CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

Other proposals

A. PROPOSAL

Inclusion of *Macroclemys temminckii* in Appendix II, in accordance with Article II 2 (a).

B. PROPONENT

The United States of America

C. SUPPORTING STATEMENT

1. Taxonomy

1.1 Class: Reptilia

1.2 Order: Testudinata

1.3 Family: Chelydridae

1.4 Species: *Macroclemys temminckii* (Harlan, 1835)

1.5 Scientific Synonyms:

1.6 Common Names: English:alligator snapping turtle, alligator snapper, loggerhead, river loggerhead

2. Biological Parameters

2.1 Distribution: *M. temminckii* is confined to the United States in river systems that drain into the Gulf of Mexico. It is widely distributed in the Mississippi Valley from as far north as Kansas, Illinois, and Indiana to the Gulf, and has been found in almost all river systems from the Suwanee River, Florida, to eastern Texas. The species was considered extirpated in Indiana until one was caught in the White River, Morgan County, in March 1991 (Ernst et al. 1994).

2.2 Habitat Availability: *M. temminckii* is the largest freshwater turtle in North America (Ernst et al. 1994). Adults are usually found in deeper water of large rivers and their major tributaries, and are also found in lakes, canals, oxbows, swamps, ponds, and bayous associated with river systems (Ernst et al. 1994).

Much of the natural habitat of this species in northeast Arkansas and southeast Missouri--lowlands and swamps--has been drained and replaced by soybeans and cotton fields in increasing amounts in recent years. According to Douglas (1992) this is perhaps the most important factor contributing to the decline of *M. temminckii.*

A survey by of *M. temminckii* populations in New Madrid, Mississippi and Dunkin and Pemmiscott counties in Missouri revealed that in this four-country area, 90% of the habitat for the species is gone. The survey was conducted by Daren Riedle, Emporia State University, from June to August, 1994.

Ewert and Jackson (1994) noted that *Macroclemys* nests in "spoil mounds that have accrued from modification of the Apalachicola River to serve as an inland waterway" and that these areas are more exposed to the sun. Since sex is determined by temperature in *Macroclemys*, these unnatural open areas could be causing a skewing of the sex ratio; females are produced under warm temperatures.

2.3 Population Status: The IUCN classifies *M. temminckii* as "vulnerable", that is, a taxon that will likely move into the "endangered" category in the near future, if the causal factors leading to its endangerment continue operating (IUCN 1990). There are no described subspecies of *M. temminckii*.

Sexual maturity in *M. temminckii* is attained between eleven and thirteen years in both sexes (Ernst et al. 1994). The species lays only one clutch per year, with 9-52 eggs (an average of 25 eggs) per clutch (Pritchard 1989, Ernst et al. 1994). Nests are built in sand or sand mixed with silt and organic alluvium (Ernst et al. 1994). Clutch success is highly variable under captive conditions (Ernst et al. 1994). Even in wild nests protected from predators, only as many as 78% of the eggs hatch (Ewert and Jackson 1994). Hatching success for unprotected wild nests is unknown. Captive specimens of the species have lived for over 70 years.

2.4 Population Trends: Anecdotal information from turtle trappers indicates that *M. temminckii* has declined drastically throughout their range (Ernst et al. 1994). Pritchard (1989) stated that, although the species has a wide distribution, "it is rare in much of this area, naturally so in the northern extremes of the range, but as a result of heavy exploitation in some sections of the heartland of the species, in Louisiana and neighboring states." In particular, Pritchard (1989) noted that fishing for *Macroclemys* has been heavy in Louisiana for many years, and by several accounts stocks are now seriously depleted; *Macroclemys* are captured in states adjacent to Louisiana (Arkansas, Mississippi, and Texas) and imported for sale in Louisiana. Pritchard (1989) also noted that, according to anecdotal evidence collected from fishermen and others, populations of the species have declined in many areas in Florida and Georgia due to overcollection for the meat trade. Turtles captured in Georgia are also sold in Louisiana markets. Pritchard (1989) summarizes the status of the species as, "apparently depleted or naturally rare in the Suwannee; in the greater Apalachicola system it is depleted severely in many, but not all parts of its Georgia range. It may be in reasonable condition in the Florida section, but has been heavily fished in Lake Seminole, on the Florida/Georgia line, and incidental catch mortality is significant in the Apalachicola itself. Alabama and Mississippi both have *Macroclemys* throughout, with some areas of concentration, although these have not been identified; heavy trapping for the Louisiana market is causing progressive depletion. In Louisiana, the species is heavily depleted, to the extent that commercial interests obtain the majority of their supplies today from out of state. It is reported that there is nowhere south of Alexandria (Rapides River) that is even worth trapping. The species is not on the brink of extinction, but it is heavily depleted in most of its range and in need of protection and management."

