitate* the release of a substantial number of large constrictors of various species in Florida and elsewhere;
    - *inspire* unnecessary and inhumane euthanasia; and
    - *cause* airlines to impose embargoes on transporting any snakes to avoid prosecution for illegally transporting a listed species. Airlines do not possess the capacity to identify reptiles by species or to enforce the Lacey Act. In short, a Lacey Act listing could become the impetus for establishment of additional feral populations of Pythons, Boas, or Eunectes in the US.

Comments Addressing Specific Statements in the Federal Register Proposed Rule:

A review of the 22-page Proposed Rule reveals a number of unfounded or misleading statements that led to the Service's finding that each of the nine species "to be injurious" under the Lacey Act. PIJAC is submitting herein detailed comments keyed to specific sentences in the Federal Register Proposal by marking a copy of the Federal Register with corresponding numbers to the comments below. This is to avoid cumbersome repeating of hundreds of sentences contained in the Proposed Rule. The marked Proposed Rule is attached as Addendum 1 to these comments.

(1) PIJAC believes that the USFWS failed to use the best available biological or economic data when preparing the proposed rule. Please see the attached document (Addendum 2) regarding the Information Quality Act (IQA) challenge of the USGS large constrictor risk assessment.

(2) PIJAC's analysis indicates substantial error, bias, and inconsistencies in this USGS report. Please see Addendum 3. Since "Reed and Rodda (2009) provided the primary biological, management, and risk information for this proposed rule," we strongly believe that this document should be made available, in its entirety, for public review as part of the proposed rule change process.

(3) We strongly believe that listing of these nine constrictors species is more likely to ***facilitate*** the introduction and establishment of large constrictors (of these and other species), rather than prevent it. At this time, the risk of establishment of any large

constrictor species is very low (despite what the erroneous USGS report claims). Nothing more than basic logic is needed to reach this conclusion. Large constrictors have been in the trade in the US for decades. Only a single population of two species has ever become established – both due to very unusual circumstances (re locality and mode of introduction). Furthermore, the population of Boas at Deering Estate may have been annihilated (there have been no reports of them in recent years and this winter's cold spell likely had a substantial impact) and the Burmese python population in the Everglades is known to have been decimated by the 2009-2010 cold spell(s). If the risk of establishment was high, there would be large constrictors of many species already established through a large portion of the southern US, and this is certainly not the case. However, if owners and business persons currently in possession of large constrictors can no longer move them across state lines, it is HIGHLY likely that large numbers of these animals will be simultaneously released into the wild – creating ideal circumstances for establishment in appropriate environments. We have reason to believe that the recent findings of anacondas and rock pythons in southern Florida are strong evidence that merely the fear of listing of these animals is facilitating their release.

(4) Define "prevalent." The Indian python (*Python molurus molurus*) is a CITES Appendix 1 species and has not been in the trade for decades. While the other species are currently in international trade, the volume differs substantially among the species – both in terms of imports and captive propagation. See the PIJAC response to the NOI submission for additional information.

(5) What is the Service's evidence that the *Boa constrictor* is still established at The Deering Estate in south Florida? We are unaware of any documented sitings of this population in recent years. Moreover, the cold spell during the winter of 2009-2010 likely had a substantial impact on any boas that might have remained on site.

(6) Very little is known about the biological characteristics of these, or the aforementioned species in the wild. Furthermore, the USGS risk assessment was erroneously applied. Instead of assessing the risk of entry and establishment into a specific ecosystem – the USGS assessed risk of importation into the US and assumed that equated to risk of introduction and establishment into any ecosystem in the US. This was not the intended application of the ANSTF process.

(7) While prevention is a laudable intent, it needs to be approached through a critical, context-specific analysis. Due to the size of the US and diverse ecosystems contained herein, virtually ever species in the world could, in theory, establish some place in the US under the ideal introductory conditions. Is the USFWS going to list every non-US species on the planet as injurious wildlife as a preventive measure? No…of course not…so there needs to be very good justification for those species that it does choose to list. In this case, that justification does not exist. Furthermore, listing of these species could, in fact, facilitate the establishment of one or more of the listed species. (See comment 3.) And, because any potential establishment is likely to be very localized and limited to the extreme southern US, prevention policies/regulation should be handled by the states, not the Federal government. This is the most practical, scientifically-defensive, and cost-effective way forward.

(8) In fact, the Service lacks substantial evidence of a threat. The USGS risk assessment has numerous errors, biases, and inconsistencies. The risk assessment was inappropriately applied – it confused importation with introduction into a specific ecosystem and treated the whole of the US as a single ecosystem. This was not the intent of the ANSTF model. The USGS risk assessment does not warrant the role that it is playing in this rule making process. The document should be made available for public comment and corrected. Any decision based on it will be a poorly-informed decision.

(9) Indian pythons (*Python molurus molurus*) do not exist in the Everglades. It is technically inappropriate to lump Burmese pythons under the common name Indian python. CITES and the scientific literature recognize the two animals as distinct. Furthermore, original classification and recent literature separates them into two species (see McDiarmid et al. 1999 and Jacob et al. 2009). It appears that USGS and the USFWS are ignoring the accepted standards because to follow them would make it evident that the Burmese python has greater limits in terms of native range and climate matching. Is the Service equating mere presence of the pythons with imperilment (how defined) of other species? This assumption does not hold up scientifically. Furthermore, there is a lack of balanced effort to address the potential benefits as a food source. The ethical application of ecological principles demands presentation of a holistic systems perspective. Winter kill data now indicate that the population of Burmese pythons in the Everglades is substantially reduced. These data need to be taken into consideration in the context of the proposed rule.

(10) Mere presence of a species does not equate to threat of harm, especially when individuals are cited in environments in which they cannot establish. If this is solid justification for listing species as injurious, the USFWS will need to list every organism that has ever – and is ever – spotted outside of captivity in the US. (See also comment 6.)

(11) It is true that there are *considerable* uncertainties in this analysis, and the fact that the authors of the USGS report claim high confidence in their findings clearly indicates that there is something seriously wrong with their analysis. There conclusions are a kin to someone asking a person for their name and birth place and then telling them that they are highly certain that the person will die of a heart attack within the next five years. No one in their right mind would make life altering decisions based on that assessment – yet that is what the USFWS is claiming as "evidence" in this context.

(12) The tools are only as good as the data going into them. In this case, the data are extremely poor and the results reflect that. How can the USFWS scientifically justify translating lack of information into strong confidence in outcome?

(13) These are extreme "worst case" scenarios. Taking other reasonable factors into consideration – such as road traffic, predation, etc. – would substantially reduce the likelihood that these animals could establish and spread. The USFWS needs to use the most sophisticated tools and ecological knowledge available in their analysis. Ecological niche modeling would produce a more realistic result if properly applied.

(14) Suitable climatic conditions does not directly equate to risk. Other factors must be taken into consideration for the study to be ecologically meaningful and for it to guide policy

decision making. Policies based on poor science are poorly-informed policies that will ultimately waste tax payers monies and distract USFWS staff from truly serious issues.

(15) This statement is complete fallacy. First and foremost, it states that these animals are "successful invaders" - there are, in fact, no data to support population establishment for all but two of these species – and those are single populations that may not prove to be viable due to US winter climate conditions. If these animals are such "successful invaders," why haven't numerous populations and all of these species already established in the US – some of them have been in the country in large numbers for decades already. In addition, this statement assumes that the animals will be introduced into the environment under such conditions that they can reproduce viable offspring. What is the basis for this assumption? It appears to be pure speculation as there are no data to support it. Furthermore, as stated by the USFWS in this Federal Register notice "a myriad of factors other than climate can influence whether a species could establish a population in a particular location (p.11809)." What does it mean to be "tolerant of urbanization?" These animals are more likely to be spotted and removed in urban areas than rural areas – and thus population establishment would be even more unlikely. If these animals are so tolerant of urbanization – why didn't the boa population at Deering Estate spread throughout Miami? Basic common sense proves USGS/USFWS statements such as this to be unfounded. There is also no basis for the assumption that a generalist diet equates to high probability of species establishment -numerous other factors come into play.

(16) The analysis was erroneously conducted. Reed and Rodda equated importation into the US with introduction into the natural environment. This assumes that every animal imported ends up in the natural environment. This is not a valid assumption. Furthermore, they treated the entire US as one ecosystem. By definition, invasive species are organisms that are non-native and potentially harmful to a SPECIFIC ecosystem – not a jurisdictional area. Furthermore, the analysis does not technically address "ecosystem health." Assessing ecosystem health is a highly complex and data demanding exercise. The ANSTF process only takes a handful of biological factors – and the data supplied for these factors in the context of the large constrictor analysis was poor. The analysis needs to be corrected.

(17) There is no scientific basis for this statement. What analysis has been undertaken to accurately compare risk among these taxonomic groups? The USGS analysis is flawed and there are very few other analyses of vertebrates that have applied the ANSTF approach.

(18) There is no basis for this statement. The majority of these species have *never* been documented as being introduced into new environments. The boas at Deering Estate *never* expanded their geographic range. Despite having been detected in the vicinity of the Everglades since the 1970s, Burmese pythons are still limited to that general area.

(19) There is no basis for this statement. First - there is no such thing as ecosystem "stability" - ecosystems are dynamic and change over time. The Everglades are a highly human-altered and managed ecosystem. What data exist that indicate that these nine constrictor species are altering ecosystem "form, function, and structure" in ecologically adverse

ways? Most do not even exist outside their native range – and there is absolutely no evidence of adverse impacts by the boas at Deering Estate. Furthermore, the Burmese pythons are at least as much prey as predator in the system. According to Everglades National Park staff, there are more reports of alligators eating pythons than visa-versa. The question of what is a "novel" predator is also open for debate since crocodilians and boids can both be found in the fossil record in Florida (e.g., Holman and Harrison 2000).

(20) However, basic common sense indicates that the likelihood of establishment is very low - there are only two populations of large constrictors that have ever been documented as having established in the mainland US - despite large numbers of large constrictors of various species being prevalent in human possession in this country for decades.

(21) There are numerous statements in this Federal Register notice and that have been made to the media by the Secretary that strongly suggest that the USFWS has pre-determined the outcome of this proposed rule. We certainly hope that this is not the case and that the USFWS will require the USGS to correct their study, take public comment into full consideration, and also fully recognize the fact that recent data clearly indicate that the Burmese pythons are not as cold tolerant as the USGS has claimed.

(22) If the permitting process is not made considerably more efficient and flexible individuals and institutions engaging in these purposes are likely to be negatively impacted. (See the submission by the AZA.)

(23) Define "rapidly." This statement makes it sound like these animals become "giants" in no time – which is not the case. The growth rates are variable among the species and depend on diet. We hope this statement was not intended to bias public response to the proposed rule.

(24) Define "adept at escaping." The statement gives the impression that large constrictors are routinely getting out of their cages and that their owners are housing them inappropriately. There is no basis for this statement. Properly housed, snake escape is rare. We hope this statement was not intended to bias public response to the proposed rule.

(25) All large constrictors have to be bathed in bathtubs? This is certainly not the case. There are numerous options for offering large constrictors adequate bathing opportunities. We hope this statement was not intended to invoke a fear of "giant snakes in the bath tub" among the public.

(26) Define "very fast." This statement gives the impression that these snakes could go from neonates to 20 feet in a matter of months. The size of the snake and its weight are influenced by its species, diet, and age. Not all snakes will live to be 20 years of age or reach these dimensions. We hope this statement was not intended to bias public response to the proposed rule.

(27) Snakes can be far less "difficult" to maintain than many other types of pets. Some would argue that they are relatively easy to maintain. In fact, one could easily argue that dogs and cats are far more difficult and expensive to maintain than large constrictors. We hope this statement was not intended to bias public response to the proposed rule.

(28) This is pure speculation. There are no studies indicating the number of people who release snakes and thus there are no data to support the statement that "many snakes are released by their owners into the wild…" If "many snakes" are released and capable of establishing in throughout much of the US, where are they?

(29) There is no common pathway for large constrictor invasion because large constrictor invasion is not common. Only two populations have even been documented as establishing in the US. The boa population may no longer exist. The Burmese python population was significantly reduced by the 2009-2010 winter conditions. Thus, this statement is misleading.

(30) For the most part, the comments made in this prior section have no basis in fact. Furthermore, there is no attempt to balance the presentation with a discussion of the benefits of large constrictors in terms of economics and the public education (acceptance of snakes, interest in wildlife) that they foster. The trade in large constrictors exists because of a perceived benefit by the tens thousands of US citizens who enjoy their interactions with these animals. This section appears to have been written with the intent to bias public opinion on this matter.

(31) However, some of these species are not in the trade at all. Others have been substantially declining in the trade (Burmese pythons) and the trend is toward captive breeding of dwarf varieties and morphs that are far less likely than wild-types to be able to establish in the wild (e.g., albinos). A more complete and accurate picture of trade status is warranted.

(32) There is no scientific information that indicates that large size increases the likelihood that a species will become invasive. If fact, the opposite is likely the case since large bodied animals are more readily evident and thus more likely to be removed from the environment before they can establish a viable population. What is the USFWS scientific justification for choosing large constrictors? Earlier in the document it is stated that they are unlikely to attack humans, so there is no physical safety issue that justifies the focus on large constrictors either.

(33) Quantity in the trade varies greatly among these species and some are not in the trade at all. Trade references should be (sub)species specific.

(34) What is the scientific evidence that these species constitute a higher risk than those with lower trade volumes? The question is not volume in trade but likelihood of being introduced into a natural environment in which they can survive and reproduce. Volume in trade does not equate to rate of introduction into the natural environment. If it did, the US would already be overrun with snakes. Per comment 32, large size does not make these species more likely to become invasive – the opposite may be true. The USGS study is flawed. If these species truly are of high risk, they would already be established in "various habitats" of the US. There is no basis for this statement.

(35) Little is known about the biology of these species, or the others for that manner, so there is little basis for saying that they are ecologically similar enough to warrant listing. The

risk assessment of the "previous five species" is flawed and not a basis for well-informed decision making.

(36) True. And, there is no evidence to support the conjecture that release events are "common" and certainly not in large numbers. If the proposed rule is adopted, however, release events are likely to increase significantly and large numbers of these animals are likely to be abandoned simultaneously when breeders, distributors, and retailers are put out of business. Thus, if these species are listed as injurious wildlife, the rule will become the primary inspiration for the release and subsequent establishment of more populations of these species in the southern US.

(37) This same statement can be made about any species on the planet. It is not justification for listing. The issue at hand is whether or not sufficient release events are likely to occur in suitable environments. If the proposed rule is not adopted, the pattern of establishment in the US is likely to continue to be as is – very low given the volume of animals in the US. However, if the proposed rule is adopted, we have no doubt that the risk of release of these animals in large numbers in suitable habitat will greatly increase. (See comment 36.)

(38) The current status of this population needs to be accurately assessed and taken into consideration for the purposes of this proposed rule.

(39) Regulation does not have to equate to prohibition. Banning interstate transport is likely to facilitate the mass release of these animals. (See comment 36.)

(40) What is the Service's evidence that this population still exists? This population was established under unusual circumstances and has not spread. There is no evidence of adverse (injurious) impact of this population.

(41) These studies have not consistently "demonstrated" increased chances of establishment. The models have tended to "project" and increased chance – but projection is not determination or demonstration. There is no way to demonstrate increased chances for the nine constrictors because most are not established anywhere outside their native range and certainly not in the US. This is a biased presentation of "the facts." It is pure speculation.

(42) Importation is not the primary source for the majority of these species in the US-captive propagation is. A Lacey Act listing would also prevent interstate transport. Ending interstate transport is highly likely to backfire – i.e. it will inspire the mass release of large constrictors because their owners can no longer transport them across state lines.

(42) Since the proposed rule relied heavily on the USGS risk assessment, it should be made available for public comment as part of the proposed rule process.

(43) We respond to these questions elsewhere in our submission.

(44) See our comments re the lumping of *Python molurus molurus* and *Python molurus bivittatus* in our review of the USGS risk assessment (Addendum 3). The former is a CITES 1 listed animals and is *not* in the pet trade. There are consistent and significant

differences in scalation, color, pattern, body size, and egg size of the two subspecies (possibly species). Where they are sympatic in their distribution, they may maintain genetic distinction through partitioning of prey and habitat resources (O'Shea 2007; Barker and Barker 2008). These animals should be have been treated separately in the risk assessment. According to the USFWS FAQ, Reed and Rodda did look at the two separately and found no differences – this statement is contrary to what Rodda reported in person at a meeting of the Python Action Team (December 2008) and common sense indicates that two animals with very different range sizes covering different climates could not possibly produce the same climate match.

(45) "Several studies?" Please provide a list of the *several* studies. Our literature search only revealed a couple of studies in the zoo context. Genetics work recently undertaken by Collins et al. (2008) indicates that the Everglades population is *not* parthenogenic. Why is this not pointed out in this paragraph? The presentation of the information appears biased – intended to convince the public that Burmese pythons could establish a viable population with one parthenogenic female.

(46) This is an extreme based on a single captive animal. It should be indicated that there is little information on clutch size in the wild. Mean clutch size would be a more statistically meaningful number to present.

(47) These are data extremes. Mean values would be more meaningful and come across as far less biased.

(48) This growth rate is undoubtedly based on captive, well-fed animals – that should be clarified. In the wild, the majority of neonates probably don't even live a year.

(49) These are captive animals and it needs to be indicated that these number may not at all be representative of wild animals – which are subject to predation, etc.

(50) Use of the term "giant" constrictors is inappropriate and suggests an intentional bias to frighten the public into considering these animals to be aggressive monsters. The term "giant" is neither in common usage by scientists or hobbyists working with these animals.

(51) Why is there no discussion at all about these snakes as prey? Certainly the young are preyed on by numerous species – and large ones in the Everglades have been documented as being preyed upon by alligators. Why are these data not presented?

(52) Why are recent taxonomic changes recognized for the reticulated python but not the Burmese python? There are inconsistencies in the manner in which taxonomic information is presented for these species.

(53) This is a more appropriate presentation of information than is found in the previous species account. Why are their inconsistencies in data presentation among species?

(54) External parasites are a rare occurrence in captive snakes in the US. Parasitized animals are not marketable. This statement appears intended to bias the reader into thinking that external parasites are a common occurrence in reticulated pythons in the US.

(55) Why has the Service not provided data to indicate how few incidents have actually occurred in the US despite the volume of animals in human possession in the US?

(56) Again, more current taxonomic shifts are recognized in this species account…why not for Burmese pythons?

(57) The way this sentence is written, it gives the impression that the snake in southern Florida consumed someone's goats, dogs, and turkey. This is not the case and would certainly mislead the public. Public records indicate that only a penned turkey was consumed.

(58) The fact that the *Boa constrictor* ranges well into Mexico, but not into the US, strongly suggests climatic range limitation.

(59) Again, this is far more balanced and appropriate presentation of data than in the Burmese python. Why is the presentation in the Burmese python section so unbalanced? We hope this is not an intentional bias.

(60) This statement that tolerance to "greater climatic variation is unknown" is true for all of the species in question. Why is it only explicitly stated here?

(61) Datasets are small for virtually all of the parameters provided for all of these species…resulting in considerable uncertainty. This should have been clearly stated earlier in the text.

(62) All of these species are highly likely to be prey as juveniles. Why is this only stated in this account?

(63) This account also takes recent taxonomic information into account. Why is the Burmese python account treated so differently than the others?

(64) Saying that they have been "reported in the wild" is misleading. Most cases are isolated incidents and the animals removed from the environment

(65) What is the Service's evidence that this boa population still persists?

(66) This document needs to indicate the specific occurrence data…which is limited to a very small sample size relative to the number of these animals in the US. The statement is misleading.

(67) How is "the likelihood or release or escape" measured? Given the number of animals in the US and the relatively few reported releases/escapes, the likelihood should be low.

(68) This "potential to survive, become established, and spread" needs to be addressed on an ecosystem basis, not for the whole of the US. Treating the US as a single ecosystem is not scientifically appropriate.

(69) Since most of these animals have no history of introduction into the wild and there are little data for the two that have, it would be appropriate to handle these questions with an "unknown" response rather than the gross speculation undertaken in the USGS risk

assessment report. The USGS report is extremely biased and not scientifically justifiable in this regard.

(70) The USGS risk assessment report does a very poor job of covering this topic. Clearly escapes/releases are small relative to the number of snakes in the country and, given the economic value of many of these snakes, owners are very unlikely to be sloppy in their caging and transport. Incidents do occur, but they are very few given the number of animals in captivity. Furthermore, these questions require a specific context for consideration – because no specific context of establishment exists for all but two populations Reed and Rodda, turn to gross speculation. This is not an appropriate way to make a science-based determination.

(71) Reed and Rodda did not properly apply the ANSTF study – they used risk of importation into the country instead of risk of introduction into a specific ecosystem. The two are not synonymous and the US should not have been treated as a single ecosystem. Furthermore, they based must of their scoring on gross speculation. (See PIJAC's review of the USGS risk assessment for more details. Addendum 3).

(72) Given the lack of information available for the analysis, any assessment that comes out with a high level of certainty is inherently flawed. The assessment was not intended to be applied to the US as a whole. Just because two populations have established in southern Florida does not mean the risk is equal throughout the country. Furthermore, one of those populations may be gone and the other was decimated by the 2009-2010 cold spell(s). The risk assessment was erroneously applied. See our review of the USGS risk assessment for more details (Addendum 3).

(73) The risk assessment is flawed. It needs to be correctly applied. Ideally it should be independently evaluated by individuals who do not have a stake in the outcome (Reed and Rodda are employed to address invasive snake issues). Furthermore, the results of multiple risk assessment models (such as the one developed by DEFRA in the UK) should be assessed and compared. A single, incorrectly applied, risk assessment conducted by individuals who receive grants for working on invasive species should not be considered an appropriate/ethical basis for decision making.

(74) Evidence of animals in a limited locality cannot be used as a measure of escape/release risk. Risk should be based on the occurrence of events versus the volume of animals in the US. Clearly the escape/release risk is relatively low.

(75) This is an extremely misleading statement. They will only survive where the climate and other conditions are suitable. Those conditions are not suitable over the vast majority of the US – and possibly not even in much of Florida as evidenced by the impact of the 2009-2019 winter.

