CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

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Twenty-first meeting of the Animals Committee
Geneva (Switzerland), 20-25 May 2005

Periodic review of animal species included in the CITES Appendices

PREVIOUSLY SELECTED SPECIES

1. This cover page and Annex 1 have been prepared by the Secretariat, and Annexes 2 and 3 have been submitted by Mexico.

2. At its 15th meeting (AC15; Antananarivo, 1999), the Animals Committee selected 31 species in the context of its ongoing periodic review of animal species included in the CITES Appendices. The Animals Committee decided that the list should consist of four to six species from Appendices I and II per large taxonomic group in the animal kingdom. Criteria for selection and priority setting were that the species chosen: should not have been previously reviewed according to Resolution Conf. 9.24 [now replaced by Resolution Conf. 9.24 (Rev. CoP13)]; were listed in early meetings of the Conferences of the Parties; had varied ranges and biological properties; had characteristics useful in testing the reliability of the listing criteria; and were in trade to different degrees. Parties volunteered to undertake several of these reviews, which were scheduled to be completed and submitted to the Secretariat by the end of 1999.

3. By the 16th meeting of the Animals Committee (AC16; Sheperdstown, 2000), reviews for only nine of the 36 selected species had been competed. The Animals Committee nevertheless added two more species to the list (*Cnemidophorus hyperythrus* and *Ornithoptera alexandrae*). By its 19th meeting (AC19; Geneva, 2003), 14 taxa had been reviewed. On that occasion, the Committee noted that a few reviews were still underway, but agreed not to initiate any new reviews until the 13th meeting of the Conference of the Parties (Cop13).

4. The species selected at AC15 and AC16, the Parties that volunteered to undertake the reviews against the listing criteria contained in Resolution Conf. 9.24 and the results of these reviews are presented in Annex 1 to this document.

5. The Scientific Authority of Mexico has submitted for the present meeting two outstanding reviews on *Ambystoma mexicanum* and *Dematemys mawii* (see Annexes 2 and 3).

Issues for consideration

6. In the light of the new process for selection of species for periodic reviews (see document AC21 Doc. 11), the Animals Committee should decide on how to treat the outstanding reviews of species that it had selected before CoP13, and the two reviews by Mexico.

SPECIES SELECTED BY THE ANIMALS COMMITTEE IN 1999 AND 2000 IN THE CONTEXT OF THE PERIODIC REVIEWS OF SPECIES INCLUDED IN THE CITES APPENDICES (PURSUANT TO PARAGRAPH V) UNDER RESOLVES IN ANNEX 2 OF RESOLUTION CONF. 9.1 (REV.) ON ESTABLISHMENT OF COMMITTEES – A RESOLUTION SINCE REPEALED)

Species (Appendix in 1999 and 2000)	**Party volunteering to conduct the periodic review**	**Completion of the reviews**	**Final AC recommendation**
Mammals			
Callithrix jacchus (I)	Brazil		
Cephalophus sylvicultor (II)	*no volunteers*		
Macaca fascicularis (II)	Indonesia	AC16 (2000)	Retain
Mirounga leonine (II)	Australia		
Panthera pardus (I)	Kenya		
Pteropus macrotis (II)	Australia		
Saiga tatarica (II)	United States of America	AC16 (2000)	Retain
Birds			
Anas aucklandica (I)	Australia; New Zealand	AC18 (2002)	Retain
Agapornis fischerii (II)	Switzerland; United Republic of Tanzania		
Ara macao (I)	Guatemala; Mexico	AC17 (2001)	Retain
Caloenas nicobarica (I)	*no volunteers*		
Falco peregrinus (I)	United States of America	AC17 (2001)	Retain
Macrocephalon maleo (I)	Indonesia	AC16 (2000)	Retain
Rhea americana (II)	Argentina		
Reptiles			
Boa constrictor (II)	*no volunteers*		
Cnemidophorus hyperythrus (II)	United States of America	AC18 (2002)	Delete from Appendix II
Crocodilurus lacertinus (II)	Netherlands		
Dermatemys mawii (II)	Guatemala; Mexico		
Dermochelys coriacea (I)	United States of America	AC16 (2000)	Retain
Python anchietae (II)	Namibia	AC16 (2000)	Retain
Tupinambis teguixin (II)	Argentina		
Amphibians			
Ambystoma mexicanum (II)	Mexico; United States of America		
Bufo superciliaris (I)	Netherlands		
Dyscophus antongilli (I)	Netherlands		
Hoplobatrachus tigerinus (II)	Netherlands	Removed from list at AC17	
Fishes			
Cynoscion macdonaldi (I)	Mexico	AC17 (2001)	Retain
Probarbus jullieni (I)	United Kingdom	AC16 (2000)	Retain
Scleropages formosus (I)	Indonesia	AC16 (2000)	Retain
Invertebrates			
Antipatharia (II)	United States of America	AC16 (2000)	Retain
Goniopora spp. (II)	*no volunteers*		
Hirudo medicinalis (II)	*no volunteers*		
Ornithoptera alexandrae (I)	*no volunteers*		
Parnassius apollo (II)	Spain	AC18 (2002)	Retain

PERIODIC REVIEW OF THE CITES APPENDICES

Review of the status of the axolotl (*Ambystoma mexicanum*)

1. This document has been prepared by the Scientific Authority of Mexico.

2. At its 15th meeting (Antananarivo, 1999), the Animals Committee discussed the task of carrying out a periodic review of various species listed in the CITES Appendices, in accordance with Decision 10.71, with a view to examining the taxa listed in Appendices I and II in accordance with the criteria in Resolution Conf. 9.24.

3. The animals on the list of species selected by the Animals Committee for the First Phase of this review included the Mexican salamander or axolotl (*Ambystoma mexicanum*), listed in CITES Appendix II since 1 July 1975, together with the rest of the genus *Ambystoma*. The review was originally entrusted to the United States of America and Mexico. Subsequently, during the 16th meeting of the Animals Committee (Shepherdstown, 2000), Mexico undertook to coordinate the review.

4. Between 2002 and 2004, a group of specialists from the Biology Institute of the National Autonomous University of Mexico (UNAM) carried out the study entitled "Abundance and population structure of the Mexican salamander (*Ambystoma mexicanum*) in the freshwater systems of Xochimilco and Chalco". This study was financed by Mexico's CITES Scientific Authority, the Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO). The objectives of the study were: (a) to ascertain the abundance of the population of the Mexican salamander in the systems of Xochimilco and Chalco, (b) to determine the basic population parameters of the salamander, such as its age structure, breeding levels and survival rate of different age classes, and (c) to determine the current conservation status of the wild population. The re-evaluation of the status of the species in Appendix II was also backed up by compiling and analysing the information available on the uses made of it in the area, and on the international trade in it.

5. The principal results of this study are shown below, together with a recommendation as to the appropriate listing in the CITES Appendices for *Ambystoma mexicanum*.

Range

Ambystoma mexicanum is found solely in bodies of water near to Mexico City, in particular in the systems of Xochimilco and Chalco (Figure 1). The Xochimilco aquatic system is located in the central-southern part of the Federal District and has known human settlements since before the time of the colonization by the Spanish. At the present time, Lake Xochimilco is confined to a central strip in the area of the same name. Around the lake are 189 kilometres of canals which are fed by treatment plants located on the Estrella hill and at other points close to the canal area.

Chalco is located in the eastern part of Mexico City, and has also had human settlements since the pre-Columbian era, i.e. for more than a thousand years. In Chalco, informal sampling corroborated the presence of salamanders in a body of water shared by the Tlahuac area (Federal District) and Mexico State. However, the collection carried out in the course of the project were not intended to obtain actual densities, owing to the fact that this is a highly unstable system which runs the risk of disappearing at any moment. This reservoir has been dry for long periods of time. About 10 years ago it started to refill; however, at times it remains dry for periods of up to three months, and it cannot be known when it may dry up again.

