

The U.S. Role in the International Live Reptile Trade:

Amazon Tree Boas to Zululand Dwarf Chameleons

This chameleon (for me)
doesn't flap its tail! The sand in its African desert
Home is sizzling hot. So the chameleon does a kind of hot
hop across the sand. It lifts its tail and legs high off the sand
as it trots toward the shade.



TRAFFIC
—NORTH AMERICA—

By Craig Hoover



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Front cover art: "Hip Hop on the Sizzling Sand" by Raymond Hu

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**The U.S. Role in the International Live Reptile Trade:
Amazon Tree Boas to Zululand Dwarf Chameleons**

By Craig Hoover

TRAFFIC NORTH
AMERICA

August 1998

ABOUT THE COVER

Hip Hop on the Sizzling Sand was painted by artist Raymond Hu, a twenty-one-year-old student who lives in Alamo, California.

Raymond began studying Chinese brush painting with artist Lampo Leong eight years ago, and his paintings have won many awards and honors. In 1993, his *Tiger* was awarded the first prize in "A Very Special Art Show," and was selected from among more than 1,000 entries to be the 20th Anniversary Show poster of the Sacramento Association for the Retarded. In 1994, his *Elephant* won second prize in the Student Art Contest of the California Association for the Gifted.

Raymond's art has been exhibited in the United States and China, and in three solo shows in California. *The Eyes of Raymond Hu*, a book of 42 fascinating animal paintings, was recently published.

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EXECUTIVE SUMMARY

The international trade in live reptiles has grown dramatically in the last decade. The import, export, and reexport of live reptiles predominantly supplies the pet trade, but also supplies the demand for reptiles for food, educational and research purposes, breeding facilities, zoos, and aquariums.

The causes of the substantial rise in the international trade in live reptiles are difficult to quantify but may include an increase in the availability and variety of species, improved reptile husbandry practices due to advanced technology and scientific knowledge, increased restrictions on other wildlife trade, changing lifestyles that make reptiles more suitable pets than other fauna, or simply an increased popularity that has made reptiles today's fashionable pets.

In 1970, prior to the passage of laws such as the U.S. Endangered Species Act, and adoption of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), U.S. importations of live reptiles approached 2 million animals. Based on analysis of trade data for a number of species, it is clear that the trade subsequently

declined significantly and remained low throughout the 1980s. However, imports increased again and in 1995 more than 2.5 million live reptiles were imported to the United States. By far the most commonly imported species was the green iguana (*Iguana iguana*), which made up more than 45 percent of the total trade in 1995.

The United States is also a significant and growing supplier of live reptiles to the rest of the world. In 1996, the United States exported or reexported over 9.5 million reptiles, primarily to Europe and Southeast Asia. Over 88 percent of this trade consisted of one species: the red-eared slider turtle (*Trachemys scripta*), at a volume of nearly 8.4 million animals. Second only to red-eared slider turtles, the United States also reexported more than 270,000 iguanas that were previously imported. Both iguanas and red-eared slider turtles are produced on farms, though it is unclear how much wild stock is needed to sustain these farms and what impact such operations have on wild populations.

U.S. trade in live reptiles also appears to make up a substantial portion of the world trade in live reptiles. A comparison of trade data for certain

CITES-listed species indicates that U.S. trade constituted approximately 28 percent of the total world trade in 1983, but constituted more than 82 percent of the world trade by 1992. However, these numbers may be artificially high given the failure of many countries to accurately report such trade.

Prices for many live reptile species found in trade in the United States have fluctuated significantly, though no clear trends have been identified. Price data indicate that prices are influenced by a number of factors, including restrictions on trade, captive breeding, increased legal protection of species, fluctuations in demand, and species abundance or rarity.

There appears to have been an increase in illegal as well as legal trade. Based on a review of press releases, wildlife trade journals, and other sources, from 1970 to 1990 there were only 11 reported investigations of international live reptile smuggling, while from 1991 to 1997 there were at least 23 such cases reported.

Based on these findings, TRAFFIC North America recommends that the appropriate parties take these actions:

- Increase emphasis on the monitoring and protection of native species found in trade, with special attention to North American turtle species;
- Investigate commercial captive breeding, farming, and ranching operations around the world to determine their productivity and assess their impact on wild populations;
- Analyze the threat posed by exotic species introductions and identify any legislative gaps in the United States' ability to deal with these potential threats to native fauna;
- Review legislation, assessing effectiveness of implementation and enforcement, for identified "hot spots" where reptile species continue to be threatened by trade, and recommend improvements or pursue trade bans.

INTRODUCTION

Live reptiles are not new to wildlife commerce. In fact, the trade in live reptiles, primarily to supply the pet industry, dates back at least to Greek and Roman times, when tortoises were popular pets. Since the late 1800s, Mediterranean tortoises have been commercially imported into the United Kingdom where imports peaked at a quarter million in 1938 (Inskipp and Wells 1979).

Though the international live reptile trade has a far shorter history in the United States, the trade has been quite active for several decades. In 1970, for example, 1,736,695 live reptiles were imported into the United States, including 1,382,927 turtles comprising 10 families, 112,402 crocodilians from two families, 208,921 lizards and amphisbaenians from 13 families, and 32,445 snakes comprising 10 families (Busack 1974). Live reptile trade levels appeared to decline in the 1970s and 1980s—due at least in part to the passage of legislation that restricted the trade in wildlife, such as the U.S. Endangered Species Act (ESA) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Nevertheless, in the last five to ten years, both the volume of live reptiles and variety

of species in trade have increased dramatically.

The United States is not only a consumer of live reptiles, but also a supplier. Throughout most of this century, hatchling turtles were one of the staples of the U.S. pet industry. Millions of red-eared slider turtles (*Trachemys scripta*) were sold in dime stores and pet shops until the early 1970s when the turtles were identified as a source of *Salmonella*. The U.S. Food and Drug Administration banned the sale of turtles less than 4 inches in carapace length (Coleman 1993). Already a significant importer of live reptiles for the pet trade, the United States became a major exporter as well, because of the virtual closure of the U.S. market to hatchling turtles.

Recognizing the apparent rise in reptile imports in the United States and the growing popularity of reptiles as pets and food, TRAFFIC North America sought to examine the trade in live reptiles—to define its scope, analyze trends, and identify areas within this enormous trade that warranted a closer look in future research.



METHODOLOGY

International trade data reviewed in this report were derived from a number of sources. The primary sources for data on U.S. imports and exports of live reptiles were the U.S. Fish and Wildlife Service's Law Enforcement Management Information System (LEMIS) and a review of Fish and Wildlife Import/Export Declaration Forms (Form 3-177) that had not yet been entered into LEMIS. Among other things, LEMIS is a computerized database of imports and exports of live wildlife and wildlife products that have been declared to the U.S. Fish and Wildlife Service. Species are recorded in the system by using a four letter species code (for example, IGUI = *Iguana iguana*). Those species not assigned a code are entered into the system using a more general code that refers to a genus (for example, VAR? = all *Varanus* species) or even more broad classification (for example, RNCT = all non-CITES listed reptiles). All of the species reviewed here currently have species codes, though some were assigned only recently. These data can be accessed via the Freedom of Information Act.

Data were also obtained from a U.S. Customs database called the Automated Commercial System (ACS). In 1992, the U.S. Fish and Wildlife Service began an effort to process wildlife imports electronically via ACS, a system that allows brokers and importers to enter import/export data electronically for review and clearance by federal inspection agencies. The U.S. Fish and Wildlife Service began using the system and chose not to continue recording in LEMIS shipments that were processed via ACS. Thus, to get a complete data set for 1992 to 1997, it was necessary to gather data from both systems. However, the use of ACS posed substantial public access problems, as U.S. Customs does not allow public release of ACS data. This dual system has now largely been eliminated by the Service's decision in late 1997 to enter into LEMIS all shipments that are cleared via ACS.

Because LEMIS and ACS data include only those wildlife shipments that were declared to the U.S. Fish and Wildlife Service and recorded in either of those systems, these data should be considered minimum trade figures.

Another source of international trade data that was used for this report is CITES annual report information, compiled by the World Conservation Monitoring Center (WCMC) in Cambridge, United Kingdom. Under CITES, each party (country who has acceded to the treaty) is required to submit an annual report to the CITES Secretariat that shows how many CITES-listed species or specimens that country imported, exported, or reexported. Though these annual reports are a valuable source of trade data, many countries are several years behind in the submission of their annual reports.

Price and availability data were compiled from approximately 200 price lists obtained from various sources and distributed by live reptile dealers in the United States. Investigation information was obtained from press releases and news reports, as well as from contacts with investigators and government officials.

Because the international trade in live reptiles involves hundreds of species from all corners of the globe, there was a need to limit the scope of this review. Because not all reptile species in trade are recorded at the

species level, tracking the trade in all species would be a labor and time-intensive exercise. Apart from overall trade figures, approximately 100 species were chosen for review in this report based on contacts with live reptile traders, government officials responsible for regulating the trade, and the author's own experience as a former wildlife inspector with the U.S. Fish and Wildlife Service. These species are noted in table 6 (pp. 21-23).

Much of the analysis in this report was conducted on a regional basis, with the trade data compiled in seven different regions: Indo-Pacific and Oceania, North America, Central and South America, East and Southeast Asia, Africa (excluding Madagascar), Madagascar, and East Europe/West Asia. Though this regional approach allowed for species groups to be addressed, there was some overlap between regions. Where there was overlap, the total data were included in both regions and not broken down. So, for example, the water monitor lizard (*Varanus salvator*) was included in both the Indo-Pacific and Oceania and the East and Southeast Asia regions, and the total import/export figures were duplicated in each regional analysis.

LEGISLATION GOVERNING WILDLIFE TRADE IN THE UNITED STATES

There are numerous laws, treaties, and regulations governing wildlife trade, and among the most important pertaining to the trade in live reptiles are the U.S. Endangered Species Act (ESA), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Lacey Act.

The U.S. Endangered Species Act

The U.S. Endangered Species Act, 16 USC. §1531 et seq., makes it illegal for any person subject to U.S. jurisdiction to import, export, deliver, receive, carry, transport, ship, sell, or offer for sale in interstate commerce, any species of plant or animal that has been listed as threatened or endangered pursuant to the act. The act also makes it unlawful to take (defined at 16 USCS §1532(19) as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct") any listed species within the United States or its territorial seas. Violation of the Endangered Species Act carries a maximum penalty of up to one year imprisonment and fines of up to \$100,000. Organizations may be fined up to \$200,000.

See Annex 1 for a complete list of reptiles protected under the Endangered Species Act.

CITES

The Endangered Species Act serves as the United States' enabling legislation for CITES, an international conservation treaty regulating wildlife trade with 144 signatory countries or parties. CITES accords varying degrees of protection to wild animal and plant species depending on their biological status and the effect international trade has on them. Because a large percentage of those reptiles commonly found in the trade are listed in the CITES appendices, CITES is one of the primary means of regulation of the live reptile trade.

Species listed on CITES Appendix I are those threatened with extinction that are, or may be, affected by trade. With very few exceptions, such species cannot be traded among member countries. Examples of reptiles included on this list are the Indian python (*Python m. molurus*), the yellow monitor lizard (*Varanus flavescens*), which is found in Asia, and the U.S. native bog turtle (*Clemmys mublenbergi*).

Species listed on CITES Appendix II are those that may become threatened if their trade is not controlled. Trade in these species requires an export permit from the country of origin or a reexport permit from a country of reexport. Many reptile species are found on Appendix II, including all chameleons (*Chameleo* spp., *Bradypodion* spp.), all pythons and boas not included in Appendix I (Boidae spp.), and all tortoises not included in Appendix I (Testudinidae spp.).

Finally, species listed on Appendix III are those that are subject to regulation within the jurisdiction of a party and for which cooperation of other parties is needed in order to prevent or restrict their exploitation. A party listing a native species on Appendix III must issue an export permit for that species, and other parties cooperate by issuing a certificate of origin when exporting the same species. Among the reptiles listed on Appendix III are the Gabon hinged terrapin (*Pelusios gabonensis*) for Ghana and the Russell's viper (*Vipera russellii*) for India.

See Annex 2 for a complete list of reptile species listed in the CITES Appendices.

The Lacey Act

The Lacey Act, 16 USC §371 et seq., as amended in 1981, prohibits the import, export, transport, sale, receipt, acquisition, or purchase of fish, wildlife, or plants taken, possessed, or sold in violation of any wildlife law, treaty, or regulation of the United States, or in violation of any Indian tribal law.

More important, the act prohibits the import, export, transport, acquisition, receipt, sale, or purchase in interstate or foreign commerce of any fish or wildlife taken, possessed, transported, or sold in violation of any wildlife law or regulation of any state, or in violation of any foreign law. Therefore, a live reptile sold in violation of Australian law and imported to the United States, regardless of whether or not this species is protected by any U.S. law, has been imported in violation of the Lacey Act.

An individual convicted of violating the Lacey Act may be imprisoned for up to one year and fined up to \$100,000 for a misdemeanor offense, and imprisoned up to five years and fined up to \$250,000 for a felony offense. Fines for organizations that violate the act are up to \$250,000 for a misdemeanor and \$500,000 for a felony.

The original Lacey Act, 18 USC §42, is still in effect and prohibits any person from knowingly causing or permitting any wild animal or bird to be transported to the United States under inhumane or unhealthful conditions.

Regulations

A number of regulations implemented by the U.S. Fish and Wildlife Service are pertinent to the trade in live reptiles.

The regulations entitled Importation, Exportation, and Transportation of Wildlife, 50 Code of Federal Regulations (CFR) Part 14, establish the requirements for importing and

exporting wildlife; for the declaration, inspection, and clearance of such shipments; for the licensing of importers; and for standards for the humane and healthful shipment of live animals (these have not yet been finalized for reptiles and amphibians).

50 CFR Part 17, entitled Endangered and Threatened Wildlife and Plants, are the regulations that implement the U.S. Endangered Species Act. Among other things,

these regulations contain the lists of endangered and threatened species and the requirements for importation and exportation of those species.

Finally, 50 CFR Part 23, entitled Endangered Species Convention, are the regulations that implement CITES. They include the Appendices to CITES, the requirements for obtaining permits, and the exceptions to permit requirements.



THE U.S. ROLE IN THE LIVE REPTILE TRADE: AN OVERVIEW

Explaining the Trend

The international trade in live reptiles supplies a number of markets, including zoos and aquariums, breeding facilities, research centers, and even food markets in some segments of society. But by far the most significant market for the live reptile trade is the pet market.

In the last five to ten years, there has been a substantial increase in the number of live reptiles imported into and exported/reexported from the United States. Determining all of the factors that have driven this trend remains difficult. There are a number of factors that may have played a role in this increase, some of which are listed here.

- One possibility is that there are simply more animals available, through both captive breeding and increased importation of wild-caught animals, and that this supply has been accompanied by an increasing demand.
- Another factor may be that improved technology and advanced knowledge of reptile husbandry have allowed animals to be kept healthier and live longer at lower cost, making reptiles more practical and appealing as pets.
- Changing restrictions on other types of wildlife trade may also play a role in the volume of the live reptile trade. For example, passage of the Wild Bird Conservation Act of 1992 substantially reduced the importation of CITES-listed birds, including most parrot species, and may have triggered the pet industry and consumers to seek alternative pets to fill the gap.
- A less tangible cause may be our changing culture. An increasing number of American households exist in smaller spaces such as apartments or condominiums, and in most families both parents work. People have less time to devote to higher maintenance pets such as dogs, so reptiles, like fish, have been elevated to greater status as the pet that fits in with this busy lifestyle. The public perception about many reptile pets is that one need only put their light or heat rock on a timer, throw them a few crickets or a mouse, and they won't require any further maintenance for several days.
- Finally, the increase may be all about fads. Reptiles simply may be the flavor of the month, and next

month the industry may turn to Vietnamese pot-bellied pigs or chinchillas.

Whatever the reason, and there may be some truth to all of these theories, there can be no denying that the live reptile industry has expanded dramatically. There are now a number of magazines dedicated to reptiles and their care, and most pet stores have reserved a substantial amount of floor space for reptile products. There are enormous trade shows around the United States with breeders and dry goods suppliers selling their wares, and the Internet is rife with dealers' price lists offering everything from Cuban crocodiles (*Crocodylus rhombifer*) to Satanic leaf-tailed geckos (*Uroplatus fantasticus*) to albino monacle cobras (*Naja n. kaouthia*).

Imports

The United States is the world's largest consumer of live reptiles for the pet industry. Figure 1 shows live reptile import figures for a number of years, beginning in 1970.¹

Also of interest is which groups of animals make up these figures. For example, in 1970, 79.6 percent of the reptiles imported were turtles and tortoises, while 6.5 percent were

crocodylians, 12 percent were lizards, and only 1.8 percent were snakes. In contrast, in 1996, only 2 percent of imported reptiles were turtles and tortoises, less than 1 percent were crocodylians, 86 percent were lizards, and 11 percent were snakes.

TRAFFIC undertook a review of approximately 100 species commonly found in the international live reptile trade. Though it is difficult to gather comprehensive trade data, especially from more than five years ago, it is relatively easy to gather species-specific trade data, especially for CITES-listed species. Figure 2 shows U.S. import figures from 1983 to 1995 for the approximately 100 species selected for review.^{2,3}

As seen in figure 2, among the species that TRAFFIC reviewed there has been an enormous increase in the number of live reptiles imported. However, there is one significant caveat to these results: the U.S. Fish and Wildlife Service assigned species-level codes to many of these species only in the last few years—before that, the species may have been imported, but recorded only under more general codes, making the gathering of species-specific data impossible. For example, approximately 30 of

¹ The exact figures used for live reptile imports to the United States for years shown in figure 1 are as follows: 1970: 1,736,695; 1971: 1,343,172 (1970-71 data derived from Busack 1974); 1993: 2,358,324; 1994: 2,276,453; 1995: 2,519,711; 1996: 1,707,838 (1993-96 data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data).

² Import figures are for "approximately" 100 species because some taxa were recorded at the genus level and some species were recorded during a portion of this time period.

³ The exact figures used for approximately 100 selected species imports to the United States for years shown in figure 2 are 1983: 64,575; 1985: 166,478; 1987: 99,140; 1989: 243,195; 1991: 408,315; 1993: 1,123,929; 1995: 1,460,070 (data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data).