(76) Why is there absolutely no mention in this proposed rule on the impact of the 2009-2010 winter on these animals? This is an interesting omission in light of the significant media coverage of the losses as well as the loss of specimens in a controlled research environment used to study the snakes.

(77) There are absolutely no reliable data to support this statement and there are numerous factors besides climate that limit a species' range extension. This statement appears written to intentionally mislead the public into believing that these snakes will be spreading throughout much of the US.

(78) This analysis erroneously used information based on the range of *Python molurus molurus* – which is not established in the US and is not in the trade. It is likely to grossly overestimate the range potential of *Python molurus bivittatus*. Why is there no mention of the 2009-2010 die-offs that clearly indicate a cold tolerance far less than speculated by Reed and Rodda?

(79) This is a highly speculative statement which is not supported by data. If the likelihood is so high, why has only one population ever become established in the US despite the number of years and large volume of animals in the US? Common sense alone clearly indicates that there is no basis for this statement.

(80) Why are these snakes being compared to bears? Size has very little to do with a predators diet. Bears consume a considerable amount of plant material and small insects. The comparison makes no ecological sense. We hope the comparison with bears is not meant as a public scare tactic. Alligators are large predators as well, but they have not eaten species in the Everglades to extinction – what is the scientific point being made here?

(81) Native species in Florida may in fact be the decedents of animals that evolved in the presence of large constrictors. Boids can be found in the fossil record in Florida and it is clear that boids have existed over a wide range of the Americas (e.g., Homan 2000; Holman and Harrison 2000).

(82) This is an extremely misleading statement. These snakes can not live over most of the US so how would animals fall prey to them? Again, this statement seems intended to invoke fear in the public. It has no basis in science.

(83) Not a single study of competition exists between Burmese pythons in the Everglades and any species. Competition depends on far more than food type. There is no scientific basis for this statement.

(84) This entire section is grossly speculative. Burmese pythons cannot persist over a large area in the US and just because a threatened or endangered species exists within the same range, there is no guarantee that the two will cross paths, let alone that the python will consume the T & E species. By definition, T & E species are rare and, thus, the encounters that a python would have with them would be significantly less likely than with non-T & E species. This entire section seems intended to create the impression in the public's mind that Burmese pythons will drive species extinction. Furthermore, the topic of Burmese pythons as prey is left out of the section entirely. Again, why is the section on Burmese pythons presented in such an unbalanced manner. Other species are presented in a much more appropriate, more scientifically justifiable, more balanced manner. The Burmese python section seems to have been intentionally written from a biased, worst-case scenario perspective.

(85) See comment 84.

(86) The climate matching study needs to be corrected – with just a focus on the range of *Python molurus bivittatus*. Just because climates match, doesn't mean the species can establish in the region.

(87) See comment 84.

(88) Based on what scientific assessment? There is absolutely no scientific basis for this statement. This is gross and misleading speculation.

(89) Why is there absolutely no discussion of potential benefits ecologically or socio-economically? Ecologically, small pythons would be prey for numerous species, and large ones are documented to be prey for alligators. According to some National Park staff, visitation has actually increased because the public is visiting in the hopes of spotting a python in the wild.

(90) These methods don't exist because the problem is new, very limited in scope, and the government has not considered it enough of a priority to provide adequate research funding. How can the USFWS justify listing a species as injurious – and thereby impacting thousands of snake owners and business persons - when it has never made eradication and control of that species a priority?

(91) If an early detection/rapid response approach had been applied after Hurricane Andrew, it is unlikely that these snakes – and many other reptile species – would have been able to establish viable populations. Why are there no plans to develop a national early detection/rapid response program at this time in order to prevent future introductions?

(92) Why is there no mention of the socio-economic benefits of these animals?

(93) The potential for eradication is a context specific issue…and could be greatly enhanced by an early detection/rapid response program. The statements here are misleading.

(94) See comment 93. This is a very biased presentation of the issue. Eradication potential depends on many factors and is very situation specific.

(95) This is a shockingly biased paragraph and data exist to contradict it! There is plenty of evidence of Burmese python predation in the Everglades. Why is this not discussed? This paragraph alone strongly suggests that the authors have intentionally biased the presentation of the material contained in this report.

(96) This is a grossly biased and misleading presentation of information. All of the issues have been addressed in previous comments.

(97) See comment 96. Why does it indicate that the USFWS had already found these snakes to be injurious species? On what procedural grounds is the USFWS making this conclusion prior to receiving public comment on this proposed rule? Is stating a rule finding in a proposed rule consistent with the Administrative Procedures Act?

(98) Based on what scientific assessment? There are no data to support this statement. If the risk was high – given the number in the US for decades – why are reports of escapes/releases extremely uncommon? Why aren't we tripping over these snakes? Common sense indicates that there is no basis for this statement.

(99) What are the numbers? They are extremely low compared to the number of animals in the US. This is a very misleading and biased presentation of the facts.

(100) If release is highly likely and survival is highly likely, then where are all the populations of reticulated pythons in the US? Not a single population has established despite thousands of these animals being in the US for decades. There is absolutely no basis for this statement and common sense points to the contrary.

(101) See comment 100. Establishment is based on far more than similar climatic conditions.

(102) See comment 100 and comments made on the same basic points under Burmese python. There is no scientific basis for this statement.

(103) Based on what data? Impact on anything is context specific. This is pure speculation presented as if it was credible science. Reticulated pythons aren't and have never been established anywhere in the US. There is no basis for making this statement.

(104) See all of the comments for this section re "Indian" python.

(105) But the likelihood of captive pythons carrying these ticks is quite low. Parasitism is not accepted in the market place and those who sell parasitized animals do not survive in business.

(106) The scale of loss is complete speculation as impacts are context specific.

(107) See our comments in the referred to section. Control methods have not been developed because this species has never been established in the US despite decades of large numbers of animals in the trade.

(108) There is no foundation for this statement. Burmese pythons are eaten by native species in south Florida. There is no reason to believe that these pythons wouldn't also fall prey to native wildlife – especially as juveniles.

(109) This last sentence reads like a blatant scare tactic intended to induce the public to imagine being attacked by a reticulated python in their backyard for decades. There is no justification for presenting the available data in this manner.

(110) See comment 105.

(111) There is no scientific basis for any of the statements leading to the stated conclusion. See previous comments on each point.

(112) See comment 97.

(113) No clear evidence of reproduction has been produced. According to reports, the winter of 2009-2010 is known to have killed Northern African Pythons. What is the Service's evidence that these animals still persist in Florida environments?

(114) But even in this warm climate there is no evidence of establishment.

(115) But the incidence are uncommon given the number of animals in the US and there is no evidence of establishment of a viable population.

(116) So why have they not established already and why did the winter condition of 2009-2010 kill these animals. Don't believe the model, believe the dead snakes.

(117) There is absolutely no scientific basis for this statement. It is pure speculation. See comments associated with the same remake re "Indian" pythons.

(118) Prey base is context specific. It is pure speculation that, if these pythons were to establish, that they would do so in a location that T & E species existed and further speculation that they would eat them.

(119) Based on what scientific assessment? This is pure speculation. Impacts are context specific. There are no established populations and thus it is impossible to know whether or not there would even be any T & E species in the area should they establish a population somewhere in the US.

(120) See our comments in the referred to section.

(121) Just because T & E species exist in those regions doesn't mean that a population of the pythons would ever encounter them. T & E species are uncommon/rare by definition.

(122) Potential impacts are context specific. This statement is pure speculation. We could just as readily speculate that they would eat Norway rats, pigeons, and feral cats and thus prove highly beneficial.

(123) Control methods have not been developed because this species has never established a viable population in the US.

(124) See comment 108.

(125) See comments 96 and 97.

(126) Likelihood of escape or release is context specific. If someone gets a Southern African python in the US they are unlikely to risk its escape or intentionally release it – it would be a valuable snake. There is no basis for this statement.

(127) Climate matching alone cannot be used to draw a conclusion about the likelihood of survival. Many other factors come into play. There is no good scientific basis for this statement.

(128) What data does the Service have to support statements of tolerance of urbanization, long distance dispersal? What makes a sit-and-wait predator more likely to establish – there are no studies that we are aware of that support this as a basis for establishment risk. There is no scientific basis for this statement.

(129) Based on what assessment? See all previous comments regarding predation on T & E species. This is purely speculative. Why not also say that they are likely to eat non-native species? This is equally as speculative.

(130) See all prior comments on T & E species.

(131) There is no basis for this statement. Impacts on context specific. They could just as easily prove beneficial by eating other non-native species.

(132) If these animals are in captivity in the US, they are rare. There has never been a need to develop control measures as there are no reported escapes or releases in the US.

(133) See comment 108.

(134) See comments 96 and 97.

(135) What is the Service's evidence that the Deering Estate population still persists? There are no documented reports for years and they were likely impacted by the 2009-2010 die-offs. The status of this populations should be determined as part of the proposed rule evaluation process – it has strong bearing on the potential for these animals to persist over the long-run or spread.

(136) Overall the likelihood is not high. There are very few reports of releases/escapes relative to the number of animals held in the US. This is a very biased presentation of data.

(137) See comment 127.

(138) If this is the case, why haven't the Boas at Deering Estate spread throughout Miami? Actual evidence is to the contrary.

(139) This is pure speculation – impacts are context specific. See all other comments on T & E species.

(140) What is known about actually prey? According to state biologist Kevin Enge (pers. comm.) there are no species at risk of substantial impact at Deering Estate.

(141) This is pure speculation – impacts are context specific. See all other comments on T & E species.

(142) This is pure speculation – impacts are context specific. See all other comments on T & E species.

(143) This is pure speculation – impacts are context specific. See all other comments on T & E species.

(144) There is no basis for this statement. Impacts on context specific. They could just as easily prove beneficial by eating other non-native species.

(145) State and Federal governments have never considered the risks of Boas high enough to warrant investment in control methodologies.

(146) See comment 108.

(147) So why aren't there already lots of established populations of Boas in the US? Why didn't the population at Deering spread? Basic common sense indicates that this statement is not a logical conclusion.

(148) See comment 147 and 128.

(149) See comments 96 and 97.

(150) Likely based on what data? A few animals sited in south Florida suggests that there is relatively low likelihood of release/escape given the number of these animals in the US, especially within Florida. If likelihood is high as stated by the Service, why aren't there numerous reports from other parts of the country? This is a biased presentation of the facts.

(151) If this is the case, where are all the populations of these animals in the US? Empirical evidence is to the contrary. Despite these animals being in the trade in the US, there are no established populations of these animals in the US.

(152) Per previous comments, what is the scientific basis for including "surprise attack predation" among the indices for risk of spread?

(153) Predation risk is context specific. See all previous comments on T & E species.

(154) Predation risk is context specific. See all previous comments on T & E species.

(155) See comment 131.

(156) These animals have never established populations in the US. There has never been a need to develop control methods.

(157) See comment 108.

(158) Comments 96 and 97 apply to this conclusion.

(159) According to what information? Likelihood of release/escape is totally context specific. These animals would be highly valued and likely to be well-secured.

(160) Predation risk is context specific. See all previous comments on T & E species.

(161) Predation risk is context specific. See all previous comments on T & E species.

(162) Predation risk is context specific. See all previous comments on T & E species.
(163) See comment 131.

(164) These animals have never established in the US or elsewhere outside their range. There has never been a need to establish control methods.

(165) See comment 108.

(166) Comments 96 and 97 apply to this conclusion.

(167) Medium? Based on what data and acceptable methodology? The Service's would need to know such information as the population of animals in captivity, their housing situations, the attitude of the keepers, and past rates of release/escape in order to come up with a defensible conclusion that the "likelihood of escape or release is medium."

(168) Why aren't there already established populations? The empirical evidence doesn't support this statement.

(169) Why aren't there already established/spread populations? The empirical evidence doesn't support this statement. Per previous comments, what is the scientific basis for including "sit-and-wait predation" among the indices for risk of spread?

(170) How much evidence? It seems to be scant.

(171) Predation risk is context specific. See all previous comments on T & E species.

(172) This section is misleading: Predation risk is context specific. See all previous comments on T & E species.

(173) See comment 131.

(174) These animals have never established in the US or elsewhere outside their range. There has never been a need to establish control methods.

(175) See comment 108.

(176) Comments 96 and 97 apply to this section.

(177) According to what information? Likelihood of release/escape is totally context specific. These animals would be highly valued and likely to be well-secured.

(178) According to what data? Survival requires more than appropriate climate…and climate matching was not even feasible for this species.

(179) This is an incredibly bias statement. It could very well represent overprediction due to factors such as road and other vehicular mortality, visual detection leading to removal of animals, predation, etc.

(180) Large size makes an animal more readily detectable – and thus removable before it can establish and spread. Per previous comments, what is the scientific basis for including "sit-and-wait predation" among the indices for risk of spread?

(181) This section is misleading: Predation risk is context specific. See all previous comments on T & E species.

(182) See comment 131.

(183) These animals have never established in the US or elsewhere outside their range. There has never been a need to establish control methods.

(184) See comment 108.

(185) Comments 96 and 97 apply to this section.

(186) We contest the vast majority of statements in this section. We have addressed the statements previously in this document.

(187) We have concerns with all of the other reports provided for public review in this proposed rule process. These concerns are addressed elsewhere in this submission.

(188) PIJAC has repeatedly offered to assist the USFWS with economic analysis. These offers have been refused.

(189) PIJAC has repeatedly offered to assist the USFWS with economic analysis. These offers have been refused.

PIJAC Responses to the 13 Questions posed at 75 Fed Reg 1811.

Question 1. What regulations does your State have pertaining to the use, transport, or production of any of the nine constrictor snakes? What are the relevant Federal, State, or local rules that may duplicate, overlap, or conflict with the proposed rule?

PIJAC, in its April 30, 2008 response to the Notice of Inquiry, included a chart (Table 1) summarizing 12 states' laws and regulations covering large constrictors. Since preparation of that chart, Florida, Louisiana, and New Mexico, have or are in process of amending their laws and/or regulations. Delaware, North Carolina, South Carolina and Rhode Island have adopted or are currently considering new laws or regulations addressing large constrictors. The most significant conflict with the proposed rule would be banning interstate and foreign commerce in the nine species between states and/or exporting to foreign countries that allow such trade.

Question 2. How many of the nine constrictor snake species are currently in production for wholesale or retail sale, and how many and which states?

Inasmuch as these species are produced by commercial as well as hobbyists, many, if not all, of the nine species are technically "produced" in the vast majority of states obviously in varying numbers. Reliable data on numbers of breeding animals and/or production by species by state does not exist. Based on information received subsequent to PIJAC's April, 2008 submission in

response to the Notice of Inquiry, PIJAC has been advised that its estimates as to the numbers of *Boa constrictor imperator* in the pet trade are far higher than previously estimated. Based on retail sales by several large multi-state retailers, the domestic production ranges between 100,000 and 150,000 annually.

Question 3. How many businesses sell one or more of the nine constrictor snake species?

As indicated in PIJAC's response dated April 30, 2008 to the Notice of Inquiry, PIJAC submitted an estimate that there are 10 importers, 50 distributors, 5,100 retailers, 25 hobbyist show promoters (sponsoring more than 400 shows annually across the country), and 2,000-5,000 hobbyists dealing in large constrictors. Based on Onlinehobbyist.com, PIJAC's estimate as to individuals breeding these species is significantly understated.

Question 4. How many businesses breed one or more of the nine constrictor species? Apart from the data referred to in the previous question, there are no reliable data estimating the number of breeders involved with one or more of the nine species.

Question 5. What are the annual sales for each of the nine constrictor snake species?

As indicated in PIJAC's response dated April 30, 2008 to the Notice of Inquiry in Tables 2A, 2B, and 2C, PIJAC provided approximate prices for species and subspecies of Python, Boa, and Eunectes in trade in the United States, as well as the approximate numbers of these animals imported and bred in the US annually. PIJAC made it clear that the data are not comprehensive. For example, each animal is sold along a chain of transactions (e.g., from importer or breeder to distributor to retailer to consumer) and income is generated at each point of sale – so the actual economic value of a single snake can be multiple times the final cost to the consumer PIJAC also noted that particular color morphs and locality-specific varieties (e.g., from particular islands) can demand prices in the $1 ,000s (some upwards of $25,000) per snake. Ancillary sales (e.g., caging, food) and services (e.g., vet care) also need to be considered. The financial investment that snake keepers make in these animals, especially color morphs and dwarfs, is significant and acts as a substantial deterrent to their release or potential for escape.

Gross revenue per company for the sale of species and subspecies of Python, Boa, and Eunectes is highly variable, depending on whether or not the company focuses on wholesale or retail, the size of the operation, which species/subspecies are involved, and if the focus is on a) imported or US bred animals and b) normal ("wild type") specimens or color morph/locality-specific varieties. In addition to commercial operations, thousands of reptile hobbyists sell and trade large constrictors for supplemental income and conservation purposes and are not engaged in the normal retail channel.

Recognizing that the types of data being sought by the USFWS are not readily available, PIJAC advised the Service that PIJAC was willing to collaborate with the US Fish and Wildlife Service on a more detailed analysis of the breeding, trade, and other activities involving these species. Interestingly, neither the USFWS nor the USGS made a concerted effort to work with PIJAC in an attempt to collaborate on a survey, or garner other data or facts.

Question 6. How many, if any, of the nine constrictor snake species are permitted within each state?

PIJAC, in its April 30, 2008 response to the Notice of Inquiry, included a chart (Table 1) summarizing 12 states' laws and regulations covering large constrictors. That chart indicates which species are permitted within those states and the requirements or restrictions imposed by the different states. As noted above, the chart needs to be updated to reflect amendments (adopted and/or pending) in Florida, Louisiana, and New Mexico as well as new laws adopted in Delaware, North Carolina, Rhode Island and South Carolina, following preparation of the 2008 Chart.

Question 7. What would it cost to eradicate individuals or populations of the nine constrictor snake species, or similar species, if found? What methods are effective?

Only two populations of large constrictors have ever established in the US, both in southern Florida: *Python molurus bivitattus* in the Everglades and *Boa constrictor constrictor* in Deering Estate (bordering Biscayne Bay). According to State officials, eradication of these feral populations is not humanly feasible due to difficulty in surveying the landscape and ensuring that every individual has been killed or otherwise removed. PIJAC, in its April, 2008 response to the Notice of Inquiry provided information in Tables 3A and 3B.

Given the fact that the boas at Deering Estate have not been documented in years and the winter of 2009-2010 included multiple cold snaps, it is quite possible that these snakes no longer persist. Scientists studying the Burmese python population documented significant die-offs (reportedly of 85% of the population, perhaps more). This indicates that, while eradication might not be humanly possible, weather condition in the southern US might be cold enough to prevent indefinite establishment.

The cost of eradicating other populations of large constrictors, if found, would be situation-specific. Factors that would need to be considered include: species/subspecies, number of individual animals, climate, terrain, and extent of the population. Thus, the costs associated with the recent steps taken to collect Burmese pythons in the Everglades would be the best available data since to the best of PIJAC's knowledge no other collection or eradication plans are in place.

PIJAC has joined with Federal and State agencies and other stakeholders to prevent the release of unwanted Pythons, Boas, or Eunectes by promoting a component of the *Habitattitude*™ campaign that is focused on reptiles and amphibians (www.pijac.org). We believe that support of this program is one of the best investments the US government can make in preventing the establishment of additional populations of large constrictors.

Question 8. What are the costs of implementing propagation, recovery, and restoration programs for native species that are affected by the nine constrictor snake species, or similar species?

Unknown. To date, there is no need for the development of such programs. There is already a species recovery plan in place for Key Largo woodrats (*Neotoma floridana smalli*), an endemic rodent that is Endangered due to loss of habitat (See: http://www.fws.gov/southeast/vbpdfs/species/mammals/klwr.pdf). Otherwise, there is no evidence that native species have been adversely affected by the feral populations of *P. m. bivitattus* or

B. c. constrictor. For further information, see the response to Question 10. If an additional native species is adversely impacted in the future, the cost of implementing propagation, recovery, and restoration programs would need to be assessed on a situation-specific basis.

Question 9. What State threatened or endangered species would be impacted by the introduction of any of the nine constrictor snake species?

Unknown. If warranted, such as assessment would need to be undertaken on a situation- specific basis. Factors to consider would include: locality of the introduction, extent of the introduction, potential for establishment of the species, biology (including diet) of the species, biology of relevant state-listed species, and potential mitigation opportunities.

Question 10. What species have been impacted, and how, by any of the nine constrictor snake species?

No native wildlife species have been adversely impacted by feral populations of *B. constrictor constrictor* (K. Enge, Florida Fish and Wildlife Commission personal communication; Table 3A in PIJAC Response to Notice of Inquiry).

Gut content analysis of *P. m. bivitattus* (Table 4 in PIJAC Response to Notice of Inquiry) conducted by Skip Snow (Everglades National Park) and colleagues includes three state-listed species of special concern (*Aramus guarauna, Eudocimus albus, Alligator mississippiensis*), each represented by a single prey item. All of these species were listed due to historical overhunting, as well as habitat loss/modification. Their populations have rebounded considerably and all are commonly observed in the Everglades during the period in which the study occurred. All of the other species identified in the gut content analysis are common in the Everglades and most are common state-wide. Two species (*Felis sylvestris catus* and *Rattus sp.*) are non-native species that are generally considered invasive where they have become established. At least three of the rodent species (*Sigmodon hispidus, Orysomys palustris, and Rattus sp.*) found in *P. m. bivitattus* guts are reservoirs for human-disease and are known to have negative impacts on wildlife and/or crops.

Although a thorough analysis of the ecological role of *P. m. bivittatus* is not available at this time, it is possible that they are making an overall positive contribution to the Everglades system as a prey base for native species and a predator of invasive species, as well as native "pest" species.

Inasmuch as seven of the nine species of constrictor snake species have no established populations outside of their native range, it is difficult for PIJAC to speculate impacts for the seven species with any scintilla of scientific credibility

Question 11. What provisions in the proposed rule should the Service consider with regard to:

(a) The impact of the provision(s) (including any benefits and costs), if any, and
(b) what alternatives, if any, the Service should consider, as well as the costs and benefits of those alternatives, paying specific attention to the effect of the rule on small entities?

