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# Turtle Survival

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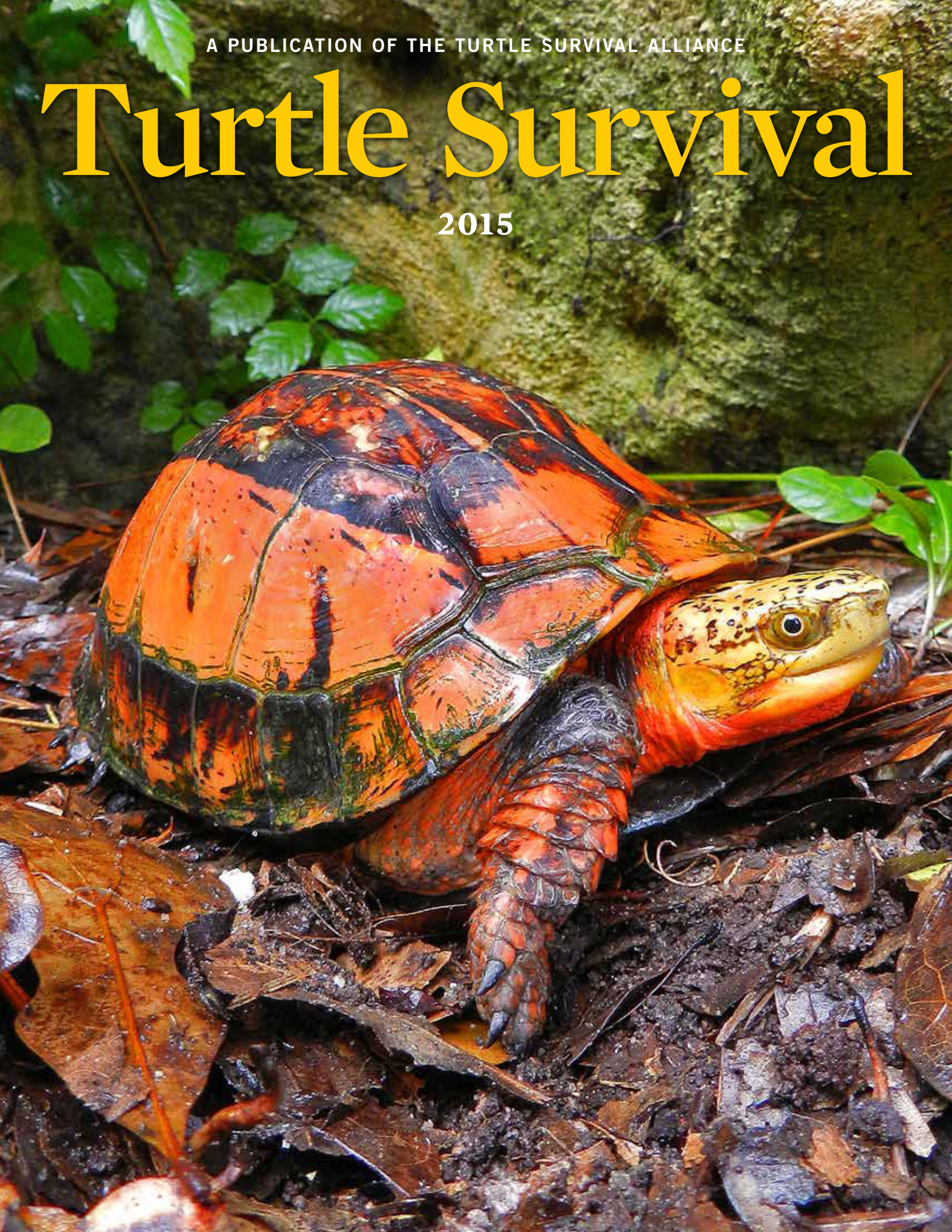

# Captive Breeding Critical to Saving the Highly Endangered Vietnamese Pond Turtle (*Mauremys annamensis*)

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**The Vietnamese Pond Turtle** is not a particularly attractive or colorful species, so they were not very popular with private owners and zoos. Believed extinct as recently as 2006, their fortunate survival now depends on captive breeding efforts to increase their numbers in the wild.

Serious scientific inquiry was initiated after it was discovered that individual specimens of *M. annamensis* were occasionally offered for sale in Asian animal markets. Field research and local interviews revealed that the species was not extinct, and eventually discovered the origin of the market turtles. A wild, residential population was discovered in Central Vietnam within a distant and isolated area of the Quang Nam Province.

Shortly afterwards, Vietnamese authorities began conservation efforts to protect the species with enthusiastic support from leading European zoos. A plan was developed whereby Vietnamese Pond Turtles hatched in Europe would be made available for a reintroduction project in Vietnam. The project's plan requires finding out how many animals are left in the wild, where they live, and how these areas can be protected. The plan also includes the important goal of gaining local community support for reintroduction of *M. annamensis*.

A juvenile *M. annamensis* in the wild – still a rarity.

## BREEDING IN CAPTIVITY

Captive breeding to save the endangered turtle began when the Rotterdam Zoo first reported successful breeding of *M. annamensis* in 2002. Both Herbert Becker and the Internationales Zentrum für Schildkrötenschutz (IZS) in Muenster Zoo announced successful breeding results in 2006. Since then, and within the past nine years, Herbert Becker oversaw the birth of 171 animals from one male and two females. In Rotterdam Zoo, 43 animals were born between 2003 and 2014 from three breeding pairs; while at the IZS, 67 animals were born between 2006 and 2014.