2.5 Geographic Trends: The genus *Macroclemys* once had a much wider geographic distribution (Ernst et al. 1994), with several species, and only one species, *M. temminckii* is extant. The fossil record indicates that *M. temminckii* once existed south of its present distributional limit and as far north as South Dakota (Ernst et al. 1994). More recent geographical trends are unreported, except that populations in Indiana were considered extirpated, until one was recently found (Ernst et al. 1995).

2.6 Role of the Species In Its Ecosystems: *M. temminckii* is primarily a carnivore that consumes a varied diet of fish, crayfish, mussels, snakes, small alligators, briar roots, wild grapes, birds and mammals, salamanders, crabs, snails, acorns, and turtles (Pritchard 1989, Ernst et al. 1994). The species is the only reptile in the world known to have a predatory lure in its mouth; it is a movable appendage on the tongue used to attract fish (Ernst et al. 1994). *M. temminckii* nests are preyed upon by raccoons, and juveniles and hatchlings are eaten by fish, birds, and otters (Ernst et al. 1994). Humans are the only predator on adults, as the species has been heavily exploited for its meat, which is consumed in both domestic and international markets.

2.7 Threats: Pritchard (1989) stated that recently, exploitation by commercial turtle trappers and habitat alteration resulting from the damming of rivers has raised concern about the survival of natural populations of this species. According to Pritchard, pollution of the Flint River by a cellulose plant resulted in a large die-off of mussels, a staple food of *M. temminckii* in the area; it is believed that only portions of that river still contain healthy *Macroclemys* populations.

Because *M. temminckii* is in a superior position on the food chain, according to Holt and Tolson (1993) the effects of pesticides are likely another threat facing this species. In conjunction with its aquatic existence, this turtle has the capability of achieving weights in excess of one hundred pounds and the potential for its life to span a number of decades. All these factors increase the vulnerability of the species. Consequently, *M. temminckii* is a primary target for the bioaccumulation of organochlorines.

3. Utilization and Trade

3.1 National Utilization: Small specimens of *M. temminckii* are used for the domestic pet trade and the larger specimens are traded as meat for human consumption. Hatchlings were sold as pets in the United States in 1968-69 for US$3.00-5.00 each; in 1977 the price was US$35.00, and this was still the price in 1988 (Pritchard 1989). Hatchlings offered by dealers are said to have been "captive-bred", although Pritchard (1989) notes that these are likely to have been hatched from eggs collected from nests in the wild. Larger specimens are less commonly offered in the pet trade, although one 24-inch, 100 lb. specimen was offered for US$100 in 1970 (Pritchard 1989).

The *M. temminckii* meat trade is much larger than the pet trade (Pritchard 1989). In the 1960s and early 1970s, *M. temminckii* were intensively trapped for the meat trade in Mississippi, Louisiana, Georgia, Alabama, and Texas. In 1982, *M. temminckii* meat sold for US$3.50-$4.50 per pound; a 100 pound turtle can produce 30 pounds of meat (Pritchard 1989). Their meat commonly was sold in a popular national brand of soup in the United States (Pritchard 1989). In addition to commercial trade, the species is also fished for personal consumption. Fishing techniques include traps and hooks and net traps; they can also be caught on trot lines (Pritchard 1989).

In a letter to the Arkansas Game and Fish Commission concerning the state's *M. temminckii* population, Santhuff (1993) noted that there is a high level of legal commercial trade. As mentioned, in the pet trade mostly juveniles are sold, but adults bring as much as $750 each, or $1100 per pair. The Louisiana market for meat is very demanding. Santhuff recounted one man's operation where weekly sales of more than one ton of meat are common. In 1993, the meat was selling for US$3.25 with bones and US$4.25 deboned, at wholesale prices. Live turtle were bought from the fishermen for $.50 a pound. Meat is packaged in five or ten pound packages.

