



## Asian Turtle Conservation Network

February 18, 2004

Commercial Farming of <i>Palea steindachneri</i> in Hanoi			
Facility Name Private household of Mr. Nguyen Duc Hien			
Species focus <b><i>Palea steindachneri</i> and <i>Pelodiscus sinensis</i></b>			
Visit Date: February 17, 2004		Date Established: 1994	
Species	Number by sex	Total	Notes
<i>Palea steindachneri</i>	8:10	18+	Undetermined number of juveniles Production = ~50 offspring/adult females (2003)
<i>Pelodiscus sinensis</i>	Unk	Unk	Mr. Hien is closing down his operations for <i>Pelodiscus</i> , and little information was sought about this species

### Investigation Findings

An article appeared in the Vietnamese-language Science and Life Newspaper in November 2001 about the farming of *Palea steindachneri* in northern Vietnam. As I was unaware of any farming operations involving *Palea steindachneri* underway in Vietnam, eventually we followed up on the article to determine whether in fact the species had been identified correctly in the article, and to determine whether actual breeding and production was underway.

Ms. Dang Thi Nguyet, Vietnam program officer for the WCS Regional Turtle Conservation Program followed up on the article, talking with farmers in Yen Bai province, and tracking down a *Palea* farmer in the Hanoi area. The findings of her investigation are contained separately in a brief summary report.

On February 17, Tim McCormack, Ms. Nguyet, Kristine Grayson (a visiting turtle biologist) and I visited the farm of Mr. Nguyen Duc Hien in the outskirts of Hanoi, and carried out a field evaluation of the operation to post on the ATCN website profiling ex-situ breeding operations for Asian turtles. Our findings are summarized below. Also attached is a copy of the original article on *Palea* farming that appeared in 2001.

Mr. Hien is a teacher by profession, though now retired. He said that one of his interests was in animal breeding, and within his very well-kept compound he cultivates orchids and flowers, keeps song birds and rabbits, and produces honey from his dozen or more hives that were observed. Mr. Hien said that he has been farming soft-shell turtles for 10 years. He appeared to have extensive experience breeding and raising *Pelodiscus sinensis*. Only in the last two years did he obtain breeding adult *Palea steindachneri*, which according to Mr. Hien, are worth at twice the value of *Pelodiscus sinensis* in the market, though no commercial trade in this species has been established as of yet, due largely to the fact that *Palea* farming is new and stocks have not been sufficiently established to produce sufficient numbers of market-size offspring. Hien plans to close down his *Pelodiscus* operation and exclusively farm *Palea* in the future, mainly because *Palea* was worth more. Hien noted that his farming operation was part of a Ministry of Fisheries program called "*Palea steindachneri* Breeding Stock Development" that is promoted at the provincial level down to the districts through the Agricultural Promotion Centers (aquiculture?). Thus far, Hien receives regular visits and technical inputs from the program, but no financial support.

Mr. Hien offered information about his experience breeding and raising soft-shell turtles, including both *Pelodiscus sinensis* and *Palea steindachneri*.

***Pelodiscus sinensis***: (Ba Ba Hoa or Ba Ba Tron)

Mr. Hien raises young to sell to the market. *Pelodiscus* grow 4-5 kg in weight, but are sold at weights of 1-2kg, when they are reportedly best for selling. The soft-shells are sold live to the market for at a price of 240,000 VND/kg.

Recently he sold 200 kg of his stock to the market. Originally, he had 400 soft-shells of roughly 100-200g each put in his ponds to grow. Of these, 300 have survived. Major problems include swelling of the neck and fungus on the carapace. Both are reportedly fatal. The fungus causes lesions and pitting in the shell. The only cure is prevention, according to Mr. Hien. He did not state what preventative measures he takes to keep the turtles healthy.

Mr. Hien noted that *Pelodiscus sinensis* begin to lay eggs when they reach 700-800g, but the eggs are small and produce weak hatchlings initially.

## **Palea steindachneri: (Ba Ba Gai)**

### **Breeding**

This species grows very quickly, and much bigger than *Pelodiscus*. Additionally, unlike *Pelodiscus*, there are no dark spots on the plastron of *Palea*. *Palea* also has ridges on the carapace (described as rice grains) and a more pointed nose than *Pelodiscus*. No mention was made of wattles on the side of the neck. Young turtles are provided by farmers in Yen Bai Province. This is where Mr. Hien received some turtles from two years ago from a farm in Yen Bai province. According to Hien, his founder stock is F1 generation, the offspring of adults caught in the wild and bred on the Yen Bai farm. Presently, he has 18 adults (8:10), and an unknown number of young, though most were distributed recently to family and friends to be raised, according to Hien.