Figure 1: Total Number of Live Reptiles Imported to the United States

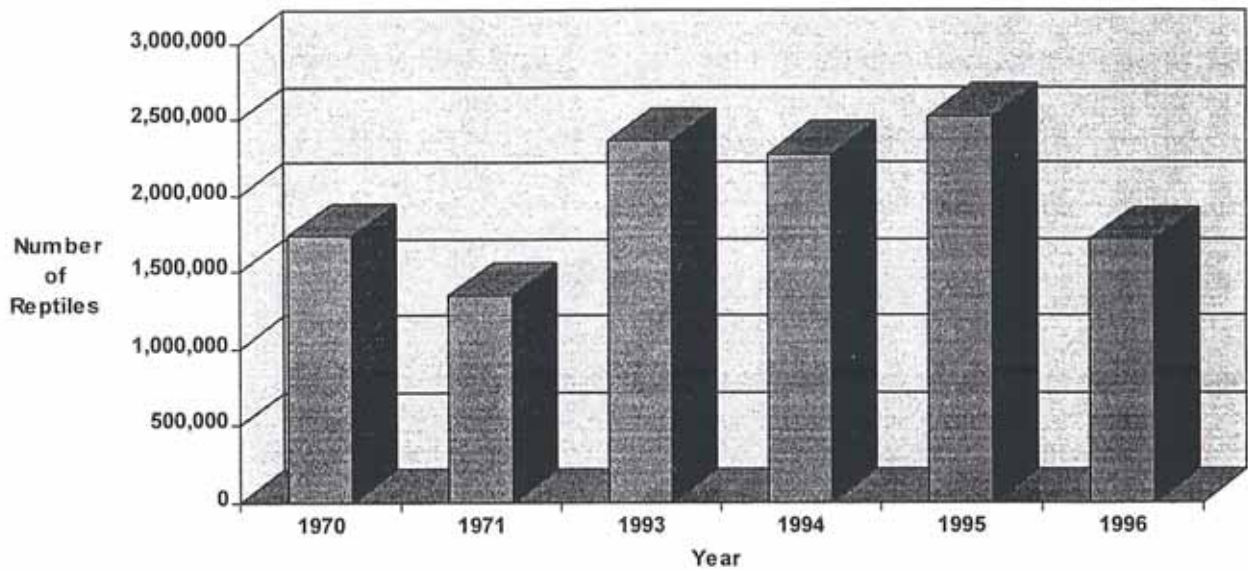
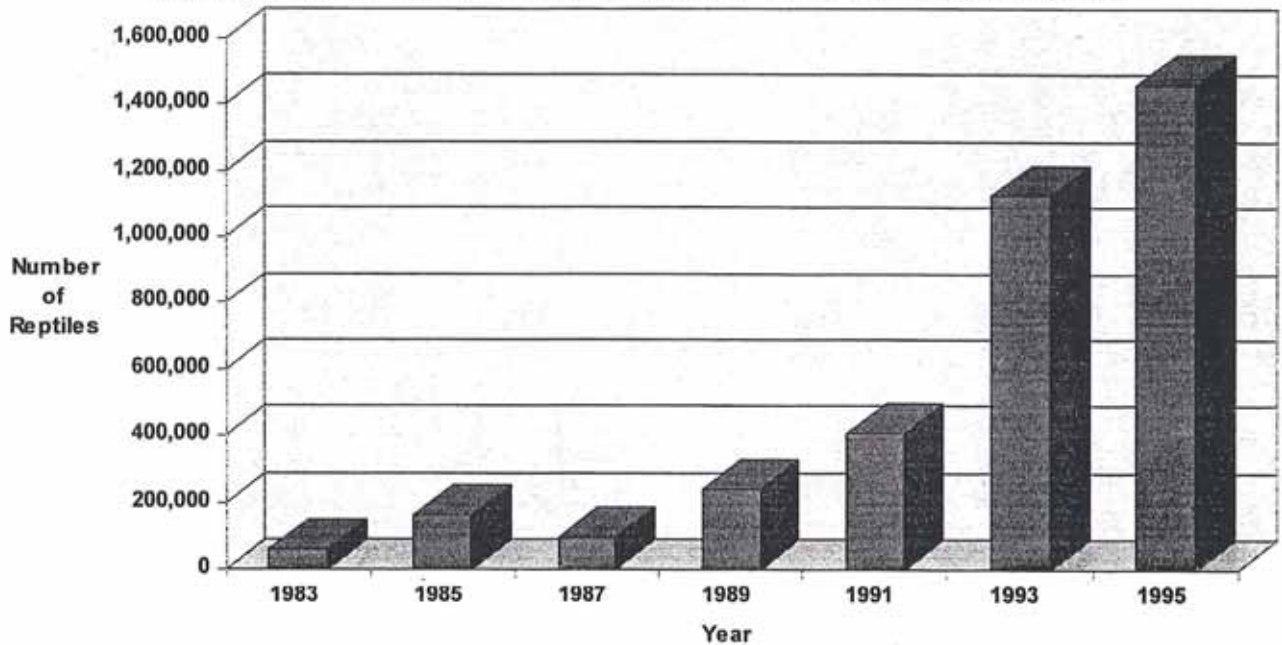


Figure 2: U.S. Import Figures for Approximately 100 Selected Reptile Species



the species reviewed were not entered into the database at the species level in 1983, and 25 of these 30 species had still not been assigned species level codes in 1988. However, 70 percent of the species selected for review are currently listed in CITES Appendix II, and all of these species were recorded at the

species level. Only four of the species reviewed were added to CITES Appendix II since the beginning of the period reviewed. So, figure 2 provides a fairly accurate picture of the trade trend since 1983 (for individual species trade data, see the regional sections, pages 39-46).

In recent years, the green iguana (*Iguana iguana*) has been the single species imported to the United States in the greatest numbers. In fact, both the dramatic increase in the total number of live reptiles imported and fluctuations in import numbers from 1993 to 1995 are primarily because of fluctuation in the number of iguanas imported.

As the figure and table indicate, not only have iguana

imports risen dramatically, they also constitute a growing proportion of the total imports.

Interestingly, U.S. importation levels in the early 1970s were not substantially influenced by iguanas but by a species that the United



The green iguana (*Iguana iguana*) is imported to the United States more than any other live reptile species. Photo credit: P. August.

States now exports in enormous quantities: red-eared slider turtles (*Trachemys scripta*), a species found from the southern United States, through Mexico and Central America, and as far south as northern Argentina (Pritchard 1979; Ernst and Barbour 1989). Though the 1970 and 1971 figures indicate overall importation levels comparable to the 1993-1996 figures, the bulk of the

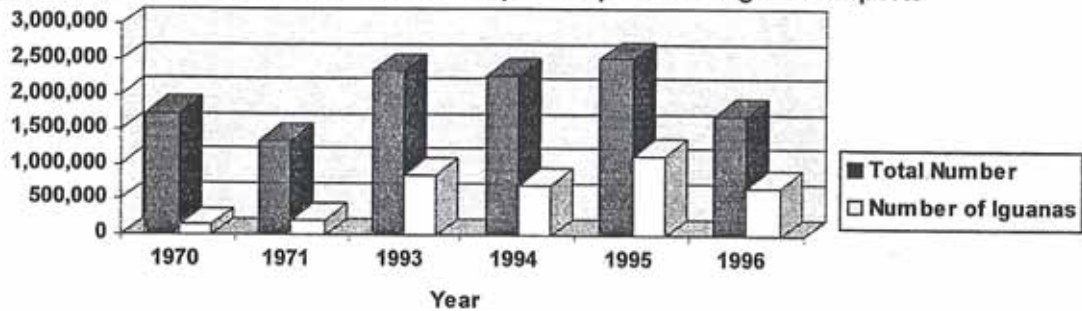
1970 and 1971 volumes consisted of red-eared slider turtles, including imports of 1,203,635 red-eared slider turtles (69.3% of total imports) in 1970, and 623,804 (46.4% of total imports) in 1971, almost entirely from Colombia.

Table 1: Comparison of Total U.S. Live Reptile Imports with Iguana Imports

Reptile Imports	1970	1971	1993	1994	1995	1996
Total Number	1,736,695	1,343,172	2,358,324	2,276,453	2,519,711	1,707,838
Number of Iguanas	142,377	210,594	858,467	717,892	1,143,720	693,790
Iguanas as % of Total	8.2%	15.7%	36.4%	31.5%	45.4%	40.6%
Total w/o Iguanas	1,594,318	1,132,578	1,499,857	1,558,561	1,375,991	1,014,048

Source: Data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data.

Figure 3: Comparison of Total U.S. Live Reptile Imports with Iguana Imports



Exports and Reexports

The United States has also played a substantial role in the export of live reptiles, especially turtles. In fact, the United States presently exports or reexports more live reptiles than it imports, due largely to the export of farm-raised hatchling red-eared slider turtles to Europe and Asia (see table 3). The trade in North American turtle species appears to supply two very different industries: the pet trade, nearly throughout the world, and the live

food trade, primarily in East and Southeast Asia.

Even more substantial than the influence of iguana imports on total reptile trade is the export volume of red-eared slider turtles, which make up more than 80 percent of the total number of live reptiles leaving the United States. Sent all over the world, these turtles have caused great concern for conservationists due to the species' potential to establish wild

Table 2: Top Five Species Imported into the United States (1991-1995)
Of Those Species Selected for Review

Species	Volume Imported
green iguana (<i>Iguana iguana</i>)	3,443,469
ball python (<i>Python regius</i>)	466,974
boa constrictor (<i>Boa constrictor</i>)	137,851
savanna monitor (<i>Varanus exanthematicus</i>)	129,410
Senegal chameleon (<i>Chameleo senegalensis</i>)	50,399

Source: Data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data.

Table 3: Comparison of Total U.S. Live Reptile Exports and Reexports with Red-eared Slider Turtle Exports

Year	1993	1994	1995	1996
Total Reptiles Exported/Reexported	8,160,137	9,770,472	9,125,399	9,505,489
Red-eared Slider Turtles Exported	6,857,486	8,511,147	7,725,975	8,376,216
Red-eared Slider Turtles as % of Total	84.0%	87.1%	84.7%	88.1%
Total w/o Red-eared Slider Turtles	1,302,651	1,259,325	1,399,424	1,129,273

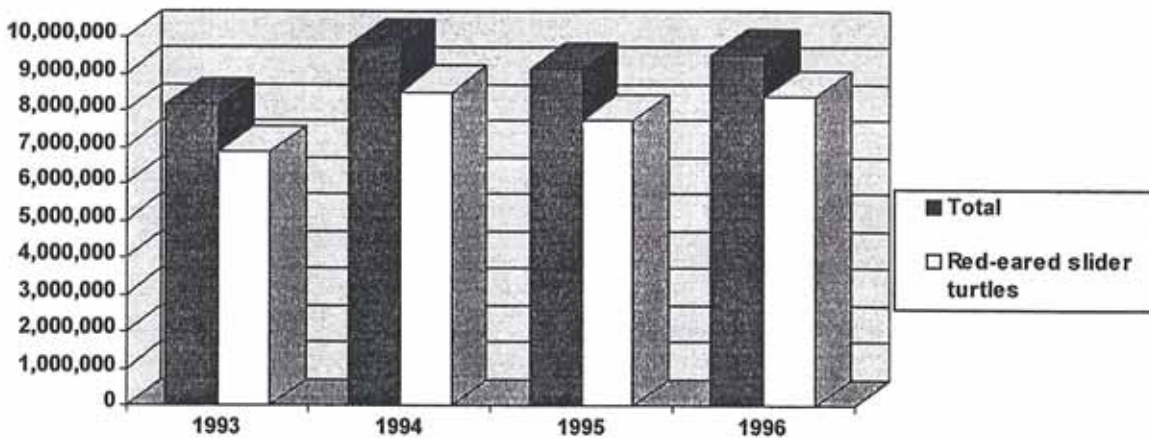
Source: Data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data.

populations and become injurious exotic (nonnative) species by adapting to new habitats and out-competing native turtle fauna (Jenkins 1995; Branch 1988). Though red-eared slider turtles are produced primarily at farming operations throughout the southeastern United States, it is unclear what negative impacts this enormous trade

may be having on wild populations: farming operations incur some mortality of adult breeders each year, and that breeding stock must be supplemented by wild-caught animals.

Setting aside the voluminous trade in red-eared slider turtles, there are more than one million reptiles of other species exported or reexported

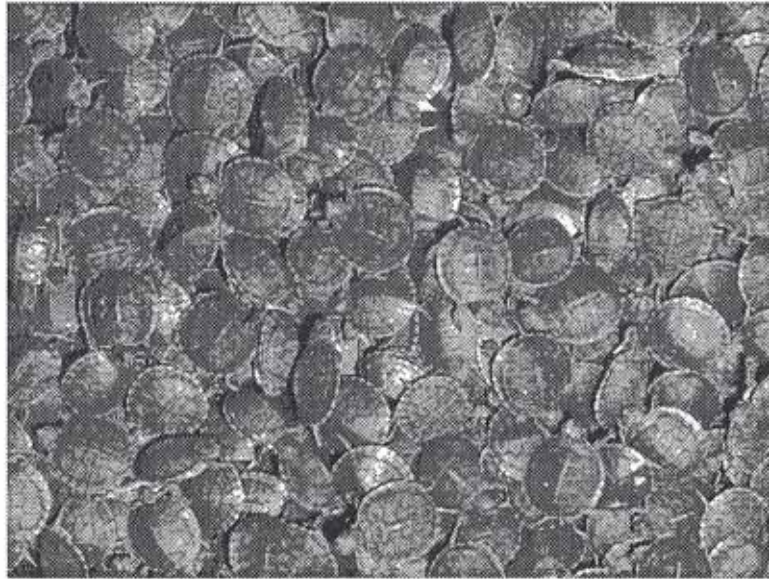
Figure 4: Comparison of Total U.S. Live Reptile Exports and Reexports with Red-eared Slider Turtle Exports



from the United States. The North American taxa closest to the red-eared slider in export volume is the map turtle (*Graptemys* spp.). Based on map turtle export data, just two species (out of 12) make up 90 to 95 percent of the map turtles exported (*G. geographica* and *G. pseudogeographica*) (Ventura 1997; data provided by Weissgold 1997). The number of map turtles exported has jumped from less than 10,000 in 1990 to more than 80,000 in both 1995 and 1996. However, some of this apparent growth in trade may be the result of a failure to enter this group of turtles into the U.S. Fish and Wildlife Service database at even the genus level in previous years.

It is important to note that the largest segment of the export trade (excluding red-eared sliders) is the *reexport* of previously imported species. The term "reexport" refers to animals that have been imported to the United States and later exported, as opposed to animals that are merely shipped through the United States in transit to their final destinations. The

United States plays a substantial and apparently expanding role as a reexporter in the live reptile trade. This role as an exporter of previously



More than 8 million live red-eared slider turtles (*Trachemys scripta*) were exported from the United States in 1996.
Photo credit: W. Luijf.

imported reptiles is influenced by a number of factors. One of the most significant factors is geography: U.S. dealers are in an advantageous geographic position to supply Asia with African species, Europe with Asian and Indo-Pacific species, and

Asia and Europe with Central and South American species. Another significant factor is that many U.S. dealers have long-established connections with overseas suppliers, so as new markets arise U.S. dealers have the ability to obtain and reexport the animals demanded by those markets. For example, most of the live reptile trade in Canada, where the trade in reptiles is less established than in the United States, appears to be supplied by U.S. traders (Chatel 1998).

The number of imported iguanas that is later reexported continues to grow, even as the number imported may be declining. Table 4 shows three species commonly reexported from the United States.

Table 4: U.S. Reexport Totals for Three Commonly Traded Species

Reexports	1993	1994	1995	1996
iguanas	57,528	78,353	140,037	277,813
ball pythons	1,326	4,622	2,957	Unk.
savanna monitor lizards	297	2,402	532	Unk.

Source: Data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data.

The enormous growth in captive breeding of reptiles in the United States, including many nonnative species, has led to trade in large numbers of captive-bred animals as well. In fact, the United States has exported a number of nonnative species in larger numbers than it has imported them from other countries. Two species, Burmese pythons (*Python molurus bivittatus*) and

sulcata tortoises (*Geochelone sulcata*), have shown this trend in some years (see table 5).

In measuring the conservation impact of this trade, it is important to note that the import of these two species largely involves animals taken from the wild, while the export primarily involves captive-bred animals.

Table 5: Import and Export/Reexport Figures for Two Commonly Captive-bred Species

	1992		1993		1994		1995	
	Import	Export/ Reexport	Import	Export/ Reexport	Import	Export/ Reexport	Import	Export/ Reexport
Burmese python	322	409	139	591	3,048	699	5,525	1,223
sulcata tortoise	12	120	295	832	653	904	952	2,332

Source: Data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data.

Table 6: U.S. Export and Reexport Figures for Selected Live Reptile Species, 1983 to 1995

Common Name	Scientific Name	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total
boa, Amazon tree	<i>Corallus enydris</i>	205	296	20	30	7	74	43	35	101	119	60	46	15	1,051
boa, emerald tree	<i>C. caninus</i>	55	75	26	17	65	65	42	46	105	97	122	76	50	841
boa, Papuan ground	<i>Candoia (Morelia) aspera</i>	0	0	0	0	0	0	3	0	2	4	2	0	3	14
boa, rainbow	<i>Epicrater cenchria</i>	18	8	36	39	79	51	34	41	76	54	45	66	100	647
boa, rosy	<i>Lichanura trivirgata</i>	0	0	2	18	2	6	12	35	93	23	33	59	258	541
boa, Solomon ground	<i>Candoia (Morelia) carinata</i>	0	0	0	0	0	0	39	60	0	46	7	28	2	182
chameleon, verrucosus	<i>Chameleo verrucosus</i>	0	0	0	0	0	0	0	0	0	0	3	43	5	51
chameleon, Fisher's	<i>C. fisheri</i>	0	0	0	0	0	6	0	0	0	4	173	70	88	341
chameleon, flap-necked	<i>C. dilepis</i>	0	0	14	1	0	0	0	0	11	96	80	27	49	278
chameleon, four-horned	<i>C. quadricornis</i>	0	0	0	0	0	0	0	0	0	0	0	65	171	236
chameleon, graceful	<i>C. gracilis</i>	0	0	0	0	0	6	25	0	0	0	0	24	0	55
chameleon, Jackson's	<i>C. jacksoni</i>	0	0	0	0	0	8	69	7	3	12	42	53	307	501
chameleon, jewel	<i>C. lateralis</i>	0	0	0	0	0	0	0	0	0	35	38	146	81	300
chameleon, Meller's	<i>C. melleri</i>	0	0	0	0	0	0	0	0	0	0	17	37	13	67
chameleon, Oustalet's	<i>C. oustaleti</i>	0	0	0	0	0	0	0	0	2	13	7	80	54	156
chameleon, panther	<i>C. pardalis</i>	0	0	0	0	0	0	0	0	0	9	38	250	178	475
chameleon, Parson's	<i>C. parsoni</i>	0	0	0	0	0	0	0	0	2	6	21	73	15	117
chameleon, Senegal	<i>C. senegalensis</i>	60	0	0	0	174	475	160	60	154	212	84	474	128	1,981
chameleon, short-horned	<i>C. brevicornis</i>	0	0	0	0	0	0	0	0	0	0	12	52	6	70
constrictor, boa	<i>Boa constrictor</i>	64	530	654	432	182	247	72	184	517	1,127	1,339	1,263	1,709	8,320
dragon, water	<i>Physignathus cocincinus</i>	x	x	x	x	x	x	x	x	x	x	457	670	2,442	3,569
gecko, four-spotted day	<i>Phelsuma quadriocellata</i>	0	0	0	0	4	25	2	5	0	61	56	428	126	707
gecko, gold-dust day	<i>P. laticauda</i>	0	0	17	25	0	2	2	20	6	26	120	212	130	560
gecko, leaf-tailed	<i>Uroplatus fimbriatus</i>	x	x	x	x	x	x	x	x	x	x	0	0	0	0
gecko, Madagascar day	<i>Phelsuma madagascariensis</i>	0	0	0	4	8	23	0	0	13	122	77	465	244	956
gecko, side-striped	<i>P. lineata</i>	0	0	0	25	0	26	0	17	6	42	90	284	86	576
gecko, Standing's day	<i>P. standingi</i>	0	0	0	0	0	19	0	0	0	12	11	47	14	103
iguana, green	<i>Iguana iguana</i>	33	3,188	4,837	1,898	1,247	3,165	2,771	13,466	17,782	33,466	57,528	78,353	140,037	357,771
kingsnake	<i>Lampropeltis getulus</i>	x	21	50	140	92	310	401	2,059	721	837	1,238	1,445	1,913	9,227
lizard, black spiny-tailed	<i>Uromastyx acanthinurus</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0
lizard, common tegu	<i>Tupinambis teguixin</i>	252	189	195	190	45	66	28	141	41	288	194	377	299	2,305

Source: Data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data.