While visiting an Arkansas turtle meat dealer's premises, Santhuff noticed a price list, which in addition to prices for turtle meat, also listed the following body parts:

Claws/Paws:$4.00 each
Skulls on Plaques:$ < 50.00 each
Clocks from Shells:$ < 75.00 each
Hatchling turtles $9.00-$13.00 each
(from butchered females)

To supply the hatchling turtles, more than 1000 female turtles are held in live ponds until June, when their eggs are fertile and ready to be laid. The turtles are then butchered for their meat and the eggs. The eggs are kept until hatching in the fall and sold. Santhuff reports that most hatchlings are sold to a U.S. buyer who freeze dries them into ornaments for the Asian market.

The meat dealer also told Santhuff that he buys juvenile alligator snapping turtles from collectors for $7.00-$10.00 each and sells them mainly to another individual in Alabama, who ships them from Little Rock directly to his customers, so as to not violate Alabama laws.

3.2 Legal International Trade: Analysis of import/export data obtained from the U.S. Fish and Wildlife Service's Law Enforcement database, indicates that live *M. temminckii* have been exported in increasing numbers in recent years. The following are minimum estimates of live exports from the U.S.:

Year	*Quantity*	*Destinations (in descending order of quantity)*
1989	290	Japan, Germany, Austria

1990	382	Japan, Germany, United Kingdom, Denmark, Netherlands
1991	1761	Japan, Germany, Netherlands, Hong Kong, Malaysia, France, Switzerland, Italy
1992	2039	Japan, France, Germany, Spain, Austria, Netherlands, Hong Kong, Italy, United Kingdom
1993	2101	Japan, Hong Kong, Hungary, Germany, Netherlands, France, United Kingdom, Switzerland, Spain, Malaysia, Austria
Year	*Quantity*	*Destinations (in descending order of quantity)*
1994	4477	Japan, Hong Kong, Netherlands, Germany, Hungary, Italy, Malaysia, Mexico, Israel

In 1993, the average exporter-declared value of the exported live turtles was US$23.66 each; in 1989, the same value was US$16.81.

U.S. Fish and Wildlife Service data indicate that the following quantities of *M. temminckii* products were exported from the United States during recent years:

Skins

Year	Quantity	Destination
1990	30	Japan
1992	150	Japan
1993	50	Japan

Skulls

Year	Quantity	Destination
1989	3	Japan
1991	101	Japan (100) Great Britain (1)
1992	2	Great Britain (1), Belgium (1)
1993	1	Canada
1994	1	Japan

The Fish and Wildlife Service data also reveal the following information concerning international trade in *M. temminckii*:

Exporters:

In 1991, the major exporters of *M. temminckii*, the quantity and port of export for each, were: Robert Gutherie, 1080, Chicago; Green Acre Pets, 435, Chicago; and International Wildlife, Inc., 134, Newark.

In 1992, the major exporters of *M. temminckii*, the quantity and port of export for each, were: Carson Pet Aquarium and Pet Shop, 952, Los Angeles; King's Turtle Farm, 230, Chicago; and Strictly Reptiles, 200, Miami.

In 1993, the major exporters of *M. temminckii,* the quantity and port of export for each, were: Robert Gutherie, 469, Chicago; Green Acre Pets, 400, Seattle; and Carson Pet Aquarium and Pet Shop, 353, Los Angeles.

In 1994, the major exporters of *M. temminckii,* the quantity and port of export for each, were: Green Acre Pets, 1661, Seattle, Portland and New York; Carson Pet, 604, Los Angeles; Sunshine Turtle Farm, 600, New Orleans; and Concordia Turtle Farm, 351, Chicago.

Importers (non-U.S.):

In 1991, the major importers of *M. temminckii* species, along with the quantity imported and the country in which the importer resides were: Naotsugu Shoji, 730, Japan; Animal Broker Roy Van Geldropseweg, 256, Netherlands; and Hiroshi Takano, 250, Japan.

In 1992, the major importers of *M. temminckii* species, along with the quantity imported and the country in which the importer resides were: Asada Trading Company, 700, Japan; Yutaka Shoji Trading Company, 252, Japan; Maple Foods Limited, 244, Japan; Aubengali, 230, France; and Creative Zoo, 200, Japan.