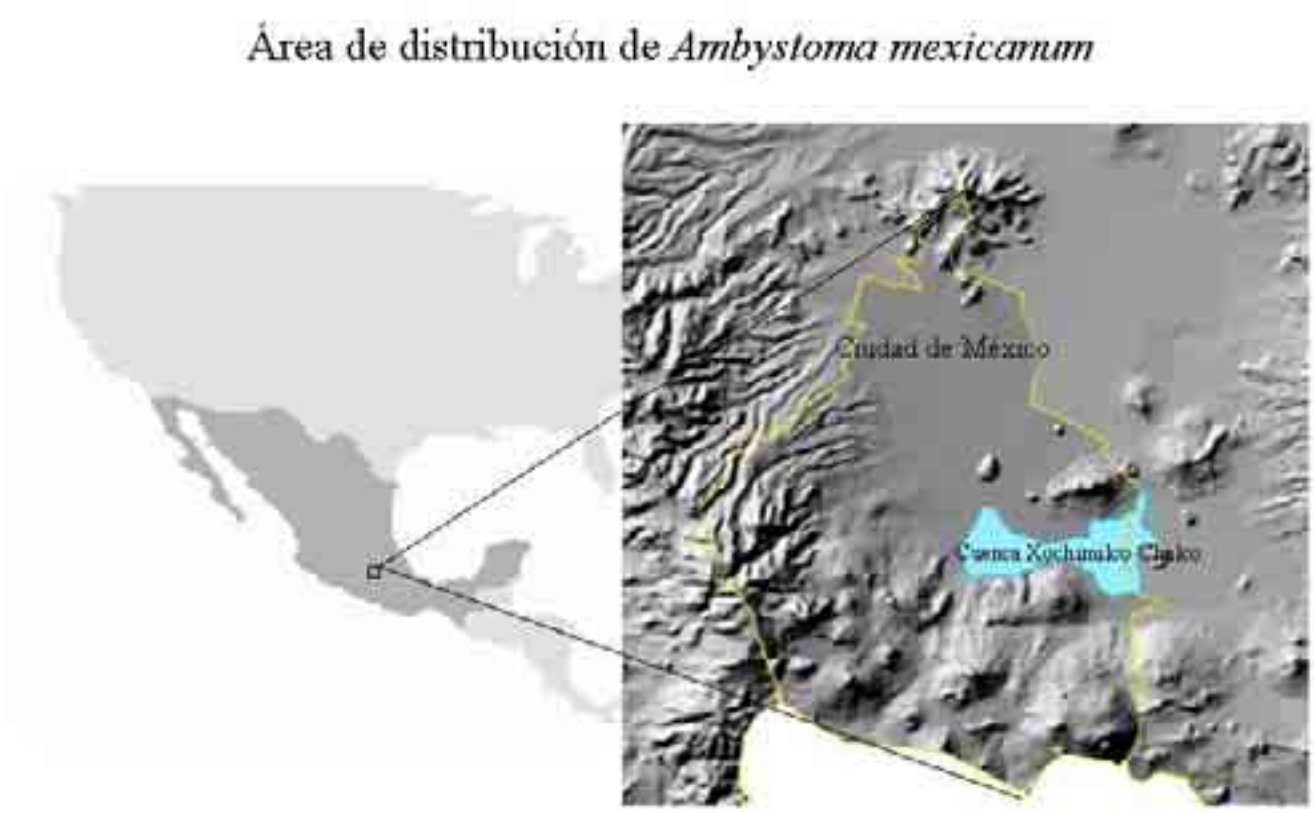

Figure 1 **Range of *Ambystoma mexicanum***

Threats to and status of the habitat

This species of salamander has been exploited for different purposes: for food, for ornamentation, and for research in various branches of medicine. Despite this level of exploitation, extending over hundreds of years, and despite the city's having grown around the only two bodies of water where it lives (Lake Xochimilco and the Chalco Lagoon), the populations of this species have survived up until the present day. However, their conditions are precarious. In Xochimilco, the populations have been going down significantly over the last 10 years.

Since the first settlements, Lake Xochimilco has been tampered with by the creation of man-made islands in it. As far back as colonial times, the fishery resources in the lake were exploited (including the salamander). At the beginning of the 20th century, the need to obtain water for the growing Mexico City resulted in initial tapping of the springs of Xochimilco. Also, the lake continued to be used for the fishery and commercial activities of the region (Vidrio and Ávila, 2000).

Many of the treatment plants whose water runs into the system have a standardized quality, including for agricultural use, and as a result the quality of the water is not homogeneous throughout the system (Sandoval, 2003). These canals are surrounded by residential and industrial areas as well as by crop-raising agricultural areas.

The high rates of population growth in the area (3.41 in 1995, one of the highest in Mexico City) have resulted in problems of squatter settlements, in particular in the conservation area, where almost 65 per cent of the 169 squatter families are found. There has also been change in land use, with the urban portion increasing from 11 per cent to 16 per cent between 1980 and 1990, which has caused the ecological-recovery and preservation area to drop from 87 per cent in 1980 to 42.2 per cent in 1997, with the lake area being the most seriously affected. Others factors that have an impact on the deterioration of the system are improper logging and introduced plant species such as the water iris, which have led to a drop in the water levels as a result of evapotranspiration during photosynthesis. There are also 78 wells used to draw off water, which in Xochimilco have contributed to excessive water usage and caused sinkage of the ground in the northern part of the area.

The poor quality of the water may be one factor that causes disease in the salamanders (Duhon, 1989). In particular, there has been both biotic and abiotic contamination of the canals of Xochimilco. The levels of some of the chemical pollutants in the water are extremely high and may be the cause for the low survival rate of these animals in certain areas of Xochimilco.

The species of fish present in Xochimilco demonstrate the degree to which the system has been unbalanced. Many of the fish here are introduced, with the alien species most affecting the ecosystem being the carp (*Cyrpinus carpio*) and the tilapia (*Oreochromis niloticus*). These species have caused major changes in the trophic network in those places where they have been introduced into Mexico (Zambrano *et al.*, 2001).

On the other hand, since the pre-Columbian era Chalco has been used more as a communications route than as a source of exploitation (Núñez *et al.*, 1987). This body of water has been greatly disturbed, since the lake dried up in the first half of the 19th century. However, the sinkages of the region (Mazari, personal communication) have caused the lake to revive in recent years. In 2003 in particular, with the copious rain, it reached a size that had seldom been seen in recent years. It is probable that this will be, for the most part, temporary, but there do exist two bodies of permanent water where the salamander can survive. One of them is within the Tlahuac region, while the other is part of Chalco. Both locations serve as water sources which are drawn on both for crop agriculture and for the urban needs of the two areas. Around and within the lake there are various wells that are used both for vegetable growing and for the urban settlements. The lake comprises four separate bodies of water, two of which dry up partially or completely in dry periods, while the other two are perennial. In one of the perennial parts there are either very low densities of introduced species, or none at all.

Among the threats to the salamanders in the first year of life (the time when they are most susceptible), the low water quality may lead to growth of fungus on the eggs or reduced viability after hatching. Another threat is predation of the eggs and juveniles by of alien species, in particular carp and tilapia. The third threat to this age segment is fishing. Salamanders of no more than four months are easy to catch in nets, and are therefore targeted by clandestine fishing.

The combination of these three threats may explain on the one hand why the distribution of the specimens is so heterogeneous, and on the other why the population has dropped sharply in recent years. Generally speaking, the areas where salamanders have been found are characterized by having low levels of pollutants and a limited abundance of introduced species. It is very probable that these conditions vary from year to year in the canals of Xochimilco (the pollutants and the distribution of carp and tilapia may be varying from canal to canal). The foregoing suggests that the salamander populations depend on chance events, which create zones free of conditions that are adverse to their offspring. Such zones have been decreasing in proportion as the contamination of the water has been increasing, and in addition there are carp and tilapia populations in more and more of the canals. Therefore, the

salamanders are concentrating in the few sites that are free of these factors. However, through being concentrated in specific sites, the salamanders are rapidly discovered by the clandestine fishermen. Thus, those seeking to catch salamanders fish in the specific zones where they survive and, since their nets can catch specimens less than one year old, this strongly affects the species' population annual growth rate.

Status of the wild population

Salamanders were collected in Xochimilco during 2002 and 2003, at which time 62 canals and eight lakes were covered, in 50 visits. Professional fishermen carried out the collecting, by casting fishing nets, which has been the traditional method of catching these animals. In total, 1,821 net casts were made, covering an area of approximately 39,173 m^2 of canals, and these resulted in a catch of 42 salamanders: 17 during the first stage and 25 during the second.

The distribution of the salamanders over the canals is not homogeneous, with 70 per cent of them being collected in the canals near to the agricultural area of Xochimilco. Apparently this distribution has been varying over the years, since in earlier studies capture had been more successful in different canals. Based on the data obtained, an average density of 0.001 specimen/m^2 was calculated for Xochimilco. In 1998, studies carried out under a comparable protocol produced a density of 0.006 specimen/m^2. It may thus be estimated that in five years the salamander populations have shrunk sixfold. This density was calculated on the assumption that the distribution of the salamander is homogeneous in the canals of Xochimilco, in order to be able to compare it with the estimate calculated five years earlier. The low density of salamanders contrasts with that of the alien fish species referred to earlier (carp = 0.032 specimen/m^2 and tilapia = 0.093 specimen/m^2), which have much higher densities in the area under study.

With the information compiled, an analysis was carried out, using life tables. This suggested that survival during the first year of life is crucial to the rate of population growth of the salamander. It is probable, then, that the principal effects on the population, i.e. the threats already mentioned, have their impact directly on the salamanders at this age.

International trade

The demand for salamanders is very diverse, since the species has multiple uses on different markets. Salamanders can be used as pets, as objects for study, or as a component of traditional medicines, used to relieve various illnesses ranging from the cough to rheumatism. For all of these reasons, there exists a high demand at the international level (Fig. 1). The most common form of trade is in live specimens (Fig. 2).

