

## Transfer of Annam Leaf Turtle *Mauremys annamensis* from Appendix II to Appendix I

### Proponent: Viet Nam

**Summary:** The Annam Leaf Turtle *Mauremys annamensis* is a moderately large freshwater turtle, endemic to Viet Nam. Its known distribution is the marshes and slow-flowing streams of the lowlands of Quang Nam, Da Nang and Gia Lai Provinces in the centre of the country. The provinces have a combined area of approximately 27 000 km<sup>2</sup>; suitable habitat within this area would be considerably smaller. Records of specimens in markets in Southern Viet Nam indicate that the species may be considerably more widespread than this in Viet Nam, but this remains unconfirmed. The species has been very rarely recorded in the wild. There are anecdotal accounts that it was locally common in the 1980s and 1990s. In recent years, very few animals have been found in the wild by scientists, despite targeted survey efforts, nor is the species frequently seen in market surveys or recorded in trade seizures. Observations in captivity indicate that it takes about seven years to mature, and females may produce one or two clutches of five to eight eggs per year.

The species was included in Appendix II in 2002. Since then, fewer than 200 have been recorded in CITES trade data, and fewer than 30 of those are recorded as having been taken from the wild. The species is protected in Viet Nam; there have been numerous documented seizures made within the country, apparently with the intended destination of China. Collection for trade is considered to be the primary threat to the species. It is in some demand in the international pet trade and the Asian food trade, and is also used locally for medicinal purposes. Apparently wild-collected turtles pass through a network of local middlemen before being exported or consumed locally. There has been some success in captive-breeding the species in Viet Nam and elsewhere; the largest known holding in Viet Nam is of around 40 individuals. A European studbook has been established, and the Asian Turtle Consortium in the USA is also holding a number of animals.

Wetland habitat loss and degradation as a result of conversion to agriculture is a secondary threat to the species; the species may well be able to adapt to agricultural landscapes with wet rice fields, ponds and canals, but in this habitat animals are extremely likely to be encountered by humans and collected. There are currently no records from any protected areas. *Mauremys annamensis* was assessed as Critically Endangered by IUCN in 2000.

**Analysis:** *Mauremys annamensis* is endemic to Viet Nam and is in demand in international trade. There are no estimates for a global population but the species now appears to be rare or very rare, with few specimens encountered in the wild in surveys. Reports from local people and market observations indicate that the species was considerably more abundant in the 1980s and 1990s, suggesting a marked population decline. It is possible, therefore, that it meets the criteria for inclusion in Appendix I set out in Paragraph C of Annex I to *Resolution Conf. 9.24 (Rev CoP15)*.

Supporting Statement (SS)	Additional information
Viet Nam.  Critically Endangered (Assessed 2000).	<u>Range</u>   <u>IUCN Global Category</u>   <i>Critically Endangered A1d+2d ver 2.3 Assessment noted as in need of updating.</i>