In 1993, the major importers of *M. temminckii* species, along with the quantity imported and the country in which the importer resides were: Asada Trading Company, 338, Japan; Hiroshi Takano, 269, Japan; Maple Foods Limited, 200, Japan; Scales and Tails Trading Company, 200, Hong Kong; Yoshino Trading, 200, Japan; and Sakurai Havero, 200, Japan.

In 1994, the major importers of *M. temminckii* species, along with the quantity imported and the country in which the importer resides were: Yoshino Trading Company, 2593, Japan; Yutaka Shoji Trading Company, 600, Japan; Maple Foods Limited, 332, Japan; Japan Pet Fish Trade Company, 200, Japan; and Chow Shing Kwong, 200, Hong Kong.

3.3 Illegal Trade: Illegal trade is known to occur. In Florida there have been at least three cases of involving individuals illegally transporting *M. temminckii*.

3.4 Actual or Potential Trade Impacts: The export figures from 1989-1994 reveal that international trade in *M. temminckii* primarily for human consumption and as pets increased dramatically during the six-year period. In addition to international trade, there is a significant domestic trade in *M. temminckii*.

As mentioned, smaller specimens are generally collected for the pet trade and larger ones for human consumption. In Louisiana, Douglas (1992) noted that in recent years, the numbers of this turtle have been reduced dramatically throughout its range. Due to decreasing population sizes in Mississippi, Alabama, and Georgia, *M. temminckii* populations in northeast Louisiana are being heavily exploited. Douglas also stated that due to the demand for *M. temminckii*, many of these turtles are harvested and sold at 5, 10, or 15 pounds, which is several years before they have become sexually mature and able to reproduce.

According to Santhuff (1993), the most serious problem with the commercial take of these turtles is that one crew of trappers with as little as 30-40 hoop net traps can take almost every turtle in a section of a stream or within the vicinity of the traps. If an area is worked for only two nights, then the population is so severely depleted that it is no longer self-sustaining. In general, commercial harvest of this species is not sustainable and the efforts of very few trappers can deplete population levels far below self-sustaining levels (Santhuff 1993).

Santhuff described how the capture of three to four tons a day of *Macroclemys* by Al Redmond and others in Georgia's Flint River depleted the population. A 1990 status survey of more that 250 river kilometers of the Flint River, over 763 traps nights, resulted in the capture of only 62 *Macroclemys.* Santhuff claims that this low capture rate indicates that commercial harvest of *M. temminckii* results in long term reduction in the population size. Santhuff suggests in the letter to the Arkansas Game and Fish Commission that since no populations can sustain a commercial harvest and other populations are already extirpated, turtles should be given full protection, with no legal take.

Various commercial turtle dealers have indicated that populations in Louisiana and other southern states are seriously depleted (Holt and Tolson 1993). Deemed as a highly-edible delicacy, the relentless

harvesting of this species as a food source, as well as habitat destruction propagated by human encroachment, has threatened this animal's very existence (Pritchard 1989). Despite widespread demand, management of the species throughout its range is non existent. In Florida, Enge (1992) reported that because the harvest of turtles for personal consumption is not reported, valuable information on the take of *M. temminckii* is lacking.

3.5 Captive Breeding or Artificial Propagation for Commercial Purposes:

Currently five adult turtles are in Australian zoos. From the 11 March to 12 July 1994, a male, adult turtle was observed mating on 11 occasions. A total of 36 eggs resulted and were collected. After the infertile and obviously dead eggs were removed, 14 eggs remained. A total of six neonates survived (Irwin and Thomsen, 1995).

One individual in Tennessee reported that he had two large breeding females in captivity, and that these animals together produced about 75 eggs per year. The hatchlings from these eggs were released in Tennessee lakes. Allegedly, an individual in Georgia maintained a breeding pond in which adult *M. temminckii* were present and released offspring annually into the rivers and streams of Georgia, Alabama and Florida.

4. Conservation and Management

4.1 Legal Status

4.1.1 National: Though the U.S. Fish and Wildlife Service considers *M. temminckii* a "candidate species" for a listing as threatened under the U.S. Endangered Species Act (Shipman et al. 1993), trade in the species is not regulated at the federal level.

Listed below are the fourteen states in which *M. temminckii* exists (Pritchard 1989) and relevant information on the management of the species in each state:

Alabama: Take requires a scientific permit (Pritchard 1989).

Arkansas: Prohibits the taking of nongame animals from the wild for commercial purposes (Ramus, ed. 1995). On 4 October 1993, Arkansas issued an emergency proclamation prohibiting the take of *M. temminckii* (Santhuff 1996).

