

Domestic Trade of Tortoises and Freshwater Turtles in Cambodia. Linnaeus Fund Research Report

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The consumption and trade of turtles, mainly for food and medicine, is an ancient practice across the world. China is currently the greatest non-pet consumer of turtles in the world, with long-held values for turtles being catered for by newfound wealth. The turtles consumed in China may be up to 90% imported. Southeast Asia is a major source of turtles imported into China, due mainly to great abundance of turtles, ease of transport, and the socio-economic conditions found in the region (van Dijk et al., 2000). Cambodia, with its Great Lake (Tonle Sap) and sparsely populated countryside is thought to be heavily involved in the trade of turtles, both domestically and to China via Vietnam (Touch et al., 2000). By conducting research into the local trade of turtles in Cambodia that has occurred over the past ten years, an preliminary picture of the driving forces of demand and supply of turtles for the domestic and international markets can be established.

Methods. — Through a combination of qualitative and quantitative research methods, it was possible to incorporate records of prices and quantities in trade with the knowledge of local individuals concerning the turtle trade. The quantities and prices of each turtle species observed at the major markets in Phnom Penh across the dry season (December 1999 to February 2000) were recorded, as were sizes and sex of individuals, where possible. Areas outside Phnom Penh were visited where turtle harvesters, middlemen, and traders were interviewed on their observations of the species present and changes in abundance and price. Provinces visited included Ratanakiri, Kompong Chhang, Kompong Som, and Kompong Speu. From comparisons of the numbers, sizes, prices, and percentages of turtle species observed and reported from the past ten years, the dynamics of demand and supply in the domestic turtle trade were examined.

Results and Discussion. — The most common species observed in trade was *Malayemys subtrijuga* (over 200 specimens seen). In the highland areas of Ratanakiri the most common species seen was *Indotestudo elongata* (about 100 specimens seen). Other species observed in more moderate levels of trade, from highest numbers observed to fewest, were: *Cuora amboinensis*, *Amyda cartilaginea*, *Heosemys grandis*, and *Hieremys annandalii*. Species observed in lesser quantities in-

cluded: *Siebenrockiella crassicolis*, *Pelochelys cantorii*, *Pelodiscus sinensis*, *Cyclemys* sp., and *Manouria impressa*.

All species except *P. sinensis* are certainly wild-caught. One “farm” visited was seen to be no more than a harvested lake. *Pelodiscus sinensis* is heavily farmed in surrounding Thailand and Vietnam and there are reportedly some individuals farming *P. sinensis* in Siem Reap, northern Cambodia (S. Platt, *pers. comm.*), and also in the coastal province of Kampong Saom.

Species that may be present in Cambodia (from confirmed localities, unconfirmed reports, or distribution in surrounding countries), but not seen in this study include: *Notochelys platynota* (Jenkins, 1995), *Pyxidea mouhotii* (Ernst and Barbour, 1989), *Cuora galbinifrons* (Lehr et al., 1998), *Manouria emys* (Jenkins, 1995), *Platysternon megacephalum* (Bourret, 1941; Nutaphand, 1979; Pritchard, 1979; Moll, 1989), *Cuora trifasciata* (Jenkins, 1995), and *Batagur baska* (Bourret, 1941; Ernst and Barbour, 1989; Jenkins, 1995; Das, 1997; Iverson, 1992). [*Batagur baska* was confirmed in the coastal Koh Kong province shortly after the conclusion of this study.]

Over the study period (December 1999 – February 2000), with additional market reports in March, May, and June, several price fluctuations were observed. In early December, prices were relatively high, ca. R1500 Cambodian Riel (R3800 = \$US 1) per *M. subtrijuga*. This marked the beginning of the dry season, when turtles were reportedly just beginning to be available in the markets in regular high quantities. Prices in late December to early January were much lower, at ca. R100 per *M. subtrijuga*. Prices in June (ca. R3000 per *M. subtrijuga*), as well as the near absence of turtles being offered in the markets, was related to the wet season and the reported inability for harvesters to catch significant quantities of turtles during this time. Price peaks within the dry season coincided with Chinese New Year (5 February) and Khmer New Year (13 April). At these times, the quantities of turtles consumed increased as turtle meat is a favoured luxury food item; market vendors reported that sales increased from 2–3 kg per day in December and early January to over 10 kg per day.