Supporting Statement (SS)	Additional information
<p><b>Biological criteria for inclusion in Appendix I</b></p> <p><b><u>A) Small wild population</u></b>  <b>(i) Population or habitat decline; (ii) small sub-populations; (iii) concentrated geographically during one or more life-history phases; (iv) large population fluctuations; (v) high vulnerability</b></p> <p>No data are available on the population size of <i>M. annamensis</i>.</p> <p>Recruitment for <i>M. annamensis</i> is slow – animals take about seven years to mature, females are thought to produce one or two clutches of 5-8 eggs per year, and there is high egg and juvenile mortality rates making this species intrinsically vulnerable to large population declines such as that brought about by over-exploitation.</p> <p><b><u>B) Restricted area of distribution</u></b>  <b>(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment)</b></p> <p>No data are given on the area of distribution of <i>M. annamensis</i>. However, it is known from only three provinces in Viet Nam, and within these it is restricted to small lowland lakes, ponds and wetland areas close to large rivers. There is ongoing habitat degradation predominantly through the conversion of wetlands to agricultural land. There is also continued decline in the population due to over-harvesting of wild individuals.</p> <p><i>M. annamensis</i> is suffering a decline in habitat due to the conversion of natural lowland wetlands to agriculture. While this species can inhabit modified landscapes, this increases the proximity of the turtles to humans making it more likely that they</p>	<p><i>During April and May 2006, comprehensive interview-based surveys were conducted in Quang Nam Province, focusing on M. annamensis. During the survey, 397 locals were interviewed, of whom 93 were able to provide information on M. annamensis. In particular, the two districts of Dien Ban and Duy Xuyen provided reliable information on the species; including information from a boy who was keeping a specimen of M. annamensis which he claimed to have caught in a small lake known locally as Ha Tre Lake. In November 2006, a team from the Mauremys annamensis Project (MAP; led by the Asian Turtle Program (ATP)) returned to investigate Ha Tre Lake. During this visit, non-lethal aquatic trapping was conducted, which resulted in the capture of a single sub-adult M. annamensis, the first ever confirmed wild capture of the species since 1939. As a result of the findings, the MAP established a project presence at the site starting in September 2007, with a full-time monitoring team located in Dien Phong Commune. By February 2008, a total of 339 additional interviews had been conducted in Duy Xuyen, Dien Ban, Que Son, Thang Binh and Dai Loc districts. Five M. annamensis were observed in the hands of a single trader in Vinh Dien town of Dien Ban district. Interviews with traders indicated that the species was becoming increasingly rarer. This is further supported by the fact all five animals observed in trade were sub-adults or juveniles; the largest specimen was 280 g and still not mature and the smallest was only 85 g. In addition to interviews, a total of 110 days of trapping were carried out at three sites in Duy Xuyen and Dien Ban districts. Trapping resulted in no additional field records for M. annamensis (Nguyen et al., 2008).</i></p> <p><i>The combined area of Quang Nam, Da Nang and Gia Lai provinces is approximately 27 000 km<sup>2</sup>. Suitable habitat within this range would be considerably smaller.</i></p> <p><i>Le et al. (2004) suggest that the range of M. annamensis may be far larger than is commonly thought. Surveys from 1995 suggested it may be found as far south as Ca Mau, although these animals may have been misidentified, but individuals also appear in Ho Chi Minh City markets. As turtle trade runs south to north (to China) and traders tend to sell locally, they suggest this means the species' range reaches to the south of Viet Nam.</i></p>