PIJAC and other stakeholders are prepared to discuss options with the Service in detail. We believe that a comprehensive, State-led prevention and early detection/rapid response program will ultimately be more ecologically-effective and cost-effective than an injurious wildlife listing. We are in the process of developing a proposed alternative plan that includes a budget but are not been able to complete this in the time allocated for comment. Please contact us to establish a dialogue on this important topic. See also section below on "Other Initiatives to Deal with the Issue".

Question 12. How could the proposed rule be modified to reduce any costs or burdens for small entities consistent with the Service's requirements?

The only way to reduce costs or burdens on small entities would be to provide for greater flexibility by adopting a permit system (similar to the CBW process) to allow interstate movement or exportation of the species from the United States. Otherwise, such entities will be left holding onto to animal and incurring the cost of maintenance until they can figure out how to dispose of the animals.

Question 13. Why we should or should not include hybrids of the nine constrictor species analyzed by the rule, and if the hybrids possess the same biological characteristics as the parent species.

How would the Service know if the hybrids possessed the same biological characteristics of the parent species? In most cases, the Service had very little data on the biological characteristics of the parent species. The proposed rule lacks a strong scientific underpinning.

Other Initiatives to Deal with the Issue

In order to prevent the introduction of any species or subspecies of the general Python, Boa, or Eunectes in the US, PIJAC has been engaged with State and Federal agencies, as well as other stakeholders, in the following initiatives. It is our contention that these programs, as well as State-level permitting systems, offer the most effective strategy for preventing any additional populations of large constrictors from establishing in the US. PIJAC wishes to continue working with the US Fish and Wildlife Service, Florida Fish and Wildlife Commission, and others on these important programs. For more information, see: www.pijac.org.

- **Habitattitude™**: Designed to educate pet owners on the need to make smart pet choices, care for their pets properly, and find alternatives to the release of unwanted pets. Includes a component focused on reptiles and amphibians.

- **National Reptile Improvement Plan (NRIP)**: Accreditation program for reptile importers, distributors, and retailers to ensure the animals are free of parasites and pathogens.

- **Non-Native Pet Amnesty Day**: Sponsored by the State of Florida and partners for the purposes of taking in unwanted, non-native species of pets (mostly reptiles and amphibians) without consequence to the former pet owner.

- **Retailer Capacity Building**: PIJAC guidebooks and a certification program for increasing the capacity of pet retailers to help customers make wise choices about pet selection, as well as to care for their pets properly.

Future Opportunities

PIJAC is well aware of the problems posed by invasive species. Our involvement with this issue dates back to the early 1970s . For many years, PIJAC has been providing leadership on invasive species issues, serving as an advisor to and collaborator with numerous government agencies. The PIJAC staff serves on various Aquatic Naissance Species Task Force (ANSTF) committees and regional panels, the Invasive Species Advisory Committee (ISAC) and a number of State invasive species advisory committees or working groups. Additionally, PIJAC leads several initiatives and proactive campaigns designed to minimize the introduction and impact of invasive species. These campaigns reflect a strong collaborative effort between industry, the government, and other stakeholders.

For well over a decade, government and industry have been working collaboratively to enhance prevention, improve early detection and rapid response, develop screening mechanisms applicable to different animal types, identify pathways and pathway related problems, and increase public awareness on the importance of not introducing nonnative species into the environment. A major component of that process is recognizing that screening or risk analysis must be carefully constructed to ensure that the analysis is science-based, credible, transparent, involves stakeholders, and evaluates and promotes viable management policies.

PIJAC recognizes that the Lacey Act process is inefficient in many ways and needs to be modernized to deal with a number of issues, including new ways to deal with specimens of listed species that have been in the United States in large numbers for many years prior to listing. Greater collaboration with the states and industry, implementation of new permit mechanisms, enhance early detection/rapid response, or screening processes would provide flexibility when addressing these issues. PIJAC is interested in participating in the much needed dialog to address myriad issues involving invasive species, including improving implementation of the Lacey Act.

We look forward to future collaboration on invasive species issues and trust that the US Fish and Wildlife Service will engage PIJAC and other interested stakeholders in any dialog involving the pending rulemaking as well as other discussions regarding the Lacey Act.

Respectfully submitted,

Marshall Meyers

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** at 65 FR 19477, April 11, 2000, or you may visit http://www.regulations.gov.

If you wish Docket Management to notify you upon its receipt of your comments, enclose a self-addressed, stamped postcard in the envelope containing your comments. Upon receiving your comments, Docket Management will return the postcard by mail.

How do I submit confidential business information?

If you wish to submit any information under a claim of confidentiality, send three copies of your complete submission, including the information you claim to be confidential business information, to the Chief Counsel, National Highway Traffic Safety Administration, 1200 New Jersey Avenue, SE., Washington, DC 20590. Include a cover letter supplying the information specified in our confidential business information regulation (49 CFR part 512).

In addition, send two copies from which you have deleted the claimed confidential business information to Docket Management, 1200 New Jersey Avenue, SE., West Building, Room W12–140, Washington, DC 20590, or submit them electronically, in the manner described at the beginning of this notice.

Will the agency consider late comments?

NHTSA will consider all comments that Docket Management receives before the close of business on the comment closing date indicated above under **DATES**. To the extent the research schedule allows, NHTSA will try to consider comments that Docket Management receives after that date, but we cannot ensure that we will be able to do so.[3]

Please note that even after the comment closing date we will continue to file relevant information in the docket as it becomes available. Further, some commenters may submit late comments. Accordingly, we recommend that you periodically check the docket for new material.

Issued: March 5, 2010.

Stephen R. Kratzke,

Associate Administrator for Rulemaking.

[FR Doc. 2010–5177 Filed 3–11–10; 8:45 am]

BILLING CODE P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 16

RIN 1018-AV68

[FWS-R9-FHC-2008-0015]
[941 40-1342-0000-N3]

Injurious Wildlife Species; Listing the Boa Constrictor, Four Python Species, and Four Anaconda Species as Injurious Reptiles

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule; availability of draft environmental assessment and draft economic analysis.

SUMMARY: The U.S. Fish and Wildlife Service (Service) proposes to amend its regulations to add Indian python (*Python molurus*, including Burmese python *Python molurus bivittatus*), reticulated python (*Broghammerus reticulatus* or *Python reticulatus*), Northern African python (*Python sebae*), Southern African python (*Python natalensis*), boa constrictor (*Boa constrictor*), yellow anaconda (*Eunectes notaeus*), DeSchauensee's anaconda (*Eunectes deschauenseei*), green anaconda (*Eunectes murinus*), and Beni anaconda (*Eunectes beniensis*) to the list of injurious reptiles. This listing would prohibit the importation of any live animal, gamete, viable egg, or hybrid of these nine constrictor snakes into the United States, except as specifically authorized. The best available information 1 indicates that this action is necessary to protect the interests of humans, wildlife, and wildlife resources from the purposeful or accidental introduction and subsequent establishment of these large constrictor snake populations into ecosystems of the United States. If the proposed rule is made final, live snakes, gametes, or hybrids of the nine species or their viable eggs could be imported only by permit for scientific, medical, educational, or zoological purposes, or without a permit by Federal agencies solely for their own use. The proposed rule, if made final, would also prohibit any interstate transportation of live snakes, gametes, viable eggs, or hybrids of the nine species currently held in the United States. If the proposed rule is made final, interstate transportation could be authorized for scientific, medical, educational, or zoological purposes.

DATES: We will consider comments we receive on or before May 11, 2010.

ADDRESSES: You may submit comments by one of the following methods:

- Federal eRulemaking Portal: http://www.regulations.gov. Follow the instructions for submitting comments to Docket No. FWS-R9-FHC-2008-0015.
- U.S. mail or hand-delivery: Public Comments Processing, Attn: Docket No. FWS-R9-FHC-2008-0015; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, Suite 222; Arlington, VA 22203.

We will not accept e-mail or faxes. We will post all comments on http://www.regulations.gov. This generally means that we will post any personal information you provide us (see the **Public Comments** section below for more information).

FOR FURTHER INFORMATION CONTACT: Supervisor, South Florida Ecological Services Office, U.S. Fish and Wildlife Service, 1339 20th Street, Vero Beach, FL 32960-3559; telephone 772-562-3909 ext. 256. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Previous Federal Action

On June 23, 2006, the Service received a petition from the South Florida Water Management District (District) requesting that Burmese pythons be considered for inclusion in the injurious wildlife regulations under the Lacey Act (18 U.S.C. 42). The District is concerned about the number of Burmese pythons found in Florida, particularly in Everglades National Park and on the District's widespread property in South Florida.

The Service published a notice of inquiry in the **Federal Register** (73 FR 5784; January 31, 2008) soliciting available biological, economic, and other information and data on the *Python*, *Boa*, and *Eunectes* genera for possible addition to the list of injurious wildlife under the Lacey Act and provided a 90–day public comment period. The Service received 1,528 comments during the public comment period that closed April 30, 2008. We reviewed all comments received for substantive issues and information regarding the injurious nature of species in the *Python*, *Boa*, and *Eunectes* genera. Of the 1,528 comments, 115

provided economic, ecological, and other data responsive to 10 specific questions in the notice of inquiry. Most individuals submitting comments responded to the notice of inquiry as though it was a proposed rule to list constrictor snakes in the *Python, Boa*, and *Eunectes* genera as injurious under the Lacey Act. As a result, most comments expressed either opposition or support for listing the large constrictor snakes species and did not provide substantive information. We considered the information provided in the 115 applicable comments in the preparation of the draft environmental assessment, draft economic analysis, and this proposed rule.

For the injurious wildlife evaluation in this proposed rule, we considered: (1) The substantive information that we received during the notice of inquiry, (2) information from the United States Geological Survey's (USGS) ''Giant Constrictors: Biological and Management Profiles and an Establishment Risk Assessment for Nine Large Species of Pythons, Anacondas, and the Boa Constrictor'' (Reed and Rodda 2009), and (3) the latest findings regarding the nine large constrictor snakes in Florida and the Commonwealth of Puerto Rico. The USGS's risk assessment (Reed and Rodda 2009) can be viewed at the following web sites: http://www.regulations.gov under Docket No. FWS-R9-FHC-2008-0015 and http://www.fort.usgs.gov/Products/Publications/pub.abstract.asp?PubID=22691. Reed and Rodda (2009) provided the primary biological, management, and risk information for this proposed rule **2**. The risk assessment was prepared at the request of the Service and the National Park Service.

Background

Purpose of Listing as Injurious

The purpose of listing the Indian python (*Python molurus*, including Burmese python *P. molurus bivittatus*), reticulated python (*Broghammerus reticulatus* or *Python reticulatus*), Northern African python (*Python sebae*), Southern African python (*Python natalensis*), boa constrictor (*Boa constrictor*), yellow anaconda (*Eunectes notaeus*), DeSchauensee's anaconda (*Eunectes deschauenseei*), green anaconda (*Eunectes murinus*), and Beni anaconda (*Eunectes beniensis*) (hereafter, collectively the nine constrictor snakes) as injurious wildlife would be to prevent the accidental or intentional introduction of and the possible subsequent establishment of populations of these snakes in the wild in the United States **3**.

Why the Nine Species Were Selected for Consideration as Injurious Species

The four true giants (with maximum lengths well exceeding 6 m [20 ft]) are the Indian python, Northern African python, reticulated python, and green anaconda; they are prevalent in international trade **4**. The boa constrictor is large, prevalent in international trade, and already established in South Florida **5**. The Southern African python, yellow anaconda, DeSchauensee's anaconda, and Beni anaconda exhibit many of the same biological characteristics as the previous five species that pose a risk of establishment and negative effects in the United States **6**. The Service is striving to prevent the introduction and establishment of all nine species into new areas of the United States due to concerns about the injurious effects of all nine species consistent with 18 U.S.C. 42.**7**

Need for the Proposed Rule

The threat posed by the Indian python (including Burmese python) and other large constrictor snakes is evident **8**. Thousands of Indian pythons (including Burmese pythons) are now breeding in the Everglades and threaten many imperiled species and other wildlife.**9** In addition, other species of large constrictors are or may be breeding in South Florida, including boa constrictors and Northern African pythons. Reticulated pythons, yellow anacondas, and green anacondas have also been reported in the wild in Florida. Indian pythons (including Burmese pythons), reticulated pythons, African pythons, boa constrictors, and yellow anacondas have been reported in the wild in Puerto Rico. The Southern African python, yellow anaconda, DeSchauensee's anaconda, and Beni anaconda exhibit many of the same biological characteristics as the previous five species that pose a risk of establishment and negative effects in the United States **10**.

The USGS risk assessment used a method called ''climate matching'' to estimate those areas of the United States exhibiting climates similar to those experienced by the species in their respective native ranges (Reed and Rodda 2009). Considerable uncertainties exist about the native range limits of many of the giant constrictors, and a myriad of factors other than climate can

influence whether a species could establish a population in a particular location. 11While we acknowledge this uncertainty, these tools also serve as a useful predictor to identify vulnerable ecosystems at risk from injurious wildlife prior to the species actually becoming established (Lodge *et al.* 2006). 12 Based on climate alone, many species of large constrictors are likely to be limited to the warmest areas of the United States, including parts of Florida, extreme south Texas, Hawaii, and insular territories. 13 For a few species, large areas of the continental United States appear to have suitable climatic conditions. 14 There is a high probability that large constrictors would establish populations in the wild within their respective thermal and precipitation limits due to common life- history traits that make them successful invaders, such as being habitat generalists that are tolerant of urbanization and capable of feeding on a wide range of size-appropriate vertebrates (reptiles, mammals, birds, amphibians, and fish; Reed and Rodda 2009). 15 While a few of the largest species have been known to attack humans in their native ranges, such attacks appear to be rare.

Of the nine large constrictor snakes assessed by Reed and Rodda (2009), five were shown to pose a high risk to the health of the ecosystem, including the Indian python or Burmese python, Northern African python, Southern African python, yellow anaconda, and boa constrictor. The remaining four large constrictors—the reticulated python, green anaconda, Beni anaconda, and DeSchauensee's anaconda—were shown to pose a medium risk. None of the large constrictors that were assessed was classified as low risk. 16 As compared to many other vertebrates, large constrictors pose a relatively high risk for being injurious. 17 They are highly adaptable to new environments and opportunistic in expanding their geographic range. 18 Furthermore, since they are a novel, top predator, they can threaten the stability of native ecosystems by altering the ecosystem's form, function, and structure. 19

Most of these nine species are cryptically marked, which makes them difficult to detect in the field, complicating efforts to identify the range of populations or deplete populations through visual searching and removal of individuals. There are currently no tools available that would appear adequate for eradication of an established population of giant snakes once they have spread over a large area. 20

Listing Process

The regulations contained in 50 CFR part 16 implement the Lacey Act (Act; 18 U.S.C. 42) as amended. Under the terms of the Act, the Secretary of the Interior is authorized to prescribe by regulation those wild mammals, wild birds, fish, mollusks, crustaceans, amphibians, reptiles, and the offspring or eggs of any of the foregoing that are injurious to humans, to the interests of agriculture, horticulture, or forestry, or to the wildlife or wildlife resources of the United States. The lists of injurious wildlife species are found at 50 CFR 16.11–16.15.

We are evaluating each of the nine species of constrictor snakes individually and will list only those species that we determine to be injurious 21. If we determine that any or all of the nine constrictor snakes in this proposed rule are injurious, then, as with all listed injurious animals, their importation into, or transportation between, the States, the District of Columbia, the Commonwealth of Puerto Rico, or any territory or possession of the United States by any means whatsoever is prohibited, except by permit for zoological, educational, medical, or scientific purposes (in accordance with permit regulations at 50 CFR 16.22), or by Federal agencies without a permit solely for their own use, upon filing a written declaration with the District Director of Customs and the U.S. Fish and Wildlife Service Inspector at the port of entry. 22 The rule would not prohibit intrastate transport of the listed constrictor snake species within States. Any regulations pertaining to the transport or use of these species within a particular State would continue to be the responsibility of that State.

The Lacey Act Evaluation Criteria are used as a guide to evaluate whether a species does or does not qualify as injurious under the Act. The analysis developed using the criteria serves as a basis for the Service's regulatory decision regarding injurious wildlife species listings. A species does not have to be established, currently imported, or present in the wild in the United States for the Service to list it as injurious. The objective of such a listing would be to prevent that species' importation and likely establishment in the wild, thereby preventing injurious effects consistent with 18 U.S.C. 42.

If the data indicate that a species is injurious, a proposed rule will be developed. The proposed rule provides the public with a period to comment on the proposed listing and associated documents.

If a determination is made to not finalize the listing, the Service will publish a notice in the **Federal Register** explaining why the species is not added to the list of injurious wildlife. If a determination is made to list a species as injurious after evaluating the comments received during the proposed rule's comment period, a final rule would be published. The final rule contains responses to comments received on the proposed rule, states the final decision, and provides the justification for that decision. If listed, species determined to be injurious will be codified in the Code of Federal Regulations.

Introduction Pathways for Large Constrictor Snakes

The primary pathway for the entry of the nine constrictor snakes into the United States is the commercial trade in pets. The main ports of entry for imports are Miami, Los Angeles, Baltimore, Dallas-Ft. Worth, Detroit, Chicago, and San Francisco. From there, many of the live snakes are transported to animal dealers, who then transport the snakes to pet retailers. Large constrictor snakes are also bred in the United States and sold within the country.

A typical pathway of a large constrictor snake includes a pet store. Often, a person will purchase a hatchling snake (0.5 meters (m) [(22 inches (in)]) at a pet store or reptile show for as little as $35. The hatchling grows rapidly 23, even when fed conservatively, so a strong snake-proof enclosure is necessary. All snakes are adept at escaping, and pythons are especially powerful when it comes to breaking out of cages 24. In captivity, they are fed pre-killed mice, rats, rabbits, and chickens. A tub of fresh water is needed for the snake to drink and soak in. As the snake grows too big for a tub in its enclosure, the snake will have to be bathed in a bathtub 25. Under captive conditions, pythons will grow very fast. An Indian python, for example, will grow to more than 20 feet long, weigh 200 pounds, live more than 25 years, and must be fed rabbits and the like 26.

Owning a giant snake is a difficult, long-term, somewhat expensive responsibility. 27 For this reason, many snakes are released by their

owners into the wild when they can no longer care for them, and other snakes escape from inadequate enclosures. 28 This is a common pathway to invading the ecosystem by large constrictor snakes (Fujisaki *et al.* 2009). 29 30

In aggregate, the trade in giant constrictors is significant. 31 From 1999 to 2008, more than 1.8 million live constrictor snakes of 12 species were imported into the United States (U.S. Fish and Wildlife Service 2010). Of all the constrictor snake species imported into the United States, the selection of nine constrictor snakes for evaluation as injurious wildlife was based on concern over the giant size 32 of these particular snakes combined with their quantity in international trade 33. The four largest species of snakes—Indian python, Northern African python, reticulated python, and green anaconda—were selected, as well as similar and closely related species, and the boa constrictor. These giant constrictor snakes constitute a high risk of injuriousness in relation to those taxa with lower trade volumes, are large in size with maximum lengths exceeding 6 m (20 ft), and have a high likelihood of establishment in various habitats of the United States 34. The Southern African python, yellow anaconda, DeSchauensee's anaconda, and Beni anaconda exhibit many of the same biological characteristics as the previous five species that pose a risk of establishment and negative effects in the United States 35.

By far the strongest factor influencing the chances of these large constrictors establishing in the wild is the number of release events and the numbers of individuals released. 36 With a sufficient number of either unintentional or intentional release events, these species will establish in ecosystems with suitable conditions for survival and reproduction. 37 This is likely the case at Everglades National Park, where the core nonnative Burmese python population in Florida is now located. 38. Therefore, allowing unregulated importation and interstate transport of these exotic species will increase the risk of these new species becoming established through increased opportunities for release. 39 A second factor that is strongly and consistently associated with the success of an invasive species' establishment is a history of it successfully establishing elsewhere outside its native range. For example, in addition to the established Indian (including Burmese) python population in Florida, we now know that boa constrictors are established at the Deering Estate at Cutler preserve in South Florida, and the Northern African python is established west of Miami, Florida, in the vicinity known as the Bird Drive Basin Recharge Area. 40 A third factor strongly associated with establishment success is having a good climate or habitat match between where the species naturally occurs and where it is introduced. These three factors have all been consistently demonstrated to increase the chances of establishment by all invasive vertebrate taxa, including the nine large constrictor snakes in this proposed rule (Bomford 2008). 41

However, as stated above, a species does not have to be established, currently imported, or present in the wild in the United States for the Service to list it as injurious. The objective of such a listing would be to prevent that species' importation and likely establishment in the wild 42, thereby preventing injurious effects consistent with 18 U.S.C. 42.

Public Comments

We are soliciting substantive public comments and supporting data on the draft environmental assessment, the draft economic analysis, and this proposed rule 43 to add the Indian (including Burmese) python, reticulated python (*Broghammerus reticulatus* or *Python reticulatus)*, Northern African python, Southern African python, boa constrictor, yellow anaconda, DeSchauensee's anaconda, green anaconda, and Beni anaconda to the list of injurious wildlife under the Lacey Act. The draft environmental assessment, the draft economic analysis, the initial regulatory flexibility analysis, and this proposed rule will be available on http://www.regulations.gov under Docket No. FWS-R9-FHC-2008-0015.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in the **ADDRESSES** section. We will not accept comments sent by e-mail or fax or to an address not listed in the **ADDRESSES** section.

We will post your entire comment—including your personal identifying information—on http://www.regulations.gov. If your written comments provide personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on http://www.regulations.gov under Docket No. FWS-R9-FHC-2008-0015, or by appointment, during normal business hours at the South Florida Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT** section).

We are soliciting public comments and supporting data to gain additional information, and we specifically seek comment regarding the Indian python (*Python molurus*, including Burmese python *P. m. bi vittat us*) , reticulated python (*Broghammerus reticulatus* or *Python reticulatus)*, Northern African python (*Python sebae*), Southern African python (*Python natalensis*), boa constrictor (*Boa constrictor*), yellow anaconda (*Eunectes notaeus*), DeSchauensee's anaconda (*Eunectes deschauenseei*), green anaconda (*Eunectes murinus*), and Beni anaconda (*Eunectes beniensis*) on the following questions: 43

(1) What regulations does your State have pertaining to the use, transport, or production of any of the nine constrictor snakes? What are relevant Federal, State, or local rules that may duplicate, overlap, or conflict with the proposed rule?