Florida: Listed as Species of Special Concern. It is illegal to buy, sell, or possess for sale, *M. temminckii* (Ramus ed. 1994).

Georgia: Listed as threatened. It is illegal to possess, process, sell, or offer for sale, transport or export *M. temminckii* (Ramus ed. 1994).

Illinois: Listed as threatened. It is unlawful to take, possess, buy, sell, offer to buy or sell or barter any reptile, amphibian, or their eggs or parts taken from the wild for commercial purposes, unless otherwise authorized by statute. No person may take or possess any listed species, except with special permission from the Department of Conservation (Ramus ed. 1994).

Indiana: Listed as endangered; take is prohibited (Ramus ed. 1994). Pritchard (1989) stated that the species is officially listed as "extirpated" in the state.

Kansas: Was listed as threatened, but is now listed as a species in need of conservation. Biologists contend that the species meets the state's criteria for a listing as endangered (Shipman et al. 1993). A hunting license is required to take any wildlife species, and no more than five of any one species of reptile or amphibian may be possessed (Ramus ed. 1994).

Louisiana: Listed as a species of special concern. All persons engaged in the sale of native reptiles collected in Louisiana must possess a collector's license (except those who are 16 years old or younger). All persons engaged in buying, acquiring, or handling by any means any species of native reptile or amphibian in Louisiana for resale, or any person engaged in the shipping or transporting of any native reptile species either into or out of the state, must possess a reptile wholesale/retail dealer's license.

Mississippi: There is a bag limit (for consumption or display) of four turtles; turtles used for commercial purposes must be captive-bred and raised (Pritchard 1989).

Missouri: Listed as rare. It is illegal to capture or kill the species within the state (Pritchard 1989).

Oklahoma: Listed as a species of concern. For such species, there is a statewide closed season (Ramus ed. 1994).

Tennessee: It is illegal to take the species or knowingly destroy its habitat. *M. temminckii* is included on the list of wildlife in need of management (Pritchard 1989).

Texas: Listed as threatened, and is protected from commercial take or other exploitation, except as regulated by the Texas Parks and Wildlife Commission (Pritchard 1989).

4.1.2 International: None.

4.2 Species Management

4.2.1 Population Monitoring: The Missouri Department of Conservation has monitored on an on-going basis the state's *M. temminckii* population and the Florida Game and Freshwater Fish Commission has surveyed *M. temminckii* populations in panhandle streams (Santhuff 1996).

4.2.2 Habitat Conservation: In Tennessee, it is illegal to take *M. temminckii* from the wild or knowingly destroy its habitat (Pritchard 1989). Although states may have protected waterways, no programs established specifically for the purpose of protecting *M. temminckii* habitat are known.

4.2.3 Management Measures: Other than restrictions on take in some states, as delineated in Section 4.1.1, no known efforts at managing wild populations of *M. temminckii* are known.

Pritchard (1989) reported that some private individuals have undertaken conservation or restoration programs for this species.

4.3 Control Measures

4.3.1 International Trade: None.

4.3.2 Domestic Measures: None.

5. Information on Similar Species: *Chelydra serpentina* lacks submarginal scutes, has low keels on the carapace, or none at all, and its eyes are situated high enough so that the orbits can be seen when viewed from above (Ernst et al. 1994). *C serpentina* and *Macroclemys* rarely share the same habitat (Santhuff, 1996).

6. Other Comments:

Given the biological characteristics of turtle species, and the increasing numbers of *M. temminckii* exported, it is probable that collecting this species from the wild for international commercial trade could have a detrimental impact on the species by either exceeding, over an extended period, the level that can be continued in perpetuity, or reducing it to a population level at which its survival could be threatened by other influences. This situation meets the criteria of Resolution Conf. 9.24, Annex 2a, for inclusion in Appendix II under the provisions of Article II (a).

7. Additional Remarks: At its annual meeting in 1991, the Chelonian Advisory Group to the American Association of Zoological Parks and Aquariums recommended that *M. temminckii* become a high priority for future conservation efforts, and reported to the Captive Breeding Specialist Group of the IUCN that *Macroclemys* was one of three North American turtles most in need of management. Though Reichling (1992) reported that head-start and release programs are likely to become prevalent in the near future, there is no evidence of this occurring.

8. References

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