Supporting Statement (SS)	Additional information
will be collected through chance encounters.	
<p><b>C) Decline in number of wild individuals</b>  <b>(i) Ongoing or historic decline; (ii) inferred or projected decline due to decreasing area or quality of habitat, levels of exploitation, high vulnerability, or decreasing recruitment</b></p>	
<p><i>M. annamensis</i> is classified as Critically Endangered on the IUCN Red List of Threatened Species, based on a population decline of 80% or more within the past three generations, and a similar projected decline in the future. Although this assessment needs to be updated, the Conservation of Asian Tortoises and Freshwater Turtles Workshop held in 2011 recommended that this species retains its Critically Endangered status for the same thresholds.</p> <p><i>M. annamensis</i> has historically been collected for local consumption, however with the rise in the international turtle pet trade since the 1990s this species has suffered dramatic decline in numbers. Anecdotal evidence suggests that locals reported this species as common in the 1980s and 1990s and occasionally considered this species a pest. The species now appears to be extremely rare. At one site where Asian Turtle Program (ATP) has a focused presence across three villages, fewer than five new turtles have been observed each year since 2008.</p>	
<p><b>Trade criteria for inclusion in Appendix I</b></p>	
<p style="text-align: center;"><b><u>The species is or may be affected by trade</u></b></p>	
<p>The primary threat to <i>Mauremys annamensis</i> is collection for trade. The species is in some demand in the international pet trade and the Asian consumption trade, and is also used locally for medicinal purposes. Collected turtles are traded, mostly illegally, through a network of local middlemen before being exported or consumed locally.</p> <p>Collection of wild individuals, predominantly for the pet trade, has had a significant impact on this species. It is exported for Asian and worldwide markets, usually as adults as these fetch a higher price. It is also used throughout its range in traditional medicine and in particular <i>M. annamensis</i> is targeted for its blood for an alleged heart disease cure.</p> <p>The CITES trade database recorded a total of 172 exported animals or specimens of <i>M. annamensis</i> during the period 2000-2011.</p> <p>Despite a legal trade in this species, illegal trading is still apparent. The species is found in lower numbers in market trades than it has in the past, which is thought to be due to the difficulty in finding remaining individuals in the wild to collect. Nevertheless trade still continues, for instance up to 50 animals were recorded in</p>	<p><i>Wild-collection for Asian (and particularly Chinese) markets is suggested to pose a greater threat to M. annamensis than export for the Western pet trade, and the Asian trade network for this species is largely illegal (Raffel and Meier in litt., 2012). According to Nguyen et al. (2008), intensive collection of M. annamensis to meet the rising demand for turtles in China since the late 1980s has significantly reduced remaining populations, with fewer animals observed in the trade in each passing year.</i></p> <p><i>According to the CITES trade database, 110 animals were imported 2000–2011, 109 of which were live. The vast majority were imported for commercial purposes (99%). Of these, it was reported that 38% were pre-Convention animals, 31% were of unknown origin, 24% were born or bred in captivity (including F1 generations) and 7% were reported as of wild origin. For all reported (re-)exports, there were a total of 121 animals, 111 of which were live. Most animals were recorded as being for commercial purposes (55%), with 28% recorded as for educational purposes and 17% for scientific purposes. The source for the animals was most commonly recorded as pre-Convention animals (63%), with 18% recorded as of wild origin (none live), 17% as bred or born in captivity and 3% as confiscated or seized (UNEP-WCMC, 2012).</i></p> <p><i>Reported seizures involving M. annamensis provide evidence of illegal activities</i></p>

Supporting Statement (SS)	Additional information
<p>one market in Guangzhou, China, during seven surveys from 2006-2008.</p> <p>There is a demand from commercial turtle farms for wild-caught turtles for founder stock, which is driving the collection of wild individuals through increased trade prices.</p>	<p><i>involving this species, although it is unclear whether any/all of these shipments were destined for international markets. In 1998, Vietnamese authorities reported having seized an estimated 700 (800 kg) of turtles and tortoises of 13 species, of which a small number were <i>M. annamensis</i>, from a public bus destined for Hanoi. The trader claimed that the animals were raised on farms in southern Viet Nam, but information provided to the authorities suggested that they were collected from the wild. The cargo was for possible onward shipment to the Chinese market (TRAFFIC, 2012). Other seizures reported as having occurred in Viet Nam in recent years include a case of six adult <i>M. annamensis</i> seized from the home of a Vietnamese trader in January 2009 (Humane Society International, Australia, 2009) and a case of 16 specimens reportedly seized from a house in the Dong Hoa district in August 2011 (Education for Nature Vietnam (ENV), 2012). A 2007 genetic study looked at eight individuals confiscated in northern Viet Nam and assumed the animals: (i) to be wild, owing to the lack of known turtle farms breeding <i>M. annamensis</i> at that time, and (ii) destined for China, presumably due in part to the location of the seizure (Fong et al., 2007).</i></p> <p><i>The species may be observed for sale on a small number of US-based websites: in 2008, captive-bred specimens were being offered by a US dealer at a price of USD100 per turtle--see <a href="http://www.turtletimes.com/forums/topic/64899-turtlepimpcom-current-list-of-turtles-for-sale/">http://www.turtletimes.com/forums/topic/64899-turtlepimpcom-current-list-of-turtles-for-sale/</a>.</i></p>

## Other information

### Threats

The primary threat to this species is over-harvesting. Conversion of wetlands to agricultural land is causing habitat degradation, however, the main cause of population decline in these areas is through increased proximity to humans, which increases the likelihood of collection of wild individuals.