Table 6: U.S. Export and Reexport Figures for Selected Live Reptile Species, 1983 to 1995 (cont.)

Common Name	Scientific Name	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
lizard, Egyptian spiny-tailed	<i>Uromastix aegypticus</i>	0	0	0	0	0	5	0	0	1	8	0	301	56
lizard, ocellated spiny-tailed	<i>U. ocellatus</i>	0	0	0	0	0	0	0	0	0	4	5	708	145
lizard, plated	<i>Gerrhonotus</i> species	x	x	x	x	x	x	x	x	x	x	0	0	197
lizard, red tegu	<i>Tupinambis rufescens</i>	0	0	1	0	5	204	0	17	0	0	0	3	230
monitor, blue-tailed	<i>Varanus kallaibecki (dorianus)</i>	x	x	x	x	x	x	x	x	x	x	x	0	0
monitor, crocodile	<i>V. salvadorii</i>	0	0	0	0	0	0	4	0	2	1	6	6	0
monitor, Dumeril's	<i>V. dumerilii</i>	0	0	0	2	4	0	0	0	0	4	16	28	3
monitor, eyed	<i>V. panoptes</i>	0	0	0	0	0	0	0	0	0	1	4	6	0
monitor, green tree	<i>V. prasinus</i>	0	0	0	0	0	4	0	0	0	1	0	8	0
monitor, mangrove	<i>V. indicus (spinulosus)</i>	0	0	0	0	0	1	22	4	0	9	14	24	3
monitor, peachthroat	<i>V. karlschmidti (jobiensis)</i>	0	0	0	0	0	0	0	0	0	0	3	1	0
monitor, roughneck	<i>V. rudicollis</i>	0	0	0	0	0	0	0	0	2	3	9	28	2
monitor, savanna	<i>V. exanthematicus</i>	1	26	87	51	91	125	85	166	178	286	297	2,402	532
monitor, Timor	<i>V. timorensis</i>	0	0	0	0	0	0	0	0	0	4	1	5	0
monitor, water	<i>V. salvator</i>	2	4	27	9	8	15	12	5	1	15	56	223	168
python, African rock	<i>Python sebae</i>	2	0	13	12	10	11	9	16	5	22	29	135	51
python, amethystine	<i>Morelia amethystina</i>	0	0	0	0	10	11	0	4	2	0	13	43	3
python, ball	<i>Python regius</i>	86	143	158	100	195	812	354	1,065	1,059	1,887	1,326	4,622	2,957
python, blood	<i>P. curtis</i>	3	9	6	0	0	6	21	9	7	24	54	310	90
python, Burmese	<i>P. molurus bivittatus</i>	62	47	437	241	78	17	84	214	163	409	591	699	1,223
python, carpet	<i>Morelia spilota</i>	16	16	21	18	53	16	2	25	3	9	32	46	63
python, green tree	<i>M. (Chondropython) viridis</i>	1	2	8	0	32	9	0	21	10	4	9	15	18
python, olive	<i>M. olivacea</i>	0	0	0	0	0	4	3	0	0	0	6	8	2
python, reticulated	<i>Python reticulatus</i>	15	31	46	9	13	87	4	14	24	32	82	173	78
rattlesnake, E. diamondback	<i>Crotalus admamatus</i>	x	x	x	x	x	x	x	x	x	x	x	27	48
rattlesnake, prairie	<i>C. viridis</i>	x	x	x	x	x	x	x	x	x	x	x	x	19
rattlesnake, timber	<i>C. horridus</i>	x	x	x	x	x	x	x	x	x	x	x	36	73
rattlesnake, W. diamondback	<i>C. atrox</i>	x	x	x	x	x	x	x	x	x	x	x	30	30
skink, prehensile-tailed	<i>Corucia zebrata</i>	x	x	x	x	x	x	x	x	x	x	x	517	122
skink, blue-tongued	<i>Tiliqua scincoides/gigas</i>	x	x	x	x	x	x	x	x	x	69	92	0	800
snake, corn	<i>Elaphe guttata</i>	x	93	68	282	330	1,180	2,739	4,892	1,515	2,450	2,785	4,872	6,359
tortoise, Bell's hingeback	<i>Kinixys belliana</i>	9	28	9	4	16	2	6	13	23	84	66	228	32
tortoise, Burmese brown	<i>Manouria emys</i>	0	0	0	0	0	0	1	0	0	0	0	0	3
tortoise, forest hingeback	<i>Kinixys erosa</i>	0	0	0	0	0	14	3	11	0	4	0	0	0

Table 6: U.S. Export and Reexport Figures for Selected Live Reptile Species, 1983 to 1995 (cont.)

Common Name	Scientific Name	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
tortoise, Forsten's/elongated	<i>Indotestudo forsteni/elongata</i>	0	8	0	1	6	0	6	0	0	1	4	5	0
tortoise, Greek (spur-thighed)	<i>Testudo graeca</i>	0	0	0	0	0	18	24	61	0	298	229	0	400
tortoise, Hermann's	<i>T. hermanni</i>	24	5	36	0	1	0	0	0	0	3	42	0	3
tortoise, Home's hingeback	<i>Kinixys homeana</i>	0	0	3	0	0	0	0	10	4	35	44	165	55
tortoise, impressed	<i>Manouria impressa</i>	0	0	0	0	0	0	0	0	0	0	0	0	0
tortoise, leopard	<i>Geochelone pardalis</i>	0	12	7	55	126	111	4	356	273	310	73	545	527
tortoise, pancake	<i>Malacochersus tornieri</i>	0	0	0	84	126	48	6	0	242	145	0	0	16
tortoise, red-footed	<i>Geochelone carbonaria</i>	62	162	59	128	10	23	12	18	268	46	49	99	207
tortoise, Russian	<i>Testudo horsfieldii</i>	60	0	0	0	0	0	0	195	30	122	152	36	59
tortoise, spurred	<i>Geochelone sulcata</i>	0	0	0	1	0	6	6	12	61	120	832	904	2,332
tortoise, yellow-footed	<i>G. denticulata</i>	62	31	1	68	32	33	10	24	46	57	34	67	203
turtle, African side-neck	<i>Pelusios species</i>	4	0	5	0	0	0	0	20	0	0	12	50	24
turtle, alligator snapping	<i>Macrochelys temminckii</i>	x	x	38	243	1	337	300	1,016	3,539	2,338	3,589	4,577	5,792
turtle, Beal's four-eyed	<i>Sacalia bealei</i>	x	x	x	x	x	x	x	x	x	x	x	0	0
turtle, big-headed	<i>Platysternon megacephalum</i>	x	x	x	x	x	x	x	x	x	x	0	1	78
turtle, bog	<i>Clemmys muhlenbergii</i>	x	x	x	x	6	0	0	0	0	0	0	0	0
turtle, Chinese box	<i>Cuora flavomarginata</i>	x	x	x	x	x	x	x	x	x	0	156	47	36
turtle, common snapping	<i>Chelydra serpentina</i>	x	x	x	x	x	x	x	3,122	0	5,909	12,365	19,539	17,495
turtle, Eastern box	<i>Terrapene carolina</i>	x	0	189	293	1,211	2,861	692	3,056	9,871	26,693	25,057	21,757	7,928
turtle, golden-headed box	<i>Cuora trifasciata</i>	x	x	x	x	x	x	x	x	x	x	x	0	1
turtle, jagged shell	<i>Cyclenys (Pyxidea) moubottii</i>	x	x	x	x	x	x	x	x	x	x	0	11	25
turtle, leaf	<i>Cuora dentata</i>	x	x	x	x	x	x	x	x	x	x	x	x	22
turtle, Malayan box	<i>C. amboinensis</i>	x	x	x	x	x	x	x	x	x	x	42	186	392
turtle, map	<i>Graptemys species</i>	x	x	325	784	905	2,001	2,225	6,994	13,272	25,708	41,894	57,848	84,546
turtle, ornate box	<i>Terrapene ornata</i>	x	x	x	x	x	x	x	x	216	6,753	10,308	10,763	61
turtle, Reeve's	<i>Chinemys reevesi</i>	x	x	x	x	x	x	x	x	x	x	0	39	10
turtle, soft-shelled	<i>Apalone species</i>	x	x	65	40	24	440	742	3,256	4,925	5,856	13,341	24,015	38,611
turtle, spotted	<i>Clemmys guttata</i>	x	x	x	x	x	x	x	x	x	x	3	289	247
turtle, Vietnamese box	<i>Cuora galbinifrons</i>	x	x	x	x	x	x	x	x	x	x	10	30	28
turtle, Vietnamese wood	<i>Geomyda spengleri</i>	x	x	x	x	x	x	x	x	x	x	x	6	48
turtle, wood (N. American)	<i>Clemmys insculpta</i>	x	x	x	x	x	x	x	x	x	2x	20	1	23
Totals		5,062	8,892	11,430	9,216	9,172	16,951	15,057	44,772	59,359	120,421	179,612	245,745	324,024
														997,999

x = no species code available, so data not entered into database at species level

A Comparison of the U.S. Trade with the World Trade

The world trade in live reptiles is impossible to measure accurately, primarily because most countries do not keep complete records of all reptile imports and exports. However, there is one means of getting a glimpse of the world trade and comparing it with the U.S. trade in live reptiles. Because many of the species found in trade are listed on CITES, it is possible to look at how many CITES-listed species are found in trade. CITES requires each party to submit annual reports documenting the number of CITES-listed specimens that have been traded to and from that country. Therefore, TRAFFIC looked at the number of CITES-listed live reptiles traded globally, and compared that

figure to the number of CITES-listed reptiles traded to and from the United States. This analysis focused on approximately 100 species, and of those, roughly 70 are listed on CITES (the exact number is difficult to indicate because some taxa were reviewed at the genus level, while other species were added to the CITES appendices during the period reviewed). The approximately 30 remaining non-CITES-listed species could not be reviewed with regard to world trade because such data is not kept on a comprehensive basis.

Table 7 shows world trade figures (based on the total number of animals reported in trade by CITES parties) for the approximately 70 CITES-listed species in the study.

Table 7: World Trade Figures for Approximately 70 CITES-listed Species, 1983 to 1994

Common Name	Scientific Name	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
boa, Amazon tree	<i>Croallus erydri</i>	1,455	1,641	1,475	2,718	922	1,668	987	1,526	3,036	2,167	1,223	1,511
boa, Emerald tree	<i>C. carinus</i>	571	879	813	493	542	998	422	653	1,266	1,536	712	780
boa, Papuan ground	<i>Candoia (Morelia) aspera</i>	0	11	49	10	9	0	589	274	348	202	772	503
boa, rainbow	<i>Epicrates cenchria</i>	278	294	355	491	437	510	231	534	520	664	349	1,206
boa, rosy	<i>Lichanura trivirgata</i>	0	0	3	18	5	6	13	50	111	29	39	98
boa, Solomon ground	<i>Candoia (Morelia) carinata</i>	0	0	1	20	140	344	3,536	1,259	1,113	1,382	1,547	1,412
chameleon, verrucose	<i>Chameleo verrucosus</i>	0	0	0	0	10	20	134	137	52	317	489	641
chameleon, Fisher's	<i>C. fisheri</i>	0	0	1,442	800	462	131	190	100	22	801	4,788	7,657
chameleon, flap-necked	<i>C. dilepis</i>	20	801	2,091	1,980	1,325	815	1,269	2,250	3,546	3,160	2,930	5,875
chameleon, four-horned	<i>C. quadricornis</i>	0	0	0	0	0	0	0	0	60	174	50	1,107
chameleon, graceful	<i>C. gracilis</i>	0	0	375	68	301	791	1,391	4,192	5,344	3,559	4,680	2,492
chameleon, Jackson's	<i>C. jacksoni</i>	0	0	250	20	50	373	1,020	651	1,274	425	3,249	5,698
chameleon, jewel	<i>C. lateralis</i>	0	0	1,466	569	880	1,879	2,248	2,339	2,282	4,449	7,432	10,868
chameleon, Meller's	<i>C. melleri</i>	0	0	20	191	0	0	25	0	215	253	1,957	2,328
chameleon, Oustalet's	<i>C. oustaleti</i>	0	0	0	5	38	1,052	550	818	1,478	899	1,674	2,775
chameleon, panther	<i>C. pardalis</i>	0	0	0	11	40	434	938	3,153	2,527	3,497	4,960	8,594
chameleon, Parson's	<i>C. parsoni</i>	0	0	373	30	235	559	616	1,648	1,662	2,670	3,598	4,632
chameleon, Senegal	<i>C. senegalensis</i>	4,468	14,350	12,594	5,408	10,601	18,704	18,124	17,172	16,692	10,336	14,505	17,146
chameleon, short-horned	<i>C. brevicornis</i>	0	0	0	0	18	188	442	1,657	1,503	1,393	2,237	3,464
constrictor, boa	<i>Boa constrictor</i>	2,294	11,873	30,124	9,797	5,385	6,475	7,854	13,619	14,547	41,205	53,116	27,841
gecko, four-spotted day	<i>Phelsuma quadriocellata</i>	0	1,170	1,435	4,298	2,528	3,728	4,265	8,007	7,707	9,143	10,750	16,387
gecko, gold-dust day	<i>P. laticauda</i>	1,013	1,066	2,291	4,600	2,959	4,044	4,268	6,583	7,726	8,419	10,927	15,421
gecko, Madagascar day	<i>Phelsuma madagascariensis</i>	194	989	1,640	5,186	2,855	5,190	4,407	7,429	8,487	10,529	12,288	17,622
gecko, side-striped day	<i>P. lineata</i>	0	1,255	1,410	4,340	2,827	5,024	4,624	9,015	13,052	7,732	11,751	19,661
gecko, Standing's day	<i>P. standingi</i>	0	0	0	111	258	1,267	540	1,199	1,509	2,684	2,975	2,175
iguana, green	<i>Iguana iguana</i>	55,154	58,152	117,681	35,585	56,634	110,099	166,554	275,257	344,234	546,479	1,043,260	871,212
lizard, black spiny-tailed	<i>Uromastix acanthinurus</i>	10	26	1	54	0	132	212	275	377	217	362	689
lizard, common tegu	<i>Tupinambis teguixin</i>	6,773	6,525	6,412	22,011	17,108	29,170	3,137	4,381	10,791	9,831	6,029	9,151
lizard, Egyptian spiny-tailed	<i>Uromastix aegypticus</i>	0	0	0	121	182	736	399	457	1,668	687	499	4,244
lizard, ocellated spiny-tailed	<i>U. ocellatus</i>	0	0	0	193	158	188	90	172	490	303	105	6,037
lizard, red tegu	<i>Tupinambis rufescens</i>	10	12	102	65	190	7,502	1,911	396	57	8	720	332
monitor, blue-tailed	<i>V. kallahebecki (dorianus)</i>	0	0	0	0	94	498	1,037	323	41	720	1,420	510
monitor, crocodile	<i>V. salvadorii</i>	0	0	0	1	21	38	233	50	97	281	243	115
monitor, Dumeril's	<i>V. dumerili</i>	45	220	25	249	549	351	71	357	591	907	1,425	935

Source: Data derived from TRAFFIC analysis of World Conservation Monitoring Centre CITES Annual Report data in comparative tabulation form.

Table 7: World Trade Figures for Approximately 70 CITES-listed Species, 1983 to 1994 (cont.)

Common Name	Scientific Name	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
monitor, eyed	<i>V. panoptes</i>	0	0	0	0	0	0	150	64	130	168	499	1,181
monitor, green tree	<i>V. prasinus</i>	0	0	0	1	145	477	827	257	29	94	232	195
monitor, mangrove	<i>V. indicus (spinulosus)</i>	0	0	4	35	0	5	565	1,112	781	560	1,026	1,111
monitor, peachthroat	<i>V. karlschmidtii (sobiensis)</i>	0	0	1	0	87	86	139	72	107	269	385	242
monitor, roughneck	<i>V. rudicollis</i>	46	174	18	206	508	381	50	354	699	976	1,503	668
monitor, savanna	<i>V. exanthematicus</i>	695	1,856	7,664	5,846	6,668	11,633	14,579	15,487	16,391	19,255	33,724	55,252
monitor, Timor	<i>V. timorensis</i>	0	2	0	4	14	0	2	12	58	51	119	146
monitor, water	<i>V. salvator</i>	1,720	8,252	4,943	3,545	6,908	3,931	7,424	5,287	1,764	5,020	8,113	4,375
python, African rock	<i>Python sebae</i>	287	270	1,299	632	516	2,643	1,743	2,323	1,880	2,670	3,401	3,486
python, amethystine	<i>Morelia amethystina</i>	3	0	4	30	68	598	765	688	636	947	753	485
python, ball	<i>Python regius</i>	6,745	11,496	24,558	16,237	21,427	39,308	46,266	70,359	82,977	95,983	115,745	166,178
python, blood	<i>P. curtis</i>	146	105	50	516	901	976	800	2,178	2,859	2,717	4,075	3,399
python, Burmese	<i>P. molurus bivittatus</i>	7,845	16,363	27,065	18,280	18,354	10,715	11,149	11,899	2,543	2,684	2,239	9,053
python, carpet	<i>Morelia spilota</i>	62	59	71	55	119	109	41	81	66	57	287	316
python, green tree	<i>M. (Chondropython) viridis</i>	12	22	23	35	45	63	130	160	54	90	274	545
python, olive	<i>M. olivacea</i>	0	0	3	1	1	16	157	188	143	213	354	185
python, reticulated	<i>Python reticulatus</i>	6,054	10,171	19,994	4,709	10,608	7,060	6,302	6,512	4,772	4,235	4,460	4,944
skink, prehensile-tailed	<i>Coraucia zebrata</i>	x	x	x	x	x	x	x	x	x	x	x	5,473
tortoise, Bell's hingeback	<i>Kinixys belliana</i>	788	1,744	1,246	2,113	2,149	3,722	15,183	6,203	6,579	3,771	4,309	6,463
tortoise, Burmese brown	<i>Manouria emys</i>	7	4	34	292	952	898	658	1,004	366	104	967	448
tortoise, forest hingeback	<i>Kinixys erosa</i>	102	124	248	556	643	863	374	943	639	851	321	618
tortoise, Forsten's/elongated	<i>Indotestudo forstenii/elongata</i>	34	188	169	1,351	2,371	2,309	1,614	2,004	437	1,018	4,350	1,542
tortoise, Greek (spur-thighed)	<i>Testudo graeca</i>	44,331	11,015	337	2,003	21,542	4,699	7,461	1,662	2,149	4,420	8,272	7,475
tortoise, Hermann's	<i>T. hermanni</i>	16,814	9,341	14,556	5,181	3,185	38	1,242	77	117	320	840	751
tortoise, Home's hingeback	<i>Kinixys homeana</i>	61	663	508	1,451	796	1,427	2,107	3,305	4,218	3,278	3,240	6,426
tortoise, impressed	<i>Manouria impressa</i>	0	0	2	130	153	312	285	706	9	0	122	130
tortoise, leopard	<i>Geochelone pardalis</i>	201	60	1,812	2,156	6,403	5,042	1,312	3,724	7,004	3,330	2,572	4,353
tortoise, pancake	<i>Malacochersus tornieri</i>	1	0	65	1,019	2,456	1,819	452	603	5,620	1,069	0	60
tortoise, red-footed	<i>Geochelone carbonaria</i>	814	3,853	1,145	2,579	185	573	398	412	2,650	1,619	1,168	1,165
tortoise, Russian	<i>Testudo horsfieldii</i>	72,437	40,335	24,016	3	68	20,666	52,339	12,831	24,185	16,214	25,951	24,703
tortoise, spurred	<i>Geochelone sulcata</i>	2	4	50	38	247	121	461	494	735	1,525	1,521	2,934
tortoise, yellow-footed	<i>G. denticulata</i>	185	261	213	2,082	252	665	431	472	965	962	597	839
turtle, African sideneck	<i>Pelusios spp.</i>	35	76	629	311	1,395	1,099	3,284	3,174	3,512	2,848	1,973	3,652
turtle, bog	<i>Clemmys muelenbergii</i>	0	0	0	0	6	0	0	0	0	0	0	0
turtle, N. American wood	<i>Clemmys insculpta</i>	x	x	x	x	x	x	x	x	x	x	x	23
Total		233,695	217,686	315,140	172,826	218,922	327,156	413,006	522,570	631,490	856,737	1,452,963	1,391,929

Table 8 shows a comparison of United States and world figures for a select number of years for the roughly 70 CITES-listed reptile species that TRAFFIC reviewed. It should be noted that these world trade figures only include trade involving CITES parties, and then only those parties that submitted annual reports. Given this qualification, it can be assumed that only a portion of the live reptiles traded globally are represented in these figures. This is especially true in the early 1980s when far fewer countries were members of CITES. However, most trade reported in the 1990s should be represented here given that most of the world has joined CITES, including nearly all significant traders in live reptiles (noteworthy exceptions include the Solomon Islands and Kazakhstan). (See Annex 3 for a list of the 144 countries who are parties to CITES.)