(2) How many of the nine constrictor snakes species are currently in production for wholesale or retail sale, and in how many and which States?

(3) How many businesses sell one or more of the nine constrictor snake species?

(4) How many businesses breed one or more of the nine constrictor snake species?

(5) What are the annual sales for each of the nine constrictor snake species?

(6) How many, if any, of the nine constrictor snake species are permitted within each State?

(7) What would it cost to eradicate individuals or populations of the nine constrictor snakes, or similar species, if found? What methods are effective?

(8) What are the costs of implementing propagation, recovery, and restoration programs for native species that are affected by the nine constrictor snake species, or similar species?

(9) What State threatened or endangered species would be impacted by the introduction of any of the nine constrictor snake species?

(10)What species have been

impacted, and how, by any of the nine constrictor snake species?

(11) What provisions in the proposed rule should the Service consider with regard to: (a) The impact of the provision(s) (including any benefits and costs), if any, and (b) what alternatives, if any, the Service should consider, as well as the costs and benefits of those alternatives, paying specific attention to the effect of the rule on small entities?

(12) How could the proposed rule be modified to reduce any costs or burdens for small entities consistent with the Service's requirements?

(13) Why we should or should not include hybrids of the nine constrictor species analyzed in this rule, and if the hybrids possess the same biological characteristics as the parent species.

Species Information

Indian python (*Python molurus*, including Burmese python *P. molurus bivittatus*)

Native Range

The species *Python molurus* ranges widely over southern and southeast Asia (Reed and Rodda 2009). Reed and Rodda (2009) state that, at times, the species has been divided into subspecies recognizable primarily by color. The most widely used common name for the entire species is Indian python, with *P. molurus bivittatus* routinely distinguished as the Burmese python. Because the pet trade is composed almost entirely of *P. m. bivittatus*, most popular references simply use Burmese python. However, hereafter, we refer to the species as Indian python (for the entire species), unless specifically noted as Burmese (to refer to the subspecies, or where information sources used that name). ***44***

The subspecies, *Python molurus molurus* is listed as endangered in its native lands under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531, *et seq.*) under the common name of Indian python. *P. molurus molurus* is also listed by the Convention on International Trade in Threatened and Endangered Species (CITES) under Appendix I but uses no common name. All other subspecies in the genus *Python* are listed in CITES Appendix II. This rule as proposed would list all members of *Python molurus* as injurious.

In its native range, the Indian python occurs in virtually every habitat from lowland tropical rainforest (Indonesia and Southeast Asia) to thorn-scrub desert (Pakistan) and grasslands (Sumbawa, India) to montane warm temperate forests (Nepal and China) (Reed and Rodda 2009). This species inhabits an extraordinary range of climates, including both temperate and tropical, as well as both very wet and very dry environments (Reed and Rodda 2009).

Biology

The Indian python's life history is fairly representative of large constrictors because juveniles are relatively small when they hatch, but nevertheless are independent from birth, grow rapidly, and mature in a few years. Mature males search for mates, and the females wait for males to find them during the mating season, then lay eggs to repeat the cycle. Male Indian pythons do not need to copulate with females for fertilization of viable eggs. Instead, the female apparently can fertilize her eggs with her own genetic material, though it is not known how often this occurs in the wild. Several studies of captives reported viable eggs from females kept for many years in isolation (Reed and Rodda).**45**

In a sample of eight clutches discovered in southern Florida (one nest and seven gravid females), the average clutch size was 36 eggs, but pythons have been known to lay as many as 107 eggs in one clutch. **46** Adult females from recent captures in Everglades National Park have been found to be carrying more than 85 eggs (Harvey *et al.* 2008).

The Burmese python (*Python molurus bivittatus*) is one of the largest snakes in the world; it reaches lengths of up to 7 m (23 ft) and weights of over 90 kilograms (kg)(almost 200 pounds (lbs)). **47** Hatchlings range in length from 50 to 80 centimeters (cm)(19 to 31 inches (in)) and can more than double in size within the first year (Harvey *et al.* 2008). **48** As is true with all snakes, pythons grow throughout their lives. Reed and Rodda (2009) cite Bowler (1977) for two records of Burmese pythons living more than 28 years (up to 34 years, 2 months for one snake that was already an adult when acquired). **49**

Like all of the giant constrictors **50**, Indian pythons are extremely cryptic in coloration. They are silent hunters that lie in wait along pathways used by their prey and then ambush them. They blend so well into their surroundings that observers have released marked snakes for research purposes and lost sight of them 5 feet away (Roybal, pers. comm. 2010).

With only a few reported exceptions, Indian pythons eat terrestrial vertebrates, although they eat a wide variety of terrestrial vertebrates (lizards, frogs, crocodilians, snakes, birds, and mammals). Special attention has been paid to the large maximum size of prey taken from python stomachs, both in their native range and nonnative occurrences in the United States. The most well-known large prey items include alligators, antelopes, dogs, deer, jackals, goats, porcupines, wild boars, pangolins, bobcats, pea fowl, frigate birds, great blue herons, langurs, and flying foxes; a leopard has even been reported as prey (Reed and Rodda 2009). To accommodate the large size of prey, Indian pythons have the ability to grow stomach tissue quickly to digest a large meal (Reed and Rodda 2009). **51**

Reticulated Python (*Broghammerus reticulatus* or *Python reticulatus*)***52***

Native Range

Although native range boundaries are disputed, reticulated pythons conservatively range across much of mainland Southeast Asia (Reed and Rodda 2009). They are found from sea level up to more than 1,300 m (4,265 ft) and inhabit lowland primary and secondary tropical wet forests, tropical open dry forests, tropical wet montane forests, rocky scrublands, swamps, marshes, plantations and cultivated areas, and suburban and urban areas. Reticulated pythons occur primarily in areas with a wet tropical climate. Although they also occur in areas that are seasonally dry, reticulated pythons do not occur in areas that are continuously dry or very cold at any time (Reed and Rodda 2009).

Biology

The reticulated python is most likely the world's longest snake (Reed and Rodda 2009). Adults can grow to a length of more than 8.7 m (28.5 ft). Like all pythons, the reticulated python is oviparous (lays eggs). The clutch sizes range from 8 to 124, with typical clutches of 20 to 40 eggs. Hatchlings are at least 61 cm (2 ft) in total length (Reed and Rodda 2009). We have no data on life expectancy in the wild, but several captive specimens have lived for nearly 30 years (Reed and Rodda 2009). **53**

The size range of the prey of reticulated pythons is essentially the same as that of the Indian python, as far as is known (Reed and Rodda 2009), and has included chickens, rats, monitor lizards, civet cats, bats, an immature cow, various primates, deer, goats, cats, dogs, ducks, rabbits, tree shrews, porcupines, and many species of birds.

A host of internal and external parasites plague wild reticulated pythons (Auliya 2006). The pythons in general are hosts to various protozoans, nematodes, ticks, and lung arthropods (Reed and Rodda 2009). Captive reticulated pythons can carry ticks of agricultural significance (potential threat to domestic livestock) in Florida (Burridge *et al.* 2000, 2006; Clark and Doten 1995).**54**

The reticulated python can be an aggressive and dangerous species of giant constrictor to humans. Reed and Rodda (2009) cite numerous sources of people being bitten, attacked, and even killed by reticulated pythons in their native range. **55**

Northern African Python (*Python sebae*)

Native Range

Python sebae and *Python natalensis* are closely related, large-bodied pythons of similar appearance found in sub-Saharan Africa (Reed and Rodda 2009). The most common English name for this species complex has been African rock python. After *P. sebae* was split from *P. natalensis*, some authors added "Northern" or "Southern" as a prefix to this common name. Reed and Rodda 2009 adopted Broadley's (1999) recommendations and refer to these snakes as the Northern and Southern African pythons; hereafter, we refer to them as Northern and Southern African pythons, or occasionally as African pythons. **56**

Northern African pythons range from the coasts of Kenya and Tanzania across much of central Africa to Mali and Mauritania, as well as north to Ethiopia and perhaps Eritrea; in arid zones, their range is apparently limited to the vicinity of permanent water (Reed and Rodda 2009). In Nigeria, Northern African pythons are reported from suburban, forest, pond and stream, and swamp habitats, including extensive use of Nigerian mangrove habitats. In the arid northern parts of its range, Northern African pythons appear to be limited to wetlands, including the headwaters of the Nile, isolated wetlands in the Sahel of Mauritania and Senegal, and the Shabelle and Jubba Rivers of Somalia (Reed and Rodda 2009). The Northern African python inhabits regions with some of the highest mean monthly temperatures identified for any of the giant constrictors, with means of greater than 35 °C (95 °F) in arid northern localities (Reed and Rodda 2009).

Biology

Northern African pythons are primarily ambush foragers, lying in wait for prey in burrows, along animal trails, and in water. Northern African pythons are oviparous. Branch (1988) reports that an "average" female of 3 to 4 m (10 to 13 ft) total length would be expected to lay 30 to 40 eggs, while others report an average clutch of 46 eggs, individual clutches from 20 to "about 100," and clutch size increasing correspondingly in relation to the body length of the female (Pope 1961). In captivity, Northern African pythons have lived for 27 years (Snider and Bowler 1992). As with most of the giant constrictors, adult African pythons primarily eat endothermic (warm-blooded) prey from a wide variety of taxa. Domestic animals consumed by African pythons include goats, dogs, and a domestic turkey consumed by an individual in suburban South Florida. **57**

Southern African Python (*Python natalensis*)

Native Range

The Southern African python is found from Kenya southwest to Angola and south through parts of Namibia and much of eastern South Africa. Distributions of the species overlap somewhat, although the southern species tends to inhabit higher areas in regions where both species occur (Reed and Rodda 2009).

Biology

Little is known about Southern African pythons. They are oviparous. As with most of the giant constrictors, adult African pythons primarily eat endothermic (warm-blooded) prey from a wide variety of taxa. The Southern African pythons consume a variety of prey types that includes those listed for Northern African pythons.

Boa Constrictor (*Boa constrictor*)

Native Range

Boa constrictors range widely over North America (Mexico), Central America, and South America, including dozens of marine and lacustrine islands, and have one of the widest latitudinal distributions of any snake in the world. In their native range, boa constrictors inhabit environments from sea level to 1,000 m (3,280 ft), including wet and dry tropical forest, savanna, very dry thorn scrub, and cultivated fields. They are commonly found in or along rivers and streams because they are capable swimmers (Reed and Rodda 2009; Snow *et al.* 2007). **58**

Biology

The maximum length of this species is roughly 4 m (13 ft). Boa constrictors are ovoviviparous (bear live young after eggs hatch inside mother). The average clutch size is 35 eggs. Snake longevity records from captive-bred populations can be 38 to 40 years (Reed and Rodda 2009). **59**

The boa constrictor has a broad diet, consuming prey from a wide variety of vertebrate taxa. Young boa constrictors will eat mice, small birds, lizards, and amphibians. The size of the prey item will increase as the snake gets older and larger. The boa constrictor is an ambush predator and will lie in wait for an appropriate prey to come along, at which point it will attack (Reed and Rodda 2009; Snow *et al.* 2007).

The subspecies *Boa constrictor occidentalis* is listed by CITES under Appendix I but uses no common name. This rule as proposed would list all subspecies of *Boa constrictor* as injurious.

Yellow Anaconda (*Eunectes notaeus*)

Native Range

The yellow anaconda (*E. notaeus*) has a larger distribution in subtropical and temperate areas of South America than the DeSchauensee's anaconda and has received more scientific attention. The yellow anaconda appears to be restricted to swampy, seasonally flooded, or riverine habitats throughout its range. The yellow anaconda exhibits a fairly temperate climate range, including localities with cold-season monthly mean temperatures around 10 °C (50 °F) and no localities with monthly means exceeding 30 °C (86 °F) in the warm season (Reed and Rodda 2009).

Biology

The yellow anaconda bears live young (ovoviviparous). The recorded number of yellow anaconda offspring range from 10 to 37, with a maximum of 56. In captivity, yellow anacondas have lived for over 20 years. Yellow anacondas appear to be generalist predators on a range of vertebrates. The anacondas in general exhibit among the broadest diet range of any snake, including ectotherms (lizards, crocodilians, turtles, snakes, fish) and endotherms (birds, mammals), and yellow anacondas have typical diets.

DeSchauensee's Anaconda (*Eunectes deschauenseei*)

Native Range

This species has a much smaller range than does the yellow anaconda and is largely confined to the Brazilian island of Marajó, nearby areas around the mouth of the Amazon River, and several drainages in French Guiana. DeSchauensee's anaconda is known from a small number of specimens and has a limited range in northeast South America. Although not well studied, DeSchauensee's anaconda apparently prefers swampy habitats that may be seasonally flooded. DeSchauensee's anaconda is known from only a few localities in northeast South America, and its known climate range is accordingly very small. While the occupied range exhibits moderate variation in precipitation across the year, annual temperatures tend to range between 25 °C (77 °F) and 30 °C (86 °F). Whether the species could tolerate greater climatic variation is unknown.

60

Biology

DeSchauensee's anaconda appears to be the smallest of the anacondas, although the extremely limited number of available specimens does not allow unequivocal determination of maximal body sizes. **61** Dirksen and Henderson (2002) record a maximum total length of available specimens as 1.92 m (6.3 (ft)) in males and 3.0 m (9.8 (ft)) in females. The DeSchauensee's anaconda is live-bearing. In captivity, DeSchauensee's anacondas have been reported to live for 17 years, 11 months (Snider and Bowler 1992). Clutch sizes of DeSchauensee's anacondas ranged from 3 to 27 (mean 10.6 ± 9.6) in a sample of five museum specimens (Pizzatto and Marques 2007), a range far greater than reported in some general works (for example, 3-7 offspring; Walls, 1998).

DeSchauensee's anaconda is reported to consume mammals, fish, and birds, and its overall diet is assumed to be similar to that of the yellow anaconda (Reed and Rodda 2009).

Green Anaconda (*Eunectes murinus*)

Native Range

The native range of green anaconda includes aquatic habitats in much of South America below 850 m (2,789 ft) elevation plus the insular population on Trinidad, encompassing the Amazon and Orinoco Basins; major Guianan rivers; the San Francisco, Parana, and Paraguay Rivers in Brazil; and extending south as far as the Tropic of Capricorn in northeast Paraguay. The range of green anaconda is largely defined by availability of aquatic habitats. Depending on location within the wide distribution of the species, these appear to include deep, shallow, turbid, and clear waters, and both lacustrine and riverine habitats (Reed and Rodda 2009).

Biology

Reed and Rodda (2009) describe the green anaconda as truly a giant snake, with fairly reliable records of lengths over 7 m (23 ft) and having a very stout body. Very large anacondas are almost certainly the heaviest snakes in the world, ranging up to 200 kg (441 lbs) (Bisplinghof and Bellosa 2007), even though reticulated pythons, for example, may attain greater lengths.

The green anaconda bears live young. The maximum recorded litter size is 82, removed from a Brazilian specimen, but the typical range is 28 to 42 young. Neonates (newly born young) are around 70 to 80 cm (27.5 to 31.5 in) long and receive no parental care. Because of their small size, they often fall prey to other animals. If they survive, they grow rapidly until they reach sexual maturity in their first few years (Reed and Rodda 2009). **62** While reproduction is typically sexual, Reed and Rodda (2009) report that a captive, female green anaconda that was 5 years old in 1976 and that had no access to males gave birth in 2002 to 23 females. This raises the possibility that green anacondas are facultatively parthenogenic, and that, theoretically, a single female green anaconda could establish a population.

The green anaconda is considered a top predator in South American ecosystems. Small anacondas appear to primarily consume birds, and as they mature, they undergo an ontogenetic prey shift to large mammals and reptiles. The regular inclusion of fish in the diet of the anacondas (including other members of the genus *Eunectes*) increases their dietary niche breadth in relation to the other giant constrictors, which rarely consume fish. Green anacondas consume a wide variety of endotherms and ectotherms from higher taxa, including such large prey as deer and crocodilians (alligators are a type of crocodilian). The regular inclusion of fish, turtles, and other aquatic organisms in their diet increases their range of prey even beyond that of reticulated or Indian pythons. Organisms that regularly come in contact with aquatic habitats are likely to be most commonly consumed by green anacondas (Reed and Rodda 2009). Green anacondas would have a ready food supply anywhere that the climate and habitat matched their native range. Since green anacondas are known to prey upon crocodilians, they could potentially thrive on alligators, which are common in the southeastern United States.

Beni Anaconda (*Eunectes beniensis*)

Native Range **63**

The Beni anaconda is a recently described and poorly known anaconda closely related to the green anaconda (Reed and Rodda 2009). The native range of the Beni anaconda is the Itenez/ Guapore River in Bolivia along the border with Brazil, as well as the Baures River drainage in Bolivia. The green and Beni anacondas are similar in size and the range of the Beni anaconda is within the range of the green anaconda (Bolivia).

Biology

Eunectes beniensis is a recently described species from northern Bolivia, previously considered to be contained within *E. murinus*. *Eunectes beniensis* was discovered in the Beni Province, Bolivia—thus the labeled name of Beni anaconda and another alias of Bolivian anaconda. Based on morphological and molecular genetic evidence, *E. beniensis* is more closely related to *E. notaeus* and *E. deschauenseei* than to *E. murinus*. The phylogenetic relationships within *Eunectes* are currently best described as: *E. murinus* [*E. beniensis* (*E. deschauenseei, E. notaeus*)]. To an experienced herpetologist, *E. beniensis* is easily recognizable by its brown to olive-brownish ground color in combination with five head stripes and less than 100 large, dark, solid dorsal blotches that always lack lighter centers. To a novice, *E. beniensis* and *E. murinus* are similar in appearance. The primarily nocturnal anaconda species tends to spend most of its life in or around water.

Summary of the Presence of the Nine Constrictor Snakes in the United States

Of the nine constrictor snake species that are proposed for listing as injurious, six have been reported in the wild in the United States and two have been confirmed as reproducing in the wild in the United States; six have been imported commercially into the United States during the period 1999 to 2008 (Table 1)

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TABLE 1. THE SPECIES OF NINE SNAKES PROPOSED FOR LISTING AS INJURIOUS THAT HAVE BEEN REPORTED IN THE UNITED STATES, ARE KNOWN TO BE BREEDING IN THE UNITED STATES, AND HAVE BEEN IMPORTED FOR TRADE.

Species	Reported in the wild in U.S.? **66**	Reproducing in the wild in U.S.?	Imported into U.S. for trade?*
Indian (or Burmese) python	Yes	Yes	Yes
Reticulated python	Yes	No	Yes
Northern African python	Yes	Possible	Yes
Southern African python	No	No	Unknown**
Boa constrictor	Yes	Yes **65**	Yes
Yellow anaconda	Yes	No	Yes
DeSchauensee's anaconda	No	No	Unknown**
Green anaconda	Yes	No	Yes
Beni anaconda	No	No	Unknown**

*Data from Draft Economic Analysis (USFWS 2010)

** It is possible that this species has been imported into the U.S. incorrectly identified as one of the other species under consideration in this rule.

Lacey Act Evaluation Criteria

We use the criteria below to evaluate whether a species does or does not qualify as injurious under the Lacey Act, 18 U.S.C. 42. The analysis that is developed using these criteria serves as a general basis for the Service's regulatory decision regarding injurious wildlife species listings (not just for the nine proposed snake species). Biologists within the Service who are knowledgeable about a species being evaluated will assess both the factors that contribute to and the factors that reduce the likelihood of injuriousness.

(1) Factors that contribute to being considered injurious:

- The likelihood of release or escape;

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- Potential to survive, become established, and spread;

68

- Impacts on wildlife resources or ecosystems through hybridization and competition for food and habitats, habitat degradation and destruction, predation, and pathogen transfer;
- Impact to threatened and endangered species and their habitats;
- Impacts to human beings, forestry, horticulture, and agriculture; and Wildlife or habitat damages that may occur from control measures.

69

(2) Factors that reduce the likelihood of the species being considered as injurious:

- Ability to prevent escape and establishment;
- Potential to eradicate or manage established populations (for example, making organisms sterile);
- Ability to rehabilitate disturbed ecosystems;
- Ability to prevent or control the spread of pathogens or parasites; and
- Any potential ecological benefits to introduction.

70

To obtain some of the information for the above criteria, we used Reed and Rodda (2009). Reed and Rodda (2009) developed the Organism Risk Potential scores for each species using a widely utilized risk assessment procedure that was published by the Aquatic Nuisance Species Task Force (ANSTF 1996). This procedure incorporates four factors associated with probability of establishment and three factors associated with consequences of establishment, with the combination of these factors resulting in an overall Organism Risk Potential (ORP) for each species. For the nine constrictor snakes under consideration, the risk of establishment ranged from medium (reticulated python, DeSchauensee's anaconda, green anaconda, and Beni anaconda) to high (Indian python, Northern African python, Southern African python, boa constrictor, and yellow anaconda).

For the nine constrictor snakes under consideration, the consequences of establishment range from low (DeSchauensee's anaconda and Beni anaconda) to medium (reticulated python, yellow anaconda, and green anaconda) to high (Indian python, Northern African python, Southern African python, and boa constrictor). The overall ORP, which is derived from an algorithm of both probability of establishment and consequences of establishment, was found to range from medium (reticulated python, green anaconda, DeSchauensee's anaconda, and Beni anaconda) to high (Indian python, Northern African python, Southern African python, boa constrictor, yellow anaconda). 71

Certainties were highly variable within each of the seven elements of the risk assessment, varying from very uncertain to very certain. In general, the highest certainties were associated with those species unequivocally established in Florida (Indian python and boa constrictor) because of enhanced ecological information on these species from studies in both their native range and in Florida. The way in which these sub-scores are obtained and combined is set forth in an algorithm created by the ANSTF (Table 2).