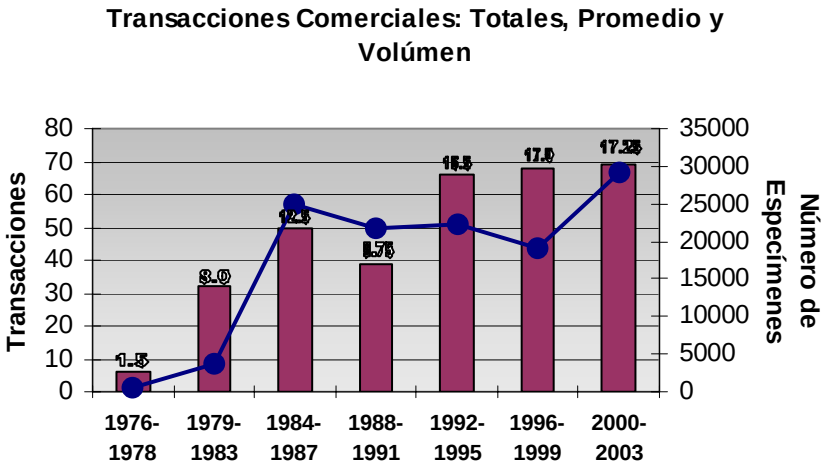

Figure 2 Trends in international trade in *Ambystoma mexicanum* (data from: UNEP–WCMC. 2005. CITES Trade Database. http://www.unep-wcmc.org)

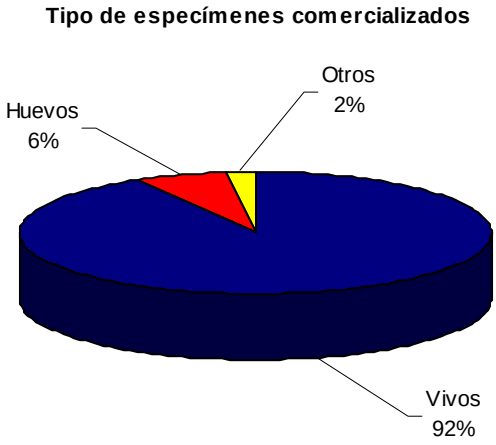

Figure 3 Type of specimens of *Ambystoma mexicanum* in international trade (data from: UNEP–WCMC. 2005. CITES Trade Database. http://www.unep-wcmc.org)

Captive breeding

The interest in *Ambystoma mexicanum* has resulted in the establishment of breeding farms in various countries. At present, the principal exporters of salamanders are Australia, the United States, the Czech Republic and the United Kingdom (Fig. 3).

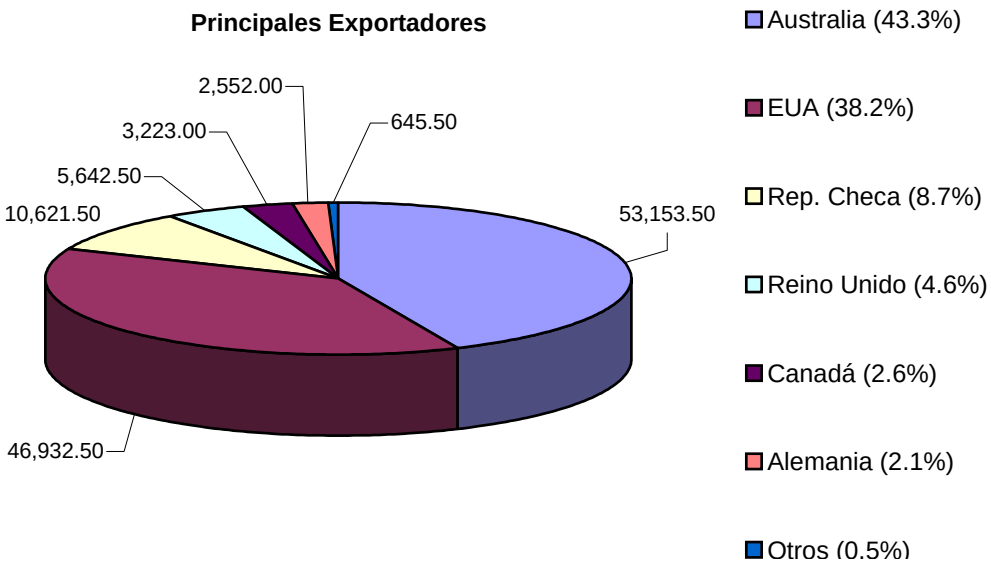

Figure 4 Principal exporters of *Ambystoma mexicanum* (data from: UNEP–WCMC. 2005. CITES Trade Database. http://www.unep-wcmc.org).

To date, the most significant breeding farm for *Ambystoma mexicanum* is 'The Axolotl Colony' at the University of Indiana. The colony is dedicated to the breeding of *Ambystoma mexicanum*, and it acts as a genetic resource, supplying embryos, larvae and adults of the species to laboratories in the United States and elsewhere. The prices of the specimens vary with their age (adults, juveniles, larvae, embryos, etc.). Currently, an adult of reproductive age costs USD 32 for a female and USD 27 for a male. The animals are sold only for use in education or in research centres. The director of The Axolotl Colony informed Mexico's CITES Scientific Authority that there had been no imports of wild specimens since the 1970s, and it appeared that there was no intention of doing so at present. However, he did say that he could not rule out the possibility that it might perhaps be necessary to import some wild specimens from Xochimilco in order to enrich the colony's gene pool. This means that although international trade is not a threat to the species at the present time, there does exist the potential of its becoming active again in the

future, and therefore it represents an additional risk factor which might contribute to a degradation in the species' fragile conservation status.

In Mexico City there are at least two breeding farms for this species, one at the Iztacala Advanced Studies Faculty at the UNAM and one at the Xochimilco Municipal Autonomous University. These and other farms are the providers for part of the domestic and international markets.

These species are also sold for commercial purposes (principally as pets), both domestically and internationally (Fig. 3). There is an international network for buying and selling pets through the Internet. Using this medium, research was carried out to ascertain the most important trading centres and the way in which the specimens are obtained. Various websites were found dedicated to the breeding and selling of amphibians and reptiles, able to supply specimens of *A. mexicanum* on request. Also, there exists a user group ("Deutsche Gesellschaft für Herpetologie und Terrarienkunde e. V" http://www.dght.de) which acts as a contact between those interested in obtaining a salamander and specialized breeders (http://groups.yahoo.com/group/axolotl_list/).

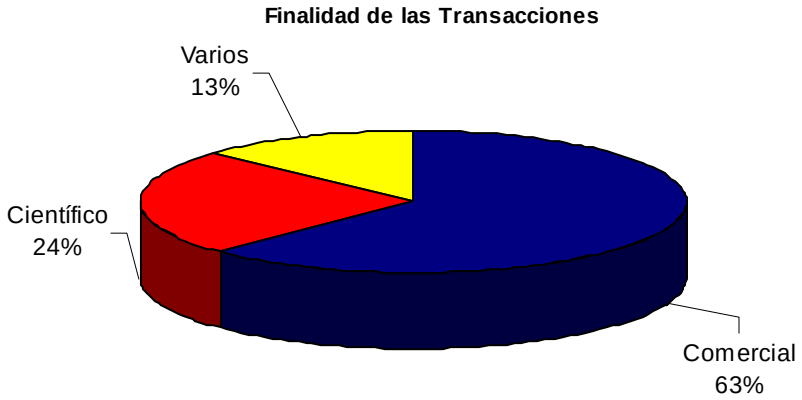

Figure 5 Intended purpose of salamander exports (data from: UNEP–WCMC. 2005. CITES Trade Database. http://www.unep-wcmc.org)

Contact was also made through the Internet with buyers of salamanders in different countries, who said that they are sold principally in pet shops, and that the latter in turn obtain them from breeders. Currently the principal importers of *Ambystoma mexicanum* are Japan, Germany, Sweden and the United Kingdom (Fig. 4).