As these figures indicate, the significance of the U.S. role in the international reptile trade has grown remarkably in recent years, so that the United States is now the importer or exporter of more than 80 percent of

the total world trade in CITES-listed live reptiles.

Price Trends for Live Reptiles in the United States

TRAFFIC reviewed reptile dealer price lists to identify trends in price and availability for reptile species commonly found in trade (see tables 9 and 10, pp. 31-36). These price lists were obtained from wholesale and retail dealers throughout the country via mail and reptile shows. In all, TRAFFIC reviewed and compiled results from 236 price lists issued from 1980 to 1996. These prices were adjusted for inflation using the value of the dollar in 1997 (Statistical Abstract of the United States 1998), so the price listed at the time the animal was advertised was adjusted to show the value of that price in 1997. For example, the average advertised price for a rainbow boa both in 1984 and 1995 was \$250, but the adjusted values of those two prices are \$393 and \$265, respectively.

In order to examine the international trade's impact on wild populations, this review included prices and

Table 8: Comparison of World Trade to U.S. Trade in Certain CITES-listed Live Reptiles

Year	1983	1985	1987	1990	1991	1992	1993
World Total	233,695	315,140	218,922	522,570	631,490	856,737	1,452,963
U.S. Total	65,671	173,203	101,775	375,312	429,633	708,404	1,184,703
U.S. Proportion of Total	28.1%	55.0%	46.5%	71.8%	68.0%	82.7%	81.5%

Source: Data derived from TRAFFIC analysis of World Conservation Monitoring Centre CITES Annual Report data in comparative tabulation form and from U.S. Fish and Wildlife Service data.

availability for wild-caught animals only; data on reptiles advertised as captive-bred were omitted. Also omitted from the review were reptiles with unique color phases or genetic characteristics (albino, melanistic), aberrations, or injuries (shell damage), because these variations dramatically affect prices. Consequently, tables 9 and 10 do not necessarily reflect the prices and availability apparent from visiting a pet shop, but rather prices and availability only for the segment of trade taken from the wild. For example, though since 1996 iguanas routinely have been found in pet shops for under \$20, our average price for iguanas in 1996 is \$49. The reason for this higher price is that nearly all iguanas in trade today are advertised as captive-bred and sold as hatchlings, while we only reviewed prices for animals apparently taken from the wild: typically larger, higher-priced animals. So tables 9 and 10 show a much higher price and lower availability for iguanas in the marketplace than would be evident in most pet shops.

Interestingly, there were no clear trends in price and availability that applied to all species. Though many species showed large increases in value over time, others showed declining value or fluctuation in value.

For example, some turtles and tortoises have shown a significant increase in value over time. North American wood turtles (*Clemmys insculpta*) were available on 9 of 14 price lists (64%) from 1988, and had an average price of \$77. In contrast, they were found on only 3 of 68 price

lists (4%) from 1994, for an average price of \$154. This trend was also true for the golden-headed box turtle (*Cuora trifasciata*), found in northern Vietnam and southern China (Ernst and Barbour 1989; Jenkins 1995), which was available on 7 of 29 price lists (24%) from 1990, and had an average price of \$107. Yet in 1996, the species was available on only 1 of 22 price lists (5%), at a price of \$309. However, other turtles and tortoises have shown significant declines in value, or a series of increases and declines over the period reviewed. For example, all of the hingeback tortoises (*Kinixys* spp.) have declined dramatically in price from well over \$100 in the early 1980s to well under \$50 in the mid 1990s. Yet Greek tortoises (*Testudo graeca*) have fluctuated from \$124 in 1981, to \$44 in 1990, up to \$179 in 1991, and back down to \$93 in 1996.

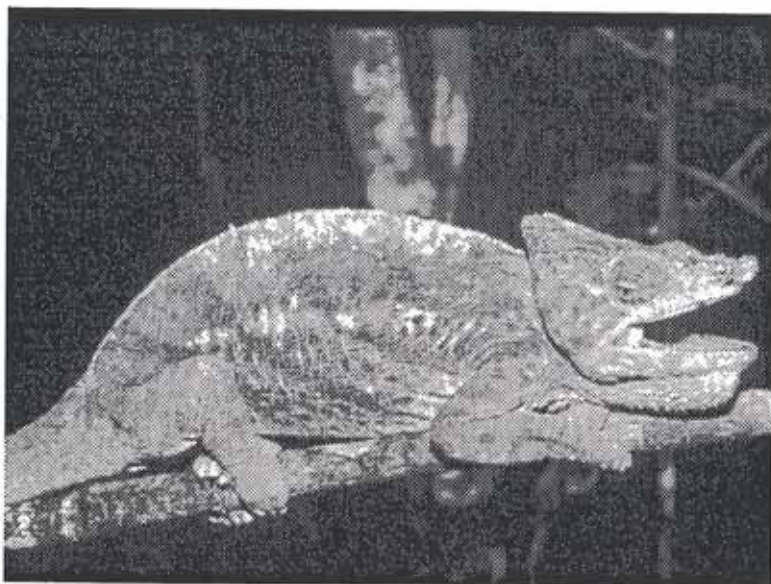
Many of these price trends are directly tied to the availability of these species on the market: when species are less readily available, prices tend to increase. Such a lack of availability can be artificial (such as when a country prohibits the export of a species that is still common in the wild), or real (such as when the species' wild population has declined so severely that it is no longer commercially available). Both are likely causes for the fluctuation in turtle and tortoise species availability. A number of tortoise species come only from countries that establish strict export quotas, so the animals are only available when quotas are set. Many turtle

and tortoise species have also experienced substantial decline in wild populations.

Other factors may also contribute to this lack of availability, such as greater demand, and thus higher value, in another market. For example, the golden-headed box turtle is reportedly being sold for as much as \$1,200 in Vietnam and China, where it is primarily a medicinal and food item (McCord 1998; Jenkins 1995). Of course, declining population may be a significant factor in the current high price for the species in those countries.

However, not all species prices have increased. In fact, many lizard species showed a decline in value during the period reviewed. Nearly all chameleon species reviewed showed significant declines in price. Savanna monitor lizards (*Varanus exanthematicus*), found in central and west Africa, were available on 3 of 5 price lists (60%) from 1984 at an average price of \$99, while in 1995 the species was available on 24 of 43 price lists (56%) at an average price of \$32. Similarly, prehensile-tailed skinks (*Corucia zebrata*) were found

on 13 of 14 price lists (93%) from 1988 at an average price of \$442. In 1995, however, the species could be found on 19 of 43 price lists (44%) at an average price of \$108. Declining price can be attributed to a number of factors, including greater availability in



Most chameleons, such as this panther chameleon (*Chameleo pardalis*), have shown a substantial decline in price in the United States over the last 15 years.

Photo credit: R. Mast.

the market, reduced consumer demand, increased captive breeding leading to decreased demand for wild-caught animals, increased access to unexploited stocks, and increased population in the wild. The decline in price for savanna monitor lizards is likely due to

increased availability in the market because more countries are allowing the export of the species, and because of increased effort to farm this species for the trade. The decline in price for prehensile-tailed skinks is likely due to an increase in market availability as well. This species originates exclusively from the Solomon Islands and was not regularly commercially available until the late 1980s.

Finally, a number of species, including many of the snake species reviewed, have shown either little change in price over the last 15 years, or a great deal of fluctuation in price

with no identifiable trend. For example, Burmese pythons (*Python molurus bivittatus*) were available fairly steadily from 1980 to 1996, and were found on 43% of the total of 236 price lists reviewed. However, the average price for Burmese pythons in 1984 was \$154, in 1990 was \$266, and in 1996 was \$101—a dramatic fluctuation. Boa constrictors (*Boa constrictor*) showed similar trends in price and availability over the review period. This species was found on 169 of the 236 price lists (69%) over the review period. The average price for boa constrictors in 1984 was \$130, in 1991 was \$276, and in 1996 was \$205.

There are two probable reasons for the unpredictable nature of the market for Burmese pythons. First, a large portion of the market is supplied by captive-bred animals, and in some years more Burmese pythons are exported from than imported to the United States. (Though this is not the

case for boa constrictors, a substantial amount of that market also consists of captive-bred animals.) Further, Burmese pythons imported to the United States generally originate in Vietnam and Thailand. However, U.S. policy prohibited all commercial shipments from Vietnam until 1994, and import of CITES-listed species from Thailand was prohibited until 1996. Since shipments from Vietnam resumed, there has been an influx of wild-caught Burmese pythons to the United States, and prices have dropped accordingly.

These examples demonstrate that there are no across-the-board price trends for all reptile species found in the trade. Though it is clear that price and availability are generally closely related, the reasons for that availability are numerous, including restrictions on trade, increased legal protection of species, population declines, and captive breeding.

Table 9: Average U.S. Prices Per Animal for Selected Wild-caught Live Reptile Species

Common Name	Scientific Name	1980	1981	1984	1986	1988	1990	1991	1992	1993	1994	1995	1996
boa, Amazon tree	<i>Corallus enydris</i>	\$43	\$143	\$105	\$90	\$39	\$84	\$95	\$75	\$66	\$65	\$66	\$135
boa, emerald tree	<i>C. caninus</i>			\$744	\$508	\$519	\$449	\$442	\$465	\$520	\$599	\$488	\$545
boa, Papuan ground	<i>Candoia (Morelia) aspera</i>						\$192	\$66		\$144	\$123	\$111	\$125
boa, rainbow	<i>Epicrates cenchria</i>	\$76	\$238	\$393	\$410	\$177	\$243	\$420	\$254	\$309	\$297	\$265	\$342
boa, rosy	<i>Lichanura trivirgata</i>		\$285	\$256	\$181	\$173	\$243	\$234	\$144	\$189	\$136	\$152	\$129
boa, Solomon ground	<i>Candoia (Morelia) carinata</i>				\$160	\$193	\$105	\$146	\$100	\$81	\$76	\$57	\$79
chameleon, verrucosus	<i>Chameleo verrucosus</i>									\$90	\$76	\$77	\$41
chameleon, Fisher's	<i>C. fiberi</i>				\$174					\$45	\$43	\$58	\$36
chameleon, flap-necked	<i>C. dilepis</i>		\$67		\$65	\$62	\$58	\$53	\$69		\$38	\$36	\$26
chameleon, four-horned	<i>C. quadricornis</i>										\$122	\$88	\$84
chameleon, graceful	<i>C. gracilis</i>		\$67	\$102		\$18	\$19	\$42			\$29	\$17	\$31
chameleon, Jackson's	<i>C. jacksoni</i>	\$54	\$67	\$236	\$157	\$113	\$108	\$119	\$144	\$139	\$90	\$69	\$54
chameleon, jewel	<i>C. lateralis</i>				\$123	\$173		\$60		\$56	\$32	\$80	
chameleon, Meller's	<i>C. melleri</i>					\$552		\$504			\$120	\$107	\$61
chameleon, Oustalet's	<i>C. oustaleti</i>					\$1,208	\$252	\$210		\$95	\$82	\$49	\$123
chameleon, panther	<i>C. pardalis</i>					\$414	\$261	\$180	\$230	\$155	\$81	\$72	\$113
chameleon, Parson's	<i>C. parsoni</i>					\$1,573	\$524	\$384	\$187	\$140	\$102	\$80	
chameleon, Senegal	<i>C. senegalensis</i>			\$63	\$41	\$41	\$28	\$26		\$22	\$24	\$17	\$21
chameleon, short-horned	<i>C. brevicornis</i>							\$164		\$56	\$42	\$29	
constrictor, boa	<i>Boa constrictor</i>	\$130	\$285	\$130	\$151	\$105	\$261	\$276	\$207	\$287	\$219	\$162	\$205
dragon, water	<i>Physignathus cocincinus</i>		\$162	\$31	\$23	\$39	\$43	\$46	\$58	\$71	\$32	\$33	\$28
gecko, four-spotted day	<i>Phelsuma quadricellata</i>					\$35			\$21	\$24	\$22	\$21	\$24
gecko, gold-dust day	<i>P. laticauda</i>		\$143		\$51	\$36	\$37	\$37	\$35	\$25	\$21	\$23	\$23
gecko, leaf-tailed	<i>Uroplatus fimbriatus</i>					\$460	\$164		\$345	\$196	\$122	\$105	\$121
gecko, Madagascar day	<i>Phelsuma madagascarensis</i>			\$203	\$77	\$76	\$74	\$64	\$49	\$54	\$37	\$31	\$38
gecko, side-striped	<i>P. lineata</i>				\$51	\$36	\$42	\$35	\$98	\$21	\$23	\$16	\$22
gecko, Standing's day	<i>P. standingi</i>					\$110	\$105	\$109	\$76	\$87	\$49	\$59	\$52
iguana, green	<i>Iguana iguana</i>	\$76	\$133	\$46	\$57	\$46	\$58	\$46	\$28	\$83	\$16	\$19	\$49
kingsnake	<i>Lampropeltis getulus</i>		\$133	\$69	\$100	\$102	\$84	\$82	\$61	\$81	\$59	\$46	\$67
kingsnake, gray-banded	<i>L. alterna</i>						\$223	\$216	\$186	\$168	\$140	\$166	\$235
lizard, black spiny-tailed	<i>Uromastyx acanthinurus</i>						\$473				\$354	\$334	\$294
lizard, common tegu	<i>Tupinambis teguixin</i>	\$54	\$143	\$61	\$61	\$92	\$102	\$102	\$71	\$69	\$58	\$144	\$35
lizard, Egyptian spiny-tailed	<i>Uromastyx aegypticus</i>			\$580	\$247	\$141	\$262	\$176	\$176	\$157	\$103	\$57	
lizard, ocellated spiny-tailed	<i>U. ocellatus</i>			\$508				\$98			\$171	\$32	\$201

Source: Data derived from 236 reptile dealer price lists from throughout the United States distributed via mail and reptile shows. Prices have been adjusted for inflation based on 1997 dollars.

Table 9: Average U.S. Prices Per Animal for Selected Wild-caught Live Reptile Species (cont.)

Common Name	Scientific Name	1980	1981	1984	1986	1988	1990	1991	1992	1993	1994	1995	1996
lizard, plated	<i>Gerrhosaurus</i> species						\$33	\$55	\$53	\$30	\$26	\$17	\$19
lizard, red tegu	<i>Tupinambis rufescens</i>					\$94	\$139	\$280	\$259	\$252		\$458	\$670
monitor, black tree	<i>Varanus beccarii</i>					\$207	\$189	\$199		\$308	\$283	\$334	
monitor, blue-tailed	<i>V. kallabeki (dorianus)</i>					\$3,220	\$2,205	\$1,603	\$1,150	\$765	\$905	\$847	\$777
monitor, crocodile	<i>V. salvadorii</i>						\$398	\$240	\$201	\$215	\$192	\$143	\$201
monitor, Dumeril's	<i>V. dumerili</i>		\$285	\$295	\$218				\$863	\$448	\$268	\$322	\$288
monitor, argus	<i>V. panoptes</i>						\$504	\$422	\$518	\$560	\$472	\$530	\$670
monitor, green tree	<i>V. prasinus</i>					\$656	\$504	\$422	\$518	\$560	\$472	\$530	\$670
monitor, mangrove	<i>V. indicus (spinulosus)</i>				\$870	\$117	\$156	\$150	\$141	\$146	\$94	\$117	\$150
monitor, peachthroat	<i>V. karlsmidtii (jobiensis)</i>					\$628	\$441	\$510		\$140	\$295	\$245	\$528
monitor, roughneck	<i>V. rudicollis</i>		\$285	\$366	\$225	\$345	\$567	\$538	\$359	\$283	\$229	\$182	\$277
monitor, savanna	<i>V. exanthematicus</i>	\$108	\$190	\$99	\$57	\$43	\$50	\$58	\$62	\$84	\$42	\$32	\$37
monitor, Timor	<i>V. timorensis</i>		\$285				\$189	\$390	\$276	\$364	\$194	\$257	\$232
monitor, water	<i>V. salvator</i>	\$108	\$162	\$91	\$87	\$145	\$92	\$313	\$397	\$179	\$131	\$80	\$123
python, African rock	<i>Python sebae</i>		\$428	\$165	\$116	\$117	\$161	\$184	\$230	\$152	\$89	\$92	\$83
python, amethystine	<i>Morelia amethystina</i>				\$653	\$377	\$299	\$251	\$248	\$335	\$261	\$131	\$127
python, ball	<i>Python regius</i>	\$108	\$171	\$83	\$51	\$59	\$69	\$84	\$55	\$66	\$43	\$38	\$40
python, blood	<i>P. curtis</i>	\$324	\$380	\$295		\$333	\$577	\$426	\$438	\$511	\$227	\$193	\$237
python, Burmese	<i>P. molurus bivittatus</i>	\$108	\$285	\$154	\$65	\$166	\$266	\$248	\$232	\$264	\$105	\$170	\$101
python, carpet	<i>Morelia spilota</i>				\$580	\$197	\$331	\$520	\$359	\$513	\$445	\$470	\$389
python, green tree	<i>M. (Chondropython) viridis</i>		\$950			\$690	\$819	\$900			\$1,072	\$900	\$906
python, olive	<i>M. olivacea</i>						\$1,329	\$876	\$963	\$392	\$464	\$398	\$361
python, reticulated	<i>Python reticulatus</i>	\$97	\$285	\$111	\$202	\$119	\$159	\$158	\$130	\$217	\$159	\$69	\$177
rattlesnake, E. diamondback	<i>Crotalus adamanteus</i>			\$71			\$67	\$59	\$48	\$59	\$43	\$51	\$47
rattlesnake, prairie	<i>C. viridis</i>			\$63			\$39	\$52	\$46	\$41	\$39	\$31	\$34
rattlesnake, timber	<i>C. horridus</i>			\$55			\$60	\$49	\$52	\$48	\$42	\$48	\$46
rattlesnake, W. diamondback	<i>C. atrox</i>			\$471			\$21	\$32	\$155	\$37	\$21	\$24	\$23
skink, blue-tongued	<i>Tiliqua scincoides/gigas</i>		\$285	\$550	\$251	\$119	\$155	\$254	\$236	\$324	\$191	\$184	\$176
skink, prehensile-tailed	<i>Corucia zebrata</i>			\$1,178		\$442	\$180	\$173	\$159	\$183	\$106	\$108	\$133
snake, corn	<i>Elaphe guttata</i>		\$76	\$71	\$167	\$55	\$53	\$62	\$41	\$47	\$33	\$59	\$40
tortoise, Bell's hingeback	<i>Kinixys belliana</i>		\$124	\$61			\$48	\$49	\$29	\$34	\$30	\$34	\$42
tortoise, Burmese brown	<i>Manouria emys</i>		\$380	\$393	\$1,450	\$577	\$524	\$42		\$364	\$437	\$411	\$309
tortoise, forest hingeback	<i>Kinixys erosa</i>		\$190	\$135	\$65	\$46	\$40	\$24	\$72	\$50	\$33	\$21	
tortoise, Forsten's/ elongated	<i>Indotestudo forsteni/elongata</i>		\$171	\$124	\$319	\$79	\$122	\$130	\$130	\$128		\$55	\$106

Table 9: Average U.S. Prices Per Animal for Selected Wild-caught Live Reptile Species (cont.)