*In 2011, the Conservation of Asian Tortoises and Freshwater Turtles Workshop noted that the demand for *M. annamensis* blood in traditional medicine had placed wild populations under exceedingly high collection pressure. Rapid population growth in central Viet Nam has resulted in much of its habitat being converted to rice fields (Horne et al., 2012).*

### Conservation, management and legislation

It has been listed in Appendix II of CITES since 2002.

*M. annamensis* is a protected species in Viet Nam. Collection is only permitted for scientific research, establishing a breeding colony and international exchange, and permits must be obtained. Wildlife also needs a permit to be transported nationally.

An international program led by the Asian Turtle Program of Cleveland Metroparks Zoo aims to reintroduce and strengthen a viable population of *M. annamensis* into its native range. Captive-bred individuals from various institutions around the world are currently being held in anticipation of suitable habitat being adequately secured.

*The MAP is being led by the ATP (as previously noted). Currently, the Turtle Conservation Centre (TCC) of Cuc Phuong National Park has almost 200 animals waiting for release in the wild within their historical distribution—see [http://www.asianturtleprogram.org/working-on/map\\_project.html](http://www.asianturtleprogram.org/working-on/map_project.html).*

Supporting Statement (SS)	Additional information
<p>The project includes a large outreach component to generate support for conservation of the species through awareness and community engagement, a training component for local authorities, and a population monitoring program.</p> <p>There are no records of this species from within any protected areas, which are largely focused on forested areas. At present the Asian Turtle Program is working with the Forest Protection Department of Quang Ngai province and local People's Committee to establish a small Species Habitat Conservation Area (SHCA) for <i>M. annamensis</i>.</p>	
<b><u>Similar species</u></b>	
<p>This species is easily recognisable. The only other Asian turtle with a similar head pattern is <i>Cuora amboinensis</i>, which is instantly separated from <i>M. annamensis</i> by its possession of a transverse hinge across the plastron, which allows <i>Cuora amboinensis</i> to close its shell completely. In contrast, <i>M. annamensis</i> cannot move its shell. <i>Mauremys sinensis</i> has much finer and more numerous yellow head stripes and also has yellow stripes on the limbs.</p>	
<b><u>Captive breeding/Artificial propagation</u></b>	
<p>This species has been bred in captivity with some success. There are records of successful breeding in some turtle farms, for instance the largest observed in 2009 had approximately 40 <i>M. annamensis</i>. There is no information on the number of farms or an estimation of the numbers of hatchlings produced annually.</p> <p>This species is bred in zoos and by private hobbyists in Europe, USA and Hong Kong in modest numbers. In recent years hobbyists efforts have started to develop into coordinated breeding programs, and a European studbook has been established for <i>M. annamensis</i>. Despite apparent success in captive breeding attempts, the numbers in question are still very low, e.g. by 2001, 77 animals were held within the Asian Turtle Consortium in the USA and another 54 were registered in the European studbooks.</p>	<p>According to the 2011 Conservation of Asian Tortoises and Freshwater Turtles Workshop, <i>M. annamensis</i> is a promising candidate for pilot programmes aimed at establishing semi-wild to wild colonies within their former range from captive produced stock. The species breeds readily in captivity and has breeding programmes and studbooks managed by the AZA (Association of Zoos and Aquariums) and EAZA (European Association of Zoos and Aquariums). Approximately 100 ha. of suitable habitat have been identified for a reintroduction programme and establishment of a community-based wildlife protected area (Horne et al., 2012).</p>
<b><u>Other comments</u></b>	
<p><i>Ocadia glyphistoma</i> has been considered a hybrid between <i>M. annamensis</i> and <i>M. sinensis</i>. While <i>O. glyphistoma</i> is excluded from the scope of this proposal, the recent findings of seven individuals of <i>O. glyphistoma</i> in the wild are suggested to show that population levels of both the parent species have fallen so low that no separate breeding populations exist anymore, leading to hybridisation.</p> <p>At its 5th World Conservation Congress in 2012, IUCN passed a Resolution (Motion</p>	<p><i>M. annamensis</i> has been listed 14<sup>th</sup> in order of extinction risk of tortoise and freshwater turtles globally, owing to: (i) its restricted distribution; (ii) the limited number of times it has been observed by scientists in the wild; and (iii) the intense levels of wildlife harvesting across its range in central and southern Viet Nam (Fong et al., 2007; Turtle Conservation Coalition, 2011).</p>