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TABLE 2. THE ALGORITHM THAT THE ANSTF DEFINED FOR COMBINING THE TWO PRIMARY SUB-SCORES (REED AND RODDA 2009) 73

Probability of Establishment	Consequences of Establishment	Organism Risk Potential (ORP)
High	High	High
Medium	High	High
Low	High	Medium
High	Medium	High
Medium	Medium	Medium
Low	Medium	Medium
High	Low	Medium
Medium	Low	Medium
Low	Low	Low

Similar algorithms are used for deriving the primary sub-scores from the secondary sub-scores. However, the scores are fundamentally qualitative, in the sense that there is no unequivocal threshold that is given in advance to determine when a given risk passes from being low to medium, and so forth. Therefore, we viewed the process as one of providing relative ranks for each species. Thus a high ORP score indicates that such a species would likely entail greater consequences or greater probability of establishment than would a species whose ORP was medium or low (that is, high > medium > low). High-risk species are Indian pythons, Northern and Southern African pythons, boa constrictors, and yellow anacondas. High-risk species, if established in this country, put larger portions of the U.S. mainland at risk, constitute a greater ecological threat, or are more common in trade and commerce. Medium-risk species were reticulated python, DeSchauensee's anaconda, green anaconda, and Beni anaconda. These species constitute lesser threats in these areas, but still are potentially serious threats. Because all nine species share characteristics associated with greater risks, none was found to be a low risk.

For the purposes of this proposed rule, a hybrid is any progeny from any cross involving parents of these nine constrictor snake species. Such progeny are likely to possess the same biological characteristics of the parent species that, through our analysis, leads us to find that they are injurious to humans and to wildlife and wildlife resources of the United States.

Factors That Contribute to Injuriousness for Indian Python

Current Nonnative Occurrences

The Indian python has been reported as captured in many areas in Florida (see Figure 4 in the draft environmental assessment). In South Florida, more than 1,300 live and dead Burmese pythons, including gravid females, have been removed from in and around Everglades National Park in the last 10 years by authorized agents, park staff, and park partners, indicating that they are already established (National Park Service 2010). In the Commonwealth of Puerto Rico, the Indian python has been collected or reported (eight individuals collected, including a 3-m (10-ft) albino) from the municipality of Adjuntas, the northern region of the island (Arecibo), and the eastern region of the island (Humacao) (Saliva, pers. comm. 2009).

Potential Introduction and Spread

The likelihood of release or escape from captivity of Indian python is high as evidenced by the releases and effects of those releases in Florida and Puerto Rico. **74** When Indian pythons escape captivity or are released into the wild, they have survived and are likely to continue to survive and become established with or without reproduction. **75** For example, in the past 10 years, more than 1,300 Burmese pythons have been removed from Everglades National Park and vicinity (National Park Service 2010) alone and others have been captured from other natural areas on the west side of South Florida, the Florida Keys (Higgins, pers. comm. 2009), and farther up the peninsula, including Sarasota and Indian River County (Lowman, pers. comm. 2009; Dangerfield, pers. comm. 2010). **76** Moreover, released Indian pythons would likely spread to areas of the United States with a suitable climate. **77** These areas were determined in the risk assessment (Reed and Rodda 2009) for all nine constrictor snakes by comparing the type of climate the species inhabited in their native ranges to areas of similar climate in the United States (climate matching). Due to the wide rainfall tolerance and extensive semi-temperate range of Indian python, large areas of the southern United States mainland appear to have a climate suitable for survival of this species. Areas of the United States that are climatically matched at present include along the coasts and across the south from Delaware to Oregon, as well as most of California, Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Florida, Georgia, and South and North Carolina. In addition to these areas of the U.S. mainland, the territories of Guam, Northern Mariana Islands, American Samoa, Virgin Islands, and Puerto Rico appear to have suitable climate. Areas of the State of Hawaii with elevations under about 2,500 m (8,202 ft) would also appear to be climatically suitable. **78** Indian pythons are highly likely to spread and become established in the wild due to common traits shared by the giant constrictors, including large size, habitat generalist, tolerance of urbanization, high reproductive potential, long distance disperser, early maturation, rapid growth, longevity, and ''sit and wait'' style of predation. **79**

Potential Impacts to Native Species (including Threatened and Endangered Species)

As discussed above under *Biology*, the Indian python grows to lengths greater than 7 m (23 ft) and can weigh up to 90 kg (200 lbs). This is longer than any native terrestrial predator (including bears) in the United States and its territories and heavier than most native predators (including many bears). American black bears (*Ursus americanus*) vary in size depending on sex, food availability and quality, and other factors. Male black bears can grow to more than six feet long and weigh up to 295 kg (650 lbs); females rarely reach that length and do not weigh more than 79 kg (175 lbs) (Smithsonian Institution 2010). Among the largest of the native predators of the Southeast is the American alligator (*Alligator mississippiensis*). The average length for an adult female American alligator is 2.6 m (8.2 ft), and the average length for a male is 3.4 m (11.2 ft) (Smithsonian Institution 2010). **80**

In comparison with the Indian python, the largest snake native to North America is the indigo snake (*Drymarchon corais*), attaining a size of about 2.5 m (8 ft) (Monroe and Monroe 1968). A subspecies of the indigo snake is the eastern indigo snake (*D. corais couperi*), which grows to a similar maximum length. The eastern indigo snake inhabits Georgia and Florida and is listed as federally threatened by the Service.

Unlike prey species in the Indian python's native range, none of our native species has evolved defenses to avoid predation by such a large snake. **81** Thus, naïve native wildlife anywhere in the United States would be very likely to fall prey to Indian pythons (or any of the other eight constrictor snakes). **82** At all life stages, Indian pythons can and will compete for food with native species; in other words, baby pythons will eat small prey, and the size of their prey will increase as they grow. Based on an analysis of their diets in Florida, Indian pythons, once introduced and established, are likely to outcompete native predators (such as the federally listed Florida panther, eastern indigo snake, native boas, hawks), feeding on the same prey and thereby reducing the supply of prey for the native predators. **83** Indian pythons are generalist predators that consume a wide variety of mammal and bird species, as well as reptiles, amphibians, and occasionally fish. This constrictor can easily adapt to prey on novel wildlife (species that they are not familiar with), and they need no special

adaptations to capture and consume them. Pythons in Florida have consumed prey as large as white-tailed deer and adult American alligators. Three federally endangered Key Largo woodrats (*Neotoma floridana smalli)* were consumed by a Burmese python in the Florida Keys in 2007. The extremely small number of remaining Key Largo woodrats suggests that the current status of the species is precarious (USFWS 2008); this means that a new predator that has been confirmed to prey on the endangered woodrats is a serious threat to the continued existence of the species.

The United States, particularly the Southeast, has one of the most diverse faunal communities that are potentially vulnerable to predation by the Indian python. Juveniles of these giant constrictors will climb to remove prey from bird nests and capture perching or sleeping birds. Most of the South has suitable climate and habitat for Indian pythons. The greatest biological impact of an introduced predator, such as the Indian python, is the likely loss of imperiled native species. Based on the food habits and habitat preferences of the Indian python in its native range, the species is likely to invade the habitat, prey on, and further threaten most of the federally threatened or endangered fauna in climate-suitable areas of the United States. Indian pythons are also likely to threaten numerous other potential candidates for Federal protection. Candidate species are plants and animals for which the Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. For example, the current candidate list includes several bat species that inhabit the Indian python's climate-matched regions. **84**

The draft environmental assessment includes lists of species that are federally threatened or endangered in climate-suitable States and territories, such as Florida, Hawaii, Guam, Puerto Rico, and the Virgin Islands. These lists include only the species of the sizes and types that would be expected to be directly affected by predation by Indian pythons and the other eight large constrictors. For example, plants and marine species are excluded. In Florida, 14 bird species, 15 mammals, and 2 reptiles that are threatened or endangered could be preyed upon by Indian pythons or be outcompeted by them for prey. Hawaii has 32 bird species and one mammal that are threatened or endangered that would be at risk of predation. Puerto Rico has eight bird species and eight reptile species that are threatened or endangered that would be at risk of predation. The Virgin Islands have one bird species and three reptiles that are threatened or endangered that would be at risk of predation. Guam has six bird species and two mammals that are threatened or endangered that would be at risk of predation. **85**

According to the climate suitability maps (Reed and Rodda 2009), threatened and endangered species from all of Florida, most of Hawaii, and all of Puerto Rico would be at risk from the establishment of Indian pythons. **86** While we did not itemize the federally threatened and endangered species from California, Texas, and other States, there are likely several hundred species in those and other States that would be at risk from Indian pythons. In addition, we assume that Guam, the U.S. Virgin Islands, and other territories would have suitable habitat and climate to support Indian pythons, and these also have federally threatened and endangered species that would be at risk if Indian pythons became established. **87**

The likelihood and magnitude of the effect on threatened and endangered species is high. Indian pythons are thus highly likely to negatively affect threatened and endangered birds and mammals, as well as unlisted native species. **88**

Potential Impacts to Humans

The introduction or establishment of Indian pythons may have negative impacts on humans primarily from the loss of native wildlife bio diversity, as discussed above. These losses would affect the aesthetic, recreational, and economic values currently provided by native wildlife and healthy ecosystems. Educational values would also be diminished through the loss of biodiversity and ecosystem health.

Human fatalities from nonvenomous snakes in the wild are rare, probably only a few per year worldwide (Reed and Rodda 2009). However, although attacks on people by Indian pythons are improbable, they are possible given the large size that some individual snakes can reach. **89**

Factors That Reduce or Remove Injuriousness for Indian Python

Control

No effective tools are currently available to detect and remove established large constrictor populations. Traps with drift fences or barriers are the best option, but their use on a large scale is prohibitively expensive, largely because of the labor cost of baiting, checking, and maintaining the traps daily. Additionally, some areas cannot be effectively trapped due to the expanse of the area and type of terrain, the distribution of the target species, and the effects on any nontarget species. While the Department of the Interior, the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), and State of Florida entities have conducted limited research on control tools, there are currently no such tools available that would appear adequate for eradication of an established population of large constrictor snakes, such as the Indian python, once they have spread over a large area. **90**

Efforts to eradicate the Indian python in Florida have become increasingly intense as the species is reported in new locations across the State. Natural resource management agencies are expending already-scarce resources to devise methods to capture or otherwise control any large constrictor snake species. These agencies recognize that control of large constrictor snakes (as major predators) on lands that they manage is necessary to prevent the likely adverse impacts to the ecosystems occupied by the invasive snakes. **91**

The draft economic analysis for the nine constrictor snakes (USFWS January 2010), provides the following information about the expenditures for research and eradication in Florida, primarily for Indian pythons, which provides some indication of the efforts to date. The Service spent about $600,000 over a 3–year period (2007 to 2009) on python trap design, deployment, and education in the Florida Keys to prevent the potential extinction of the endangered Key Largo woodrat at Crocodile Lake National Wildlife Refuge. The South Florida Water Management District spent $334,000 between 2005 and 2009 and anticipates spending an additional $156,600 on research, salaries, and vehicles in the next several years. An additional $300,000 will go for the assistance of USDA, Wildlife Services (part of USDA Animal and Plant Health Inspection Service). The USDA Wildlife Research Center (Gainesville FL Field Station) has spent $15,800 from 2008 to 2009 on salaries, travel, and supplies. The USGS, in conjunction with the University of Florida, has spent over $1.5 million on research, radio telemetry, and the development, testing,

and implementation of constrictor snake traps. All these expenditures total $2.9 million from 2005 to approximately 2012, or roughly an average of $363,000 per year. However, all of these efforts have failed to provide a method for eradicating large constrictor snakes in Florida. 92

Kraus (2009) exhaustively reviewed the literature on invasive herpetofauna. While he found a few examples of local populations of amphibians that had been successfully eradicated, he found no such examples for reptiles. He also states that, "Should an invasive [nonnative] species be allowed to spread widely, it is usually impossible—or at best very expensive - to eradicate it." The Indian python is unlikely to be one of those species that could be eradicated. 93

Eradication will almost certainly be unachievable for a species that is hard to detect and remove at low densities, which is the case with all of the nine large constrictor snakes. They are well-camouflaged and stealthy, and, therefore, nearly impossible to see in the wild. Most of the protective measures available to prevent the escape of Indian pythons are currently (and expected to remain) cost-prohibitive and labor-intensive. Even with protective measures in place, the risks of accidental escape are not likely to be eliminated. Since effective measures to prevent the establishment in new locations or eradicate, manage, or control the spread of established populations of the Indian python are not currently available, the ability to rehabilitate or recover ecosystems disturbed by the species is low. 94

Potential Ecological Benefits for Introduction

While the introduction of a faunal biomass could potentially provide a food source for some native carnivores, species native to the United States are unlikely to possess the hunting ability for such large, camouflaged snakes and would not likely turn to large constrictor snakes as a food source. The risks to native wildlife greatly outweigh this unlikely benefit. There are no other potential ecological benefits for the introduction of Indian pythons into the United States. 95

Conclusion

The Indian python is one of the largest snakes in the world, reaching lengths of up to 7 m (23 ft) and weights of over 90 kilograms (kg)(almost 200 pounds (lbs)). This is longer than any native, terrestrial animal in the United States, including alligators, and three times longer than the longest native snake species. Native fauna have no experience defending against this type of novel, giant predator. Hatchlings are about the size of average adult native snakes and can more than double in size within the first year. In addition, Indian pythons reportedly can fertilize their own eggs and have viable eggs after several years in isolation. Even one female Indian python that escapes captivity could produce dozens of large young at one time (average clutch size is 36, with a known clutch of 107). Furthermore, an individual is likely to live for 20 to 30 years. Even a single python in a small area, such as one of the Florida Keys or insular islands, can devastate the population of a federally threatened or endangered species. There are currently no effective control methods for Indian pythons, nor are any anticipated in the near future. 96

Therefore, because Indian pythons have already established populations in some areas of the United States; are likely to spread from their current established range to new natural areas in the United States; are likely to become established in disjunct areas of the United States with suitable climate and habitat if released there; are likely to prey on and compete with native species (including threatened and endangered species); and it would be difficult to eradicate or reduce large populations or to recover ecosystems disturbed by the species, the Service finds the Indian python to be injurious to humans and to wildlife and wildlife resources of the United States. 97

Factors That Contribute to Injuriousness for Reticulated Python

Current Nonnative Occurrences

In Florida, two known instances of reticulated python removals have been documented in Vero Beach and Sebastian, Florida. A 5.5 m (18 ft) reticulated python was struck by a person mowing along a canal on 58th Avenue in Vero Beach in 2007, and a reticulated python was removed along Roseland Road in Sebastian, Florida (Dangerfield, pers. comm. 2010). In the Commonwealth of Puerto Rico, reticulated pythons have been collected in the western region of the island (Aguadilla and Mayaguez), and the southern region of the island (Guayama), including a 5.5-m (18-ft) long specimen.

Potential Introduction and Spread

The likelihood of release or escape from captivity of reticulated python is high. 98 Reticulated pythons (*Broghammerus reticulatus* or *Python reticulatus)* have escaped or been released into the wild in Florida and the Commonwealth of Puerto Rico. 99 Reticulated pythons are highly likely to survive in natural ecosystems (primarily extreme southern habitats) of the United States. 100 Reticulated pythons have a more tropical distribution than Indian pythons. Accordingly, the area of the mainland United States showing a climate match is smaller, exclusively subtropical, and limited to southern Florida and extreme southern Texas. Low and mid-elevation sites in the United States' tropical territories (Guam, Northern Mariana Islands, American Samoa, Virgin Islands, Puerto Rico) and Hawaii also appear to be climate-matched to the requirements of reticulated pythons. If they escape or are intentionally released, they are likely to survive and become established within their respective thermal and precipitation limits. 101 Reticulated pythons are highly likely to spread and become established in the wild due to common traits shared by the giant constrictors, including large size, habitat generalist, tolerance of urbanization, sit-and-wait style of predation, high reproductive potential, long-distance disperser, rapid growth, longevity, early maturation, and a generalist predator. 102

Potential Impacts to Native Species (including Threatened and Endangered Species)

Reticulated pythons (*Broghammerus reticulatus* or *Python reticulatus*) are highly likely to prey on native species, including threatened and endangered species. Their natural diet includes mammals and birds. An adverse effect of reticulated python on select threatened and endangered species is likely to be moderate to high. 103

Please see *Potential Impacts to Native Species (including Threatened and Endangered Species)* under **Factors that Contribute to the Injuriousness for Indian Python** for a description of the impacts that reticulated pythons would have on native species. These impacts are applicable to reticulated pythons by comparing their prey type with the suitable climate areas and the listed species found in those areas; suitable climate areas and the listed species can be found in the draft environmental assessment. 104

According to the climate suitability maps (Reed and Rodda 2009),

threatened and endangered species from parts of Florida, southern Texas, Hawaii, and Puerto Rico would be at risk from the establishment of reticulated pythons. In addition, we assume that Guam, the U.S. Virgin Islands, and other territories would have suitable habitat and climate to support reticulated pythons, and these also have federally threatened and endangered species that would be at risk if reticulated pythons became established.

Potential Impacts to Humans

Like all pythons, reticulated pythons are nonvenomous. Captive reticulated pythons can carry ticks of agricultural significance (potential threat to domestic livestock) in Florida (Burridge *et al*. 2000, 2006; Clark and Doten 1995). **105** The reticulated python can be an aggressive and dangerous species of giant constrictor to humans. Reed and Rodda (2009) cite numerous sources of people being bitten, attacked, and even killed by reticulated pythons in their native range.

The introduction or establishment of reticulated pythons may have negative impacts on humans primarily from the loss of native wildlife bio diversity, as discussed above. These losses would affect the aesthetic, recreational, and economic values currently provided by native wildlife and healthy ecosystems. Educational values would also be diminished through the loss of biodiversity and ecosystem health. **106**

Factors That Reduce or Remove Injuriousness for Reticulated Python

Control

Eradication, management, or control of the spread of reticulated python will be highly unlikely once the species is established. Please see the *Control* section for the Indian python for reasons why the reticulated python is difficult to control, all of which apply to this species. **107**

Potential Ecological Benefits for Introduction

While the introduction of a faunal biomass could potentially provide a food source for some native carnivores, species native to the United States are unlikely to possess the hunting ability for such large, camouflaged snakes and would not likely turn to large constrictor snakes as a food source. The risks to native wildlife greatly outweigh this unlikely benefit. There are no other potential ecological benefits from the introduction into the United States or establishment in the United States of reticulated pythons. **108**

Conclusion

The reticulated python can grow to a length of more that 8.7 m (28.5 ft); this is longer than any native, terrestrial animal in the United States. Native fauna have no experience defending against this type of novel, giant predator. Several captive reticulated pythons have lived for nearly 30 years. The reticulated python can be an aggressive and dangerous species to humans. Therefore, even one escaped individual can cause injury to wildlife and possibly humans for several decades. **109** Captive reticulated pythons can carry ticks of agricultural significance (potential threat to domestic livestock) in Florida. **110**

Because reticulated pythons are likely to escape captivity or be released into the wild if imported to areas of the United States that have suitable climate and habitat and do not currently contain the species; are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food and habitat (including threatened and endangered species); are likely to be disease vectors for livestock; and because they would be difficult to prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service **111** finds reticulated python to be injurious to humans and to wildlife and wildlife resources of the United States. **112**

Factors That Contribute to Injuriousness for Northern African Python

Current Nonnative Occurrences

Several Northern African pythons have been found in Florida and elsewhere in the United States—most of these are assumed to be escaped or released pets (Reed and Rodda 2009). From 2005 to 2009, adults and hatchlings have been captured, confirming the presence of a population of Northern African pythons along the western border of Miami, adjacent to the Everglades. From May 2009 to January 2010, four specimens were found by herpetologists and the Miami-Dade County Anti-Venom Response Unit, including hatchlings and adults collected from an area of about 2 kilometers (1.6 miles) in diameter known as the Bird Drive Recharge Basin (Miami-Dade County). Dr. Kenneth Krysko, Senior Biological Scientist, Division of Herpetology, Florida Museum of Natural History, University of Florida, is preparing a summary of recent collections and observations of the Northern African Python from the Bird Drive Recharge Basin in Miami-Dade County. One Northern African python has also been collected on State Road 72 approximately 6.43 km (4 mi) east of Myakka River State Park, Sarasota County, Florida. **113**

In the Commonwealth of Puerto Rico, African pythons have been found in the western region of the island (Mayaguez), the San Juan metro area, and the southern region of the island (Guayama). **114**

Potential Introduction and Spread

Northern African pythons have escaped captivity or been released into the wild in Florida and Puerto Rico and are likely to continue to escape and be released into the wild..**115** Based on Reed and Rodda (2009), extrapolation of climate from the native range and mapped to the United States for Northern African pythons exhibit a climate match that includes a large portion of peninsular Florida, extreme south Texas, and parts of Hawaii and Puerto Rico. **116** Northern African pythons are highly likely to spread and become established in the wild due to common traits shared by the giant constrictors, including large size, habitat generalist, tolerance of urbanization, high reproductive potential, long distance disperser, early maturation, rapid growth, longevity, and a generalist sit- and-wait style of predation. **117**

Potential Impacts to Native Species (including Threatened and Endangered Species)

Northern African pythons are highly likely to prey on native species, including threatened and endangered species. **118** As with most of the giant constrictors, adult African pythons primarily eat endothermic prey from a wide variety of taxa. Adverse effects of Northern African pythons on selected threatened and endangered species are likely to be moderate to high. **119**

Please see *Potential Impacts to Native Species (including Threatened and Endangered Species)* under **Factors that Contribute to the Injuriousness for Indian Python** for a description of the impacts that Northern African pythons

would have on native species. These impacts are applicable to Northern African pythons by comparing their prey type with the suitable climate areas and the listed species found in those areas; suitable climate areas and the listed species can be found in the draft environmental assessment. 120

According to the climate suitability maps (Reed and Rodda 2009), threatened and endangered species from parts of Florida, most of Hawaii, and all of Puerto Rico would be at risk from the establishment of Northern African pythons. In addition, we assume that Guam, the U.S. Virgin Islands, and other territories would have suitable habitat and climate to support Northern African pythons, and these also have federally threatened and endangered species that would be at risk if Northern African pythons became established. 121

Potential Impacts to Humans

The introduction or establishment of Northern African pythons may have negative impacts on humans primarily from the loss of native wildlife biodiversity, as discussed above. These losses would affect the aesthetic, recreational, and economic values currently provided by native wildlife and healthy ecosystems. Educational values would also be diminished through the loss of bio diversity and ecosystem health. 122

African pythons (both wild and captive-bred) are noted for their bad temperament and readiness to bite if harassed by people. Although African pythons can easily kill an adult person, attacks on humans are uncommon (Reed and Rodda 2009).