Common Name	Scientific Name	1980	1981	1984	1986	1988	1990	1991	1992	1993	1994	1995	1996
tortoise, Greek	<i>Testudo graeca</i>	\$86	\$124	\$102	\$44		\$44	\$179	\$44		\$68	\$75	\$93
tortoise, Hermann's	<i>T. hermanni</i>		\$124	\$60	\$51		\$54				\$127	\$146	\$103
tortoise, Home's hingeback	<i>Kinixys homeana</i>		\$190	\$118	\$65		\$47	\$42	\$26	\$50	\$28	\$27	
tortoise, impressed	<i>Manouria impressa</i>					\$800					\$297	\$278	
tortoise, leopard	<i>Geochelone pardalis</i>		\$190	\$275	\$117	\$95	\$214	\$150	\$173	\$149	\$203	\$217	\$192
tortoise, pancake	<i>Malacochersus tornieri</i>		\$143		\$168	\$66	\$315	\$109	\$105	\$196	\$246	\$250	
tortoise, red-footed	<i>Geochelone carbonaria</i>		\$133	\$74	\$117	\$94	\$242	\$180	\$206	\$176	\$164	\$200	\$210
tortoise, Russian	<i>Testudo horsfieldii</i>		\$124				\$50	\$80	\$63	\$112	\$39	\$49	\$48
tortoise, spurred	<i>Geochelone sulcata</i>					\$856	\$973	\$940	\$321	\$519	\$600	\$704	\$488
tortoise, yellow-footed	<i>G. denticulata</i>			\$196	\$157	\$97	\$164	\$199	\$158	\$168	\$156	\$174	\$236
turtle, African side-neck	<i>Pelusios species</i>			\$36	\$35		\$18	\$28	\$9	\$27	\$17	\$11	\$19
turtle, alligator snapping	<i>Macrolemys temminckii</i>		\$114	\$102	\$73		\$73	\$66	\$29		\$54	\$254	
turtle, Beal's four-eyed	<i>Sacalia bealei</i>		\$124	\$57	\$51	\$26	\$24	\$26	\$23	\$17	\$27	\$27	
turtle, big-headed	<i>Platysternon megacephalum</i>		\$143	\$63	\$32	\$59	\$64	\$30	\$31	\$17	\$27	\$23	\$35
turtle, bog	<i>Clemmys mublenbergii</i>						\$315	\$450					
turtle, common snapping	<i>Cheyladra serpentina</i>		\$95	\$49	\$32	\$19	\$24	\$26	\$35	\$34	\$29	\$25	\$59
turtle, Chinese box	<i>Cuora flavomarginata</i>		\$38	\$24	\$9	\$8	\$11	\$14	\$8	\$10	\$11	\$19	\$11
turtle, Eastern box	<i>Terrapene carolina</i>		\$38	\$30	\$10	\$14	\$18	\$20	\$13		\$14	\$12	\$36
turtle, Florida soft-shelled	<i>Apalone ferox</i>		\$57	\$30	\$17	\$17		\$18	\$16	\$13	\$9	\$7	\$10
turtle, golden thread	<i>Ocadia sinensis</i>			\$133			\$44	\$37	\$29	\$34	\$22	\$53	
turtle, golden-headed box	<i>Cuora trifasciata</i>		\$143	\$63	\$65		\$107	\$118		\$196			\$309
turtle, jagged shell	<i>Cyclenys (Pyxidea) moubotti</i>		\$143	\$86	\$58	\$33	\$34	\$32	\$29	\$59	\$30	\$29	
turtle, leaf	<i>Cuora dentata</i>		\$57	\$19	\$19	\$21	\$20		\$23	\$25	\$22	\$15	
turtle, Malayan box	<i>C. amboinensis</i>		\$57	\$27	\$35	\$14	\$13	\$18	\$16	\$22	\$16	\$13	\$19
turtle, map	<i>Graptemys species</i>		\$38	\$46	\$11	\$11	\$16	\$22	\$16	\$40	\$8	\$15	\$20
turtle, ornate box	<i>Terrapene ornata</i>		\$38	\$19	\$12	\$19	\$18	\$20	\$14	\$20	\$13	\$17	\$16
turtle, Reeve's	<i>Chinemys reevesi</i>		\$57	\$8	\$7	\$7	\$9	\$12	\$23	\$16	\$15	\$11	\$12
turtle, smooth soft-shelled	<i>Apalone mutica</i>		\$57	\$47				\$7	\$7	\$17	\$11		
turtle, spiny soft-shelled	<i>Aspiniifera</i>		\$67	\$36	\$12	\$12	\$11	\$16		\$11	\$11	\$16	\$8
turtle, spotted	<i>Clemmys guttata</i>		\$48	\$47	\$58	\$52	\$58	\$64	\$60	\$63	\$65	\$66	\$90
turtle, wood (N. American)	<i>Clemmys insculpta</i>		\$86	\$102	\$116	\$77	\$62	\$91			\$154	\$133	\$131
turtle, Vietnamese box	<i>Cuora galbinifrons</i>			\$245	\$109	\$98	\$74	\$53	\$40		\$38	\$32	\$62
turtle, Vietnamese wood	<i>Geomyda spengleri</i>					\$52	\$63	\$40	\$35		\$35	\$33	\$15
Number of Lists Reviewed		1	1	5	7	14	29	21	12	13	68	43	22

Table 10: Availability in the United States of Selected Wild-caught Live Reptile Species

Frequency with which species occur on price lists	1980	1981	1984	1986	1988	1990	1991	1992	1993	1994	1995	1996	Total	%
Common Name	Scientific Name													
boa, Amazon tree	<i>Corallus enydris</i>	1	1	1	2	5	12	12	5	7	8	7	3	64
boa, emerald tree	<i>C. caninus</i>			5	3	6	8	9	6	5	9	12	6	69
boa, Papuan ground	<i>Candoia (Morelia) aspera</i>						9	1		6	7	9	8	40
boa, rainbow	<i>Epicrates cenchria</i>	1	1	2	3	6	8	7	4	8	20	11	10	81
boa, rosy	<i>Lichanura trivirgata</i>		1	2	2	7	10	3	3	5	15	10	5	63
boa, Solomon ground	<i>Candoia (Morelia) carinata</i>				1	12	11	12	5	7	20	10	7	85
chameleon, verrucosus	<i>Chameleo verrucosus</i>								2	2	2	2	1	7
chameleon, Fisher's	<i>C. fisheri</i>				1					8	4	3		16
chameleon, flap-necked	<i>C. dilepis</i>				2	1	6	7	1	6	6	2	2	32
chameleon, four-horned	<i>C. quadricornis</i>									3	5	7		15
chameleon, graceful	<i>C. gracilis</i>		1	1		9	5	1		2	4	1		24
chameleon, Jackson's	<i>C. jacksoni</i>	1	1	1	3	4	12	4	2	4	17	6	9	64
chameleon, jewel	<i>C. lateralis</i>				1	1	1	1	1	7	1			12
chameleon, Meller's	<i>C. melleri</i>					1				8	6	2	2	22
chameleon, Oustalet's	<i>C. oustaleti</i>					2	11	1	1	9	8	7		39
chameleon, panther	<i>C. pardalis</i>					1	11	1	1	2	15	5	10	46
chameleon, Parson's	<i>C. parsoni</i>					5	9	6	2	3	11	5		41
chameleon, Senegal	<i>C. senegalensis</i>				2	4	8	5	5	1	7	4	3	39
chameleon, short-horned	<i>C. brevicornis</i>									1	9	3		15
constrictor, boa	<i>Boa constrictor</i>	1	1	4	4	10	24	15	6	11	45	28	14	163
dragon, water	<i>Physignathus cocincinus</i>						7	5	1	2	14	16	2	59
gecko, four-spotted day	<i>Phelsuma quadricellata</i>						4		1	4	17	7	9	42
gecko, gold-dust day	<i>P. laticauda</i>				1	12	13	6	1	6	21	7	5	73
gecko, leaf-tailed	<i>Uroplatus fimbriatus</i>					3	5	1	2	14	8	6		39
gecko, Madagascar day	<i>Phelsuma madagascarensis</i>			3	2	12	29	9	5	7	27	14	12	120
gecko, side-striped	<i>P. lineata</i>				1	5	7	4	1	5	21	9	7	60
gecko, Standing's day	<i>P. standingi</i>					9	6	5	4	7	24	4	2	61
iguana, green	<i>Iguana iguana</i>	1	1	3	2	10	19	14	6	7	41	31	8	143
kingsnake	<i>Lampropeltis getulus</i>			5	4	10	23	17	6	9	27	20	15	137
kingsnake, gray-banded	<i>L. alterna</i>					6	6	3	2	6	8	5	5	36
lizard, black spiny-tailed	<i>Uromastix acanthinurus</i>					1				3	4	5		13
lizard, common tegu	<i>Tupinambis teguixin</i>	1	1	4	3	7	5	12	6	6	20	12	6	83
lizard, Egyptian spiny-tailed	<i>Uromastix aegypticus</i>				1	6	5	6	3	3	21	13		58
lizard, ocellated spiny-tailed	<i>U. ocellatus</i>				1			1		6	1	2		11
lizard, plated	<i>Gerrhonotus</i> species					5	3	3	5	23	11	6		56

Source: Data derived from 236 reptile dealer price lists from throughout the United States distributed via mail and reptile shows.

Table 10: Availability in the United States of Selected Wild-caught Live Reptile Species (cont.)

Common Name	Scientific Name	1980	1981	1984	1986	1988	1990	1991	1992	1993	1994	1995	1996	Total	%
lizard, red tegu	<i>Tupinambis rufescens</i>					6	9	3	1	1	0	3	2	25	11%
monitor, black tree	<i>Varanus beccarii</i>					3	1	3		1	15	3		26	11%
monitor, blue-tailed	<i>V. kallaheeki (dorianus)</i>							2		1	10	6	8	27	11%
monitor, crocodile	<i>V. salvadorii</i>					3	4	7	1	3	15	9	8	50	21%
monitor, Dumeril's	<i>V. dumerili</i>	1	2	1			3	2	2	6	28	16	7	68	29%
monitor, eyed	<i>V. panoptes</i>							1	1	4	15	6	6	33	14%
monitor, green tree	<i>V. prasinus</i>					2	6	5	1	3	13	1	4	35	15%
monitor, mangrove	<i>V. indicus (spinulosus)</i>				1	1	12	6	3	5	23	8	6	65	28%
monitor, peachthroat	<i>V. karlsmidtii (jobiensis)</i>					2	4	2		1	12	8	5	34	14%
monitor, roughneck	<i>V. rudicollis</i>	1	3	2	2	2	1	5	2	7	18	8	6	55	23%
monitor, savanna	<i>V. exanthematicus</i>	1	1	3	6	10	16	14	6	7	38	24	11	137	58%
monitor, Timor	<i>V. timorensis</i>	1					1	4	5	6	11	5	4	37	16%
monitor, water	<i>V. salvator</i>	1	1	3	2	13	7	4	5	4	28	12	11	91	39%
python, African rock	<i>Python sebae</i>	1	1	3	3	8	11	9	5	4	26	12	4	86	36%
python, amethystine	<i>Morelia amethystina</i>				1	11	10	8	3	4	22	11	5	75	32%
python, ball	<i>Python regius</i>	1	1	4	6	11	18	16	6	8	44	28	11	154	65%
python, blood	<i>P. curtis</i>	1	1	2	3	7	7	10	4	10	37	15	11	101	43%
python, Burmese	<i>P. molurus bivittatus</i>	1	1	4	2	8	9	10	5	6	30	15	10	101	43%
python, carpet	<i>Morelia spilota</i>				1	4	8	3	2	3	19	18	10	68	29%
python, green tree	<i>M. (Chondropython) viridis</i>	1				1	4	3			16	14	5	44	19%
python, olive	<i>M. olivacea</i>						9	12	2	2	13	10	7	55	23%
python, reticulated	<i>Python reticulatus</i>	1	1	4	3	6	11	12	4	10	22	13	5	92	39%
rattlesnake, E. diamondback	<i>Crotalus adamanteus</i>			1			4	7	3	5	8	8	5	41	17%
rattlesnake, prairie	<i>C. viridis</i>			1			4	6	1	6	6	4	3	31	13%
rattlesnake, timber	<i>C. horridus</i>			1			4	7	1	4	8	2	1	28	12%
rattlesnake, W. diamondback	<i>C. atrox</i>			1			2	6	2	5	8	4	3	31	13%
skink, blue-tongued	<i>Tiliqua scincoides/gigas</i>			2		13	15	9	4	4	27	19	5	98	42%
skink, prehensile-tailed	<i>Corucia zeybrata</i>	1	2	3	5	9	9	6	4	2	29	22	15	98	42%
snake, corn	<i>Elaphe guttata</i>	1	2	2	3	12	12	11	6	6	29	7	7	86	36%
tortoise, Bell's hingeback	<i>Kinixys belliana</i>	1	4				5	11	2	4	18	7	5	57	24%
tortoise, Burmese brown	<i>Manouria emys</i>	1	1	1	1	4	3	2		1	9	2	2	26	11%
tortoise, forest hingeback	<i>Kinixys erosa</i>	1	3	6	8	2	3	2	2	2	9	9		45	19%
tortoise, Forsten's/ elongated	<i>Indotestudo forsteni/elongata</i>	1	4	1	6	3	3	3	2	8		4	3	35	15%
tortoise, Greek	<i>Testudo graeca</i>	1	1	1	2		2	5	4		20	17	1	54	23%
tortoise, Hermann's	<i>T. bernanni</i>	1	3	2			1				7	2	1	17	7%
tortoise, Home's hingeback	<i>Kinixys homeana</i>	1	2	2			5	4	3	3	2	1		23	10%

Table 10: Availability in the United States of Selected Wild-caught Live Reptile Species (cont.)

Common Name	Scientific Name	1980	1981	1984	1986	1988	1990	1991	1992	1993	1994	1995	1996	Total	%
tortoise, impressed	<i>Manouria impressa</i>					5					11	2		18	8%
tortoise, leopard	<i>Geochelone pardalis</i>		1	4	5	13	10	15	4	3	1	15	11	82	35%
tortoise, pancake	<i>Malacochersus tornieri</i>		1		3	11	1	12	3	1	19	4		55	23%
tortoise, red-footed	<i>Geochelone carbonaria</i>		1	5	3	7	6	15	7	4	13	9	7	77	33%
tortoise, Russian	<i>Testudo horsfieldii</i>		1	1			5	6	2	1	29	6	4	55	23%
tortoise, spurred	<i>Geochelone sulcata</i>					10	8	6	6	3	15	12	13	73	31%
tortoise, yellow-footed	<i>G. denticulata</i>			3	3	7	8	11	6	2	14	16	11	81	34%
turtle, African side-neck	<i>Pelusios species</i>			3	3		9	7	3	4	5	11	4	49	21%
turtle, alligator snapping	<i>Macrolemmys temminckii</i>		1	2	1		3	1	1		1	3		13	6%
turtle, Beal's four-eyed	<i>Sacalia bealei</i>		1	3	3	9	8	4	1	1	5	2		37	16%
turtle, big-headed	<i>Platysternon megacephalum</i>		1	3	3	7	7	4	2	1	1	6	2	37	16%
turtle, bog	<i>Clemmys muhlenbergii</i>						5	1						6	3%
turtle, common snapping	<i>Cheyledra serpentina</i>		1	2	2	9	9	7	1	2	16	5	2	56	24%
turtle, Chinese box	<i>Cuora flavomarginata</i>		1	1	2	2	5	7	5	4	12	5	3	47	20%
turtle, Eastern box	<i>Terrapene carolina</i>		1	3	1	5	5	1	1		5	4	1	27	11%
turtle, Florida soft-shelled	<i>Apalone ferox</i>		1	2		5		6	6	5	15	3	5	48	20%
turtle, golden thread	<i>Ocadia sinensis</i>			1	1		3	6	2	4	1	1	0	19	8%
turtle, golden-headed box	<i>Cuora trifasciata</i>		1	1	1		7	8		3			1	22	9%
turtle, jagged shell	<i>Cyclenys (Pyxidea) moubotti</i>		1	2	1	6	9	5	2	2	12	5		45	19%
turtle, leaf	<i>Cuora dentata</i>		1	1	2	5	8		1	4	6	5		33	14%
turtle, Malayan box	<i>C. amboinensis</i>		1	2	6	12	10		4	3	14	5	2	59	25%
turtle, map	<i>Graptemys species</i>		1	3	1	6	6	8	2	4	14	7	3	55	23%
turtle, ornate box	<i>Terrapene ornata</i>		1	3	1	8	8	5	4	4	12	7	5	54	23%
turtle, Reeve's	<i>Chinemys reevesi</i>		1	1	9	9	8	6	1	4	9	1	1	41	17%
turtle, smooth soft-shelled	<i>Apalone mutica</i>		1	1	3			1	1	1	1			9	4%
turtle, spiny soft-shelled	<i>A. spinifera</i>		1	2	1	3	2	3	1	1	2	4	1	20	8%
turtle, spotted	<i>Clemmys guttata</i>		1	1	1	6	7	5	4	6	6	6	5	48	20%
turtle, wood (N. American)	<i>Clemmys insculpta</i>		1	1	2	9	4	5			3	1	5	31	13%
turtle, Vietnamese box	<i>Cuora galbinifrons</i>			2	1	6	9	6	1		7	6	1	39	17%
turtle, Vietnamese wood	<i>Geomyda spengleri</i>					2	5	6	2		9	3	1	28	12%
Number of Lists Reviewed		1	1	5	7	14	29	21	12	13	68	43	22	236	100%

Illegal International Trade in Live Reptiles

Along with the dramatic increase in the legal live reptile trade, there has been an apparent increase in the illegal trade in live reptiles both to and from the United States. As demand drives prices upward, the temptation to smuggle reptiles becomes overwhelming for some. The chance for large monetary gain, the relatively low risk of being caught, and the relatively small penalties, are among the factors that drive the illegal trade in live reptiles.

