



COMMUNIQUE TURTLE SURVIVAL ALLIANCE

AN IUCN PARTNERSHIP NETWORK FOR SUSTAINABLE CAPTIVE MANAGEMENT OF FRESHWATER TURTLES AND TORTOISES

Endoscopic Sex Determination of River Terrapins (*Batagur baska*) in Malaysia

In Malaysia where viable wild populations of the critically endangered river terrapin (*Batagur baska*) are known to exist, conservation programmes involving ex-situ egg incubation, head-starting and release of head-started terrapins have been in place since the 1970's. However, these efforts have not been manifested in population recovery. One of the concerns is that artificial incubation of eggs could have resulted in the release of either all male or all female *Batagur* to the wild. This issue has been nagging the minds of conservationists and remained unresolved for many years.



Releasing headstarted *Batagur* on the Perak River in Malaysia

In 2004, an opportunity to make initiatives into resolving the problem was created. Dr. Gerald Kuchling of the University of Western Australia indicated interest in applying the non-lethal method of endoscopy to the sexing of head-started river terrapins currently held in several head-starting facilities in Malaysia. Arrangements were made and with a travel grant of USD\$1,000 from the Turtle Survival Alliance Rescue Fund, Kuchling arrived in Malaysia on 3rd December 2004 to work with the Malaysian team comprised of Professor Chan Eng Heng and her two post-graduate students, Soh Chong Leng and Chen Pelf Nyok from the University College of Science and Technology Malaysia (KUSTEM).

In a marathon session covering three headstart facilities located on the opposite coasts of Malaysia from 4-8 December 2004, the team



Dr. Gerald Kuchling is shown here using a portable laparoscope to determine sex on juvenile *Batagur baska*. Tens of thousands of headstarted river terrapins have been released in Malaysia over the years without a clear understanding of the role that incubation temperature has in determining the sex of hatchlings.

succeeded in answering some basic questions. First, Kuchling was successful in sexing young *Batagur* (6-month-olds weighing 260 - 400 g). However, the method was tricky as the aquatic terrapin had lungs extending to the posterior of the body cavity that almost always blocked the gonads from view. However, once located, the distinction between testis and ovary was evident.

13 six-month-old and two four-year-old *Batagur* that had been incubated in styrofoam boxes kept indoors (in KUSTEM) were all males. In the Bukit Paloh head-starting facility (in Terengganu) eggs are incubated in outdoor sand-nests. Seven 18-month-old *Batagurs* were examined and determined to be female and of ten 3-year-old *Batagurs* examined four were male and six were female. In Bota Kanan, Perak, eggs are incubated partly in outdoor sand-nests and partly in styrofoam boxes. Here, 15 four-year-old *Batagur* were sexed; three were male and 12 were female. Of six eight-month-olds examined, were four were male and two were female.

In conclusion, indoor incubation in styrofoam boxes at KUSTEM produced only males, while in-ground incubation outdoors sometimes produced all females and sometimes a combination of both males and females. This is possibly related to ambient temperatures prevailing in different years.

KUSTEM will be conducting temperature-controlled incubation trials to fully investigate Temperature Sex Determination (TSD) in *Batagur*. Cleveland Metroparks Zoo, through its small grants program has approved a USD\$ 4,000 to Prof. Chan and her team to carry out this long-overdue piece of research. To make the dollars stretch, self-made incubators using thermostats and bulbs are being constructed



Homemade incubators at KUSTEM for conducting TSD studies on Batagur eggs. Such studies will help avoid the inadvertent release of turtles with heavily biased sex ratios back into the wild. This will allow various recovery strategies to be tested on the reintroduction of known-sex turtles.



Dr. Kuchling instructs Professor Chan Eng Heng and two post graduate students on endoscopic sexing techniques.

to provide incubation temperatures ranging from 27 to 33° Celsius (see illustration). The nesting season for 2005 begins in early February and by February 2006, we hope to share important new information with the freshwater and tortoise community.

(Report provided by Professor Chan Eng Heng (KUSTEM). Dr. Kuchling's travel was partially funded by a grant from the TSA Rescue Fund. The TSA is grateful for Dr. Kuchling's generosity in lending his time and expertise to this important project.)