Factors That Reduce or Remove Injuriousness for Northern African Python

Control

As with the other giant constrictors, prevention, eradication, management, or control of the spread of Northern African pythons will be highly unlikely. Please see the *Control* section for the Indian python for reasons why the Northern African pythons would be difficult to control, all of which apply to this large constrictor. 123

Potential Ecological Benefits for Introduction

While the introduction of a faunal biomass could potentially provide a food source for some native carnivores, species native to the United States are unlikely to possess the hunting ability for such large, camouflaged snakes and would not likely turn to large constrictor snakes as a food source. The risks to native wildlife greatly outweigh this unlikely benefit. There are no other potential ecological benefits from the introduction into the United States or establishment in the United States of Northern African pythons. 124

Conclusion

Northern African pythons are long-lived (some have lived in captivity for 27 years). The species feeds primarily on warm-blooded prey (mammals and birds). Northern African pythons have been found to be reproducing in Florida. Therefore, they pose a risk to native wildlife, including threatened and endangered species. African pythons (both wild and captive-bred) are noted for their bad temperament and have reportedly also attacked humans.

Because Northern African pythons are likely to escape or be released into the wild if imported to the United States; are likely to spread from their current established range to new natural areas in the United States; are likely to prey on native species (including threatened and endangered species); and because it would be difficult to eradicate or reduce large populations, or recover ecosystems disturbed by the species, the Service finds the Northern African python to be injurious to humans and to wildlife and wildlife resources of the United States. 125

Factors That Contribute to Injuriousness of the Southern African Python

Current Nonnative Occurrences

Occurrences of the Southern African python in the United States are unknown.

Potential Introduction and Spread

Southern African pythons are likely to escape or be released into the wild if imported into the United States. 126 The Southern African python climate match extends slightly farther to the north in Florida than the Northern African python and also includes portions of Texas from the Big Bend region to the southeasternmost extent of the State. If Southern African pythons escape or are intentionally released, they are likely to survive or become established within their respective thermal and precipitation limits. 127 Southern African pythons are highly likely to spread and become established in the wild due to common traits shared by the giant constrictors, including large size, habitat generalist, tolerance of urbanization, high reproductive potential, long distance disperser, early maturation, rapid growth, longevity, and a generalist sit-and-wait style of predation. 128

Potential Impacts to Native Species (including Threatened and Endangered Species)

Southern African pythons are highly likely to prey on native species, including threatened and endangered species. As with most of the giant constrictors, adult African pythons primarily eat endothermic prey from a wide variety of taxa. Adverse effects of Southern African pythons on selected threatened and endangered species are likely to be moderate to high. 129

Please see *Potential Impacts to Native Species (including Threatened and Endangered Species)* under **Factors that Contribute to the Injuriousness for Indian Python** for a description of the impacts that Southern African pythons would have on native species. These impacts are applicable to Southern African pythons by comparing their prey type with the suitable climate areas and the listed species found in those areas; suitable climate areas and the listed species can be found in the draft environmental assessment.

According to the climate suitability maps (Reed and Rodda 2009), threatened and endangered species from parts of Florida, Texas, Hawaii, and Puerto Rico would be at risk from the establishment of Southern African pythons. In addition, we assume that Guam, the U.S. Virgin Islands, and other territories would have suitable habitat and climate to support Southern African pythons, and these also have federally threatened and endangered species that would be at risk if Southern African pythons became established. 130

Potential Impacts to Humans

The introduction or establishment of Southern African pythons may have negative impacts on humans primarily from the loss of native wildlife biodiversity, as discussed above. These losses would affect the aesthetic, recreational, and economic values currently provided by native wildlife and healthy ecosystems. Educational values would also be diminished through the loss of bio diversity and ecosystem health. 131

African pythons (both wild and captive-bred) are noted for their bad

temperament and readiness to bite if harassed by people. Although African pythons can easily kill an adult person, attacks on humans are uncommon (Reed and Rodda 2009).

Factors That Reduce or Remove Injuriousness for Southern African Python

Control

As with the other giant constrictors, prevention, eradication, management, or control of the spread of Southern African pythons will be highly unlikely. Please see the *Control* section for the Indian python for reasons why the Southern African pythons would be difficult to control, all of which apply to these large constrictors. **132**

Potential Ecological Benefits for Introduction

While the introduction of a faunal biomass could potentially provide a food source for some native carnivores, species native to the United States are unlikely to possess the hunting ability for such large, camouflaged snakes and would not likely turn to large constrictor snakes as a food source. The risks to native wildlife greatly outweigh this unlikely benefit. There are no other potential ecological benefits from the introduction into the United States or establishment in the United States of Southern African pythons. **133**

Conclusion

Southern African pythons are long-lived. This species feeds primarily on warm-blooded prey (mammals and birds). Therefore, they pose a risk to native wildlife, including threatened and endangered species. Their climate match extends slightly farther to the north in Florida than the Northern African python and also includes portions of Texas from the Big Bend region to the southeasternmost extent of the State. Because Southern African pythons are likely to escape or be released into the wild if imported to the United States; are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food and habitat (including threatened and endangered species); and because it would be difficult to prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service finds the Southern African python to be injurious to humans and to the wildlife and wildlife resources of the United States. **134**

Factors That Contribute to Injuriousness for Boa Constrictor

Current Nonnative Occurrences

At the 180-hectare (444-acre) Deering Estate in Cutler, Florida (a preserve at the edge of Biscayne Bay in Miami-Dade County), boa constrictors are found in multiple habitats, including tropical hardwood hammocks, dirt roads and trails, landscaped areas, and pine rocklands. In addition, 15 boa constrictors have been removed in Indian River County, Florida, by animal damage control officers (Dangerfield, pers. comm. 2010). **135**

In the Commonwealth of Puerto Rico, approximately 100 boa constrictors have been collected or reported in the wild throughout the island, but primarily on the west side of the island (particularly Mayaguez). The Puerto Rico Department of Natural and Environmental Resources believes that this species is frequently breeding on the island (Saliva, pers. comm. 2009)

Potential Introduction and Spread

Boa constrictors (*Boa constrictor*) have escaped captivity or been released into the wild in Florida and Puerto Rico (Snow *et al*. 2007; Reed and Rodda 2009), and, therefore, the likelihood of release or escape from captivity is high. **136** Boa constrictors are highly likely to survive in natural ecosystems of the United States. The suitable climate match area with the boa constrictor's native range (excluding the Argentine boa *B. c. occidentalis*) includes peninsular Florida south of approximately Orlando and extreme south Texas, as well as parts of Hawaii and Puerto Rico (Reed and Rodda 2009). **137** As discussed above, nonnative occurrences in the United States already include South Florida and the Commonwealth of Puerto Rico. If boa constrictors escape or are intentionally released, they are likely to survive or become established within their respective thermal and precipitation limits. Boa constrictors are highly likely to spread and become established in the wild due to common traits shared by the giant constrictors, including large size, habitat generalist, tolerance of urbanization, high reproductive potential, long distance disperser, early maturation, rapid growth, longevity, and a generalist sit-and-wait style of predation. **138**

Potential Impacts to Native Species (including Threatened and Endangered Species)

Boa constrictors are highly likely to prey on native species, including threatened and endangered species. **139** As with most of the giant constrictors, adult boa constrictors primarily eat endothermic prey from a wide variety of taxa. Boa constrictors are ambush predators, and as such will often lie in wait to attack appropriate prey. A sample of 47 boas from an introduced population on Aruba contained 52 prey items, of which 40 percent were birds, 35 percent were lizards, and 25 percent were mammals (Quick *et al*. 2005). Potential prey at the Deering Estate at Cutler (Miami-Dade County) includes about 160 species of native resident or migratory bird species, a variety of small and medium-sized mammalian species, and native and exotic lizard species (Snow *et al.* 2007). **140** They have also been known to actively hunt, particularly in regions with a low concentration of suitable prey, and this behavior generally occurs at night. Adverse effects of boa constrictors on threatened and endangered species is likely to be moderate to high. **141**

Please see *Potential Impacts to Native Species (including Threatened and Endangered Species)* under **Factors that Contribute to the Injuriousness for Indian Python** for a description of the impacts that boa constrictors would have on native species. These impacts are applicable to boa constrictors by comparing their prey type with the suitable climate areas and the listed species found in those areas; suitable climate areas and the listed species can be found in the draft environmental assessment. **142**

According to the climate suitability maps (Reed and Rodda 2009), threatened and endangered species from parts of Florida, Texas, New Mexico, Arizona, California, and Hawaii, and all of Puerto Rico would be at risk from the establishment of boa constrictors. In addition, we assume that Guam, the U.S. Virgin Islands, and other territories would have suitable habitat and climate to support boa constrictors, and these also have federally threatened and endangered species that would be at risk if boa constrictors became established. **143**

Potential Impacts to Humans

The introduction or establishment of boa constrictors may have negative impacts on humans primarily from the loss of native wildlife bio diversity, as discussed above. These losses would affect the aesthetic, recreational, and economic values currently provided by

native wildlife and healthy ecosystems. Educational values would also be diminished through the loss of biodiversity and ecosystem health. **144**

Factors That Reduce or Remove Injuriousness for Boa Constrictor

Control

Prevention, eradication, management, or control of the spread of boa constrictors once established will be highly unlikely. Please see the *Control* section for the Indian python for reasons why the boa constrictor would be difficult to control, all of which apply to this large constrictor. **145**

Potential Ecological Benefits for Introduction

While the introduction of a faunal biomass could potentially provide a food source for some native carnivores, species native to the United States are unlikely to possess the hunting ability for such large, camouflaged snakes and would not likely turn to large constrictor snakes as a food source. The risks to native wildlife greatly outweigh this unlikely benefit. There are no other potential ecological benefits from the introduction into the United States or establishment in the United States of boa constrictors. **146**

Conclusion

Boa constrictors have one of the widest latitudinal distributions of any snake in the world. In their native range, boa constrictors inhabit environments from sea level to 1,000 m (3,280 ft), including wet and dry tropical forest, savanna, very dry thorn scrub, and cultivated fields. Nonnative occurrences in the United States include South Florida and the Commonwealth of Puerto Rico. Boa constrictors are the most commonly imported of the nine proposed constrictor snakes. If boas escape or are intentionally released into new areas, they are likely to survive or become established within their respective thermal limits. **147** Boa constrictors are highly likely to spread and become established in the wild due to common traits shared by the giant constrictors, including large size, habitat generalist, tolerance of urbanization, high reproductive potential, long distance disperser, early maturation, rapid growth, longevity, and a generalist sit-and-wait style of predation. **148**

Because boa constrictors are likely to escape or be released into the wild if imported to the United States; are likely to spread from their current established range to new natural areas in the United States; are likely to prey on native species (including threatened and endangered species); and because it would be difficult to eradicate or reduce large populations, or recover ecosystems disturbed by the species, the Service finds the boa constrictor to be injurious to humans and to wildlife and wildlife resources of the United States. **149**

Factors That Contribute to Injuriousness for Yellow Anaconda

Current Nonnative Occurrences

An adult yellow anaconda was collected from Big Cypress National Reserve in southern Florida in January 2007, and another individual was photographed basking along a canal about 25 km (15.5 mi) north of that location in January 2008. In 2008, an unnamed observer reportedly captured two anacondas that most closely fit the description of the yellow anaconda farther to the east near the Palm Beach, Florida, county line. In the Commonwealth of Puerto Rico, a few individuals of the yellow anaconda have been collected in the central region of the island (Villalba area).

Potential Introduction and Spread

Yellow anacondas have escaped or been released into the wild in Florida and Puerto Rico and are likely to escape or be released into the wild. **150** Yellow anacondas are highly likely to survive in natural ecosystems of the United States. The yellow anaconda has a native-range distribution that includes highly seasonal and fairly temperate regions in South America. When projected to the United States, the climate space occupied by yellow anaconda maps to a fairly large area, including virtually all of peninsular Florida and a corner of southeast Georgia (to about the latitude of Brunswick), as well as large parts of southern and eastern Texas and a small portion of southern California. Large areas of Hawaii and Puerto Rico appear to exhibit suitable climates, and additional insular United States possessions (Guam, Northern Marianas, American Samoa, and so on) would probably be suitable as well. Within the areas deemed suitable, however, the yellow anaconda would be expected to occupy only habitats with permanent surface water. **151** Yellow anacondas are highly likely to spread to suitable permanent surface water areas because of their large size, high reproductive potential, early maturation, rapid growth, longevity, and generalist- surprise attack predation. **152**

Potential Impacts to Native Species (including Threatened and Endangered Species)

Yellow anacondas are highly likely to prey on native species, including select threatened and endangered species. **153** The prey list suggests that yellow anacondas employ both "ambush predation" and "wide-foraging" strategies (Reed and Rodda 2009). The snakes forage predominately in open, flooded habitats, in relatively shallow water; wading birds are their most common prey. They have also been known to prey on fish, turtles, small caimans, lizards, birds, eggs, small mammals, and fish carrion (Reed and Rodda). Threatened and endangered species occupying flooded areas, such as the Everglades, would be at risk.

Please see *Potential Impacts to Native Species (including Threatened and Endangered Species)* under **Factors that Contribute to the Injuriousness for Indian Python** for a description of the impacts that yellow anacondas would have on native species. These impacts are applicable to yellow anacondas by comparing their prey type with the suitable climate areas and the listed species found in those areas; suitable climate areas and the listed species can be found in the draft environmental assessment.

According to the climate suitability maps (Reed and Rodda 2009), threatened and endangered species from parts of Florida, Texas, Hawaii, and Puerto Rico would be at risk from the establishment of yellow anacondas. In addition, we assume that Guam, the U.S. Virgin Islands, and other territories would have suitable habitat and climate to support yellow anacondas, and these also have federally threatened and endangered species that would be at risk if yellow anacondas became established. **154**

Potential Impacts to Humans

The introduction or establishment of yellow anacondas may have negative impacts on humans primarily from the loss of native wildlife bio diversity, as discussed above. These losses would affect the aesthetic, recreational, and economic values currently provided by native wildlife and healthy ecosystems. Educational values would also be diminished through the loss of biodiversity and ecosystem health. **155**

Factors That Reduce or Remove Injuriousness for Yellow Anaconda

Control

Prevention, eradication, management, or control of the spread of yellow anacondas will be highly unlikely. Please see the *Control* section for the Indian python for reasons why yellow anacondas would be difficult to control, all of which apply to this large constrictor. **156**

Potential Ecological Benefits for Introduction

While the introduction of a faunal biomass could potentially provide a food source for some native carnivores, species native to the United States are unlikely to possess the hunting ability for such large, camouflaged snakes and would not likely turn to large constrictor snakes as a food source. The risks to native wildlife greatly outweigh this unlikely benefit. There are no other potential ecological benefits from the introduction into the United States or establishment in the United States of yellow anacondas. **157**

Conclusion

Yellow anacondas are highly likely to survive in natural ecosystems of the United States. The species has a native-range distribution that includes highly seasonal and fairly temperate regions in South America. When projected to the United States, the climate space occupied by yellow anaconda maps to a fairly large area, including virtually all of peninsular Florida and a corner of southeast Georgia (to about the latitude of Brunswick), as well as large parts of southern and eastern Texas and a small portion of southern California. Large areas of Hawaii and Puerto Rico appear to exhibit suitable climates, and additional insular U.S. possessions (such as Guam, Northern Marianas, American Samoa) would probably be suitable as well. Yellow anacondas are highly likely to spread to suitable permanent surface water areas because of their large size, high reproductive potential, early maturation, rapid growth, longevity, and generalist-surprise attack predation.

Because the yellow anacondas are likely to escape captivity or be released into the wild if imported to the United States (note that the yellow anaconda has already been found in the wild in Florida); are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food and habitat (including threatened and endangered species); and because it would be difficult to prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service finds the yellow anaconda to be injurious to humans and to wildlife and wildlife resources of the United States. **158**

Factors That Contribute to Injuriousness for DeSchauensee's anaconda

Current Nonnative Occurrences

Occurrences of the DeSchauensee's anaconda in the United States are unknown.

Potential Introduction and Spread

DeSchauensee's anaconda is likely to escape or be released into the wild if imported into the United States. **159** Reed and Rodda's (2009) map identified no areas of the continental United States or Hawaii that appear to have precipitation and temperature profiles similar to those observed in the species' native range, although the southern margin of Puerto Rico and its out-islands (for example, Vieques and Culebra) appear suitable.

Potential Impacts to Native Species (including Threatened and Endangered Species)

The DeSchauensee's anaconda would likely have a similar potential impact as the yellow anaconda. DeSchauensee's anacondas are highly likely to prey on native species, including select threatened and endangered species. Anacondas employ both *ambush predation* and *wide-foraging* strategies (Reed and Rodda 2009). Threatened and endangered wildlife occupying the DeSchauensee's anaconda's preferred habitats would be at risk. **160**

Please see *Potential Impacts to Native Species (including Threatened and Endangered Species)* under **Factors that Contribute to the Injuriousness for Indian Python** for a description of the impacts that DeSchauensee's anacondas would have on native species. These impacts are applicable to DeSchauensee's anacondas by comparing their prey type with the suitable climate areas and the listed species found in those areas; suitable climate areas and the listed species can be found in the draft environmental assessment. **161**

According to the climate suitability maps (Reed and Rodda 2009), threatened and endangered species from part of Puerto Rico would be at risk from the establishment of DeSchauensee's anacondas. In addition, we assume that Guam, the U.S. Virgin Islands, and other territories would have suitable habitat and climate to support DeSchauensee's anacondas, and these also have federally threatened and endangered species that would be at risk if DeSchauensee's anacondas became established. **162**

Potential Impacts to Humans

The introduction or establishment of DeSchauensee's anacondas may have negative impacts on humans primarily from the loss of native wildlife biodiversity, as discussed above. These losses would affect the aesthetic, recreational, and economic values currently provided by native wildlife and healthy ecosystems. Educational values would also be diminished through the loss of bio diversity and ecosystem health. **163**

Factors That Reduce or Remove Injuriousness for DeSchauensee's Anaconda

Control

Prevention, eradication, management, or control of the spread of DeSchauensee's anacondas will be highly unlikely. Please see the *Control* section for the Indian python for reasons why yellow anacondas would be difficult to control, all of which apply to this large constrictor. **164**

Potential Ecological Benefits for Introduction

While the introduction of a faunal biomass could potentially provide a food source for some native carnivores, species native to the United States are unlikely to possess the hunting ability for such large, camouflaged snakes and would not likely turn to large constrictor snakes as a food source. The risks to native wildlife greatly outweigh this unlikely benefit. There are no other potential ecological benefits from the introduction into the United States or establishment in the United States of DeSchauensee's anacondas. **165**

Conclusion

DeSchauensee's anacondas are highly likely to spread to suitable permanent surface water areas because of their large size, high reproductive potential, early maturation, rapid growth, longevity, and generalist-surprise attack predation. DeSchauensee's anacondas are highly likely to survive in natural ecosystems of a small but vulnerable region of the United States, such the

southern margin of Puerto Rico and its out-islands.

Because DeSchauensee's anacondas are likely to escape captivity or be released into the wild if imported to the United States; are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food and habitat (including threatened and endangered species); and because they would be difficult to prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service finds the DeSchauensee's anaconda to be injurious to humans and to wildlife and wildlife resources of the United States. **166**

Factors That Contribute to Injuriousness for Green Anaconda

Current Nonnative Occurrences

An individual green anaconda (approximately 2.5 m (8.2 ft) total length) was found dead on US 41 in the vicinity of Fakahatchee Strand Preserve State Park in Florida in December 2004 (Reed and Rodda 2009). There are reports of two medium-sized adults and a juvenile green anaconda observed but not collected in this general area. A 3.65 m (12 ft) green anaconda was removed from East Lake Fish Camp in northern Oceola County, Florida, on January 13, 2010. This was the first live green anaconda to be caught in the wild in Florida (Florida Fish and Wildlife Conservation Commission 2010).

Potential Introduction and Spread

Green anacondas have escaped captivity or been released into the wild in Florida, and the likelihood of escape or release is medium. **167** Green anacondas are likely to survive in natural ecosystems of the United States. Much of peninsular Florida (roughly south of Gainesville) and extreme south Texas exhibit climatic conditions similar to those experienced by green anacondas in their large South American native range. **168** Lower elevations in Hawaii and all of Puerto Rico have apparently suitable climates, but the rest of the country appears to be too cool or arid. Within the climate-matched area, however, anacondas would not be at risk of establishment in sites lacking surface water. The primarily nocturnal anaconda species tends to spend most of its life in or around water. Green anacondas are highly likely to spread and become established in the wild due to rapid growth to a large size (which encourages pet owners to release them), a high reproductive potential, early maturation, and a sit-and-wait style of predation. **169** There is evidence that green anacondas are facultatively (if no other males are available) parthenogenic. **170**

Potential Impacts to Native Species (including Threatened and Endangered Species)

Green anacondas are highly likely to prey on native species, including threatened and endangered species. **171** They are primarily aquatic and eat a wide variety of prey, including fish, birds, mammals, and other reptiles.

Please see *Potential Impacts to Native Species (including Threatened and Endangered Species)* under **Factors that Contribute to the Injuriousness for Indian Python** for a description of the impacts that green anacondas would have on native species. These impacts are applicable to green anacondas by comparing their prey type with the suitable climate areas and the listed species found in those areas; suitable climate areas and the listed species can be found in the draft environmental assessment.

According to the climate suitability maps (Reed and Rodda 2009), threatened and endangered species from parts of Florida, Hawaii, and most of Puerto Rico would be at risk from the establishment of green anacondas. In addition, we assume that Guam, the U.S. Virgin Islands, and other territories would have suitable habitat and climate to support green anacondas, and these also have federally threatened and endangered species that would be at risk if green anacondas became established. **172**

Potential Impacts to Humans

The introduction or establishment of green anacondas may have negative impacts on humans primarily from the loss of native wildlife bio diversity, as discussed above. These losses would affect the aesthetic, recreational, and economic values currently provided by native wildlife and healthy ecosystems. Educational values would also be diminished through the loss of biodiversity and ecosystem health. **173**

Factors That Reduce or Remove Injuriousness for Green Anaconda

Control

Prevention, eradication, management, or control of the spread of green anacondas as once established in the United States will be highly unlikely. Please see the *Control* section for the Indian python for reasons why green anacondas would be difficult to control, all of which apply to this large constrictor. **174**

Potential Ecological Benefits for Introduction

While the introduction of a faunal biomass could potentially provide a food source for some native carnivores, species native to the United States are unlikely to possess the hunting ability for such large, camouflaged snakes and would not likely turn to large constrictor snakes as a food source. The risks to native wildlife greatly outweigh this unlikely benefit. There are no other potential ecological benefits from the introduction into the United States or establishment in the United States of green anacondas. **175**

Conclusion

The green anaconda is the among the world's heaviest snakes, ranging up to 200 kg (441 lbs). Large adults are heavier than almost all native, terrestrial predators in the United States, even many bears. Native fauna have no experience defending themselves against this type of novel, giant predator. The range of the green anaconda is largely defined by the availability of aquatic habitats. These include deep and shallow, turbid and clear, and lacustrine and riverine systems. Most of these habitats are found in Florida, including the Everglades, which is suitable climate for the species. Green anacondas are top predators in South America, consuming birds, mammals, fish, and reptiles; prey size includes deer and crocodilians. This diet is even broader than the diet of Indian and reticulated pythons. There is evidence that female green anacondas are facultatively parthenogenic and could therefore reproduce even if a single female is released or escapes into the wild.