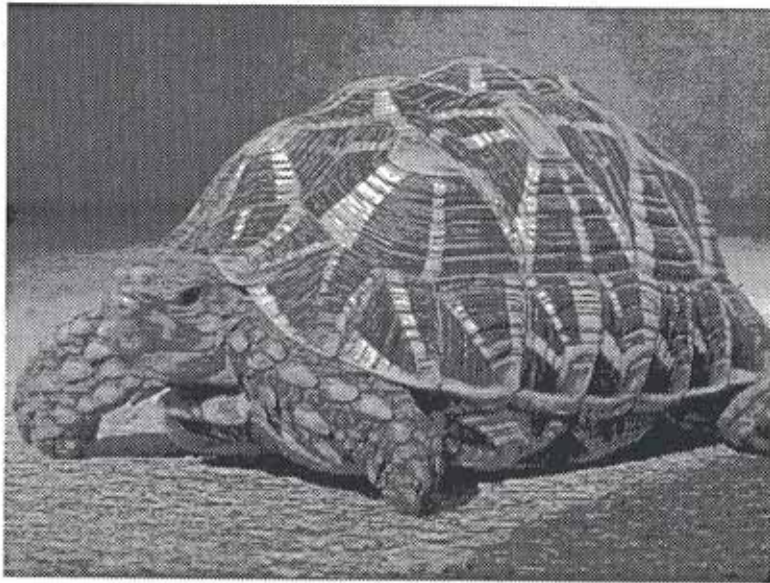
Illegal trade has flourished particularly in Australia and Madagascar. Because Australia prohibits the export for commercial purposes of all of its reptiles, and because it contains so many species found nowhere else on Earth, it has long been a hotbed of illegal trade. Australia's indigenous monitor lizards and pythons sell for thousands of dollars each on the international market. For example, a King's pygmy monitor lizard (*Varanus kingorum*) sells for \$2,000 in the United States, and a

captive-hatched black-headed python (*Aspidites melanocephalus*) sells for \$5,000. Despite legal prohibitions in Australia, a substantial number of these and other Australian species are available on the U.S. market.

Like Australia, Madagascar has seen substantial illegal trade in its live

reptiles, and for many of the same reasons.

Smugglers go to great lengths to trade in protected endemic Madagascan species. For example, a recent investigation uncovered an elaborate scheme to smuggle reptiles from Madagascar to Germany, and then to the United States



Star tortoises (*Geochelone elegans*), found in India and Sri Lanka, are frequently traded illegally because they are highly sought by collectors and are protected throughout their range. Photo credit: R. Mittermeier.

and Canada. In August 1996, a federal grand jury in Orlando, Florida, issued an 18-count indictment against Frank Lehmeyer, Wolfgang Michael Kloe, Olaf Strohmann, and Roland Werner, all German nationals; Rick Truant of Canada; and, Simon Harris of South Africa, for their roles in the multiyear international reptile smuggling operation (*TRAFFIC USA* August 1996). Apparently, hundreds of rare snakes and tortoises were smuggled, including 51 radiated tortoises

(*Geochelone radiata*) worth up to \$5,000 each, 94 Madagascan tree boas (*Sanzinia madagascarensis*) valued at \$700 to \$1200 each, and 25 spider tortoises (*Pyxis arachnoides*) valued at up to \$2,000 each. Though prosecutions are ongoing, a federal grand jury has already sentenced Kloe to 46 months in jail and a fine of \$10,000, and Harris to three years probation (TRAFFIC USA December 1996).

TRAFFIC conducted a review of press releases, reptile hobbyist magazines, TRAFFIC USA newsletters, and

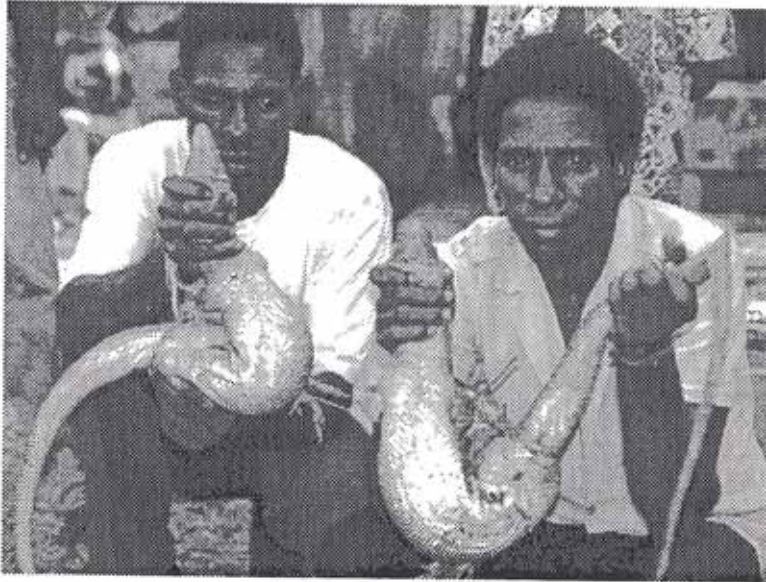
the TRAFFIC Bulletin to compile information on reptile smuggling cases that were prosecuted in the United States during the past 20 years (see table 11). The review showed a significant increase in 1996 and 1997 in the number of cases prosecuted. Table 11 shows the number of cases made each year, the number of subjects involved, and the countries from which the animals were smuggled (true numbers may be higher, as many cases may not be reported).

Table 11: Number of International Live Reptile Smuggling Cases per Year

Year	No. of Cases Prosecuted	No. of Individuals and/or Businesses Involved	Countries from which the Animals were Smuggled
1979	2	1	Fiji, Madagascar
1987	5	10	Colombia, Papua New Guinea, Australia, Mexico
1989	4	4	United States, Papua New Guinea, Australia, Peru, Mexico
1991	3	6	Australia, Canada, Nigeria
1992	3	4	Fiji, United States
1993	2	3	Argentina, United States
1994	2	2	Papua New Guinea, Venezuela
1995	1	2	Mexico
1996	7	14	Indonesia, Australia, Spain, Germany, Japan, Madagascar
1997	6	15	Argentina, Peru, Spain, France, South Africa, United States, Japan, Madagascar, Indonesia, Germany

Source: Data compiled from TRAFFIC analysis of press releases, reptile hobbyist magazines, TRAFFIC USA newsletters and the TRAFFIC Bulletin.

REGIONAL REVIEWS OF U.S. TRADE IN LIVE REPTILES



Live reptiles such as these monitor lizards (*Varanus* spp.) are readily available in Indonesian markets, where they are most often sold for food.

Photo credit: R. Peldente.

Much of the trade data analysis in this report was conducted on a regional basis. Compiling and analyzing species data by region enabled the review of trade in particular species and the identification of regions where live reptile trade volumes were most significant.

Because some species were found in more than one region, there was some overlap of trade data. In these instances, the total data were included in both regions and the overlapping species were marked with an asterisk. For ease of reading, tables 12-18 and their descriptions are presented broadside.

U.S. Trade in Live Reptiles from the Indo-Pacific and Oceania

Perhaps the most diverse group of reptiles imported to the United States originates from the Indo-Pacific and Oceania. This region is made up of Singapore, Malaysia, Indonesia, Papua New Guinea, Australia, the Solomon Islands, and New Caledonia. Malaysia,

Indonesia, and the Solomon Islands are the only regular suppliers of live reptiles from this region to the United States. The other countries of the region either prohibit or strictly control the export of live reptiles for commercial purposes.

TRAFFIC examined trade data for 26 species from the region, 24 of which are listed on CITES

Appendix II (table 12). However, 7 of these species are included in the East and Southeast Asia region as well. Though the Burmese python (*Python molurus bivittatus*) does occur in this region, it was considered only in the East and Southeast Asia region because nearly all trade is apparently derived from Thailand and Vietnam.

Table 12: U.S. Import of Certain Indo-Pacific and Oceania Reptiles, 1983 to 1995

Common Name	Scientific Name	1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		Totals				
		Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports					
boa, Papuan ground	<i>Morelia (Candoleia) aspera</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
boa, Solomon ground	<i>M. (C.) carinata</i>	0	0	0	1	1	140	269	2,547	565	305	114	83	114	115	172	254	882	577	7,262	1,115	297	1,115	297	1,115	297	1,115	297				
monitor, blue-tailed	<i>Varanus kallebecki (dorianus)</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
monitor, crocodile	<i>V. salvadorii</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
monitor, Dumeril's	<i>V. dumerilii</i>	17	52	14	26	59	49	15	76	274	451	664	853	545	3,095	2	386	2	386	2	386	2	386	2	386	2	386	2	386	2		
monitor, eyed	<i>V. panoptes</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
monitor, green tree	<i>V. prasinus</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
monitor, mangrove	<i>V. indicus (spinulosus)</i>	0	3	0	0	0	44	228	673	606	540	550	1,300	875	5,375	2	372	2	372	2	372	2	372	2	372	2	372	2	372	2		
monitor, psachthrost	<i>V. karischmidti (sobiensis)</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
monitor, roughneck	<i>V. macollis</i>	18	1	8	9	65	39	3	31	280	312	652	553	2,240	2	254	2	254	2	254	2	254	2	254	2	254	2	254	2	254	2	
monitor, Timor	<i>V. timorensis</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
"monitor, water	<i>V. salvator</i>	1,064	1,805	864	1,052	1,430	1,218	3,713	1,257	670	1,904	4,611	3,161	2,790	25,539	161	1,406	161	1,406	161	1,406	161	1,406	161	1,406	161	1,406	161	1,406	161		
python, amethystine	<i>Morelia amethystina</i>	0	0	0	4	8	96	74	112	167	316	154	314	161	1,406	161	1,406	161	1,406	161	1,406	161	1,406	161	1,406	161	1,406	161	1,406	161	1,406	161
python, blood	<i>Python curtis</i>	73	76	24	33	124	115	163	436	2,055	2,258	3,232	2,538	1,929	13,056	208	449	208	449	208	449	208	449	208	449	208	449	208	449	208	449	
python, carpet	<i>Morelia spilota</i>	1	10	10	3	7	6	1	6	4	9	52	132	208	449	208	449	208	449	208	449	208	449	208	449	208	449	208	449	208	449	
python, green tree	<i>M. (Chondropython) viridis</i>	4	0	0	16	4	28	62	32	15	40	127	140	565	1,033	74	45	297	140	565	1,033	74	45	297	140	565	1,033	74	45	297		
python, olive	<i>M. olivacea/papua</i>	0	0	0	1	0	0	22	35	47	37	36	74	45	297	140	565	1,033	74	45	297	140	565	1,033	74	45	297	140	565	1,033		
"python, reticulated	<i>Python reticulatus</i>	17	2,888	3,563	2,120	3,768	2,029	3,003	3,217	3,365	1,636	2,655	2,519	2,167	32,947	2,167	32,947	2,167	32,947	2,167	32,947	2,167	32,947	2,167	32,947	2,167	32,947	2,167	32,947	2,167	32,947	
skink, prehensile-tailed	<i>Cornicia zebrata</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
skink, blue-tongued	<i>Tiliqua tincoides (gigas)</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
"tortoise, Burmese brown	<i>Manouria emys</i>	1	4	9	6	77	35	41	0	217	21	106	68	36	621	68	36	621	68	36	621	68	36	621	68	36	621	68	36	621	68	
"tortoise, Forsten's/elongated	<i>Indotestudo forsterii/elongata</i>	9	92	58	75	183	36	138	295	25	273	870	164	81	2,299	164	81	2,299	164	81	2,299	164	81	2,299	164	81	2,299	164	81	2,299	164	
"tortoise, impressed	<i>Manouria impressa</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
"turtle, leaf	<i>Cyclenys dentata</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
"turtle, Malayan box	<i>Cuora amboinensis</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Totals		1,204	4,931	4,581	3,346	5,983	4,177	10,536	6,772	8,217	9,932	20,561	23,275	23,488	127,003	23,488	127,003	23,488	127,003	23,488	127,003	23,488	127,003	23,488	127,003	23,488	127,003	23,488	127,003	23,488	127,003	

x = no species code, so data not entered into database at species level

Source: Data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data. Species also included in East and Southeast Asia regional analysis are denoted with an asterisk.

U.S. Trade in Live Reptiles from East and Southeast Asia

The East and Southeast Asia region consists of China, Hong Kong, Japan, Vietnam, Laos, Cambodia, the Philippines, and Thailand. China has long been a substantial trader in live reptiles, especially freshwater turtles. Hong Kong serves primarily as an entrepot for Chinese species, as well as reptiles from several other Asian countries.

Though Thailand has historically been a substantial contributor to U.S. imports of reptiles, CITES species from Thailand have been prohibited from import to the United States since 1991. Many non-CITES species continue to be imported from Thailand. Improved diplomatic relations between the United States and Vietnam have led to a new source of Asian reptiles, and Vietnam has largely replaced Thailand as a supplier of such species as Burmese pythons and brown tortoises. Laos and Cambodia remain relatively closed to world trade

in live reptiles, though there appears to be substantial laundering of reptiles from these countries through Vietnam and China, where they may then be exported to other countries (Jenkins 1995; Le Dien Duc and Broad 1995).

TRAFFIC North America reviewed the trade in 17 reptile species from East and Southeast Asia. Because many of these species also occur in the Indo-Pacific countries, their trade data is duplicated here.

Table 13: U.S. Import of Certain East and Southeast Asian Reptiles, 1983 to 1995

Common Name	Scientific Name	1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		Totals
		Imports	x	Imports	x	Imports	x	Imports	x	Imports	x	Imports	x	Imports	x	Imports	x	Imports	x	Imports	x	Imports	x	Imports	x	Imports	x	
dragon, water	<i>Physignathus cocincinus</i>	x		x		x		x		x		x		x		x		x		x		x		x		x		45,416
*monitor, water	<i>Varanus salivator</i>	1,064		1,805		864		1,052		1,430		1,218		3,713		1,257		670		1,904		2,494		4,611		7,792		35,130
python, Burmese	<i>Python molurus bivittatus</i>	5,443		12,626		16,663		7,470		4,946		4,474		3,309		4,056		583		322		139		3,048		3,161		2,790
*python, reticulated	<i>Python reticulatus</i>	17		2,888		3,563		2,120		3,768		2,029		3,003		3,217		3,365		1,636		2,655		2,519		2,167		68,604
*tortoise, Burmese brown	<i>Manouria emys</i>	1		4		9		6		77		35		41		0		217		21		106		68		36		621
*tortoise, Forsten's/elongated	<i>Indotestudo forstenii/elongata</i>	9		92		58		75		183		36		138		295		25		273		870		164		81		2,299
*tortoise, impressed	<i>Manouria impressa</i>	0		0		0		0		3		0		19		0		0		0		50		10		216		298
turtle, Beal's four-eyed	<i>Sacalia bealei</i>	x		x		x		x		x		x		x		x		x		x		x		x		148		128
turtle, big-headed	<i>Platyternon megacephalum</i>	x		x		x		x		x		x		x		x		x		x		9		88		472		569
turtle, Chinese box	<i>Cuora flavomarginata</i>	x		x		x		x		x		x		x		x		x		143		11		1,020		1,109		2,283
turtle, golden-headed box	<i>C. trifasciata</i>	x		x		x		x		x		x		x		x		x		x		x		277		9		286
turtle, jagged shell	<i>Cyclonys (Physidys) mouhotti</i>	x		x		x		x		x		x		x		x		x		x		32		204		755		991
*turtle, leaf	<i>C. dentata</i>	x		x		x		x		x		x		x		x		x		x		x		48		463		511
*turtle, Malayan box	<i>Cuora amboinensis</i>	x		x		x		x		x		x		x		x		x		x		464		5,066		8,946		14,476
turtle, Reeve's	<i>Chinemys reevesi</i>	x		x		x		x		x		x		x		x		x		x		51		1,562		271		1,884
turtle, Vietnamese box	<i>Cuora galbinifrons</i>	x		x		x		x		x		x		x		x		x		x		39		481		659		1,179
turtle, Vietnamese wood	<i>Geomyda spengleri</i>	x		x		x		x		x		x		x		x		x		x		x		216		532		748
Totals		6,534		17,415		21,157		10,723		10,407		7,792		10,223		8,825		4,860		4,299		11,531		25,872		59,289		198,927

x = no species code, so no data entered into database at species level

U.S. Trade in Live Reptiles from Central and South America

The trade in reptiles from Central and South America primarily involves El Salvador, Nicaragua, Colombia, Guyana, Suriname, and Peru, while

many of the remaining countries prohibit trade in their native reptiles. The most imported species by far, the iguana, comes from this region. This enormous supply of iguanas, imported primarily from El Salvador and Colombia, is mainly farmed animals. The impact on wild populations to supply and supplement these farms is largely unknown.

For Central and South America, TRAFFIC reviewed trade data for 3 lizard species, 4 snake species, and 2 tortoise species (table 14).

Table 14: U.S. Import of Certain Central and South American Reptiles, 1983 to 1995

Common Name	Scientific Name	1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		Totals
		Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	
boa, Amazon tree	<i>Corallus enydris</i>	820	621	595	856	353	757	718	1,214	2,173	1,178	684	667	1,078	1,714	1,178	684	667	1,078	1,178	684	667	1,078	1,178	684	667	1,078	11,714
boa, Emerald tree	<i>C. cacinus</i>	277	295	329	219	345	480	245	350	775	1,170	388	371	502	5,746	1,170	388	371	502	1,170	388	371	502	1,170	388	371	502	5,746
boa, rainbow	<i>Epicrates conchria</i>	66	125	107	116	166	168	73	287	235	259	92	363	222	2,279	235	259	92	363	235	259	92	363	235	259	92	363	2,279
constrictor, boa	<i>Boa constrictor</i>	1,612	6,285	17,429	3,680	3,191	4,549	5,554	12,497	12,578	34,135	44,665	26,020	20,453	192,648	12,578	34,135	44,665	26,020	12,578	34,135	44,665	26,020	12,578	34,135	44,665	26,020	192,648
iguana, green	<i>Iguana iguana</i>	41,324	36,787	92,450	27,796	38,426	85,694	142,937	214,657	251,586	471,804	858,467	717,892	1,143,720	4,123,540	251,586	471,804	858,467	717,892	251,586	471,804	858,467	717,892	1,143,720	1,143,720	4,123,540	4,123,540	
lizard, common tegu	<i>Tupinambis teguixin</i>	2,640	3,175	2,714	9,708	1,873	24,925	2,535	3,222	5,098	4,220	4,266	5,538	3,879	73,793	5,098	4,220	4,266	5,538	5,098	4,220	4,266	5,538	3,879	3,879	73,793	73,793	
lizard, red tegu	<i>T. rufescens</i>	0	0	54	18	60	7,133	30	230	0	0	0	262	0	7,787	0	0	0	262	0	0	0	262	0	0	0	7,787	
tortoise, red-footed	<i>Geochelone carbonaria</i>	571	3,465	720	1,702	84	197	318	298	1,552	603	290	737	385	10,922	1,552	603	290	737	1,552	603	290	737	385	385	10,922	10,922	
tortoise, yellow-footed	<i>G. denitculata</i>	111	76	20	892	109	249	367	375	612	560	463	558	399	4,791	612	560	463	558	612	560	463	558	399	399	4,791	4,791	
Totals		47,421	50,829	114,418	44,987	44,607	124,152	152,777	233,130	274,609	513,929	909,315	752,408	1,170,638	4,433,220	274,609	513,929	909,315	752,408	274,609	513,929	909,315	752,408	1,170,638	1,170,638	4,433,220	4,433,220	

Source: Data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data.