In 2003, the year of the 'Shellshock Campaign', a discussion within the European Association for Zoos and Aquariums (EAZA) discussed how the breeding of the Vietnamese Pond Turtle in zoos might support an *in situ* conservation project. Experience with this species showed that they were not hard to breed, and so good results could be expected. Reported breeding results supported this conclusion as the species had already been bred into the second generation.

With all evidence showing that the establishment of an assurance colony was possible, an EAZA breeding program was developed to ensure a genetically sound and healthy population to breed from, and from which to reintroduce offspring into the wild. Within the framework of this breeding program, DNA research – coordinated by the Prague Zoo – was done on samples of *M. annamensis* bred by Herbert Becker, and on animals from zoos in Muenster and Rotterdam. Results showed that the breeding groups were genetically pure *Mauremys annamensis*.

The implementation of the EAZA studbook took longer than expected, so there was overcrowding in the groups from Becker, Muenster and Rotterdam in 2011 and 2012.

## THE HOMECOMING OF THE FRESHWATER TURTLE

Initial preparation for the transfer of the turtles to Vietnam was challenging, despite our good relationship with Vietnamese officials which helped pave the way. Application and handover of CITES and veterinary medical documents took longer than expected, but finally, in August 2013, we were ready to transfer the offspring to the Turtle Breeding Center at Cuc Phuong National Park in North Vietnam (TCC). Seventy-one *M. annamensis* offspring, originating from the breeding program that included Becker, the Rotterdam Zoo, and Muenster, were flown to Vietnam as part of the *Mauremys annamensis* Project (MAP) of the Asian Turtle Program (ATP).

Cuc Phuong National Parks Director Truong Quang Bich and TCC Manager Bui Dang Phuong meet the turtles at the National Park and explain the important status of these turtles to the press. PHOTO CREDIT: TIM MCCORMACK/ATP

Captive bred *M. annamensis* at the Turtle Conservation Center (TCC) in the Cuc Phuong National Park, Vietnam. PHOTO CREDIT: TIM MCGORMACK/ATP

The Vietnamese press came out in force to greet the turtles and their breeders, though the news was mostly ignored in Europe and the United States. In Hanoi, more than 40 journalists, representing seven television stations and 30 newspapers, reported what the Vietnamese press called 'The Homecoming of the Freshwater Turtle'.

"Today is an important step towards the preservation of this rare species in Vietnam," declared Mr. Bui Dang Phong, leader of the TCC in 2013. "Poaching, agriculture and loss of habitat are a great danger to the Vietnamese Pond Turtle in the wild. It is the duty of Vietnam to actively protect these animals from illegal hunting and trade, so that we will not lose another valuable endemic species."

"We're proud that we have contributed to the preservation of these rare turtles and were able to bring them back to Vietnam," stated Henk Zwartepoorte, curator of reptiles at the Rotterdam Zoo. "We're positive that Vietnamese initiatives like these and ongoing international efforts will help these species to survive in the wild. The goal of these efforts is to reintroduce the turtles in their habitat in Quang Ngai Province in Central Vietnam."

Timothy McCormack, Program Coordinator of ATP and MAP, noted, "This event has contributed to placing the Vietnamese Pond Turtles all over the world in the focus of nature conservation. Although these turtles survive in captivity, we must take urgent measures to protect this species in the wild, so they will have the chance to survive in Vietnam."

## DNA ANALYSIS, RECENT DEVELOPMENTS

Recent DNA research in Vietnam on *M. annamensis* from the wild has shown that there are two DNA lineages within their habitat in Central Vietnam. Only genetically and medically healthy animals are suitable for reintroduction, so it's important to establish which of the available animals are suitable for reestablishment and in which habitat they can be released.

Since 2000, a large group of confiscated *M. annamensis* and their offspring have resided in the turtle rescue center in Cuc Phuong. The origin of these animals is unknown. As mentioned above, from 2007 on, some animals caught in the wild have occasionally been found in markets. Whether these animals are suitable for captive breeding or not remains to be determined by further DNA sampling.

Rotterdam Zoo contributed funds in 2015 for further DNA research, while the Muenster, Rotterdam, and London Zoos, along with Herbert Becker, made donations to build theft proof enclosures in the Cuc Phuong National Park.

The coordination of the conservation project is now the responsibility of Vietnam, as suitable lands for reintroduction need to be assessed and purchased from local people. These areas must also be secured and guarded – offering job opportunities in the community. Though this process develops slowly, support of the local people is vital. They need to be convinced that they are important partners in species protection and conservation, if our efforts are to have hope of success.

## THE FUTURE OF EUROPEAN EFFORTS

In July 2014, during a meeting at the London Zoo, involved parties discussed the necessity and feasibility of a continued *M. annamensis* captive breeding program in Europe. Representatives from the London, Chester, and Rotterdam Zoos brainstormed a variety of issues, and made plans related to DNA and veterinary medical research on Vietnamese Pond Turtles in Europe, with protocols and timetables to be developed. The possibility of an EAZA studbook and further cooperation between EAZA Zoos and private keepers within the European Studbook Foundation (ESF) was also addressed.

The experience gained from developing a first Vietnam initiative to protect *M. annamensis* habitat and reintroduce this threatened species was very important. This was the first time ever that such a large group of turtles from a European breeding program was transferred to their country of origin.

Repatriating these animals demonstrated that *ex situ* breeding by zoos or private keepers can play a decisive part in the preservation of species.

The cooperation between zoos, private keepers and local conservationists worked exceedingly well in this first major effort, and played an important part in the continuing preservation of *Mauremys annamensis*. Clearly, international cooperation and the establishment of a strong link between *in situ* and *ex situ* partners, is a key to success.

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