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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 16

RIN 1018-AV68
[FWS-R9-FHC-2008-0015]
[94140-1342-0000-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 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 20\th\ 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

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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. 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.

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. The boa constrictor is large, prevalent in international trade, and already established in South Florida. 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. 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.

Need for the Proposed Rule

The threat posed by the Indian python (including Burmese python) and other large constrictor snakes is evident. Thousands of Indian pythons (including Burmese pythons) are now breeding in the Everglades and threaten many imperiled species and other wildlife. 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.

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. While 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). 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. For a few species, large areas of the continental United States appear to have suitable climatic conditions. 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). 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. As compared to many other vertebrates, large constrictors pose a relatively high risk for being injurious. They are highly adaptable to new environments and opportunistic in expanding their geographic range. 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.

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.

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

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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. 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. 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, 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. 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. 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.

Owning a giant snake is a difficult, long-term, somewhat expensive responsibility. 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. This is a common pathway to invading the ecosystem by large constrictor snakes (Fujisaki et al. 2009).

In aggregate, the trade in giant constrictors is significant. 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 of these particular snakes combined with their quantity in international trade. 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. 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.

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. With a sufficient number of either unintentional or intentional release events, these species will establish in ecosystems with suitable conditions for survival and reproduction. This is likely the case at Everglades National Park, where the core nonnative Burmese python population in Florida is now located. 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. 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. 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).

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

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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.

Public Comments

We are soliciting substantive public comments and supporting data on the draft environmental assessment, the draft economic analysis, and this proposed rule 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. 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) on the following questions:

(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).

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).

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

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have been known to lay as many as 107 eggs in one clutch. 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)). 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). 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).

Like all of the giant constrictors, 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).

Reticulated Python (Broghammerus reticulatus or Python reticulatus)

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).

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).

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.

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.

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 [deg]C (95 [deg]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.

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).

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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).

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).

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 [deg]C (50 [deg]F) and no localities with monthly means exceeding 30 [deg]C (86 [deg]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 Marajo, 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 \o\C (77 \o\F) and 30 \o\C (86 \o\F). Whether the species could tolerate greater climatic variation is unknown.

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. 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). 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

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).

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.?	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	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;

Potential to survive, become established, and spread;

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.

(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.

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).

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).

Table 2. The algorithm that the ANSTF defined for combining the two primary sub-scores (Reed and Rodda 2009)

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. When Indian pythons escape captivity or are released into the wild,

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they have survived and are likely to continue to survive and become established with or without reproduction. 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). Moreover, released Indian pythons would likely spread to areas of the United States with a suitable climate. 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. 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.

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).

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. Thus, naive 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). 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. 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.

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.

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

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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. 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.

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.

Potential Impacts to Humans

The introduction or establishment of Indian 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 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.

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.

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.

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.

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.

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.

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.

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

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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.

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 58\th\ 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. Reticulated pythons (Broghammerus reticulatus or Python reticulatus) have escaped or been released into the wild in Florida and the Commonwealth of Puerto Rico. Reticulated pythons are highly likely to survive in natural ecosystems (primarily extreme southern habitats) of the United States. 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. 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.

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.

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.

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). 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 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 biodiversity and ecosystem health.

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.

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.

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. 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

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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.

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.

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).

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.. 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. 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.

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. 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.

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.

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.

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 biodiversity and ecosystem health.

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.

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.

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.

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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. 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. 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.

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.

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.

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 biodiversity and ecosystem health.

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.

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.

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.

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).

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. 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). 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

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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.

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. 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). 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.

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.

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.

Potential Impacts to Humans

The introduction or establishment of boa constrictors 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 biodiversity and ecosystem health.

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.

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.

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. 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.

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. 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

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surface water. 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.

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. 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.

Potential Impacts to Humans

The introduction or establishment of yellow 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 biodiversity and ecosystem health.

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.

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.

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.

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. 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.

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.

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

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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.

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 biodiversity and ecosystem health.

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.

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.

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.

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. 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. 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. There is evidence that green anacondas are facultatively (if no other males are available) parthenogenic.

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. 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.

Potential Impacts to Humans

The introduction or establishment of green 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 biodiversity and ecosystem health.

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.

Potential Ecological Benefits for Introduction

While the introduction of a faunal biomass could potentially provide a food source for some native carnivores,

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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.

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.

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). Beni anacondas are highly likely to survive in natural ecosystems of the United States. 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 \o\C (72 \o\F) to 27.5 \o\C (77 \o\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. 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.

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.

Potential Impacts to Humans

The introduction or establishment of Beni 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 biodiversity and ecosystem health.

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.

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.

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.

Conclusions for the Nine Constrictor Snakes

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.

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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 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.

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.

Required Determinations

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

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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.

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.

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

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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

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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 Sec. 16.15 by revising paragraph (a) to read as follows:

Sec. 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 Sec. 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.

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