U.S. Trade in Live Reptiles from Africa

The most prominent reptile-supplying countries in Africa in recent years have been Ghana, Togo, Benin, Tanzania, Mozambique, Cameroon, and Egypt, though several others have allowed some export of their native species.

Even for a continent as vast as Africa, the variety and quantity of species being exported is remarkable. East and Southern African countries

have played a significant role in supplying the live reptile trade, especially with tortoises and chameleons. Of particular interest is the large and increasing trade in some pythons, monitor lizards, and tortoises from West Africa, primarily Benin, Togo, and Ghana. Though much of this trade is described as deriving from captive breeding or ranching operations, there is some question as to the legitimacy of these operations. Though such facilities exist, serious concerns have been raised

regarding the enormous numbers claimed to be produced. The dramatic increase in the export volume of ball pythons (*Python regius*) alone (topping over 100,000 animals in 1994) is indicative of a trade worthy of close monitoring.

TRAFFIC reviewed the trade in 13 lizard species (including 8 chameleons), 2 python species, 6 tortoise species, and 1 turtle genus (table 15).

Table 15: U.S. Import of Certain African Reptiles, 1983 to 1995

Common Name	Scientific Name	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Totals
		Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	Imports	
lizard, black spiny-tailed	<i>Uromastyx acanthinurus</i>	0	0	0	3	0	37	71	40	7	142	150	462	394	1,306
lizard, Egyptian spiny-tailed	<i>U. aegypticus</i>	0	0	0	0	0	231	43	165	274	506	469	3,269	4,179	9,136
lizard, ocellated spiny-tailed	<i>U. ocellatus</i>	0	0	0	0	0	40	0	0	0	104	100	3,854	4,251	8,349
lizard, plated	<i>Gerrhonotus</i> species	x	x	x	x	x	x	x	x	x	x	478	1,160	2,625	4,263
chameleon, Fisher's	<i>Chamaeleo fisheri</i>	0	0	10	12	0	125	0	0	0	525	2,763	3,255	4,087	10,777
chameleon, flap-necked	<i>C. dilepis</i>	0	35	435	1,456	187	74	325	1,820	2,783	1,315	1,948	2,244	2,671	15,293
chameleon, four-horned	<i>C. quadricornis</i>	0	0	0	0	0	0	0	0	30	140	50	906	1,200	2,326
chameleon, graceful	<i>C. gracilis</i>	0	0	5	0	104	595	901	2,630	2,900	2,295	1,786	740	569	12,525
chameleon, Jackson's	<i>C. jacksoni</i>	0	0	0	0	50	345	787	616	956	399	657	2,632	1,540	7,982
chameleon, Meller's	<i>C. melleri</i>	0	0	0	0	0	0	25	0	180	226	554	738	888	2,611
chameleon, Oustalet's	<i>C. oustaleti</i>	0	0	0	0	0	50	7	62	283	504	1,043	1,442	2,532	5,923
chameleon, Senegal	<i>C. senegalensis</i>	2,912	3,930	6,359	3,458	6,566	13,583	17,468	15,084	10,463	7,328	11,287	13,743	7,578	119,759
monitor, savanna	<i>Varanus exanthematicus</i>	280	619	4,663	4,172	4,892	9,347	8,734	11,834	12,550	14,339	28,706	45,452	28,363	173,951
python, African rock	<i>Python sebae</i>	81	108	560	179	282	334	784	984	824	1,357	2,269	1,481	1,145	10,388
python, ball	<i>P. regius</i>	3,036	6,032	14,462	9,443	14,954	24,925	31,897	55,995	64,719	78,125	92,697	133,897	97,536	627,718
tortoise, Bell's hingeback	<i>Kinixys belliana</i>	281	271	459	918	821	570	9,814	1,234	1,863	2,038	2,241	3,998	2,683	27,191
tortoise, forest hingeback	<i>K. erosa</i>	5	12	169	493	417	567	167	577	200	617	71	169	67	3,531
tortoise, Home's hingeback	<i>K. homeana</i>	41	39	120	305	221	291	954	1,830	2,091	1,408	2,384	3,146	2,053	14,883
tortoise, leopard	<i>Geochelone pardalis</i>	81	47	558	1,769	1,721	2,515	926	1,319	4,831	1,029	442	3,234	1,223	19,695
tortoise, pancake	<i>Malacochersus tornieri</i>	1	0	65	813	1,429	1,104	385	369	5,168	605	0	0	100	10,039
tortoise, spurred	<i>Geochelone sulcata</i>	0	0	50	1	135	42	90	143	365	12	295	653	952	2,738
turtle, African sideneck	<i>Pelusios</i> species	0	0	574	164	724	450	712	1,349	729	747	391	343	521	6,704
Totals		6,718	11,093	28,489	23,186	32,503	55,225	74,090	96,051	111,216	113,761	150,781	226,818	167,157	1,097,088

x = no species code, so no data entered into database at species level

Source: Data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data.

U.S. Trade in Live Reptiles from Madagascar

Along with southern Africa, Madagascar has been and remains a supplier of some of the most prized reptile species in the world. The large-scale illegal trade in Madagascar's endangered tortoises and boas has been prominently documented

recently (Webster 1997), yet Madagascar continues to supply large numbers of chameleons and geckos to the legal trade as well. For the last several years, Madagascar has limited the export of chameleon and day gecko species, and much of the trade has been in what are claimed to be captive-

bred animals; however, there remains some doubt as to the legitimacy of these captive breeding facilities.

TRAFFIC reviewed the trade records of 5 chameleon and 4 gecko species commonly imported to the United States (table 16).

Table 16: U.S. Import of Certain Madagascan Reptiles, 1983 to 1995

Common Name	Scientific Name	1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		Totals
		Imports		Imports		Imports		Imports		Imports		Imports		Imports		Imports		Imports		Imports		Imports		Imports		Imports		
chameleon, verrucose	<i>Chameleo verrucosus</i>	0		0		0		0		0		0		0		0		32		130		119		187		430		898
chameleon, jewel	<i>C. lateralis</i>	0		0		57		0		0		150		96		540		1,002		2,672		4,087		5,625		4,134		18,363
chameleon, panther	<i>C. pardalis</i>	0		0		0		5		0		20		100		282		729		2,033		2,742		4,096		4,236		14,243
chameleon, Parson's	<i>C. parsoni</i>	0		0		0		0		0		0		49		29		413		1,760		2,011		1,920		797		6,979
chameleon, short-horned	<i>C. brevicornis</i>	0		0		0		0		0		0		10		25		391		455		1,334		1,582		174		3,971
gecko, four-spotted day	<i>Phelsuma quadriocellata</i>	0		0		20		158		0		355		110		1,495		1,952		4,400		4,216		7,359		5,831		25,896
gecko, gold-dust day	<i>P. laticauda</i>	10		131		186		277		24		524		210		1,289		1,211		4,370		5,262		5,526		8,661		27,681
gecko, leaf-tailed	<i>Uroplatus fimbriatus</i>	x		x		x		x		x		x		x		x		x		x		15		49		342		406
gecko, Madagascar day	<i>Phelsuma madagascarenensis</i>	8		164		342		422		66		422		152		1,257		2,681		4,666		5,677		6,494		6,925		29,276
gecko, side-striped day	<i>P. lineata</i>	0		23		40		280		0		376		112		2,102		4,003		3,207		4,077		6,181		8,765		29,166
gecko, Standing's day	<i>P. standingi</i>	0		0		0		11		7		130		22		339		477		2,154		1,664		1,139		525		6,468
Totals		18		318		645		1,153		97		1,977		861		7,358		12,891		25,847		31,204		40,158		40,820		163,347

x = no species code, so no data entered into database at species level

U.S. Trade in Live Reptiles from East Europe/West Asia

The East Europe/West Asia region comprises 28 countries: the Czech Republic, Bulgaria, Poland, Hungary, Serbia, Macedonia, Croatia, Albania, Bosnia Herzegovina, Russia, Georgia, Romania,

Slovakia, Slovenia, Ukraine, Uzbekistan, Yugoslavia, Latvia, Lithuania, Estonia, Kazakhstan, Azerbaijan, Kirgystan, Tajikistan, Armenia, Belarus, Turkey, and Moldova. The region is one of the oldest sources of live reptiles bound for international trade. The three species of tortoises reviewed from this region are among the reptiles most commonly

found in international trade (table 17). Though there is no clear trend in the trade in these tortoises (due largely to the political and socioeconomic instability of the source countries), there continue to be significant numbers of tortoises in trade from Turkey and some of the newly independent Russian republics.

Table 17: U.S. Import of Certain East European/West Asian Reptiles, 1983 to 1995

Common Name	Scientific Name	1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		
		Imports	Totals	Imports	Totals	Imports	Totals	Imports	Totals	Imports	Totals	Imports	Totals	Imports	Totals	Imports	Totals	Imports	Totals	Imports	Totals	Imports	Totals	Imports	Totals	Imports	Totals	
tortoise, Greek (spur-thighed)	<i>Testudo graeca</i>	2,265		1	299	2,000	10,000	110	856	1,510	765	1,553	3,561	3,600	3,364	29,884												
tortoise, Hermann's	<i>T. hermanni</i>	1,126		737	1,383	819	1,000	10	750	22	34	184	297	56	4,004	10,422												
tortoise, Russian	<i>T. horsfieldii</i>	380		0	0	0	4	20	16	10,016	0	2,983	5,435	11,976	6,003	36,833												
Totals		3,771		738	1,682	2,819	11,004	140	1,622	11,548	799	4,720	9,293	15,632	13,371	77,139												

Source: Data derived from TRAFFIC analysis of U.S. Fish and Wildlife Service data.

U.S. Trade in Live Reptiles from North America

The United States, Canada, and Mexico make up this region, and the United States is by far the largest exporter of North American species. Mexico prohibits the export of its native reptiles, though there remains a substantial illegal trade in Mexican

species, and Canada has few reptile species that draw international demand.

Turtles make up the largest portion of U.S. species in trade. Farm-raised red-eared slider turtles are exported by the millions. However, there also is a substantial and growing trade in map turtles, soft-shelled turtles, alligator snapping turtles, and common snapping turtles. Though all of these

species are traded as pets, the primary reason for the increase in this trade is the demand for these species as food in Asia.

TRAFFIC conducted a review of 16 North American reptiles—8 snake species and 8 turtle species (table 18).

Table 18: U.S. Export of Certain North American Reptile Species, 1983 to 1995

Common Name	Scientific Name	1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		Totals
		Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports	
boa, rosy	<i>Lichenaria trivirgata</i>	0	0	2	18	2	6	12	35	93	23	33	59	258	541													
kingsnake	<i>Lampropeltis getulius</i>	x	21	50	140	92	310	401	2,059	721	837	1,238	1,445	1,913	9,227													
kingsnake, gray-banded	<i>L. alterna</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	0													
rattlesnake, E. diamondback	<i>Crotalus adamanteus</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	75													
rattlesnake, prairie	<i>C. viridis</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	19													
rattlesnake, timber	<i>C. horridus</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	109													
rattlesnake, W. diamondback	<i>C. atrox</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	60													
snake, corn	<i>Elaphe guttata</i>	x	93	68	282	330	1,180	2,739	4,892	1,515	2,450	2,785	4,872	6,359	27,565													
turtle, alligator snapping	<i>Macrolemmys temminckii</i>	x	x	38	243	1	337	300	1,016	3,539	2,338	3,589	4,577	5,792	21,770													
turtle, bog	<i>Clemmys muhlenbergii</i>	x	x	x	x	6	0	0	0	0	0	0	0	0	6													
turtle, common snapping	<i>Chelydra serpentina</i>	x	x	x	x	x	x	x	3,122	0	5,909	12,365	19,539	17,495	58,430													
turtle, Eastern box	<i>Terrapene carolina</i>	x	0	189	293	1,211	2,861	692	3,056	9,871	26,693	25,057	21,757	7,928	99,608													
turtle, map	<i>Graptemys species</i>	x	x	325	784	905	2,001	2,225	6,994	13,272	25,708	41,894	57,848	84,546	236,502													
turtle, ornate box	<i>Terrapene ornata</i>	x	x	x	x	x	x	x	x	216	6,753	10,308	10,763	61	28,101													
turtle, soft-shelled	<i>Apalone species</i>	x	x	65	40	24	440	742	3,256	4,925	5,856	13,341	24,015	38,611	91,315													
turtle, spotted	<i>Clemmys guttata</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	539													
turtle, wood	<i>C. insculpta</i>	x	x	x	x	x	x	x	x	x	x	x	x	x	23													
Totals		0	114	737	1,800	2,571	7,135	7,111	24,430	34,152	76,569	110,613	145,277	163,381	573,890													

x = no species code, so no data entered into database at species level

CONCLUSIONS AND RECOMMENDATIONS

The international trade in live reptiles has grown dramatically in the last decade and, more than any other nation, the United States is the cause of that growth. A large percentage of the U.S. import trade involves a single species: the iguana (*Iguana iguana*), which made up more than 45 percent of the total U.S. trade in 1995.

Likewise, the U.S. export/reexport trade primarily involves a single species: the red-eared slider turtle (*Trachemys scripta*), which continually makes up over 80 percent of the total U.S. annual export/reexport trade of 8-10 million animals. However, there are a number of other species found in trade in substantial numbers, including ball pythons (*Python regius*), savanna monitor lizards (*Varanus exanthematicus*), and map turtles (*Graptemys* spp.). Also, the United States' role as an intermediary for trade in foreign species is increasing.

Although the overall impact of this trade on the world's reptile populations has not been documented, this report demonstrates that the trade is thriving and therefore demands attention from the conservation community. The report also shows that the United States is an extremely significant player in the

international live reptile trade. TRAF-FIC North America recommends further research and action to help ensure that this booming trade is conducted sustainably and not to the detriment of the world's wild reptile populations.

Trade in North American Species

- Though the U.S. Fish and Wildlife Service has been a world leader in its ability to monitor and regulate wildlife trade, the Service has focused its efforts largely on importation of foreign species and not on the export of native species. The Service should ensure that all native species in trade are assigned species codes so that trade can be monitored, and should increase its efforts not only to inspect exportations but also verify that the animals were lawfully collected or produced.
- The international trade in North American turtles, including turtle farming operations, should be examined to determine the effects of such production and trade on wild populations. Other heavily traded reptile taxa, such as kingsnakes (*Lampropeltis getulus*, *L. alterna*) and rosy boas

(*Lichanura trivirgata*), should also be reviewed to identify any negative impacts on wild populations.

- Increased review, and possibly protection, of some North American turtle species should be pursued at the state, national, and international level. Some taxa have already been identified as needing further protection. To better monitor the trade, the United States should pursue CITES Appendix III listings for map turtles (*Graptemys* spp.), soft-shelled turtles (*Apalone* spp.), and common snapping turtles (*Chelydra serpentina*). Further, though U.S. proposals to list the alligator snapping turtle (*Macrolemys temminckii*) and all map turtle species on CITES Appendix II failed at the Tenth Conference of the Parties, such listings should be pursued again.
- Domestic consumption of native turtles, for pets and for food, is difficult to measure and needs to be quantified in order to get a clear picture of the overall threat of harvest for trade on these species.

Captive Breeding, Farming, and Ranching

- Captive breeding, farming, and ranching of reptiles may provide a significant contribution to the conservation of some species. For example, crocodylian farming has contributed to the recovery of a number of species in the wild when tied to other efforts, such as habitat conservation. However,

many of the captive breeding, farming, and ranching operations that supply the world market with reptile species have not been thoroughly documented by outside experts to determine their actual production, need for wild-harvested animals to maintain breedstock, and effect of such harvest on wild populations. Two areas that purport to produce the most captive-bred, farmed, or ranched animals are West Africa (Ghana, Togo, and Benin), where tremendous quantities of ball pythons, savanna monitor lizards, and some tortoises are produced, and Central and South America, from which the world demand for iguanas is supplied. Because of the sheer number of animals coming from these operations, their production should be thoroughly documented, and the effects on wild populations should be assessed and monitored.

Invasive Species

- With an enormous trade in live animals comes the threat of introduction to the wild of exotic (non-native) species that have a detrimental impact on wild populations. Red-eared slider turtles have been introduced to Africa, Asia, the Indo-Pacific, and Europe, where the species poses a potential threat to native turtles. Likewise, a number of exotic reptile species have been introduced to Hawaii and the southeastern United States, particularly Florida. An analysis of the threat posed by exotic species should be conducted,

and the potential need for legislation to prohibit the import or export of certain species should be considered. Since the adoption of two decisions relating to the trade in alien species at the Tenth Conference of the Parties to CITES in June 1997, CITES has begun looking at invasive species issues and working with the World Conservation Union (IUCN) Invasive Species Specialist Group. Such important work should continue with a goal of preempting further detrimental introductions of exotic species.

Increased Protection/Trade Bans

- Despite implementation of CITES and other legal mechanisms, there remain a number of "hot spots" where species continue to be

threatened by international trade. A review of these countries' legislation and administration, including enforcement and implementation, as they pertain to live reptiles should be undertaken to determine how improvements can be made, or whether trade bans should be pursued. The CITES Significant Trade Process is one of the important mechanisms which should be pursued to achieve such an undertaking. Though there are several countries that would benefit from this work, Indonesia and Madagascar, both of which have experienced repeated illegal trade in their highly sought after native reptile fauna, are two of the countries with the greatest need for such a review.



ANNEX 1

Reptiles Listed Under the U.S. Endangered Species Act

The information below is presented in the following order: "T" or "E" designating a status of Threatened or Endangered; the species' common name; the species' scientific name in parenthesis.

- T(S/A)* — alligator, American (*Alligator mississippiensis*)
- E — anole, Culebra Island giant (*Anolis roosevelti*)
- T — boa, Mona (*Epicrates monensis monensis*)
- E — boa, Puerto Rican (*Epicrates inornatus*)
- E — boa, Virgin Islands tree (*Epicrates monensis granti*)
- E — crocodile, American (*Crocodylus acutus*)
- E — gecko, Monito (*Sphaerodactylus micropithecus*)
- T — iguana, Mona ground (*Cyclura stejnegeri*)
- E — lizard, blunt-nosed leopard (*Gambelia silus*)
- T — lizard, Coachella Valley fringe-toed (*Uma inornata*)
- T — lizard, island night (*Xantusia riversiana*)
- E — lizard, St. Croix ground (*Ameiva polops*)
- T — rattlesnake, New Mexican ridge-nosed (*Crotalus willardi obscurus*)
- T — skink, bluetail mole (*Eumeces egregius lividus*)
- T — skink, sand (*Neoseps reynoldsi*)
- T — snake, Atlantic salt marsh (*Nerodia clarkii taeniata*)
- T — snake, Concho water (*Nerodia paucimaculata*)
- T — snake, copperbelly water (northern population) (*Nerodia erythrogaster neglecta*)
- T — snake, eastern indigo (*Drymarchon corais couperi*)
- T — snake, giant garter (*Thamnophis gigas*)
- E — snake, San Francisco garter (*Thamnophis sirtalis tetrataenia*)
- T — tortoise, desert (*Gopherus agassizii*)
- T(S/A) — tortoise, desert (*Gopherus agassizii*)
- T — tortoise, gopher (*Gopherus polyphemus*)
- E — turtle, Alabama redbelly (*Pseudemys alabamensis*)
- T — turtle, bog (*Clemmys mublenbergii*)
- T(S/A) — turtle, bog (southern population) (*Clemmys mublenbergii*)
- T — turtle, flattened musk (*Sternotherus depressus*)
- E — turtle, green sea (*Chelonia mydas*)
- T — turtle, green sea (*Chelonia mydas*)
- E — turtle, hawksbill sea (*Eretmochelys imbricata*)
- E — turtle, Kemp's ridley sea (*Lepidochelys kempii*)
- E — turtle, leatherback sea (*Dermochelys coriacea*)
- T — turtle, loggerhead sea (*Caretta caretta*)
- E — turtle, Plymouth redbelly (*Pseudemys rubriventris bangsi*)
- T — turtle, ringed map (*Graptemys oculifera*)
- T — turtle, yellow-blotched map (*Graptemys flavimaculata*)
- T — whipsnake, Alameda (*Masticophis lateralis euryxanthus*)

*(S/A) - Listed as Threatened due to similarity of appearance with another listed species.