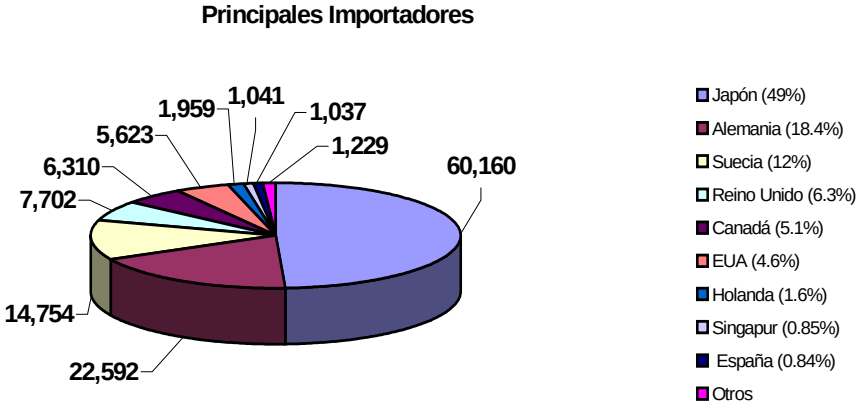

Figure 6 Principal importers of *Ambystoma mexicanum* (data from: UNEP–WCMC. 2005. CITES Trade Database. http://www.unep-wcmc.org)

The buyers and sellers who were contacted through the Internet asserted that the specimens which are in trade come from breeding centres. Also, owners of salamanders in the United Kingdom expressed the view that smuggling in a salamander would be more expensive and more complicated than buying it from a breeder. It is possible that many of these networks operate with specimens bred in such centres, but the seizures by the Federal Prosecutor's Office for Protection of the Environment (PROFEPA) in Mexico, and information from the UNEP-WCMC data base, suggest that there is also a market, albeit a small one, for specimens obtained in the wild (Fig. 5).

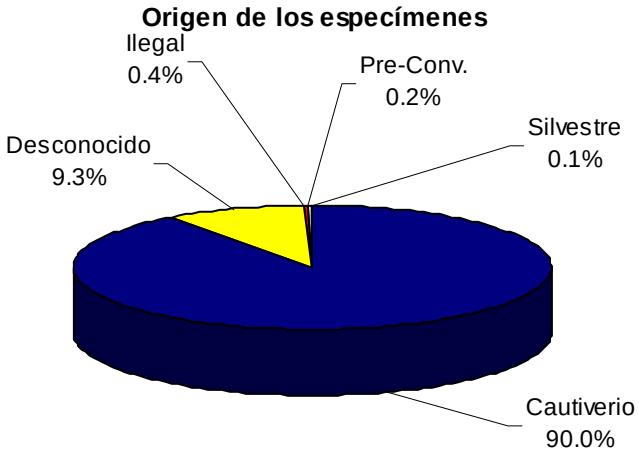

Figure 7 Origin of the salamanders entering the international market (data from: UNEP–WCMC. 2005. CITES Trade Database. http://www.unep-wcmc.org).

International illegal trade

Even if the farms apparently supply the demand on the international level, there does exist a black market that operates across borders (Table 1). In the last eight years, PROFEPA has confiscated 128 salamanders in the country's different exit ports. During those years, the trend in the number of confiscations has remained relatively steady; in other words, recent years have not shown a decrease in smuggling. The information provided by PROFEPA does not specify whether the salamanders confiscated are *Ambystoma mexicanum*, since the information is reported in the form of *Ambystoma* sp., but it is possible that international demand in this case does not make a distinction among the different species of salamander, since they are very similar.

Year	Importer	Exporter	Quantity	Form	Purpose	Origin
1994	Spain	Czech Rep.	115	live	commercial	illegal
1998	USA	Mexico	8	derived	personal	illegal
1999	USA	Mexico	3	derived	personal	illegal
1999	UK	USA	500	live		illegal
2002	Austria	Slovakia	16	live		illegal
2003	USA	Czech Rep.	21	live	commercial	illegal
2003	Austria	Mexico	200	eggs		illegal

Table 1 Illegal international trade in *Ambystoma mexicanum* (data from: UNEP–WCMC. 2005. CITES Trade Database. http://www.unep-wcmc.org)

Domestic illegal trade

Illegal trade in Mexico is centred around some groups of fishermen who still supply salamanders clandestinely. This black market has been operational for more than 10 years. The specimens were easily found in the markets, and the researchers who used them sought out the fishermen to obtain the animals. However, with the listing of the species under CITES and the strict regulation of its capture, collection of these specimens has been going down. The entry of the river police into Xochimilco, who have launches that patrol every day, has made collecting more difficult for the fishermen. It is likely that the reduction in the demand for specimens obtained from the wild (since specimens can be obtained legally from farms, at a lower price) and the difficulty of collection have cause this practice to diminish; however it has not yet completely disappeared.

The clandestine capture is carried out by fishermen with experience in collecting these amphibians, using fishing nets. They work on request and on the basis of the demand in the Sonora Market and the New Market in San Lázaro. Apparently, there are also people within the community of Xochimilco itself who act as intermediaries between the fishermen and those seeking the specimens.

Conservation efforts

In the legislation of Mexico, *Ambystoma mexicanum* is on the list of species at risk (NOM-059-SEMARNAT-2001) as a species subject to special protection (category Pr), which means that use of it is regulated by the Ministry of the Environment and Natural Resources (SEMARNAT). However, work is in progress on transferring it to the category of species at risk of extinction (category P), which will provide it with the maximum degree of protection under the current legislation.

Harvesting and management of the species and populations at risk must be done in accordance with the provisions of the General Act on Ecological Balance and Environmental Protection (LGEEPA) and the General Wildlife Act (LGVS). This means that for it to be harvested, there must be a guarantee of controlled reproduction or captive or semi-captive breeding, unless the rate of exploitation is less than that of natural renovation of the populations. It should be stressed that the legislation of Mexico promotes the care of endemic species.

Under the Xochimilco Ecological Recovery Plan, the Xochimilco Ecological Park (PEX) has been created, and was set up between 1991 and 1993. The recovery plan intends to bring back to the region a part of its original appearance, which has been altered over time by various factors, both natural causes and human activities. The PEX is located in the south-eastern part of the Federal District, in the Xochimilco region, and covers approximately 215 hectares, of which around 57 are bodies of water: lakes, swamps and canals. As a part of the recovery plan, a project has been started for the conservation of the salamander, with the specific goals of: (a) developing research into species biology; (b) restoring the salamander population in the area, through breeding and reintroduction; and (c) developing the breeding of the salamander as an alternative way of making use of the resource. The project is under way, but many items of knowledge are missing that would be required to determine the appropriateness of releasing individuals to the wild.

The lake of Xochimilco is a Protected Natural Area under the jurisdiction of the government of the Federal District. The management plan for this area is in progress, under which capture of the salamander will be explicitly prohibited. However, the Directorate-General for Wildlife of SEMARNAT is the body responsible for granting some form of permit for the management and harvesting of the species.

In December 2004, the Darwin Initiative Project of the Government of the United Kingdom entitled "Aztecs and Salamanders: Integrating Tourism and Conservation in Xochimilco, Mexico D.F.", in collaboration with the Camano Centre for Biological and Aquacultural Research, UAM, Mexico (CIBAC) and the Durrell Institute of Conservation and Ecology, Department of Anthropology, University of Kent, Canterbury, United Kingdom (DICE), organized a seminar and workshop on the salamander in Xochimilco. It was attended by various interested parties, both academics and fishermen, boatmen, students, public officials, including Mexico's CITES Scientific Authority, and others. The objective of the workshop was to draw up, with inputs from all participants, a National Plan of Action for the Management and Conservation of the Salamander in Xochimilco. This is still under preparation.

Analysis of the status of the species in the CITES Appendices based on the criteria in Resolution Conf. 9.24 (Rev. CoP13).

The species meets the following criteria from **Resolution Conf. 9.24 (Rev. CoP13**), Annex 1, which would justify its transfer to Appendix I:

A. The wild population is small and is characterized by at least one of the following:

i) an observed, inferred or projected decline in the number of individuals or the area and quality of habitat

The collection data on *A. mexicanum* in this investigation, compared with the data from five years ago, suggest that the population density has decreased sixfold. On the other hand, the information on the quality of the water in the system indicates a severe deterioration in the habitat. The water has high levels of heavy metals, ammonia nitrogen and pathogenic bacteria, which have a direct impact on the health of the salamanders.

ii) each sub-population being very small

The same density data suggest that the population in Xochimilco is very small. The difficulty in collecting, resulting from the low densities, has meant that the collections had to be carried out by fishermen with experience. Even with their participation, salamanders were not collected in high densities. Therefore, the population in Xochimilco may be considered very small (0.001 specimen/m^2). Although censuses were not carried out in the populations in Chalco, this system's variability as to quantity and quality of water justifies the conclusion that the few salamanders encountered are also part of a reduced sub-population.

iii) a majority of individuals being concentrated geographically during one or more life-history phases

Study of the life table of the salamanders suggests that the greatest vulnerability of the species occurs in the very early stages of life, with the rate of population growth depending fundamentally on the survival of these animals in their first year of life. At this stage they are faced with many more dangers than when they are adult, such as: predation of the eggs by insects and fish (including alien ones), death from contamination by fungus or by heavy metals (the eggs are very susceptible to contamination), and fishing (the majority of those captured are less than one year old). The susceptibility in the salamander's rate of growth is concentrated in the early stages of life, which involves the greatest number of threats, both natural and caused by man. This makes them very vulnerable to the effects produced by human activity, both in Xochimilco and in Chalco.