Interviews with harvesters and middlemen revealed changes in price and turtle abundance over the past approximately ten years. Prices were reported by all parties, except market vendors, to have risen by an average of 25.4% for all species since 1990. Over the same period, harvesters reported that turtle abundance (as measured by the number of turtles caught per group per day) had dropped by an average of 68%. Higher prices combined with fewer turtles have resulted in larger groups of harvesters, with the catch still reduced from years past. At the same time, some harvesters have become middlemen, motivated by greater profit in trading turtles than in capturing them. Twenty percent of harvesters also reported that there had been a decrease in the maximum size of each species caught. Although several harvesters (50%) acknowledged exploitation as a factor in the decline of these populations, all cited habitat loss as the main cause.

Although no exporters could be interviewed, the traders that did comment on export trade stated that there had been no increase in the demand outside Cambodia in the past ten years. Although this is far from conclusive, it suggests that higher prices have been driven by scarcity; supply being the driving force rather than demand.

Harvesters use different methods of capture according to species and season. Dogs are used, not only for terrestrial species such as *I. elongata*, but also for aquatic species, especially *M. subtrijuga* and *C. amboinensis* during nesting season and dry season migrations. Aquatic traps are used widely for catching fish; *A. cartilaginea* is also caught in these traps, as are smaller numbers of the hardshelled species. Dome-shaped traps are laid on land around the beginning of the wet season (May). These traps are effective in catching newly emerged hatchlings. The habit of *H. annandalii* and *H. grandis* to bury themselves in mud in the dry season has also been acknowledged as an opportunity for capture. Harvesters tell of characteristic depressions in the mud, which are probed with sticks to confirm the presence of a turtle in the mud. *Heosemys grandis* reportedly leaves some of its carapace exposed above the mud while *H. annandalii* is more adept at completely burying itself. The last form of capture is used when a group cooperatively harvests a pond. One or two of the group will swim to the center of the pond and then make a lot of noise and splashing. This apparently forces the turtles to the edges of the pond, where the other harvesters are waiting to collect them.

The major destination of Cambodia's turtles, as reported by harvesters, middlemen, and traders, is Vietnam. Turtles are taken from Ratanakiri directly to Vietnam by car or boat. In the central province of Kompong Chnang, some turtles are taken to Phnom Penh, but most are reportedly taken directly to Vietnam. One middleman in Kompong Chnang also reported that some turtles are transported to Poipet, on the border with Thailand. Middlemen and vendors in Kompong Som and Kompong Speu reported that turtles are traded to Phnom Penh. No evidence was found of trade by sea. The localities of Neak Loeung and Prek Kadam are solely dedicated to local consumption; the turtles are displayed pre-cooked. The sources for both of these towns' turtles are relatively localized, with more distant sources of turtles presumably trading to Phnom Penh or Vietnam.

Laws are present in Cambodia that ban the harvest of turtles and tortoises (Sok and Sarin, 1998; Touch et al., 2000). Responsibility for enforcing these laws is split between the Department of Fisheries and the Department of Forestry.

Effective conservation of turtles in Asia as a whole will require an approach of various methods. Such an approach is discussed by the Asian Turtle Trade Working Group (2000). The involvement of various specialist groups will work for increased enforcement and capacity of enforcement personnel, the development and production of substitutes to wild-caught turtles (e.g., farming), influencing the

attitudes of consumers (Lee et al., 1998), and the provision of knowledge and methods for harvesters to convert to a more sustainable form of development and production.

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