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Restocking river terrapins

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The river terrapin, one of the world's most endangered turtles, lives in several of our major river systems. While egg collection and mass harvesting of terrapins over the years have led to a drastic drop in wild population, a research and conservation project in Sungai Setiu, Terengganu, may well break new ground and offer hope for the critically endangered species.

WHEN a final year student decided to base his graduation thesis on the captive-raised river terrapins (Batagur baska) of Sg Setiu in Terengganu, turtle scientist Prof Dr Chan Eng Heng was delighted.

Chan had wanted to start a research and conservation programme on the critically endangered freshwater turtle species which has been registering lower nesting with each passing year.

Before student Soh Chong Leng came along, Chan had purchased four clutches of eggs (one laid in 1999 and three in 2000) from egg-collectors in Setiu, incubated them and raised the hatchlings in the campus hatchery. Initially the hatchlings were fed with fish pellets before they were introduced to water spinach to get them used to natural food.

With Soh on board, Chan embarked on restocking the river, about 60km north of Kuala Terengganu, with the captive-bred terrapins.

Seventy reptiles were released into Sg Nyatoh, a tributary of Sg Setiu, in July and August last year. The three- and four-year-old terrapins each had a number engraved on their carapace to facilitate identification.

Chan and Soh spent the next 10 weekends collecting samples in the river with the help of two fishermen. Gill-nets were strung across the river to recapture the young terrapins from dusk to dawn.

"We had to check the nets every 30 minutes. Every time a terrapin was netted, it was identified, weighed and measured before it was released into the river," says Chan who heads the Biological Sciences Department at the University College of Science and Technology Malaysia (Kustem) in Terengganu.

The data obtained showed that these terrapins which had been given a headstart were able to survive when released into the natural environment.

The accidental drowning of a terrapin enabled its stomach contents to be analysed. The analysis showed that the terrapin had been feeding on sembelit, a type of grass found in the river. The fish pellet diet offered during the years of captive breeding had not affected the terrapin's preference for natural food.

"Before this we had no idea if the turtles could survive as they had been fed and cared for in a protected environment," says Chan.

The recaptured turtles, says Chan, will shed light on the population status. "The nesting survey can only estimate the female adult population but we know nothing about the males," says Chan who is also the joint-coordinator of a marine turtle research project in Pulau Redang.

Ten turtles have been retained for future research involving radio- or ultrasonic-tracking to gather data on the threatened species.

Besides the 10, the team also captured five wild adult terrapins (three males and two females) during the sampling.

We did not encounter any sub-adults. This indicates that the Setiu population is an aging one. It is in danger of collapsing as there has not been any conservation attempts but mere exploitation, warns Chan.

Setiu riverine folk have a long tradition of harvesting river terrapin eggs. Some of the villagers even "detain" nesting females and dig trenches on the sandbanks to induce the terrapin to deposit her eggs. Some reptiles could be held in captivity for up to a month.

Chan says Sg Setiu's rich biodiversity and the fact that it is inhabited by two endangered freshwater turtle species (the river terrapin and the painted terrapin) makes it all the more critical to have a population restoration plan. Chan is concerned that if nothing is done to save the turtles, they would become extinct in less than 10 years' time.

Egg protection

Egg harvesting, mortality in fishing nets and pollution are contributing to the decline of the wild population which had previously registered several hundred egg clutches a year. Last year, 45 clutches were deposited but this year there were only 30.

Villagers had also sighted mass harvesting of river terrapins in the Dungun River by outsiders. There have been reports of the terrapins turning up in Chinese restaurants on the West Coast or being smuggled out of the country for the market in China.

To revive the population, Chan says it is important to achieve maximum egg-protection by purchasing as many clutches as possible from the villagers.

Assisted by two fishermen from Setiu, brothers Nik Sing Awang and Nik Man Awang, the research project secured 365 eggs which came from 20 of the 30 nests deposited along the banks of Sg Setiu during the last nesting season from February to April.

The two brothers are now trying to convince their fellow villagers to hand over the eggs for conservation, after learning from Chan that the turtles are on the verge of extinction.

“If we continue to eat the eggs, our children will never get a chance to see the turtles. So we’re not going to eat any more turtle eggs,” says Nik Man.

Those are comforting words indeed, considering that terrapin eggs are becoming increasingly rare these days. The eggs are being sold at RM10 for three. And orders have to be placed with collectors well in advance.

Code for life

Back at the campus hatchery, a total of 236 hatchlings were produced from the 365 eggs incubated, giving it a 65% hatch rate.

For identification purposes, the hatchlings are notched. A numeral systematic cut is made on the marginal scute of the baby terrapin, thus giving it an identity number that enables researchers to record data on every individual released.

Operating with minimal funding, Chan and Soh set up the hatchery with recycled materials and even grew a small plot of water spinach to ensure a steady supply of food for the terrapins.

Chan reveals that she had applied for funding to set up the Centre for Turtle Research and Conservation (CTReC) under the 9th Malaysian Plan which was supported by the university’s board of directors.

CTReC, she adds, would coordinate all the marine and freshwater turtle programmes and provide a focal point for research into other chelonian species, including terrestrial tortoises that are threatened by the food and pet trade, as well as habitat destruction.

Early this month, Chan secured a US\$4,000 (RM15,200) grant from the Turtle Conservation Fund which aims to address the threat of extinction faced by almost all turtle species.

In the meantime, Chan’s research project is raising funds through a terrapin adoption programme. Members of the public can adopt a year-old terrapin for RM150, a two-year-old terrapin for RM250, and a three-year-old for RM350.