Under this criterion, the following factors may be affecting the survival of the salamanders:

– Clustering

– Special niche requirements (in particular the need for submerged plants)

– Fragmentation of habitat

– Threats of disease

– Threats from introduced species

– Threats of a rapid environmental change (in particular of the water regime)

– Selective capture (in particular of specimens less than one year old).

B. The wild population has a restricted area of distribution and is characterized by at least one of the following:

i) fragmentation or occurrence at very few locations

The salamanders are clustered in Xochimilco in very few locations. The great majority of the canals do not have salamanders, or else have them only very sporadically. However, there are few locations in the canals where the salamanders can survive. These locations have been confirmed not only by the collections carried out but also by the experience of the fishermen who are familiar with the locations where they do cluster.

ii) large fluctuations in the area of distribution or the number of sub-populations

The body of water in Chalco changes significantly in response to human needs both for cultivation and for the residential area. Consequently, in years of severe drought, this aquatic system shrinks almost to the point of disappearing. It is highly possible that this affects the salamander populations to a significant degree.

As for Xochimilco, the squatter settlements are causing severe shrinkage of the protected natural area where the salamander lives.

iii) a high vulnerability to either intrinsic or extrinsic factors

The clustering in only a few canals makes their presence well-known to the clandestine fishermen. In consequence the salamander populations have a high vulnerability to fishing. When the fishermen need salamanders, they know the specific locations where they congregate, and they may be reducing the abundance of the populations of this species. On the other hand, the poor quality of the water may be a factor causing disease in the salamanders. Some of the chemical pollutants in the water are at extremely high levels and may be the reason for the low survival of these animals in certain areas of Xochimilco.

Under this criterion the following factors may be affecting the survival of the salamanders:

– Clustering

– Selective capture (in particular of specimens less than one year old).

iv) an observed, inferred or projected decrease in any of the following:

_ the area of distribution: the squatter settlements are causing severe shrinkage of the protected natural area where the salamander lives. The need for water in the Chalco region may in the future affect its capacity to retain water, and may cause the disappearance of the second body of water where these animals survive.

_ the area of habitat: the clustering of the salamanders in just a few canals suggests that its habitat is diminishing. It is possible that the large quantity of carp introduced may be causing a decrease in the quantity of submerged plants, which serve both as a refuge and as a source of food for the salamanders.

_ the number of individuals [see item A (i)];

_ the quality of habitat [see item A (i)];

_ the recruitment [see item A (iii)].

C. A marked decline in the population size in the wild, which has been either:

i) observed as ongoing or as having occurred in the past (but with a potential to resume) [see Appendix A1];

ii) inferred or projected on the basis of any one of the following:

- a decrease in area of habitat [see items A and B (iv)];
- a decrease in quality of habitat [see items A and B (iv)];
- a high vulnerability due to either intrinsic or extrinsic factors. The carp, the tilapia and the bass are introduced species occurring in very high densities in of the lakes of Xochimilco and Chalco. These three species may be preying on eggs and juvenile salamanders, while the carp may also be competing for food.

Recommendation

The densities of salamanders obtained in the study are six times lower than those obtained five years earlier, and the few individuals that reach the adult phase area easily (and illegally) collected. These results demonstrate the need to increase the measures to protect the salamander. Although international trade does not appear to be a threat to the species at present, it is an additional risk factor which may endanger its survival even further. It is evident that an intention to export still exists, since seizures in recent years at the country's exit ports have not diminished. Based on the information presented in this report, it may be concluded that there is a potential for reactivating this trade in the future. This aspect is provided for in Article II of the Convention "Appendix I shall include all species threatened with extinction which are or may be affected by trade". For the foregoing reasons, we consider it necessary to place the species under stricter international trade regulations and to authorize it only under exceptional circumstances, by transferring the species to Appendix I.

The transfer of this species to Appendix I will make a significant contribution to the legislative, conservation and management efforts which are currently being expended in Mexico, and will make it possible to exercise more severe sanctions against anyone trading in the species. This in turn will reduce the pressure from plundering and capture on the wild populations. We are convinced of the necessity to strengthen the control measure to combat illegal trade. This point strengthens the fact that the transfer to Appendix I will result in a strict control of the international trade in the interests of the effective conservation of the species.

Therefore, in accordance with the provisions of Article XV, paragraph 1 (a), and in line with Article II, paragraph 1 of the Convention, and in accordance with the criteria for amendment of the Appendices laid down in Resolution Conf. 9.24 (Rev. CoP13), the recommendation of Mexico's CITES Scientific Authority is to transfer the axolotl (*Ambystoma mexicanum*) from Appendix II to Appendix I, since this will support the legislative, conservation, and management efforts in Mexico, its country of origin.

In addition to placing the species in the Appendix which is appropriate on the basis of the evaluation, we consider that a supplementary advantage would be that of promoting, on the basis of Resolution Conf. 13.9 recently adopted by the Conference of the Parties, cooperation of Parties having *ex situ* breeding establishments with *in situ* conservation programmes. Currently these centres produce 100 per cent of the specimens that enter legal international trade, and yet the majority of the revenue that is generated (except in the case of the Colony of Indiana, which has participated in joint programmes with Mexican institutions), does not provide any assistance towards the conservation of this species in its original range.

The implications of such a measure include the registration with the Secretariat of the establishments that breed salamanders in captivity, in accordance with Resolution Conf. 12.10 (Rev. CoP13) and the use of a CITES export permit, the issue of which should not pose any particular problem. Also, the academic institutions carrying out exchanges for research purposes do not need to request that permit and it would be sufficient for them to register with the relevant Management Authority and use a label authorized or issued by it.

A second option might be to leave the salamander in Appendix II, but to establish a zero quota for specimens originating in the wild. In this way, export of specimens from breeding establishments would be facilitated and it would not be necessary to have a registration with the

Secretariat nor to process a CITES export permit, and we would ensure that salamanders from Xochimilco were not being harvested with a view to being exported to other countries.

The option of eliminating the salamander from the Appendices is not consistent with the analysis of the amendment criteria. Although international trade in wild salamanders is currently at a very low level, there is still evidence of the existence of illegal international trade, and there are high levels of trade in captive-bred specimens, which is sufficient to meet the criterion on international trade. Regulation of this species at the international level will significantly impede the trade in this species when practised in the form of smuggling. Additionally, excluding the species from the CITES Appendices would make it impossible to have a record of exports of the species. On the other hand, if the wild populations do recover following the conservation efforts that are already being made in Mexico, international trade could then turn into a significant threat to the species. Currently the salamander population in Xochimilco would not support intensive harvesting to meet international demand, but, if it were to revive and if there were no export restrictions, that would be an incentive to catch them in the wild and to sell them more cheaply than the establishments that breed them in captivity.

Consultations

With a view to determining the opinion of the principal establishments that breed salamanders for export as to a potential transfer of the species to Appendix I, Mexico's CITES Scientific Authority established contact with the Scientific Authorities in the countries with the most significant levels of exports of salamanders recorded by UNEP-WCMC.

The Outreach Coordinator of the Colony of Salamanders at the University of Indiana informed us that they strongly support the proposal to transfer the salamander to Appendix I. She also said that in any event it would be necessary to wait for a period similar to that which is needed for a CITES permit in order to obtain the permit for shipment of the specimens, and that in consequence, it was always necessary to plan any export in advance. As a result they did not consider it at all problematic to have to request a CITES export permit in addition.

On the other hand, the Sustainable Users Network of the United Kingdom, and also the CITES Scientific Authority of the Czech Republic, communicated their disagreement with the possible proposal for transfer. Their grounds were that they do not consider international trade to represent one of the principal threats facing the species, and that the paperwork necessary if the species were to be listed in Appendix I would be excessive. If the salamander were listed in Appendix I, exports within the European Union would need to be accompanied by a CITES permit (which is not the case for species in Appendix II). However, since what would be involved would be captive-bred specimens, marked or easily identifiable as such (the great majority of the salamanders which are exported in the European Union are albinos, and very different from wild specimens), the European Union can include them in its Appendix VIII, which would make it possible to for them to be traded within the Union without having a CITES permit. According to the information provided by the CITES Authorities of the United Kingdom and the Czech Republic, breeders of salamanders in the European Union do not have their establishments registered with the CITES Secretariat, given that what is laid down in Resolution Conf. 12.10 (Rev. CoP13) is not incorporated into their domestic legislation. In the light of the foregoing, it would appear that there would not be a major difference nor would there be a major problem with regard to the paperwork and formalities required for exports of salamanders within the European Union.

During the seminar and workshop on the salamander in Xochimilco organized by DICE at the end of 2004, Mexico's CITES Scientific Authority laid out the situation of the salamander and the possibility that it would be submitting a proposal to transfer it to Appendix I, and this option was supported by the great majority of the participants.