Mr. Hien said that he got his first eggs in 2003. According to what he had been told, it takes five years for a female to mature (before she lays her first eggs). At this time, she will be about 2.5 kg in weight. About 15-20 eggs are laid. The eggs are big and round, and nesting occurs in May through June (same nesting period as *Pelodiscus*). Females may nest three times over this period. Eggs must incubate for about 50 or more days before hatching. Last year, roughly 50 hatchlings were produced on the farm. We observed and photographed two yearlings during our visit.

### **Feeding**

The turtles are fed a combination of snails, fresh fish, and pig skin, according to Hien. A grinder is used to refine and process the food for juveniles.

### **Other Behavioral Notes**

Hien noted that his *Palea* often bask on bamboo floating at the water's surface or on the nesting ramp.

### **Facilities**

Hien's operation lies within a compound protected by a gate and barbed wire fence along the top of a perimeter wall. Within the compound are two large cement ponds of estimated size 6x15 meters. Only one is presently used for *Palea steindachneri*. The other is used for *Pelodiscus sinensis*. Adjacent to the *Palea* pond is a cement building with a ramp leading up from the pond into the inside of the building, where the floor is partitioned into two separate nesting areas with sand as the medium. Remarkably, the nesting females climb up a concrete ramp into the dark inside of the building to nest. The nesting areas are designed so that Mr. Hien can close access from the ramp to either of the sections, directing nesting traffic to one or the other nesting area. Mr. Hien covers the nests with flower pots that have holes cut in them allowing circulation of air, but preventing predators like rats from accessing the nest. Once one of the nesting areas is full of inverted flower pots protecting nests, he closes the section off and opens the second section. He watches for turtle tracks in the sand to indicate nesting activity.

After about a week, Hien collects the eggs and moves them to a cement tank (0.5x1m) filled with sand where they incubate until hatching. The sand is sprayed with water to keep moisture levels high, and the tank is covered by wire mesh to prevent predators from getting in. Near hatching time, Hien puts small bowls of water in the cement tank for the hatchlings to enter when they emerge. The hatchlings are then moved to an adjacent hatchling-rearing tank for care.

Mr. Hien's facilities also include two smaller cement tanks opposite the entrance to his house that are reportedly used for raising juveniles, though none were present, and both fish and aquatic snails were observed being held in these tanks.

### **Health Issues**

Like the *Pelodiscus*, Hien has problems with fungi and what he reported as "swelling of the neck". Hien noted that when he observes the fungi, he uses a treatment in the water recommended by the Agricultural; Promotion Center. Xanh Malatrite, produced by the Fisheries Institute of Vietnam or Van Tieu Linh, a product of China is applied in dosages per cubic meter of water.

See attached article that appeared in the Science and Life Newspaper about *Palea* farming.

**Source: The Science and Life Newspaper**

**Issue: 53**

**Date: November 11<sup>th</sup> 2001**

**Author: Doan Quang Suu**

## **Farming Wattle-necked Soft-shell Turtles in Mountainous Areas**

In the past, the Ministry of Fisheries warned people about developing and broadening soft-shell turtle farming. In northern Vietnam, the number of farms raising Chinese soft-shell turtles is declining due to a decrease in the price of Chinese soft-shell turtles. However, wattle-necked soft-shell turtles are sold at higher prices ranging from 410,000 VND to 470,000 VND/ a kilo. Additionally, the soft-shells can be sold in many more markets including those in China, Hong Kong and Taiwan. It is necessary to develop farming of wattle-necked soft-shell turtles in all of the provinces of Vietnam, particularly in mountainous provinces such as Yen Bai, Lao Cai, Ha Giang, Lang Son, Son La, and Lai Chau, in order to produce more soft-shell turtles for export, and contribute to eliminating hunger and reducing poverty.

### **Features and development process of soft-shell turtles**

Wattle-necked soft-shell turtles originate from rivers and streams in northern provinces such as Yen Bai, Lao Cai, Lang Son, Bac Giang, Thai Nguyen, and Ha Giang. Wattle-necked soft-shell turtles are big and grey, and have wattles on their backs. This species often inhabits small caves in and near streams and in rivulets. They eat crabs, fish, snails and mussels, and like fresh water. Moreover, wattle-necked soft-shell turtles grow more quickly than Chinese soft-shell turtles. A wattle-necked soft-shell turtle can weigh a kilo after a year if it is fed properly. Wattle-necked soft-shell turtles lay eggs in sandy areas along the edge of rivers and streams. The eggs are covered with sand, and will hatch.