Supporting Statement (SS)	Additional information
<p>028 – Addressing the Turtle Extinction Crisis) that, among others, called upon CITES Parties to a) Evaluate that turtle species subject to international trade are appropriately included in the CITES Appendices; b) Ensure that international trade adheres to CITES regulations, including detailed Non-Detriment Findings being made, and including complete reporting of trade in parts (e.g. shell) and derivative products (e.g. jelly) of turtles; c) Ensure that domestic laws and regulations adequately address both the requirements of CITES and safeguard native turtle populations from over-exploitation, that all pertinent laws and regulations are diligently enforced, and that appropriate awareness and capacity are developed within the government agencies concerned with turtle offtake and trade; and d) Collaborate with competent NGOs to effectively and humanely triage confiscated live turtle specimens.</p>	

**Reviewers:** C. Shepherd.

**References:**

- Education for Nature Vietnam (ENV) (2012). *Phu Yen: Inappropriate settlement of confiscated wildlife*. [http://envietnam.org/E\\_News/E\\_432/Phu\\_Yen\\_Inappropriate\\_settlement\\_of\\_confiscated\\_wildlife.html](http://envietnam.org/E_News/E_432/Phu_Yen_Inappropriate_settlement_of_confiscated_wildlife.html). Viewed December 2012.
- Fong, J.J., Parham, J.F., Shi, H., Stuart, B.L. and Carter, R.L. (2007). A genetic survey of heavily exploited, endangered turtles: caveats on the conservation value of trade animals. *Animal Conservation* 10: 452–460.
- Horne, B.D., Poole, C.M. and Walde, A.D. (Eds) (2012). *Conservation of Asian Tortoises and Freshwater Turtles: Setting Priorities for the Next 10 Years*. Recommendations and Conclusions from the Workshop in Singapore, February 21–24, 2011.
- Humane Society International, Australia, (2009). Web story; Critically Endangered Turtles Rescued. <http://www.hsi.org.au/?catID=347>
- Le, M., Hoang, T. and Le, D. (2004). Trade Data and some Comments on the Distribution of *Mauremys annamensis* (Siebenrock, 1903). *Asiatic Herpetological Research* 10: 110–113.
- Nguyen, D.L., Nguyen, X.T., McCormack, T. and Hendrie, D. (2008). Conservation of the Vietnamese Pond Turtle (*Mauremys annamensis*) in central Vietnam. *Asian Turtle News*. [http://www.asianturtlenetwork.org/library/ATCN\\_news/2008\\_articles/Conservation\\_of\\_the\\_Vietnamese\\_Pond\\_Turtle.html](http://www.asianturtlenetwork.org/library/ATCN_news/2008_articles/Conservation_of_the_Vietnamese_Pond_Turtle.html). Viewed December 2012.
- Raffel, M. and Meier, E. (2012). *In litt.* to the IUCN/TRAFFIC Analyses Team, Cambridge, UK.
- TRAFFIC (2012). *Seizures and prosecutions: March 1997-October 2012*. TRAFFIC Bulletin, Cambridge, UK.
- Turtle Conservation Coalition (2011). *Turtles in Trouble: The World's 25+ Most Endangered Tortoises and Freshwater Turtles—2010*. Lunenburg, MA: IUCN/SSC Tortoise and Freshwater Turtle Specialist Group, Turtle Conservation Fund, Turtle Survival Alliance, Turtle Conservancy, Chelonian Research Foundation, Conservation International, Wildlife Conservation Society, and San Diego Global Zoo.
- UNEP-WCMC (2012). UNEP-WCMC CITES Species Database: *Mauremys annamensis*. UNEP-WCMC, Cambridge, United Kingdom. [www.cites.org/eng/resources/species.html](http://www.cites.org/eng/resources/species.html) . Viewed 25 October 2012.