ANNEX 2

Reptiles Listed in CITES Appendices I, II, and III

The information below is presented in the following order: the species' common name; the species' scientific name in parenthesis; the number of the CITES Appendix on which the species is listed; the date on which the species was listed.

Order Testudinata: Turtles, Tortoises

- terrapiin, Adanson's hinged (*Pelusios adansonii*) III (Ghana), 2/26/76
- terrapiin, brown hinged, swamp hinged terrapiin (*P. castaneus*) III (Ghana), 2/26/76
- terrapiin, black hinged (*P. niger*) III (Ghana), 2/26/76
- terrapiin, helmeted (*Pelomedusa subrufa*) III (Ghana), 2/26/76
- terrapiin, Gabon hinged (*P. gabonensis*) III (Ghana), 2/26/76
- terrapiin, river (*Batagur baska*) I, 7/1/75
- tortoise, African parrot-beaked (*Homopus* spp.) II, 7/1/75
- tortoise, angulated (*Geochelone yniphora*) I, 7/1/75
- tortoise, bolson (*G. flavomarginatus*) I, 7/1/75
- tortoise, bow-sprit (*Chersina* spp.) II, 7/1/75
- tortoise, Egyptian (*T. kleinmanni*) I, 2/4/77
- tortoise, Galápagos (*Geochelone nigra*) I, 7/1/75
- tortoise, gopher (*Gopherus* spp.) (except species listed below) II, 7/1/75
- tortoise, hinged-back (*Kinixys* spp.) II, 7/1/75
- tortoise, Indian flap-shell (*Lissemys punctata*) (all subspecies except *punctata*) II, 2/16/95
- tortoise, Indian flap-shell (*L. p. punctata*) II, 7/1/75
- tortoise, land (*Geochelone* spp.) (except species listed below) II, 7/1/75
- tortoise, land (*Testudo* spp.) (all species except those in App. I) II, 7/1/75
- tortoise, land (Testudinidae spp.) (all species except those in App. I or with earlier date in App. II) II, 2/4/77
- tortoise, Madagascar radiated (*Geochelone radiata*) I, 7/1/75
- tortoise, Madagascar spider (*Pyxis* spp.) II, 7/1/75
- tortoise, pancake (*Malacochersus* spp.) II, 7/1/75
- turtle, aquatic box (*Terrapene coahuila*) I, 7/1/75
- turtle, big-headed Amazon River (*Peltocephalus dumeriliana*) II, 7/1/75
- turtle, black softshell (*Trionyx nigricans*) I, 7/1/75
- turtle, bog (*Clemmys mublenbergi*) I, 7/1/75
- turtle, box + (*Terrapene* spp.) (all species except those in App. I) II, 2/16/95
- turtle, Burmese peacock (*Morenia ocellata*) I, 7/1/75
- turtle, Central American river (*Dermatemys mawii*) II, 6/6/81
- turtle, Cuatro Ciénegas softshell (*Trionyx ater*) I, 7/1/75
- turtle, geometric (*Psammobates geometricus*) I, 2/4/77
- turtle, Indian sawback (*Kachuga tecta*) I, 7/1/75
- turtle, Indian softshell (*Trionyx gangeticus*) I, 7/1/75
- turtle, leatherback sea (*Dermochelys coriacea*) I, 7/1/75
- turtle, Madagascar (*Erymnochelys madagascariensis*) II, 7/1/75
- turtle, peacock softshell (*Trionyx burum*) I, 7/1/75
- turtle, short-necked swamp (*Pseudemydura umbrina*) I, 7/1/75
- turtle, South American (*Podocnemis* spp.) II, 7/1/75
- turtle, spotted pond (*Geoclemys hamiltonii*) I, 7/1/75

turtle, sea (*Cheloniidae* spp.) (all species in family) I, 7/1/75
turtle, three-clawed (*Trionyx triunguis*) III (Ghana), 2/26/76
turtle, three-keeled Asian (*Melanochelys tricarinata*) I, 7/1/75
turtle, wood (*Clemmys insculpta*) II, 6/11/92

Order Crocodylia: Crocodiles, Alligators, Caimans, Gavials

alligators and caimans (*Alligatoridae* spp.) (all species except those in App. I or with earlier date in App. II) II, 2/4/77
alligator, American (*Alligator mississippiensis*) II, 7/1/75
alligator, Chinese (*A. sinensis*) I, 7/1/75
caiman, Apaporis River (*Caiman crocodilus apaporiensis*) I, 7/1/75
caiman, common, spectacled caiman (*C. crocodilus crocodilus*) II, 7/1/75
caiman, black (*Melanosuchus niger*) (except for population of Ecuador) I, 7/1/75
caiman, black + (*M. niger*) (population of Ecuador, subject to zero export quotas in 1995 and 1996, followed by annual quotas described by the Secretariat) II, 7/1/75
caiman, brown (*Caiman crocodilus fuscus*) (including *C. crocodilus chiapasius*) II, 7/1/75
caiman, broad-snouted (*C. latirostris*) I, 7/1/75
caiman, smooth-fronted (*Paleosuchus trigonatus*) II, 7/1/75
crocodiles (*Crocodylidae* spp.) (all species in family except those in App. I or with earlier date in App. II) II, 2/4/77
crocodile, African slender-snouted (*Crocodylus cataphractus*) I, 7/1/75
crocodile, American (*C. acutus*) I, 7/1/75
crocodile, Cuban (*C. rhombifer*) I, 7/1/75
crocodile, dwarf (*Osteolaemus tetraspis*) (except subspecies listed below) I, 2/4/77
crocodile, dwarf (*O. tetraspis osborni*) I, 7/1/75
crocodile, dwarf (*O. tetraspis tetraspis*) I, 7/1/75
crocodile, Johnson's (*Crocodylus johnsoni*) II, 7/1/75
crocodile, Morelet's (*C. moreletii*) I, 7/1/75
crocodile, mugger (*C. palustris*) I, 7/1/75
crocodile, New Guinea, freshwater crocodile (*C. novaeguineae*) (except subspecies listed below) II, 7/1/75
crocodile, Nile (*C. niloticus*) (except those populations in App. II) I, 7/1/75
crocodile, Nile + (*C. niloticus*) (populations of Madagascar and Uganda subject to export quotas described by the Secretariat) II, 7/1/75
crocodile, Nile + (*C. niloticus*) (populations of Botswana, Ethiopia, Kenya, Malawi, Mozambique, South Africa, Zambia, and Zimbabwe subject to ranching provisions) II, 7/1/75
crocodile, Nile + (*C. niloticus*) (population of Tanzania subject to ranching provisions and annual quotas described by the Secretariat) II, 7/1/75
crocodile, Orinoco (*C. intermedius*) I, 7/1/75
crocodile, Philippine (*C. novaeguineae mindorensis*) I, 7/1/75
crocodile, saltwater + (*C. porosus*) (except populations of Australia, Papua New Guinea, and Indonesia) I, 7/1/75
crocodile, saltwater + (*C. porosus*) (Australia and Papua New Guinea populations) II, 7/1/75
crocodile, saltwater + (*C. porosus*) (Indonesian population subject to ranching provisions) II, 7/1/75
crocodile, Siamese (*C. siamensis*) I, 7/1/75
gavial, Gharial (*Gavialis gangeticus*) I, 7/1/75
tomistoma, false gavial (*Tomistoma schlegelii*) I, 7/1/75
yacare (*Caiman crocodilus yacare*) II, 7/1/75

Order Rhynchocephalia: Tuatara

tuataras + (*Sphenodon* spp.) I, 7/1/75

Order Sauria: Lizards

chameleons (*Bradypodion* spp.) II, 2/4/77

chameleons (*Chamaeleo* spp.) II, 2/4/77

chuckwalla, San Esteban Island (*Sauromalus varius*) I, 6/6/81

gecko, Serpent Island (*Cyrtodactylus serpensinsula*) II, 2/4/77

gecko, day (*Phebuma* spp.) II, 2/4/77

iguanas (*Iguana* spp.) II, 2/4/77

iguana, Fiji (*Brachylophus* spp.) I, 6/6/81

iguana, Galápagos marine (*Amblyrhynchus cristatus*) II, 7/1/75

iguana, Galápagos land iguana (*Cyclura subcristatus*) II, 7/1/75

iguana, ground (*Cyclura* spp.) I, 2/4/77

lizard, orange-throated whiptail (*Cnemidophorus hyperythrus*) II, 7/1/75

lizard, land (*Conolophus* spp.) (except species listed below) II, 2/4/77

lizard, Barrington Island land (*C. pallidus*) II, 7/1/75

lizard, beaded, Gila monster (*Heloderma* spp.) II, 7/1/75

lizard, caiman (*Dracaena* spp.) II, 2/4/77

lizard, Chinese crocodile (*Shinisaurus crocodilurus*) II, 1/18/90

lizard, coastal horned (*Phrynosoma coronatum*) (except subspecies with earlier date in App. II)
II, 6/11/92

lizard, crag (*Pseudocordylus* spp.) II, 6/6/81

lizard, desert monitor (*Varanus griseus*) I, 7/1/75

lizard, girdled (*Cordylus* spp.) II, 6/6/81

lizard, Hierro giant (*Gallotia simonyi*) I, 10/22/87

lizard, Ibiza wall (*P. pityusensis*) II, 10/22/87

lizard, Indian monitor, Bengal monitor (*Varanus bengalensis*) I, 7/1/75

lizard, Komodo Island monitor, Komodo dragon (*V. komodoensis*) I, 7/1/75

lizard, Lilford's wall (*Podarcis lilfordi*) II, 10/22/87

lizard, monitor (*Varanus* spp.) (all species except those in App. I) II, 7/1/75

lizard, San Diego horned (*Phrynosoma coronatum blainvillei*) II, 7/1/75

lizard, spiny-tailed (*Uromastyx* spp.) II, 2/4/77

lizard, tegu (*Tupinambis* spp.) II, 2/4/77

lizard, yellow monitor (*Varanus flavescens*) I, 7/1/75

lizardet, dragon (*Crocodilurus lacertinus*) II, 2/4/77

skink, prehensile-tailed (*Corucia zebrata*) II, 6/11/92

Order Serpentes: Snakes

anaconda, yellow (*Eunectes notaeus*) II, 7/1/75

boa, Jamaican (*E. subflavus*) I, 7/1/75

boa, Mona (*E. monensis*) I, 2/4/77

boa, Puerto Rican (*E. inornatus*) I, 2/4/77

boa, rainbow (*Epicrates cencbria cencbria*) II, 7/1/75

boa, Round Island (*Casarea dussumieri*) I, 2/4/77

boa, Round Island (*Bolyeria multocarinata*) I, 2/4/77

boa, tree (*Sanzinia madagascariensis*) I, 2/4/77

boa constrictor, Argentine (*Boa constrictor occidentalis*) I, 2/4/77

boa constrictor (*Boa constrictor*) II, 7/1/75

boa constrictor, python (Boidae spp.) (all species except those in App. I or with earlier date in App. II) II, 2/4/77
 cantil (*Agkistrodon bilineatus*) III (Honduras), 4/13/87
 cobra, Indian (*Naja naja*) II, 2/12/84
 cobra, king (*Ophiophagus hannah*) II, 2/12/84
 pit-viper, eyelash palm (*Bothrops schlegelii*) III (Honduras), 4/13/87
 pit-viper, jumping (*B. nummifer*) III (Honduras), 4/13/87
 pit-viper, rainforest hognosed (*B. nasutus*) III (Honduras), 4/13/87
 pit-viper, slender hognosed (*B. opbryomegas*) III (Honduras), 4/13/87
 pythons (*Python* spp.) (except subspecies listed below) II, 7/1/75
 python, Indian (*P. molurus molurus*) I, 7/1/75
 rattlesnake, tropical Cascabel (*Crotalus durissus*) III (Honduras), 4/13/87
 snake, Mussurana (*Clelia clelia*) II, 7/1/75
 snake, Indian egg-eating (*Elachistodon westermanni*) II, 7/1/75
 snake, broad-headed (*Hoplocephalus bungaroides*) II, 8/1/85
 snake, Atlanta coral (*Micrurus diastema*) III (Honduras), 4/13/87
 snake, black-banded coral (*M. nigrocinctus*) III (Honduras), 4/13/87
 snake, Oriental rat (*Ptyas mucosus*) II, 2/12/84
 terciopelo (*Bothrops asper*) III (Honduras), 4/13/87
 viper, Russell's (*Vipera russellii*) III (India), 2/12/84
 viper, Orsini's (*V. ursinii*) (except USSR populations) I, 10/22/87
 viper, Wagner's (*V. wagneri*) II, 6/11/92
 water cobra, South American false (*Cyclagras gigas*) II, 7/1/75
 water snake, checkered keelback (*Xenochrophis piscator*) III (India), 2/12/84
 water snake, dog-faced (*Cerberus rhynchops*) III (India), 2/12/84
 water snake, olive keelback (*Atretium schistosum*) III (India), 2/12/84

ANNEX III

CITES Parties

As of May 1998, 144 countries were parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

<u>PARTY</u>	<u>EFFECTIVE DATE</u>	<u>PARTY</u>	<u>EFFECTIVE DATE</u>
Afghanistan	28 January 1986	Dominican Republic	17 March 1987
Algeria	21 February 1984	Eritrea	22 January 1995
Antigua and Barbuda	6 October 1997	Ecuador	1 July 1975
Argentina	8 April 1981	Egypt	4 April 1978
Australia	27 October 1976	El Salvador	29 July 1987
Austria	27 April 1982	Equatorial Guinea	8 June 1992
Bahamas	18 September 1976	Estonia	20 October 1992
Bangladesh	18 February 1982	Ethiopia	4 July 1989
Barbados	9 March 1993	Fiji	29 December 1997
Belarus	8 November 1995	Finland	8 August 1976
Belize	21 September 1981	France	9 August 1978
Belgium	1 January 1984	Gabon	15 May 1989
Benin	28 May 1984	Gambia	24 November 1977
Bolivia	4 October 1979	Georgia	12 December 1996
Botswana	12 February 1978	Germany	7 January 1976
Brazil	4 November 1975	Ghana	12 February 1976
Brunei Darussalem	2 August 1990	Greece	6 January 1993
Bulgaria	16 April 1991	Guatemala	5 February 1980
Burkina Faso	15 January 1990	Guinea	20 December 1981
Burundi	6 November 1988	Guinea-Bissau	16 May 1990
Cambodia	2 October 1997	Guyana	25 August 1977
Cameroon	3 September 1981	Honduras	13 June 1985
Canada	9 July 1975	Hong Kong	(see United Kingdom)
Central African Republic	25 November 1980	Hungary	27 August 1985
Chad	3 May 1989	India	18 October 1976
Chile	1 July 1975	Indonesia	28 March 1979
China, People's Republic of	8 April 1981	Iran	1 November 1976
Colombia	29 November 1981	Israel	17 March 1980
Comoros	21 February 1995	Italy	31 December 1979
Congo	1 May 1983	Jamaica	22 June 1997
Costa Rica	28 September 1975	Japan	4 November 1980
Cote d'Ivoire	19 February 1995	Jordan	14 March 1979
Cuba	19 July 1990	Kenya	13 March 1979
Cyprus	1 July 1975	Korea	7 October 1993
Czech Republic	1 January 1993	Latvia	12 May 1997
Denmark	24 October 1977	Liberia	9 June 1981
Djibouti	7 May 1992	Liechtenstein	28 February 1980
Dominica	2 November 1995	Luxembourg	12 March 1984
		Madagascar	18 November 1975

<u>PARTY</u>	<u>EFFECTIVE DATE</u>
Malawi	6 May 1982
Malaysia	18 January 1978
Mali	16 October 1994
Malta	16 July 1989
Mauritania	11 June 1998
Mauritius	27 July 1975
Mexico	30 October 1991
Monaco	18 July 1978
Morocco	14 January 1976
Mozambique	23 June 1981
Myanmar	11 September 1997
Namibia	18 March 1991
Nepal	16 September 1975
Netherlands	18 July 1984
New Zealand	8 August 1989
Nicaragua	4 November 1977
Niger	7 December 1975
Nigeria	1 July 1975
Norway	25 October 1976
Pakistan	19 July 1976
Panama	15 November 1978
Papua New Guinea	11 March 1976
Paraguay	13 February 1977
Peru	25 September 1975
Philippines	16 November 1981
Poland	12 March 1990
Portugal	11 March 1981
Russian Fed.	1 January 1992
Romania	16 November 1994
Rwanda	18 January 1981
Saudi Arabia	10 June 1996
Saint Kitts and Nevis	15 May 1994
St. Lucia	15 March 1983
St. Vincent & Grenadines	28 February 1989

<u>PARTY</u>	<u>EFFECTIVE DATE</u>
Senegal	3 November 1977
Seychelles	9 May 1977
Sierra Leone	26 January 1995
Singapore	28 February 1987
Slovakia	1 January 1993
Somalia	2 March 1986
South Africa	18 October 1975
Spain	28 August 1986
Sri Lanka	2 August 1979
Sudan	24 January 1983
Suriname	15 February 1981
Swaziland	27 May 1997
Sweden	1 July 1975
Switzerland	1 July 1975
Tanzania	27 February 1980
Thailand	21 April 1984
Togo	21 January 1979
Trinidad & Tobago	8 April 1984
Tunisia	1 July 1975
Turkey	22 December 1996
Uganda	16 October 1991
United Kingdom (incl. Hong Kong)	31 October 1976
United States	1 July 1975
United Arab Emirates	12 May 1990
Uruguay	1 July 1975
Uzbekistan	8 October 1997
Vanuatu	15 October 1989
Venezuela	22 January 1978
Vietnam	20 April 1994
Yemen	3 August 1997
Zaire	18 October 1976
Zambia	22 February 1981
Zimbabwe	17 August 1981

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The TRAFFIC Network is the world's largest wildlife trade monitoring program with offices covering most parts of the world. TRAFFIC is a program of WWF-World Wildlife Fund and IUCN-The World Conservation Union, established to monitor trade in wild plants and animals. It works in close cooperation with the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The TRAFFIC Network shares its international headquarters in the United Kingdom with the World Conservation Monitoring Centre.

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