PERIODIC REVIEW OF THE CITES APPENDICES

Review of the status of the Central American river turtle (*Dermatemys mawii*)

1. This document has been prepared by the Scientific Authority of Mexico.

2. At its 15th meeting (Antananarivo, 1999), the Animals Committee discussed the task of carrying out a periodic review of various species listed in the CITES Appendices, in accordance with Decision 10.71, with a view to examining the taxa listed in Appendices I and II in accordance with the criteria in Resolution Conf. 9.24.

3. The animals on the list of species selected by the Animals Committee for the First Phase of this review included the river turtle (*Dermatemys mawii*), listed in CITES Appendix II since 1981. At the 15th meeting Guatemala offered to carry out this task. Subsequently, during the 16th meeting, Mexico undertook to carry out the review in coordination with Guatemala and other regional representatives for Central and South America and the Caribbean.

4. Between 2002 and 2004, a group of researchers from the Institute for Natural History and Ecology, coordinated by Mr Guichard, carried out the study entitled "Current Situation of the River Turtle (*Dermatemys mawii*) Populations in the South-east of Mexico", with financial support from the Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO), Mexico's CITES Scientific Authority. The aim of this study was to analyse the current situation of the river turtle populations in their natural habitat, in order to determine the status which the species should have under CITES. The specific objectives of the study were: (a) to determine the distribution of the river turtle populations and the possible factors influencing it; (b) to analyse the population parameters of the species; (c) to determine the impact of the pressure from humans on the river turtle populations; and (d) to obtain information on the utilization of and trade in the species.

5. The principal results of this study are shown below, together with a recommendation as to the appropriate listing in the CITES Appendices for *Dermatemys mawii*.

INTRODUCTION

The river turtle (*Dermatemys mawii*) is the only remaining species of the family Dermatemydidae. It is distributed over four countries in Mesoamerica, namely the south-east of Mexico, Belize, Guatemala and the north of Honduras. In Mexico, it is distributed in the states of Veracruz, Tabasco, Campeche, the northern part of Oaxaca, the north-east of Chiapas and the south of Quintana Roo.

The river turtle, known locally as *tortuga blanca* or *tortuga plana*, is herbivorous, although it also includes some insects in its diet. It lives in bodies of water in areas subject to flooding of low-lying land, from sea level up to approximately 250 m above sea level. Such bodies of water may be either temporary or permanent, a condition which favours the growth of pastures and hydrophytic vegetation at the edges of the water, which represent its principal source of food, also providing it with favourable locations for refuge, breeding and growth. Unfortunately, these same locations are being impacted on by the development of various human activities, which threaten both the wild populations of the taxon and their habitat.

All of the studies carried out into *D. mawii* in Mexico state that the populations have been harvested over their entire range for a little over 50 years. It is known that in the states of Veracruz and Tabasco the populations used to be abundant, since the fishermen used to collect hundreds of individuals in a single day, something that today is impossible. This pressure from the fishermen practically wiped out the populations in Tabasco, and during the 1970s, they moved to Chiapas to exploit the populations in the Usumacinta River. The most abundant and best-conserved populations of river turtle in Mexico are found in the areas which are farthest away from human populations.

Exploitation of and illegal trade in this species are very widespread in the States in the south-east of Mexico, in particular in Tabasco and Chiapas. Commercial hunting and subsistence consumption are the principal uses of the species, although it is also known to be used as a type of ornamentation and as a pet. The commercial hunting has impacted on the populations of the species, since its meat is much prized, and as a result a large number of fishermen take large quantities of adults at various times of the year, including during breeding.

RESULTS OF THE FIELD STUDY

Range

The distribution of the taxon in Mexico stretches from the Yucatan Peninsula, extending along the northern coast and the lowlands of the Golf of Mexico, between 15°- 21° 30' N and 88° 96° W (Figure 1).

Figure 1 Distribution of the river turtle (*Dermatemys mawii*) in Mexico.

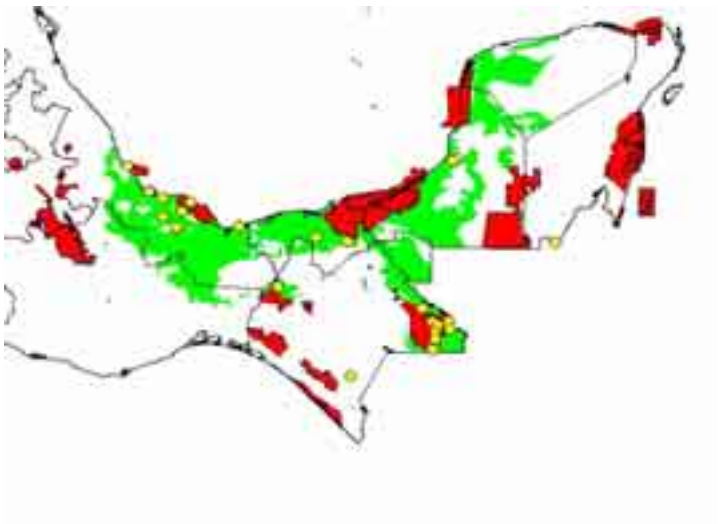

Figure 2 Potential distribution of the river turtle (*Dermatemys mawii*) in Mexico calculated by means of the GARP program (Genetic Algorithm for Rule-Set Prediction). Green = potential range; Red = protected natural areas; yellow circles = historical recordings of the species.

During the field study, the sampling effort was concentrated on the bodies of water or sections thereof featuring the following conditions: (a) accessibility by launch with an outboard motor at a sufficient speed; (b) feasibility of placing and handling the traps; and (c) safe conditions both for the personnel and for the working equipment and materials, and where it was also possible to obtain the support of local people. Additionally, consideration was given to the comments and suggestions by researchers who had carried out studies on other turtle species in these locations, as was the case in the Coatzacoalcos River, which presents high levels of contamination and in which personnel of the Institute of Ecology had captured no river turtles in the preceding three years.

A total of 23 visits were made (15 prospecting and eight sampling) in the States where historically the species has been reported, namely: Campeche, Chiapas, Oaxaca, Tabasco and Veracruz. Of these, it was only possible to confirm its presence on the basis of direct recordings (captures and observation of individuals).

Abundance

The total number of individuals captured during the whole of the study was 20, using 403 traps over the course of 53 days, in eight locations (Table 1). A total of 14 individuals were captured in the State of Veracruz, five in Campeche (plus one recapture), 1 in Chiapas, and none in Tabasco. Figure 3 shows the number of individuals as related to the sampling effort involved (calculated as the number of traps placed per day in each location). There were some locations where no specimens were captured, namely the Lacantún River and Alejandría in Chiapas, and the Tabasquillo River, the San Pedro Lagoon and the González River in Tabasco. The location where the greatest number of captures was made was the Culebras River, in Veracruz.

State	Location	No. of days	No. of traps	Effort: trap-days
Veracruz	• Culebras River	7	12	84
Chiapas	• Tzendales River	10	15	150
	• Lacantún River	2	3	6
	• Rancho Alejandría	4	5	20
Campeche	• Pom-Atasta lake system	8	6	48
Tabasco	• Tabasquillo River	7	5	35
	• San Pedro Lagoon	12	4	48
	• González River	3	4	12

Table 1 Sampling effort applied in each body of water, by State.

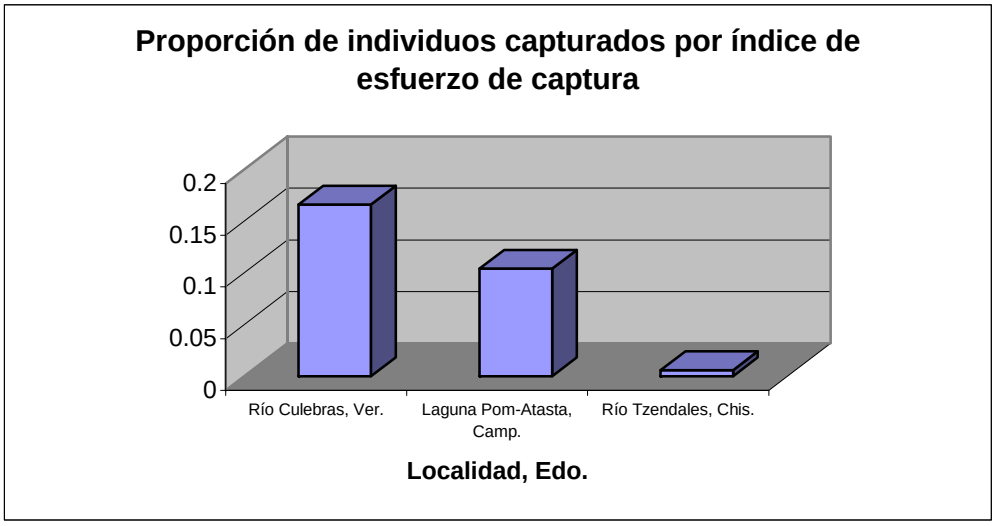

Figure 3 Proportions of individuals captured by ratio of capture effort (#indiv./traps/days). Including only those locations where captures were in fact made.