Farming wattle-necked soft-shell turtles has been developing since 1996. At first, some farmers in Yen Bai and Bac Giang provinces collected some wattle-necked soft-shell turtles from local rivers and streams. They brought the soft-shell turtles home in order to tame the turtles in water tanks.

At present, in Yen Bai there are hundreds of households farming wattle-necked soft-shell turtles. In some district of Yen Bai, 100% of the soft-shell turtles which are being farmed are the wattle-necked species. Each year these districts sell dozens of soft-shell turtles for meat. Wattle-necked soft-shell turtles are sold for 410,000 VND/ a kilo. In 1999, a kilo of wattle-necked soft-shell turtle was 470,000 VND. Farming wattle-necked soft-shell turtles is now developing in other districts of Yen Bai province. About 130 households are farming wattle-necked soft-shell turtles, some of which earn 30 million to 40 million VND of profit a year.

### **Preparation for farming**

In order to develop the farming of wattle-necked soft-shell turtles, mountainous farmers need to choose a place to build farm ponds, breeding stock-nurturing ponds, and places for the soft-shell turtles to lay their eggs. Each farmer must choose a favorable place with soil and rock and a fresh supply of water flowing into the breeding ponds. In a breeding pond, about four or five pairs of turtles should be cared for. When grown up, the adult turtles will produce enough breeding stock for the family to farm. Rock walls of 1.2 meters to 1.3 meters high should be built around each pond. The pond should have edges of 0.2 to 0.3 meter high in order to stop the turtles from crawling out. The area of each pond should be 12 to 15 square meters. The water in the pond should be 1.2 to 1.3 m deep. Near the breeding pond there should be a two-square-meter place with sunscreens for the adult females to lay eggs. In this place there should be a layer of sand of 0.3 to 0.35 meter thick. Ramps for turtles crawl out of the water onto the nesting area should be built. Seven or eight days after eggs are laid, the eggs should be collected and moved to a basin where they are covered with sand. During the incubation time, eggs should properly watered in order to ensure that they hatch after 50 to 55 days.

### **Building ponds for farming soft-shell turtles for meat**

This depends upon the location of each mountainous family. Nevertheless, places near mountains and streams are the best places for building ponds because these ponds can be easily supplied with water. The side of a mountain should be selected and dug out to create a pond. Cement is used to make walls of 1.2 meters high around the ponds. The shape of each pond can be square, rectangular, or polygonal. The bed of the pond should be made flat. Each pond can have an area of 10 to 300 square meters each. The pond should have a water drainage and supply system, and protective screen.

## Technique to farm wattle-necked soft-shell turtles

### Releasing breeding stock

Good wattle-necked soft-shell turtles weighing 100 grams to 150 grams each with no diseases are released into the holding ponds after the ponds have been drained and decontaminated with 15 kilos of lime/ 260 square meters. The density of the breeding stock should be 10 to 20 individuals/ a square meter. The breeding stock should be released in March and April. In order to have enough breeding stock, it is necessary to encourage farmers to limit selling soft-shell turtles for meat so that they have more adult soft-shell turtles to lay eggs. Each family should raise five to 10 groups of adults (one male, two or three females) so that they have more breeding stock.

### Food for the wattle-necked soft-shell turtles

Wattle-necked soft-shell turtles are stronger than other soft-shell turtle species, and eat many animals such as shrimp, snails, worms, crabs, and frogs. The internal organs of slaughtered livestock such as fish of low value, stunted or dead chickens, should be taken advantage of to be used as food for the turtles.

### *The way to feed wattle-necked soft-shell turtles*

The food should be chopped into small pieces. Snails and mussels should be broken or ground up before feeding. The soft-shell turtles should be fed early in the morning and late in the afternoon. The amount of food for the soft-shell turtles should comprise about 7% or 10% of the weight of the turtles in the pond.

### Management

Although wattle-necked soft-shell turtles are more gentle than Chinese soft-shell turtles, it is necessary to carefully manage the turtles, and often check whether they have crawled out of the ponds. The soft-shell turtles should be fed sufficient quantities of food regularly. The quality of the food should be as fresh as possible. Preventing diseases is the best way to develop turtles. Before releasing turtles as breeding stock, farming ponds should be drained, and rubbish in the ponds should be collected. Make the beds of the ponds flat. Fifteen kilos of powdered lime should be used to scatter on the bed of each pond in order to kill bacteria that can cause disease to the turtles. The farming ponds should then be sunned for one to three days. After which water should be allowed to flow into the ponds. At last, release turtles as breeding stock into the ponds.



Adult *Palea steindachneri*



*Palea steindachneri* hatchling



One of three farming ponds for raising the soft-shell *Palea steindachneri*, outside of Hanoi