Because green anacondas are likely to escape or be released into the wild if imported to the United States (note that the green anaconda has already been found in the wild in Florida); are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food and habitat (including threatened and endangered species); and because it would be difficult to

prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service finds the green anaconda to be injurious to humans and to wildlife and wildlife resources of the United States. 176

Factors That Contribute to Injuriousness for Beni Anaconda

Current Nonnative Occurrences

Occurrences of the Beni anaconda in the United States are unknown.

Potential Introduction and Spread

Beni anacondas are likely to escape or be released into the wild if imported into the United States, in part because of their large size (which encourages pet owners to release them). 177 Beni anacondas are highly likely to survive in natural ecosystems of the United States. 178 The Beni anaconda is known from few specimens in a small part of Bolivia, and Reed and Rodda (2009) judged the number of available localities to be insufficient for an attempt to delineate its climate space or extrapolate this space to the United States. Beni anacondas are known from sites with low seasonality (mean monthly temperatures approximately 22.5 °C (72 °F) to 27.5 °C (77 °F), and mean monthly precipitation about 5 to 30 cm (2 to 12 in). It is unknown whether the species' native distribution is limited by factors other than climate; if the small native range is attributable to ecological (for example, competition with green anacondas), or historical (for example, climate change) factors. If so, then Reed and Rodda's (2009) qualitative estimate of the climatically suitable areas of the United States would represent underprediction. 179 As a component of the risk assessment, the Beni anaconda's colonization potential is described by Reed and Rodda (2009) as capable of survival in small portions of the mainland or on America's tropical islands (Hawaii, Puerto Rico, American Samoa, Guam, Northern Mariana Islands, Virgin Islands).

Beni anacondas are highly likely to spread and become established in the wild due to rapid growth to a large size, a high reproductive potential, early maturation, and a sit-and-wait style of predation. 180

Potential Impacts to Native Species (including Threatened and Endangered Species)

Beni anacondas are highly likely to prey on native species, including threatened and endangered species. They are primarily aquatic and eat a wide variety of prey, including fish, birds, mammals, and other reptiles.

Please see *Potential Impacts to Native Species (including Threatened and Endangered Species)* under **Factors that Contribute to the Injuriousness for Indian Python** for a description of the impacts that Beni anacondas would have on native species. These impacts are applicable to Beni anacondas by comparing their prey type with the suitable climate areas and the listed species found in those areas; suitable climate areas and the listed species can be found in the draft environmental assessment.

According to the climate suitability maps (Reed and Rodda 2009), threatened and endangered species from parts of Hawaii, and most of Puerto Rico would be at risk from the establishment of Beni anacondas. In addition, we assume that Guam, the U.S. Virgin Islands, and other territories would have suitable habitat and climate to support Beni anacondas, and these also have federally threatened and endangered species that would be at risk if Beni anacondas became established. 181

Potential Impacts to Humans

The introduction or establishment of Beni anacondas may have negative impacts on humans primarily from the loss of native wildlife bio diversity, as discussed above. These losses would affect the aesthetic, recreational, and economic values currently provided by native wildlife and healthy ecosystems. Educational values would also be diminished through the loss of biodiversity and ecosystem health. 182

Factors That Reduce or Remove Injuriousness for Beni Anaconda

Control

Prevention, eradication, management, or control of the spread of Beni anacondas as once established in the United States will be highly unlikely. Please see the *Control* section for the Indian python for reasons why Beni anacondas would be difficult to control, all of which apply to this large constrictor. 183

Potential Ecological Benefits for Introduction

While the introduction of a faunal biomass could potentially provide a food source for some native carnivores, species native to the United States are unlikely to possess the hunting ability for such large, camouflaged snakes and would not likely turn to large constrictor snakes as a food source. The risks to native wildlife greatly outweigh this unlikely benefit. There are no other potential ecological benefits from the introduction into the United States or establishment in the United States of Beni anacondas. 184

Conclusion

Large adults are heavier than almost all native, terrestrial predators in the United States, even many bears. Native fauna have no experience defending themselves against this type of novel, giant predator. The range of the Beni anaconda is largely defined by the availability of aquatic habitats. Beni anacondas are top predators in South America, consuming birds, mammals, fish, and reptiles; prey size includes deer and crocodilians. This diet is even broader than the diet of Indian and reticulated pythons.

Because the Beni anaconda are likely to escape or be released into the wild if imported to the United States; are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food and habitat (including threatened and endangered species); and because it would be difficult to prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service finds the Beni anaconda to be injurious to humans and to wildlife and wildlife resources of the United States. 185

Conclusions for the Nine Constrictor Snakes 186

Indian python

The Indian python is one of the largest snakes in the world, reaching lengths of up to 7 m (23 ft) and weights of over 90 kilograms (kg) (almost 200 pounds (lbs)). This is longer than any native, terrestrial animal in the United States, including alligators, and three times longer than the longest native snake species. Native fauna have no experience defending against this type of novel, giant predator. Hatchlings are about the size of average adult native snakes and can more than double in size within the first year. In addition, Indian pythons reportedly can fertilize their own eggs and have viable eggs after several years in isolation. The life expectancy of Indian pythons is 20 to 30 years. Even a single python (especially

a female) in a small area, such as one of the Florida Keys or insular islands, can devastate the population of a federally threatened or endangered species. There are currently no effective control methods for Indian pythons, nor are any anticipated in the near future.

Therefore, because Indian pythons have already established populations in some areas of the United States; are likely to spread from their current established range to new natural areas in the United States; are likely to become established in disjunct areas of the United States with suitable climate and habitat if released there; are likely to prey on and compete with native species (including threatened and endangered species); and it would be difficult to eradicate or reduce large populations or to recover ecosystems disturbed by the species, the Service finds the Indian python to be injurious to humans and to wildlife and wildlife resources of the United States.

Reticulated python

The reticulated python can grow to a length of more that 8.7 m (28.5 ft); this is longer than any native, terrestrial animal in the United States. Native fauna have no experience defending against this type of novel, giant predator. Several captive reticulated pythons have lived for nearly 30 years. The reticulated python can be an aggressive and dangerous species to humans. Therefore, even one escaped individual can cause injury to wildlife and possibly humans for several decades. Captive reticulated pythons can carry ticks of agricultural significance (potential threat to domestic livestock) in Florida.

Because reticulated pythons are likely to escape captivity or be released into the wild if imported to areas of the United States that have suitable climate and habitat and do not currently contain the species; are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food and habitat (including threatened and endangered species); are likely to be disease vectors for livestock; and because they would be difficult to prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service finds reticulated python to be injurious to humans and to wildlife and wildlife resources of the United States.

Northern African Pythons

Northern African pythons are long-lived (some have lived in captivity for 27 years). The species feeds primarily on warm-blooded prey (mammals and birds). Northern African pythons have been found to be reproducing in Florida. Therefore, they pose a risk to native wildlife, including threatened and endangered species. African pythons (both wild and captive-bred) are noted for their bad temperament and have reportedly also attacked humans.

Because Northern African pythons are likely to escape or be released into the wild if imported to the United States; are likely to spread from their current established range to new natural areas in the United States; are likely to prey on native species (including threatened and endangered species); and because it would be difficult to eradicate or reduce large populations, or recover ecosystems disturbed by the species, the Service finds the Northern African python to be injurious to humans and to wildlife and wildlife resources of the United States.

Southern African pythons

Southern African pythons are long-lived. This species feeds primarily on warm-blooded prey (mammals and birds). Therefore, they pose a risk to native wildlife, including threatened and endangered species. Their climate match extends slightly farther to the north in Florida than the Northern African python and also includes portions of Texas from the Big Bend region to the southeasternmost extent of the State. Because Southern African pythons are likely to escape or be released into the wild if imported to the United States; are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food and habitat (including threatened and endangered species); and because it would be difficult to prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service finds the Southern African python to be injurious to humans and to the wildlife and wildlife resources of the United States.

Boa constrictor

Boa constrictors have one of the widest latitudinal distributions of any snake in the world. In their native range, boa constrictors inhabit environments from sea level to 1,000 m (3,280 ft), including wet and dry tropical forest, savanna, very dry thorn scrub, and cultivated fields. Nonnative occurrences in the United States include South Florida and the Commonwealth of Puerto Rico. Boa constrictors are the most commonly imported of the nine proposed constrictor snakes. If boas escape or are intentionally released into new areas, they are likely to survive or become established within their respective thermal and precipitation limits. Boa constrictors are highly likely to spread and become established in the wild due to common traits shared by the giant constrictors, including large size, habitat generalist, tolerance of urbanization, high reproductive potential, long distance disperser, early maturation, rapid growth, longevity, and a generalist sit-and-wait style of predation.

Because boa constrictors are likely to escape or be released into the wild if imported to the United States; are likely to spread from their current established range to new natural areas in the United States; are likely to prey on native species (including threatened and endangered species); and because it would be difficult to eradicate or reduce large populations, or recover ecosystems disturbed by the species, the Service finds the boa constrictor to be injurious to humans and to wildlife and wildlife resources of the United States.

Yellow anaconda

Yellow anacondas are highly likely to survive in natural ecosystems of the United States. The species has a native-range distribution that includes highly seasonal and fairly temperate regions in South America. When projected to the United States, the climate space occupied by yellow anaconda maps to a fairly large area, including virtually all of peninsular Florida and a corner of southeast Georgia (to about the latitude of Brunswick), as well as large parts of southern and eastern Texas and a small portion of southern California. Large areas of Hawaii and Puerto Rico appear to exhibit suitable climates, and additional insular U.S. possessions (such as Guam, Northern Marianas, American Samoa) would probably be suitable as well. Yellow anacondas are highly likely to spread to suitable permanent surface water areas because of their large size, high reproductive potential, early maturation, rapid growth, longevity, and generalist-surprise attack predation.

Because the yellow anacondas are likely to escape captivity or be released into the wild if imported to the United States (note that the yellow anaconda has already been found in the wild in Florida); are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food

and habitat (including threatened and endangered species); and because it would be difficult to prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service finds the yellow anaconda to be injurious to humans and to wildlife and wildlife resources of the United States.

DeSchauensee's anaconda

DeSchauensee's anacondas are highly likely to spread to suitable permanent surface water areas because of their large size, high reproductive potential, early maturation, rapid growth, longevity, and generalist-surprise attack predation. DeSchauensee's anacondas are highly likely to survive in natural ecosystems of a small but vulnerable region of the United States, such the southern margin of Puerto Rico and its out-islands.

Because the DeSchauensee's anaconda is likely to escape captivity or be released into the wild if imported to the United States; are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food and habitat (including threatened and endangered species); and because it Could be difficult to prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service finds the DeSchauensee's anaconda to be injurious to humans and to wildlife and wildlife resources of the United States.

Green anaconda

The green anaconda is the among the world's heaviest snakes, ranging up to 200 kg (441 lbs). Large adults are heavier than almost all native, terrestrial predators in the United States, even many bears. Native fauna have no experience defending themselves against this type of novel, giant predator. The range of the green anaconda is largely defined by the availability of aquatic habitats. These include deep and shallow, turbid and clear, and lacustrine and riverine systems. Most of these habitats are found in Florida, including the Everglades, which is suitable climate for the species. Green anacondas are top predators in South America, consuming birds, mammals, fish, and reptiles; prey size includes deer and crocodilians. This diet is even broader than the diet of Indian and reticulated pythons. There is evidence that female green anacondas are facultatively parthenogenic and could therefore reproduce even if a single female is released or escapes into the wild.

Because green anacondas are likely to escape or be released into the wild if imported to the United States (note that the green anaconda has already been found in the wild in Florida); are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food and habitat (including threatened and endangered species); and because it would be difficult to prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service finds the green anaconda to be injurious to humans and to wildlife and wildlife resources of the United States.

Beni anaconda

Large adults are heavier than any almost all native, terrestrial predators in the United States, even many bears. Native fauna have no experience defending themselves against this type of novel, giant predator. The range of the Beni anaconda is largely defined by the availability of aquatic habitats. Beni anacondas are top predators in South America, consuming birds, mammals, fish, and reptiles; prey size includes deer and crocodilians. This diet is even broader than the diet of Indian and reticulated pythons.

Because the Beni anaconda are likely to escape or be released into the wild if imported to the United States; are likely to survive, become established, and spread if escaped or released; are likely to prey on and compete with native species for food and habitat (including threatened and endangered species); and because it would be difficult to prevent, eradicate, or reduce large populations; control spread to new locations; or recover ecosystems disturbed by the species, the Service finds the Beni anaconda to be injurious to humans and to wildlife and wildlife resources of the United States.

Summary of Risk Potentials

Reed and Rodda (2009) found that all of the nine constrictor snakes pose high or medium risks to the interests of humans, wildlife, and wildlife resources of the United States. These risk potentials utilize the criteria for evaluating species as described by ANSTF (1996) (see **Lacey Act Evaluation Criteria** above). That all nine species are high or medium risks supports our finding that all nine constrictor species should be added to the list of injurious reptiles under the Lacey Act.

Regulatory Planning and Review

The Office of Management and Budget (OMB) has determined that this rule is significant under Executive Order (E.O.) 12866. OMB bases its determination upon the following four criteria:

(1) Whether the rule will have an annual effect of $100 million or more on the economy or adversely affect an economic sector, productivity, jobs, the environment, or other units of the government.

(2) Whether the rule will create inconsistencies with other Federal agencies' actions.

(3) Whether the rule will materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients.

(4) Whether the rule raises novel legal or policy issues.

Executive Order 12866 Regulatory Planning and Review (U.S. Office of Management and Budget 1993) and a subsequent document, Economic Analysis of Federal Regulations under Executive Order 12866 (U.S. Office of Management and Budget 1996), identify guidelines or "best practices" for the economic analysis of Federal regulations. With respect to the regulation under consideration, an analysis that comports with the Circular A-4 would include a full description and estimation of the economic benefits and costs associated with implementation of the regulation. These benefits and costs would be measured by the net change in consumer and producer surplus due to the regulation. Both producer and consumer surplus reflect opportunity cost as they measure what people would be willing to forego (pay) in order to obtain a particular good or service. "Producers' surplus is the difference between the amount a producer is paid for a unit of good and the minimum amount the producer would accept to supply that unit. Consumers' surplus is the difference between what a consumer pays for a unit of a good and the maximum amount the consumer would be willing to pay for that unit (U.S. Office of Management and Budget 1996, section C-1)."

In the context of the regulation under consideration, the economic effects to three groups would be addressed: (1) producers; (2) consumers; and (3) society. With the prohibition of imports and interstate shipping, producers, breeders, and suppliers would be affected in several ways. Depending on the characteristics of a given business (such as what portion of their sales

depends on out-of-state sales or imports), sales revenue would be reduced or eliminated, thus decreasing total producer surplus compared to the situation without the regulation. Consumers (pet owners or potential pet owners) would be affected by having a more limited choice of constrictor snakes or, in some cases, no choice at all if out-of-state sales are prohibited. Consequently, total consumer surplus would decrease compared to the situation without the regulation. Certain segments of society may value knowing that the risk to natural areas and other potential impacts from constrictor snake populations is reduced by implementing one of the proposed alternatives. In this case, consumer surplus would increase compared to the situation without the regulation. If comprehensive information were available on these different types of producer and consumer surplus, a comparison of benefits and costs would be relatively straightforward. However, information is not currently available on these values so a quantitative comparison of benefits and costs is not possible. **188**

The limited data currently available are estimates of the number of constrictor snake imports each year, the number of constrictor snakes bred in the United States, and a range of retail prices for each constrictor snake species. We provide the value of the foregone snakes sold as a rough approximation for the social cost of this proposed rulemaking. We provide qualitative discussion on the potential benefits of this rulemaking. In addition, we used an input-output model in an attempt to estimate the secondary or multiplier effects of this rulemaking-job impacts, job income impacts, and tax revenue impacts (discussed below). Given the paucity of the data to estimate the social cost and given the uncertainty associated with the appropriateness of using an input-output model due to the scale effect, we present preliminary results in this regulatory impact analysis. We ask for data that might shed light on estimating the social benefit and cost of this rulemaking. We also ask for information regarding the appropriateness of using IMPLAN model to gauge the secondary effects and if appropriate, the associated uncertainties with the estimates. For the final rulemaking, we plan to investigate the appropriateness of using IMPLAN model, and adjust the presentation of results accordingly. **189**

Regulatory Flexibility Act

Under the Regulatory Flexibility Act (as amended by the Small Business Regulatory Enforcement Fairness Act [SBREFA] of 1996) (5 U.S.C. 601, *et seq.*), whenever a Federal agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (that is, small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies that the rule would not have a significant economic impact on a substantial number of small entities. Thus, for a regulatory flexibility analysis to be required, impacts must exceed a threshold for "significant impact" and a threshold for a "substantial number of small entities." See 5 U.S.C. 605(b). SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule would not have a significant economic impact on a substantial number of small entities. An Initial Regulatory Flexibility Analysis, which we briefly summarize below, was prepared to accompany this rule. See the **FOR FURTHER INFORMATION CONTACT** section or *http://www.regulations.gov* under Docket No. FWS-R9-FHC-2008-0015 for the complete document.

This proposed rule, if made final, would list nine constrictor snake species [Indian python (*Python molurus*), reticulated python (*Broghammerus reticulatus* or *Python reticulatus),* Northern African python (*Python sebae*), Southern African python (*Python natalensis*), boa constrictor (*Boa constrictor*), yellow anaconda (*Eunectes notaeus*), DeSchauensee's anaconda (*Eunectes deschauenseei*), green anaconda (*Eunectes murinus*), and Beni anaconda (*Eunectes beniensis*)] as injurious species under the Lacey Act. Entities impacted by the listing would include: (1) Companies importing live snakes, gametes, viable eggs, hybrids; and (2) companies (breeders and wholesalers) with interstate sales of live snakes, gametes, viable eggs, hybrids. Importation of the nine constrictor snakes would be eliminated, except as specifically authorized. Impacts to entities breeding or selling these snakes domestically would depend on the amount of interstate sales within the constrictor snake market. Impacts also are dependent upon whether or not consumers would substitute the purchase of an animal that is not listed, which would thereby reduce economic impacts.

For businesses importing large constrictor snakes, the maximum impact of this rulemaking would result in 197 to 270 small businesses (66 percent) having a reduction in their retail sales of between 24 percent and 49 percent. However, this rulemaking would have an unknown impact on these small businesses because we do not know: (1) Whether these businesses sell other snakes and reptiles as well, (2) if the listed snakes are more profitable than nonlisted snakes or other aspects of the business, or (3) if consumers would substitute the purchase of other snakes that are not listed.

For businesses breeding or selling large constrictor snakes domestically, approximately 62 to 85 percent of these entities would qualify as small businesses. Under the proposed rule, the interstate transport of the nine constrictor snakes would be discontinued, except as specifically permitted. Thus, any revenue that would be potentially earned from this portion of business would be eliminated. The amount of sales impacted is completely dependent on the percentage of interstate transport. That is, the impact depends on where businesses are located and where their customers are located. Since information is not currently available on interstate sales of large constrictor snakes, we assume that a sales reduction of between 20 and 80 percent would most likely include the actual impact on out-of-state sales.

Therefore, this proposed rule may have a significant economic effect on a substantial number of small entities as defined under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*).

Small Business Regulatory Enforcement Fairness Act

The proposed rule is not a major rule under 5 U.S.C. 804(2), the Small Business Regulatory Enforcement Fairness Act. This rule:

a. Would not have an annual effect on the economy of $100 million or more. According to the draft economic analysis (USFWS, 2010), the annual retail value losses for the nine constrictor snake species are estimated to range from $3.6 million to $10.7 million. The 10–year retail value losses to the large constrictor snake market are estimated to range from $37.5 million to $93.6 million discounted at 3 percent or range from $32.1 million to $80.1

million discounted at 7 percent. In addition, businesses would also face the risk of fines if caught transporting these constrictor snakes, gametes, viable eggs, or hybrids across State lines. The penalty for a Lacey Act violation is not more than 6 months in prison and not more than a $5,000 fine for an individual and not more than a $10,000 fine for an organization.

b. Would not cause a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. Businesses breeding or selling the listed snakes would be able to substitute other species and maintain business by seeking unusual morphologic forms in other snakes. Some businesses, however, may close. We do not have data for the potential substitutions and therefore, we do not know the number of businesses that may close.

c. Would not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States-based enterprises to compete with foreign-based enterprises.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501), the Service makes the following findings:

(a) This rule would not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, tribal governments, or the private sector and includes both "Federal intergovernmental mandates" and "Federal private sector mandates." These terms are defined in 2 U.S.C. 658(5)-(7). "Federal intergovernmental mandate" includes a regulation that "would impose an enforceable duty upon State, local, or tribal governments" with two exceptions. It excludes "a condition of Federal assistance." It also excludes "a duty arising from participation in a voluntary Federal program," unless the regulation "relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority," if the provision would "increase the stringency of conditions of assistance" or "place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding," and the State, local, or tribal governments "lack authority" to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; AFDC work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. "Federal private sector mandate" includes a regulation that "would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program."

(b) The rule would not have a significant or unique effect on State, local, or tribal governments or the private sector. A statement containing the information required by the Unfunded Mandates Reform Act (2 U.S.C. 1531 *et seq.*) is not required.