In 1992, Vogt and Flores-Villela undertook a sampling in the Tzendales River, in Chiapas, and captured a total of 14 individuals using 15 traps over 30 days (450 trap-days), while in the present study only one individual was captured, using 15 traps over 10 days (150 trap-days). Therefore, in 1992 the rate of capture per ratio of effort was 0.031 and in 2002 it was 0.006, which means that it had gone down more than 80 per cent in only 10 years. It should be mentioned that this is the only area for which information was available for different years, on the basis of which it is possible to define a population trend. In the view of some specialists, this region could contain one of the better-conserved populations, owing to its relative geographic isolation, which means that the population trend observed might be a reflection of the fragile conservation situation of the species on the national level.

Figure 4 shows the number of individuals captured in the Tzendales River, as recorded in various years between 1982 and 2002, using a similar sampling effort. The data used to draw up this figure correspond to the following years and number of captures: 1982: 44; 1991: 27; 1992: 14; 1997: 4 and 2002: 1; and, except in the case of 1992, come from unpublished information (Vogt, personal communication, 2003). The drop in the number of captures (an indirect reflection of abundance) appears to be a consequence of the persistent taking and hunting of the species.

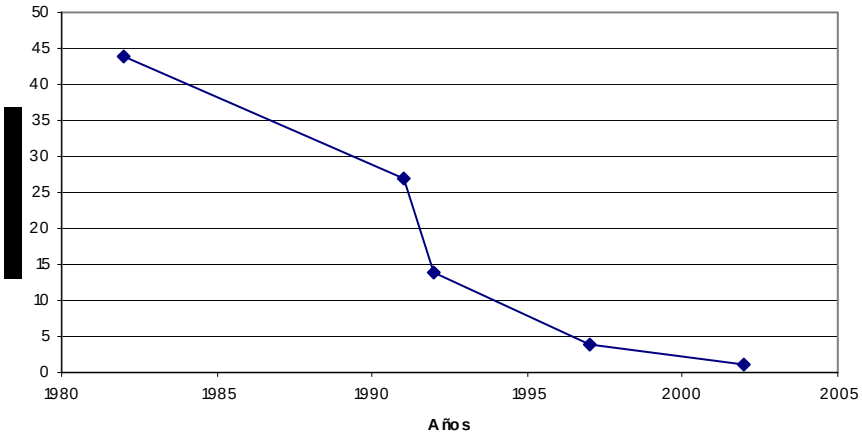

Figure 4 Comparison over time of the number of captures of *D. mawii* in the Tzendales River, Chiapas.

Population structure

With regard to the proportion of individuals by age and sex, out of the total captured, 13 were juveniles (62 per cent); 5 adults (24 per cent) and 3 pre-adults (14 per cent). Broken down by sex, 20 were female and there was only one male. This information is shown in Figure 5, which also distinguishes the proportion of these variables by State.

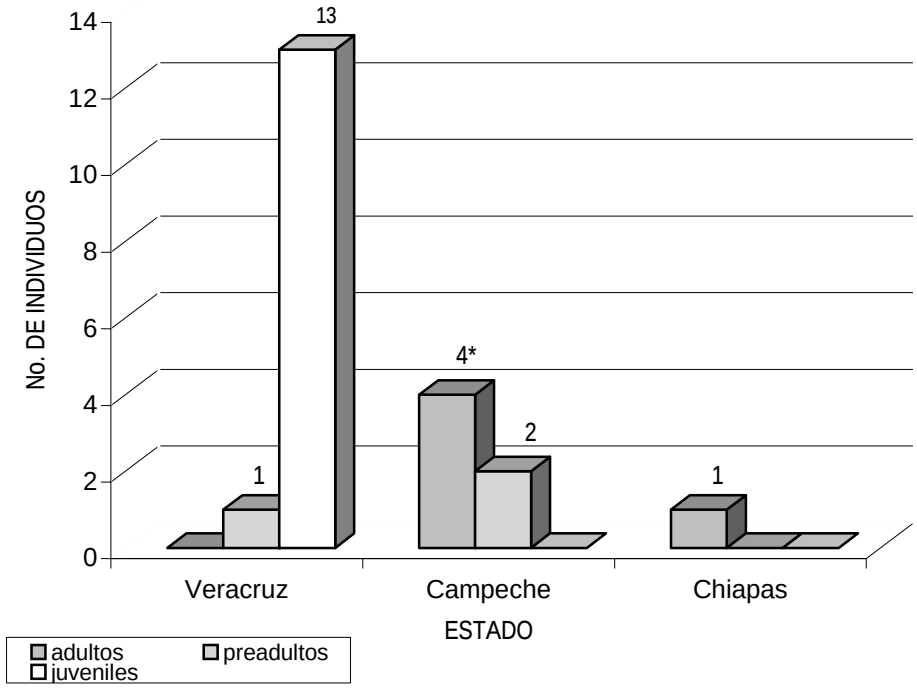

Figure 5 Proportions of individuals of *Dermatemys mawii* by age and sex (* includes the only male captured).

The results in the figure reflect the fact that in the Culebras River, in Veracruz, where the greatest number of individuals were captured, is the location with the greatest proportion of females of low age or size (juveniles); whereas the majority of the adults were encountered in the Pom-Atasta lake system, in Campeche, which is also where the sole male in the study was caught.

It is considered that the dominance of juveniles in the Culebras River may be a consequence of the fact that this area was kept closed for a time, thus permitting their development, although it also suggests that the river is an important nesting site for the species. However, the same results might indicate the strong pressures of harvesting on the local population, given that the turtle populations made up for the most part of immature individuals or juveniles may be a reflection of over-exploitation of adult individuals.

The Pom-Atasta lake system presented the opposite situation to that of the Culebras River. There, 4 adult individuals, 2 pre-adults and the only male in the study were captured.

Use, harvesting and impact of human activities

In order to determine the demand and local use of the species in the four States visited, 45 interviews were held in various communities of those States. With respect to the different uses that the settlers have for the river turtle, 89 per cent of those interviewed stated that they had used it at least once, another 7 per cent had never used it at all and 4 per cent did not respond; it should be stressed this percentage refers only to use and does not mean that the respondents are the actual hunters. Of the percentage that stated that they had used it at least once, the overriding use was for their own consumption (Figure 6).

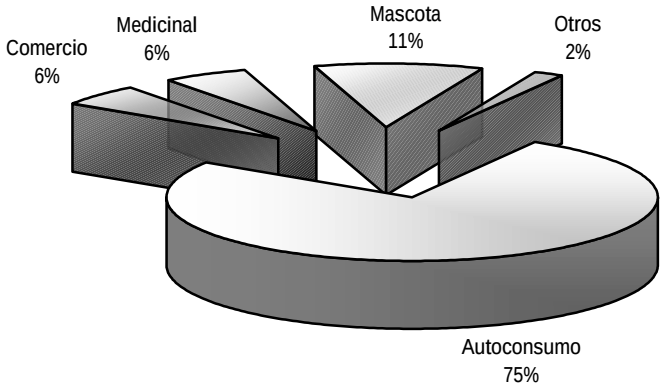

Figure 6 Local uses of *Dermatemys mawii* by the local settlers in the four States sampled.

The consumption of river turtle meat by the settlers is in response to two factors: the flavour of the meat and the large size of the species, which provides a large amount of meat.

Unfortunately, the ongoing demand for its meat means that more and more individuals are caught, exerting pressure not only on the adult specimens but also on the pre-adults and juveniles, thereby impacting on the species' population structure and reproduction, and endangering the viability of the local populations.

With respect to the time-frame for the hunting, it is more intense between the months of March and May, owing to the increased demand on the part of the locals, since this is the time of Lent or Holy Week, during which they do not consume red meat. Figure 7 shows the catch levels over the course of the year. Here it will be seen that the months with the greatest hunting activity coincide with the dry period.

The high demand that exists for the meat of this species causes it to reach high prices, which is also a consequence of its not being very abundant, and that in turn means that it is a highly profitable for any fisherman who, while not seeking this species specifically, catches one by chance in his nets. Given the commercial importance that the species takes on in the Lenten period (March-April), in Tabasco, during that time, an individual weighing 10 kg is priced at between MXN 600 (approximately USD 50) and MXN 2000 (approximately USD 170), which confirms that the high price reached by specimens of the species is profitable not only for the hunters but also for the traders.