For more details of the terrapin adoption programme, contact Dr Chan Eng Heng (09-6683251) or e-mail ehchan@kustem.edu.my

Early efforts

IT IS on the list of the world’s 25 most endangered turtle species. Conservationists put it on the Death Row, predicting its disappearance within the next 10 years if nothing is done to protect existing populations.

The precarious status of the river terrapin (*Batagur baska*) has been acknowledged decades ago. Locally known as *tuntung sungai*, the hard-shelled freshwater turtle lives in several of our major river systems.

Widespread consumption of turtle eggs among the villagers has prompted the Department of Wildlife and National Parks (Perhilitan) to set up three captive breeding centres in the peninsula.

The first centre was set up in Bota Kanan, Perak, in 1968, followed by another centre in Kg Bukit Paloh, Terengganu, in 1976. A third centre was set up in Sg Pinang, Kedah, in 1978.

However, early intervention could not stop the slide of the species into its present dire state as the efforts lacked scientific input.

For instance, the centre at Bota Kanan has been producing mainly female terrapins, resulting in inadequate mating opportunities for adult females.

Out of the present 500 captive-bred terrapins in Bota Kanan, about 70% are female, ranging in age from six months to 36 years old. State director Jasmi Abdul attributes the skewed gender ratio to incubation in styrofoam boxes and has since replaced this method with incubation in natural nesting sites. (The sex of hatchlings is determined by the incubation temperature. Higher temperatures will produce more females.)

“We have nine rangers patrolling the beach. The eggs are now left in their natural nesting sites. We have been doing this since 1999,” says Jasmi who assumed the post in that year.

The pride of Perhilitan’s conservation programme, the Bota Kanan centre has been registering a drastic decline in its egg collection. From tens of thousands in the early 1980s, egg collection has dropped to 5,000 in 1998, and a mere 1,000 during the recent nesting season from September to March.

To date, the centre has released 41,000 terrapins with an annual average of 500 head-starters. Apart from the captive-propagated population, it currently holds another 1,200 head-starters intended for staggered release over the next four years.

Jasmi does not discount the possibility of the terrapins being poached for the restaurant trade, reportedly fetching RM30 per kg.

Perak has the earliest legislation (the River Rights Enactment 1915) to check exploitation of river terrapins: one-third each for the Sultan, public consumption and conservation. It is understood that the Sultan of Perak, who is the patron of World Wide Fund for Nature Malaysia (WWF), does not request for the eggs.

Since 1968, Perhilitan has been appointed by the Perak state to manage its captive-breeding programme for terrapins. The department set a 20% incubation target for all eggs deposited along the Sg Perak. But as nesting at Bota Kanan plunged over the years, the centre had to augment the shortfall by buying eggs from collectors.

In Terengganu, the state’s Perhilitan had earmarked the Pasir Kumpal nesting site of Sg Dungun for protection. However, the idea was abandoned as

a result of delays, the sandbanks were already degraded by sand-mining activities before further action could be taken.

Although Pasir Temir and Lubuk Kawah on Sg Terengganu have been gazetted as turtle sanctuaries, the villagers continue to harvest eggs along these sandbanks.

Asked if any of the poachers had been charged, chief ranger Mohd Yusof Jusoh was hesitant in calling the uncooperative villagers poachers .

The Terengganu Turtle Enactment 1951 (Amendment 1987) provides a whole range of protection and penalties: RM3,000 fine and up to one year's jail for killing, possessing, removing or destroying eggs and failure to furnish statistics (in the case of licensed egg-collectors), and RM1,000 fine or jail up to six months for injuring or disturbing nesting terrapins. But these provisions have never been evoked.

WWF's national project director Dr Dionysius Sharma, who is familiar with the river terrapin situation in Terengganu, empathises with the rangers.

"There is no clear will and directive to enforce the law in the first place. Furthermore, it is hard for the rangers as they are often part of the community. It has to start with education," says Dr Dionysius.

There is virtually no scientific support for the ground staff. Hatch rates at the Kg Bukit Paloh centre has been on the decline, while the mortality rate of the captive-bred hatchlings has risen, yet no investigation has been initiated to look into the cause.

This year, out of 400 eggs incubated, only 10 hatched. In September 2002, 170 terrapins were stolen from the centre which was left unmanned for a day when the rangers joined in the department's family day celebrations. The centre currently houses 449 terrapins. It has thus far released 10,000 terrapins.

Perhilitan's work would seem odd given that it does not have any legal authority as the 22 species of turtles found in Malaysia are not listed in its only piece of legislation, the Wildlife Protection Act 1972.

At a 1996 national seminar on marine turtle and terrapin management, it was recommended that all marine turtles, terrapins and tortoises be listed as (totally protected wild animals) under Schedule One of the Wildlife Protection Act 1972. Calls for amendments to the Act have largely gone unheeded over the years.

But Dr Dionysius says the peculiar situation should not hinder Perhilitan's work in conserving the river terrapin as the reptiles live in river ecosystems which come under state jurisdiction.

Fact file: River terrapin (Batagur baska)

Distribution: Found in the tropics east of the Indian sub-continent, including parts of India and Bangladesh, Myanmar, Thailand, Cambodia, Vietnam, Malaysia, Singapore and Indonesia.

Status: Endangered in Peninsular Malaysia and Indonesia, and critically endangered in Bangladesh and India because the sub-populations are very small and declining. Confirmed extinct in the wild in Thailand. Presumed to be extinct in Myanmar, Vietnam and Singapore.

Listed as critically endangered in the IUCN Red List of Threatened Species since 2000. Prohibited from international trade as it is listed under Appendix I of the Convention on International Trade in Endangered Species (Cites).

Threats: Illegally traded in substantial volumes to feed the market in China. Egg consumption decimates the regeneration of wild populations. Destruction of mangrove forests, sand mining, damming of rivers and pollution also contribute to the decline of the species.