Takings

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), the rule does not have significant takings implications. A takings implication assessment is not required. This rule would not impose significant requirements or limitations on private property use.

Federalism

In accordance with E.O. 13132 (Federalism), this proposed rule does not have significant Federalism effects. A Federalism assessment is not required. This rule would not have substantial direct effects on States, in the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 13132, we determine that this rule does not have sufficient Federalism implications to warrant the preparation of a Federalism Assessment.

Civil Justice Reform

In accordance with Executive Order 12988, the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and meets the requirements of sections 3(a) and 3(b)(2) of the Executive Order. The rule has been reviewed to eliminate drafting errors and ambiguity, was written to minimize litigation, provides a clear legal standard for affected conduct rather than a general standard, and promotes simplification and burden reduction.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This rule will not impose new recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. OMB has approved the information collection requirements associated with the required permits and assigned OMB Control No. 1018-0093. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act

We have reviewed this rule in accordance with the criteria of the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*) and the Departmental Manual in 516 DM. This action is being taken to protect the natural resources of the United States. A draft environmental assessment has been prepared and is available for review by written request (see **FOR FURTHER INFORMATION CONTACT** section) or at *http://www.regulations.gov* under Docket No. FWS-R9-FHC-2008-0015. By adding Indian python, reticulated python, Northern African python, Southern African python, boa constrictor, yellow anaconda, DeSchauensee's anaconda, green anaconda, and Beni anaconda to the list of injurious wildlife, we intend to prevent their new introduction, further introduction, and establishment into natural areas of the United States to protect native wildlife species, the survival and welfare of wildlife and wildlife resources, and the health and welfare of humans. If we do not list the nine constrictor snakes as injurious, the species may expand in captivity to States where they are not already found; this would increase the risk of their escape or intentional release and establishment in new areas, which would likely threaten native fish and wildlife, and humans. Indian pythons, boa constrictors, and Northern African pythons are established in southern Florida and the Commonwealth of Puerto Rico. Releases of the nine constrictor snakes into natural areas of the United States are likely to occur again, and the species are likely to become established in additional U.S. natural areas such as national wildlife refuges and parks, threatening native fish and wildlife populations and ecosystem form, function, and structure.

Clarity of Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, and the sections where you feel lists or tables would be useful.

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994, Government-to-Government Relations with Native American Tribal Governments of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes. We have evaluated potential effects on federally recognized Indian tribes and have determined that there are no potential effects. This rule involves the importation and interstate movement of live boa constrictors, four python species, and four anaconda species, gametes, viable eggs, or hybrids. We are unaware of trade in these species by tribes.

Effects on Energy

On May 18, 2001, the President issued Executive Order 13211 on regulations that significantly affect energy supply, distribution, and use. Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. This rule is not expected to affect energy supplies, distribution, and use. Therefore, this action is a not a significant energy action and no Statement of Energy Effects is required.

References Cited

A complete list of all references used in this rulemaking is available upon request from the South Florida Ecological Services Office, Vero Beach, FL (see the **FOR FURTHER INFORMATION CONTACT** section).

Authors

The primary authors of this proposed rule are the staff members of the South Florida Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT** section).

List of Subjects in 50 CFR Part 16

Fish, Imports, Reporting and recordkeeping requirements, Transportation, Wildlife.

Proposed Regulation Promulgation

For the reasons discussed in the preamble, the U.S. Fish and Wildlife Service proposes to amend part 16, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

PART 16—[AMENDED]

1. The authority citation for part 16 continues to read as follows:

Authority: 18 U.S.C. 42.

2. Amend § 16.15 by revising paragraph (a) to read as follows: § 16.15 **Importation of live reptiles or their eggs.**

(a) The importation, transportation, or acquisition of any live specimen, gamete, viable egg, or hybrid of the species listed in this paragraph is prohibited except as provided under the terms and conditions set forth in § 16.22:

(1) Boiga irregularis (brown tree snake).
(2) Python molurus (Indian [including Burmese] python).
(3) Broghammerus reticulatus or *Python reticulatus* (reticulated python).
(4) Python sebae (Northern African python).
(5) Python natalensis (Southern African python).
(6) Boa constrictor (boa constrictor).
(7) Eunectes notaeus (yellow anaconda).
(8) Eunectes deschauenseei (DeSchauensee's anaconda).
(9) Eunectes murinus (green anaconda).
(10) Eunectes beniensis (Beni anaconda).

* * * * *

Dated: February 5, 2010.

Thomas L. Strickland,

Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 2010–4956 Filed 3–11–10; 8:45 am]

BILLING CODE 4310–55–S

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 660

[Docket No. 100122041–0118–01]

RIN 0648–AY59

Magnuson-Stevens Act Provisions; Fisheries off West Coast States; Pacific Coast Groundfish Fishery; 2010 Tribal Fishery for Pacific Whiting

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments.

SUMMARY: This proposed rule is issued consistent with a regulatory framework that was established in 1996 to implement the Washington coastal treaty Indian tribes' rights to harvest Pacific Coast groundfish. Washington coastal treaty Indian tribes mean the Hoh, Makah, and Quileute Indian Tribes and the Quinault Indian Nation. The

ADDENDUM 2

PET INDUSTRY JOINT ADVISORY COUNCIL
1220 19th Street, N.W., Suite 400
Washington, DC 20036
Tel: 202-452-1525
Fax: 202-293-4377

May 5, 2010

Mr. Kevin Gallagher
Associate Director, Geospatial Information Office
United States Geological Survey
National Center
12201 Sunrise Valley Drive
Reston, VA 20192

Re: Request for Correction of Information

Dear Mr. Gallagher:

The Pet Industry Joint Advisory Council (PIJAC) is aware of the Request for Correction of Information sent to US Geological Survey by United States Association of Reptile Keepers (USARK) on May 3, 2010. This letter specifically addressed Open-File Report 2009-1202, entitled *Giant constrictors: biological and management profiles and an establishment risk assessment for nine large species of pythons, anacondas, and the boa constrictor (Constrictor Report)***.** In the letter, Mr. Wyatt appropriately notes the influential nature of the information in question and its substantial impact on public policies of concern to persons who own, acquire or trade in reptile species. This potential impact is not limited to members of USARK, but includes a wide range of business persons (those working directly in and indirectly in support of the reptile industry) and individual pet owners. Many PIJAC members would be devastated.

PIJAC is the largest pet trade association in the United States representing the interests of all segments of the pet industry, including those who buy, breed, sell and distribute companion animals and related products, as well as the pet-owing public at large. Our mission is to promote responsible pet ownership and animal welfare, foster environmental stewardship, and ensure the availability of pets. In implementing this mission, PIJAC has works closely with many Federal and state agencies, NGO's, and other industries. For example, PIJAC has an MOU with the Department of the Interior (DOI) to implement the Habitattitude™ campaign – an initiative that, among other things, educates pet owners not to release unwanted animals. Additional information about PIJAC and its programs is readily available on our website at www.pijac.org.

PIJAC has undertaken an extensive analysis of the USGS large constrictor risk assessment, as well as previous publications by the same authors. PIJAC contributed some of this information, as well as other comments, to the letter submitted by USARK. For your reference, we are including our review of the USGS document in question. Inasmuch as the USARK letter relies heavily on information provided by PIJAC, we wish to advise you that PIJAC supports in large measure the contentions and conclusions of the USARK Request for Correction of Information, and we echo the request for an appropriate response.

ADDENDUM 2

While we see no need to reiterate the various comments set forth in the USARK letter, PIJAC will be pleased to clarify or expand upon any issue of concern as needed. We have every interest and intention of continuing to engage in a constructive relationship with DOI and its agencies.

We thank you for your consideration of our request.

Respectfully submitted,

/s/ Michael Maddox

Pet Industry Joint Advisory Council
By Michael Maddox
Vice President of Government Affairs
& General Counsel

PET INDUSTRY JOINT ADVISORY COUNCIL
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RISK ASSESSMENT REVIEW

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 constrictors. U.S. Geological Survey Open-File Report 2009-12-2, 302 p.

BACKGROUND

This document is not intended to serve as an exhaustive review of the Reed and Rodda risk assessment. Rather, it provides a general overview of the major types of technical concerns and includes specific examples to demonstrate the inherent biases, inconsistencies, and errors contained within the report.

Although the authors and U.S. Fish and Wildlife Staff[1] have stated that the risk assessment was peer-reviewed, the poor quality of the study leads us to question the qualifications and potential biases of the reviewers. We strongly recommend that the U.S. Fish and Wildlife Service, as report contractor and lead agency for the Notice of Inquiry on Pythons, Boas, and Eunectes, invite qualified peer-review through the Federal Register.

Because of the substantial need for further professional review and revision of the risk assessment, we believe that it is premature for policy makers to base decisions on the Reed and Rodda report. Any such policies would be ill-informed and quite possibly result in unintended negative consequences (e.g., mass release of large constrictors throughout the country), as well as the misappropriation of tax payer dollars.

It should also be noted that even under the worse case scenario (discussed further below), the maps matching climate envelopes clearly indicate that management of these large constrictors as invasive species, or potentially invasive species, should be a state/territorial issue rather than a priority for federal action. Climate suitability, at best, is limited to a handful of southern states[2]. Florida and Texas are already implementing state regulations to manage large constrictors and Hawaii bans all snakes.

AUTHOR BIAS

- **The authors choose to use non-technical terms and present speculative scenarios which are no doubt intended to invoke fear.** For example the word “giant” is used in the title throughout the report rather than “large” or any specific referential size as a means of categorizing the snakes in question. The term “giant” plays on the human psyche, calling up images of huge, malicious monsters.
- **The authors foster a state of fear regarding these snakes by painting a picture of large constrictors as an imminent threat to national security** by making statements such as, “we…consider what effects these species might have on…domestic tranquility of the United States…” (page 1, para. 1, line. 1), “Citizens have legitimate expectation that their government

[1] Dan Ash, verbal testimony before the Subcommittee on Crime, Terrorism, and Homeland Security. 6 November 2009.
[2] The map for the Burmese python shows the widest range but we and others contend that the actual range for *Python molurus bivittatus* (or *Python bivittatus*) would be substantially smaller than that shown for the two subspecies of *P. molurus* (or two separate species) combined.

will protect their personal safety" (page 2, para 2, line 3), and "marauding terror" (page 242, para. 3, line 3). This kind of dramatization is generally unacceptable in scientific literature.

- Risk assessments are intended to be applied to specific species without bias to the outcome of the assessment. **However, in this study, the authors clearly state that they chose which species to analyze based on their presupposed likelihood of establishment**, "…we selected the species not only for their size, but also for the likelihood of establishment" (page 1, para. 2, line 9). Thus, they selected species with the intent of concluding they were especially risky.
- On page 93 (para. 1, line 5), the authors state that "To our knowledge, illegitimate bites have never resulted in the ingestion of the human, probably because the bites were defensive in nature, intended merely to cause the human to stop bothering the snake (lethal constriction is effective for this)." **The latter statement in parenthesis appears to be a snide remark inadvertently added to the text** – perhaps a reviewer's remark made in track changes that was mistakenly accepted. This kind of comment suggests that the authors and/or a reviewer were not approaching the study from a neutral perspective.
- On page 101 (para. 1), the authors state, **"However, southern Florida has an acknowledged reputation for unsavory characters, both reptilian and otherwise."** This statement alone should raise ample concern over the attitude of the authors and the quality of the technical review the report received. Statements such as this one are unacceptable in scientific literature.

SPECIES IDENTIFICATION

- Undoubtedly, the risk assessment associated with the Burmese python (*Python molurus bivittatus*) is one of the most politically sensitive due to the press surrounding its establishment in the Everglades and the sizable impact on the importers, breeders, and hobbyists if it is banned. Reed and Rodda deliberately lump the two commonly recognized subspecies of *Python molurus* (*P. m. molurus* and *P. m. bivitattus*) despite the clear bias this presents (e.g., *P. m. bivittatus* has a much smaller native range and climate envelope than does *P. m. molurus*), considerable criticism for having used this approach in a previous USGS paper on Burmese python climate matching, and sentiment/evidence that *P. m. bivittatus* should be recognized as a full species (as it was originally designated by Kuhl in 1820). Jacobs et al. (2009)[3] recently published a paper in the journal *Sauria* in which they not only elevate *P. m. bivittatus* to full species (i.e., *P. bivittatus*), but also designate a dwarf form as a subspecies. Reed and Rodda do not acknowledge the Jacobs et al. paper nor other credible sources that have questioned the legitimacy of the Burmese python as a subspecies of *P. molurus*. **Separate risk assessments need to be applied to *Python molurus* and *Python bivittatus*.** It should also be noted that CITES recognizes these snakes as separate biological entities and assigns them different protection status. *Python molurus molurus* is listed on Appendix 1, the most restricted list, and is no longer imported for commercial purposes.

RISK ASSESSMENT PROCESS

- Risk assessments are intended to be applied to specific species by unbiased analysts. See remarks under author bias. **The risk assessment conducted by Reed and Rodda has numerous author biases**.
- Reed and Rodda state that the risk assessment process they used is "Reflecting a consensus of the field" (page 3, para. 6, line 3). The risk assessment only represents the work of those individuals associated with the Aquatic Nuisance Species Task Force (ANSTF) at the time the document was prepared. Subsequent workshops and peer-reviewed publications have raised questions

[3] Jacobs, H.J., M. Auliy and W. Bohme. 2009. Zur Taxonomie des Dunklen Tigerpythons, Python molurus bivittatus Kuhl, 1820, speziell der Population von Sulawesi. Sauria 31 :5-16.

about implementation of the approach. Other groups and governments have adopted a wide-range of alternative approaches. **The outcomes of the large constrictors risk assessment would be far more credible if a team of non-biased authors ran the available data through various risk assessment approaches, rather than relying on a single approach that has come into question.**

- In order for species to become established, viable individuals must be introduced into and sustained in the same general area in adequate numbers to found a population. **Large constrictors have been in the US in captivity in large numbers for at least three decades. Only a single population of two species (with speculation of a third) has become established. This clearly indicates that establishment of large constrictors in the US has been a very rare event** and there is no reason to believe that such an event would increase in frequency…unless snake owners deliberately decided to release large numbers of snakes out of fear of criminal violation or as reaction to federal regulation. Reed and Rodda do not adequately acknowledge the rarity of large constrictor survival and establishment in the US, rather they seem to suggest that large numbers of individuals in captivity will automatically translate to a large risk of introduction and establishment of the species. This bias leads to a substantial over-dramatization of risk.
- The context in which an animal is introduced has a profound impact on its ability to survive and establish a population. Although Reed and Rodda provide a coarse-scale assessment of potential climatic conditions that could support a species' survival, they do not give adequate attention in the risk assessment to the various other factors which would limit their ability to survive even within the areas of potential climate match. **Automobile traffic, persecution by humans, predation by wildlife and domestic animals, various landscape hazards in human-developed environments, and other factors would substantially reduce the likelihood of snake survival and establishment**. The climate maps are thus over-estimates of potential range. The locales in southern Florida hosting large constrictor populations are not subject to many of the variables that would routinely limit large constrictor establishment in the suburban and urban contexts. However, the spread of snakes from these locales will undoubtedly be limited by urbanization factors.
- The authors state that "decision-makers must account for the societal values from all viewpoints of any potential regulatory action. We will not do so in this risk assessment" (page 2, para. 3, line 12). Indeed **Reed and Rodda do not account for societal values from all viewpoints, nor do they present a balanced account of the viewpoints addressed within the report**. Rather, they appear to "cherry pick" issues and present highly speculative viewpoints (e.g., the potential impact of large constrictors on birdwatching) absent scientific justification. **They also ignore information that has been previously provided to the Federal government by the Pet Industry Joint Advisory Council (PIJAC) on estimates of species numbers and value in the trade which was submitted in response to the NOI**. They repeatedly state that "no credible" information on this topic is available.
- Reed and Rodda present the risk of "Entry Potential" as the risk of the species surviving as it enters the US upon importation. **One of the most critical missing factors for this study in an unbiased assessment of the risk of entry potential into the natural environment**. This clearly differs among species and localities (e.g., where natural disasters are more common) and is impacted by numerous release/escape prevention measures. For this risk assessment to be credible the true risk of these species *entering the natural environment* needs to be adequately addressed. Reed and Rodda state that "For most giant constrictors there is a high likelihood of release of unwanted adult constrictors, as evidenced by dozens of media reports of individuals found across the country" (p. 248 para. 1, line 10). Given the large volume of these constrictors in the US, and the fact that they've been popular for decades, dozens of media reports does not

indicate a "high likelihood" of deliberate release, nor escape. If this risk were truly high, the US would already be "crawling" with large constrictors.

UNCERTAINTY

- **Nearly every section of every biological profile states that information is lacking or available only for a small number of captive specimens.** Even where data are present from animals in the field, the sample sizes are small and the samples typically drawn from a very limited area in the species' range. The level of biological and ecological uncertainty for these large constrictors is substantial. The authors acknowledge this, yet proceed to make highly speculative statements in a tenor of "conclusiveness" that is not supported by science. From a scientific and ethical perspective, the over-riding tenor for an assessment based on this much uncertainty should be "we don't know." See e.g., "…the biological and environmental unknowns associated with giant constrictors are numerous and profound," (page 3, para 3, line 1). "There is great uncertainty about all aspects of this risk assessment…" page 4, para 4, line 16). "No single species has received across-the-board ecological study, and the ecology of some species is almost completely unknown" (page 9, para 2, last line).

PRESENTATION OF INFORMATION

- Throughout the text, the authors present data in tabular format that lacks many of the features of standard presentation of scientific data. For example, on page 11 they present sizes without indicating if these numbers represent means or extremes and what the sample sizes are. In the context of the large constrictors, it would also be important to note if the data are derived from captive or wild caught specimens. **Because the authors have not presented their data in a commonly accepted manner, it is difficult to determine whether or not they have based their analyses on the most relevant statistics or selected data (e.g., extremes in length or clutch size) that would bias the outcomes of the study.**
- Reed and Rodda provide a section on eradication tools, but do not provide any information on the various approaches that exist to prevent the introduction of large constrictors into the natural environment. This is a key factor in the likelihood of large constrictors becoming established in the US. **By failing to provide a discussion of the various factors preventing large constrictor introduction (e.g., state regulations, amnesty events, educational campaigns, financial disincentives), Reed and Rodda greatly bias their presentation of risk.**
- The discussion of eradication tools presents a rather dismal picture. **However, it fails to focus on the fact that the ability to eradicate a species depends on many factors besides technical tools.** The most important factors include the number of individuals and the context in which they are found. Large constrictors in an urban environment are far more likely to be encountered and "eradicated" than individuals in remote natural locations. If introduced outside of their climate tolerance, natural conditions will eventually "eradicate" large constrictors. Numerous media reports indicate that escaped large constrictors are typically "eradicated" from the natural environment by human observers.
- **Readers of the report need to focus on the fact that a considerable amount of the information presented in Chapter Ten (Risk Assessment) is, in fact, "hypothesized" – meaning that it is at best an "educated guess."** Although the authors acknowledge great uncertainties and a lack of information in the introduction and species accounts, the narrative in this section tends to read as if supported by "conclusive" information. **Furthermore, they state that they have a "high certainty" or "moderate certainty" of outcomes despite having acknowledged earlier in the text that scientific information was substantially lacking for all of these species.**

SPECULATION/EXAGERATION

- **Throughout the text, Reed and Rodda present information in an exaggerated, often dramatized manner.** For example, on page 7 they list a series of traits that they claim are shared by "giant constrictors" and then proceed to state that "Thus in comparison to potential invaders lacking these traits, this group of snakes constitutes a particularly high risk" (page 7, para 3, final sentence). Some of the traits listed lack scientific support (e.g., that these species are all long distance dispersers, tolerant of urbanization, and have high-population densities), while others are very context specific (e.g., pathogens and parasites – as stated elsewhere in their own report – are not common in captive bred specimens, and detectability depends on the setting the snake is in).
- **Word choice frequency is vague, and seemingly chosen to suggest negative outcomes.** For example, on page 61 (section 8.1) Reed and Rodda state, "Snakes in the international trade pathway constitute a somewhat higher risk than domestically bred animals, in that wild snakes often carry exotic parasites or pathogens that may transfer to other captive snakes during transport…etc." What evidence do they have that these snakes OFTEN carry exotic parasites that MAY transfer them? What does OFTEN mean scientifically? What are the accounts of these snakes transferring exotic parasites to other animals in captivity or the wild? The reptile industry is self-policing in that parasitized animals are not commercially viable.
- **In each of the species accounts the authors grossly speculate on the potential impacts** of large constrictors as predators, traffic hazards, and factors in tourism, hunting, and bird watching. In some sections, they even state, "one can imagine…" (page 101, 12.7.2). Impacts of this nature would be very context specific and, with the exception of localized rare species of prey, require a rather large population of snakes for the impact to be significant in socio-economic and biological terms. They do not give equal presentation to the potential benefits that large constrictors might provide (e.g., as prey, game, or the focus of tourism) in certain contexts nor do they readily acknowledge that humans have and are routinely adapting to predators that threaten pets and recreational opportunities (e.g., alligators and coyotes).

INCONSISTENCIES

- **Issues are treated quite inconsistently throughout the species accounts**. For example in the discussions of large snakes as predators, some accounts acknowledge that young snakes might be valued prey, others seem to suggest that the species are generally invulnerable to predation (as if they all hatch out as large snakes), while others acknowledge they might be both predators and prey but that the "overall demographic effects" will either be negative or neutral. For the most part, there are no data to support these statements/speculations.

UNFOUNDED CONCLUSIONS

- **There are a large number of statements throughout the text based on a lack of scientific evidence**. For example, Reed and Rodda state that "These factors combine to make it hard to limit the spread of their colonies" (page 6, para. 3, line 4). There are no studies undertaken to limit the spread of these large constrictors as introduced species. The authors' statement, though it could prove true under certain circumstances, has no basis in science. It does, however, serve to encourage fear that these "giant" snakes can not be maintained. Qualified peer-reviewers would have found fault with this kind of approach.
- **The risk assessments are based on far too much speculation and not enough scientific information to warrant the high level of certainty ascribed by the authors.** This analysis needs to be repeated by unbiased observers using scientifically-supported information. Furthermore, multiple risk assessment approaches should be applied to these species so as to explore/elucidate the biases of different risk assessment methods.