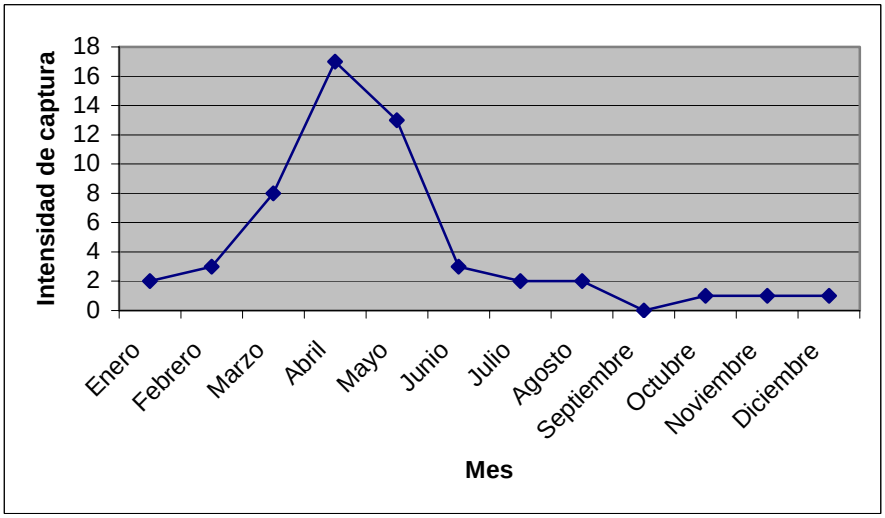

Figure 7 Catch levels of *D. mawii* over the course of the year.

Furthermore, in all of the sites where the presence of the species was confirmed, strong pressure on the medium was detected resulting from human activities. The most common impact was the continuous passage of launches, which is a consequence of the fact that many of these rivers represent the only means of communication between one village and the next, which leads to adverse conditions for all freshwater organisms.

Another impact on the species is the transformation and loss of its habitat, that results from the replacement of the original vegetation, generally speaking hydrophytic communities, by extensive areas of pastureland for agricultural and stock-breeding purposes. This substitution takes place by burning off the vegetation, after which replacement species arrive, in addition to favouring the conditions for the growth of pasture or grasses that are the basic fodder for livestock.

CONSERVATION AND MANAGEMENT STATUS

Mexico has had a permanent prohibition on the taking of *Dermatemys mawii* since 1975. Also, the species is included in the Mexican list of endangered species (NOM-059-SEMARNAT-2001), in the category At Risk of Extinction (category P), in which are classified those species whose ranges or population size on the territory of the country has dropped drastically, jeopardizing their viability. This category is partially identical with the categories Critically Endangered and At Risk of Extinction in the classification of IUCN – The World Conservation Union and prevents any commercial utilization of the species.

The General Act on Ecological Balance and Environmental Protection (LGEEPA) and the General Wildlife Act (LGVS), are the instruments that regulate all activities relating to conservation, protection and utilization of wildlife and its habitat in the territory of the country. Other local regulatory instruments are the programmes for management of the protected natural areas where the species is currently distributed, since they specify the utilizations that are permitted within each management zone.

Additionally, at the international level the species has been on the IUCN Red List of Threatened Species, under the category Endangered, EN, since 1996. This category includes those species that are not critically at risk, but that face a high risk of extinction in the wild in the near future (Table 2).

Species	Common name	CITES	ESA	IUCN	NOM ECOL 059
Dermatemys mawii	River turtle	Appendix II	P At risk of extinction	EN Endangered	P At risk of extinction

Table 2 Categories of risk and protection covering *D. mawii*.

Additionally, the Turtles Conservation Fund, TCF, in collaboration with CABS (Center for Applied Biodiversity Science), C.I. (Conservation International), IUCN/SSC (The World Conservation Union Species Survival Commission), TFTSG (Tortoise and Freshwater Turtle Specialist Group) and TSA (Turtle Survival Alliance), drew up in 2003 a listing of the 25 freshwater turtles most at risk in the world, in which the river turtle was included, with the recommendation that it could be a species suitable for management in captivity, to provide wild meat to rural and suburban settlers, with the aim of permitting the breeding and protection of the wild populations in their habitat.

BREEDING FARMS AND INTERNATIONAL TRADE

A study was made of the permits granted for the harvesting and use of the species in Mexico; this provided information on the establishment of breeding farms or wildlife management and harvesting units in the States of Veracruz and Tabasco.

In Tabasco, information was obtained about the freshwater-turtle breeding farm in Nacajuca. This was the first set up for the management and captive-breeding of river turtles in Mexico, and is maintained by means of a subsidy from the Government of the State of Tabasco. Additionally, the installations have functioned as a repository for specimens secured and/or seized by the authority charged with applying the Act (The Federal Prosecutor's Office for Protection of the Environment; PROFEPA). There is a captive population of 308 specimens of river turtle on this farm. This high abundance has encouraged the

personnel on the farm to promote the captive breeding of the species, including donation of specimens as a basis for hatcheries and provision of technical advice on management.

With respect to the Sagaro turtle farm in the locality of La Florida, Veracruz, this is the only one that currently functions as an intensive breeding facility, having also obtained CITES permits to export specimens since 2000. The exports were to Japan, during the years 2000, 2001 and 2002, and the CITES permits were issued for 50, 50 and 20 live specimens, respectively, although apparently only 30 specimens were exported in 2001 and 12 in 2002. All were exported with the intention that they would be sold as pets.

Mexico has granted no export permits except for these ones, and specimens obtained directly from the wild have not left the country legally.

ILLEGAL TRADE

Currently, at the world level, *Dermatemys mawii* is classified in the highest categories of threat (see Table 2), as a result of the combination of factors including: restricted distribution, high demand for the meat, transformation and loss of habitat, and others.

In Mexico the species has been under a permanent protection since 1975 (De Alba, 1979), which means that extraction and harvesting of it are not permitted in the locations where it lives naturally. However, it is known that some specimens are hunted and sold illegally in communities and local markets within its range area (Table 3).

State	**Year**	**No. of specimens seized**
Chiapas	1994	2
Chiapas	2001	5
Tabasco	2002	2
Tabasco	2004	11
Tabasco	2004	1

Table 3 Report of offences relating to *D. mawii* in Chiapas and Tabasco, 1994 to 2004 (PROFEPA records).

CONSULTATIONS WITH THE RANGE STATES OF THE SPECIES

Taking into account the recommendations on this type of review, the Scientific Authority consulted the CITES Authorities of all the range States of the species in order to determine its population status there. It appears that there is no current information on the conservation status of the species in those countries.

CONCLUSIONS AND RECOMMENDATIONS

In general, it has been determined that the current situation of the river turtle in Mexico is fragile, as a result of the restricted distribution of its natural habitat, the loss in area and quality of the habitat due to human activities, and the high levels of exploitation, primarily for subsistence consumption and regional trade.

Additionally, the information obtained in the field with respect to the abundance of wild individuals indicates that the populations of the species are at very low levels over all of its range and, at least in the single population sampled for various years, they show a pronounced decline that could reflect the situation in the rest of the country.

For the foregoing reasons, Mexico's CITES Scientific Authority, taking into account an analysis based on the criteria in Annex I of Resolution Conf. 9.24 (Rev. CoP13) – see the criteria below - and applying the precautionary principle, recommends that *Dermatemys mawii* should be transferred to CITES **Appendix I**, since the species meets the criteria. On the other hand, the species has also been evaluated in

accordance with the criteria of the Risk Evaluation Method that is used to classify the species in the Mexican list of endangered species (NOM-059-SEMARNAT-2001) in order to determine the status that *D. mawii* should have in that list, and this reconfirmed its categorization as a species At Risk of Extinction.

Although international trade is not the principal threat to the species at the present time, it is an additional risk factor that might endanger its survival even more. There does still exist international trade in the species, and even last year a request was received to export 35 specimens. The request was denied, once it was ascertained that none of the specimens that are currently in captivity can be considered as captive-bred under the CITES stipulations [Resolution Conf. 10.16 (Rev.)], since it still has not been demonstrated that they have the possibility to produce second-generation offspring (F2). The Scientific Authority of Mexico considers that before commercial exports of this species are possible, it will be necessary to guarantee that its captive breeding is viable in the long term and to take the necessary measures to ensure the well-being of its wild populations.

BIOLOGICAL CRITERIA APPLICABLE TO THE TRANSFER OF THE RIVER TURTLE (*Dermatemys mawii*) TO CITES APPENDIX I

According to the results obtained in the study recently concluded, the river turtle currently fulfils **more than one** of the criteria established for species to be listed in Appendix I, namely the following:

A. The wild population is small, and is characterized by the following:

   i) an observed, inferred or projected decline in the number of individuals or the area and quality of habitat;

   v) a high vulnerability due to intrinsic or extrinsic factors.

B. The wild population has a restricted area of distribution and is characterized by at least one of the following:

   iv) an observed, inferred or projected decrease in the following:

      – the area of habitat;

      – the number of individuals;

      – the quality of habitat.

C. A decline in the size of the population in the wild, that has been either:

   ii) inferred or projected on the basis of the following:

      – a decrease in area of habitat;

      – a decrease in quality of habitat; and

      – levels or patterns of exploitation.