

ON TWO SPECIES OF SOFTSHELL TURTLES NATIVE TO
SINGAPORE, INCLUDING A NOTE ON
LISSEMYS PUNCTATA (LACEPÈDE, 1788)
(REPTILIA: TESTUDINES: TRIONYCHIDAE)

Kenneth Yong

ABSTRACT. - The continued presence of two species of softshell turtles (Trionychidae) native to Singapore, *Amyda cartilaginea* and *Dogania subplana*, is confirmed through recent studies. Notes on their ecology and biology are included. *Lissemys punctata*, an Indian species, is recorded in Singapore for the first time.

Of the four species of softshell turtles (Trionychidae) native to Peninsular Malaysia, two are known from Singapore, namely *Dogania subplana* (Geoffroy, 1809) and *Amyda cartilaginea* (Boddaert, 1770). The latter species is better known under the genus *Trionyx* Geoffroy, 1809. The author has chosen to follow Meylan's (1984, 1987) classification as there seems to be sufficient morphological characters to separate *Amyda* from *Trionyx* (see also Ernst & Barbour, 1989: 97). *Trionyx* is now restricted to a single African species, *T. triunguis* (Forskål, 1775).

Another species of softshell turtle, *Pelodiscus sinensis* (Wiegmann, 1835) (previously classified in *Trionyx*), is known from Singapore. This species is cultured for food, and escapees have established themselves (Chou & Lam, 1989: 92). This species is cultured in preference to *A. cartilaginea* due to its higher fecundity and faster growth rate (Chou & Choo, 1986: 177).

Recently during a field trip to the Nee Soon swamp forest (ca. 1°23'28"N, 103°48'42"E) in the Central Catchment area on 21 April 1990, the author and his colleagues collected a softshell turtle at about 2100 hrs in a shallow (average depth ca. 30 cm) acid-water (pH 5.3) pond with a muddy, leaf-littered bottom. The specimen attempted to escape by burrowing into the mud. It proved to be a young *Amyda cartilaginea* (Boddaert, 1770), with a disc length of 157.0 mm (measured with a pair of vernier calipers accurate to 0.1 mm). It showed the characteristic markings of the species, i.e. a dark olive-brown carapace with some black reticulation, several longitudinal rows of small tubercles, five callosities (hypo-plastral and xiphiplastral) on a dirty-grey plastron and numerous small, yellow spots on the head and forelimbs. The female specimen had a short tail not extending beyond the rear edge of the carapace. Males tend to have longer and thicker tails.

A. cartilaginea is a widely distributed species, ranging from Vietnam, through Laos, Kampuchea, Thailand, Southern Burma to Malaysia, Java, Sumatra and Borneo. Ernst &

Barbour (1989: 110) state that it is found in muddy slow-moving streams or rivers, ponds, swamps etc., while Boulenger (1912: 11) notes that it is "very common in slow-moving and muddy rivers and estuaries and in ponds and swamps..". According to Ernst & Barbour (1989: 110), *A. cartilaginea* can grow to a disc length of 700 mm. Harrison & Tham (1973: 253) commented that this is the species most commonly caught "...in the freshwater swamps in neighbouring territories and sold for making tortoise soup..". Sharma (1973: 234) also noted that *Amyda cartilaginea* inhabits ponds and streams on the island. It appears that *A. cartilaginea* was more widespread and common then than it is now.

The present capture of *A. cartilaginea* confirms its presence in Singapore. The specimen caught at Nee Soon is now deposited in the Zoological Reference Collection (ZRC 2.2593). There are only three specimens in the ZRC which are authentically known to be from Singapore. One (ZRC 2.0131, disc length 500 mm) was captured by H. N. Ridley in the Botanic Gardens (which was less disturbed than it is now) in 1898; another (ZRC 2.0024, disc length 95 mm) by M. A. Smith, exact locality unknown, in 1901; and the third (ZRC 2.0137, disc length 300 mm) by P. Falshaw, again from an unknown locality, in 1907. In the course of cataloguing the turtle collection of the ZRC, the author came across a specimen (ZRC 2.2528, disc length 82 mm) collected in 1955 by the Singapore Fisheries Research Station but its exact locality could not be ascertained. Moreover, it was found in a bottle containing marine fish.

On 19 January 1989, another species of softshell turtle had been spotted and photographed by some members of the Malayan Nature Society (Anon, 1989: 4). From the photograph, it can be identified as *Dogania subplana*, with characteristic brown carapace, black medial stripe, two pairs of black-centered, yellow-bordered ocelli and a black line from the snout to the temples, passing through the eye. It had a white plastron (Kelvin Lim, pers. comm.). The sex of the specimen was not determined. The disc length was estimated to be about 150 mm. This species can grow to a disc length of 350 mm (Ernst & Barbour, 1989: 97). A colour record can be found in Ng (1988: 34).

This sighting, at night, was also at the Nee Soon swamp forest, although in a slightly different locality and biotope from that of *A. cartilaginea*. The animal was found under a submerged log in a clear, rather shallow (average depth ca. 80 cm), moderately fast-flowing forest stream with a silty, leaf-littered substrate (Kelvin Lim, pers. comm.). The acidity of the water was about pH 5. Smith (1931: 165) states that *Dogania subplana* prefers hill streams to slow-moving, muddy-bottomed rivers, hiding beneath rocks and large stones. Taylor (1970) states that he had taken specimens "from small streams from low mountains or hills." (p. 153).

This species ranges from southern Burma and Thailand southwards through Malaya to Java, Sumatra, Borneo and the Philippines (Ernst & Barbour, 1989: 98). *D. subplana* is rare in Singapore and the last specimen collected from Singapore and deposited in the ZRC was taken by M. A. Smith from Bukit Timah in 1909 (ZRC 2.0005, disc length 85 mm).

During a field trip to Seletar Reservoir, Singapore (ca. 1°26'N, 103°51'E) on 4 May 1990, the incomplete skeleton of a large softshell turtle was collected by the author from the lakeside. The skeleton was recovered from a high sand bank about two meters from the water surface, though the lake level has fallen in recent weeks due to drought.

Of the skeleton, only the last six pairs of costals and the last four neurals, the hyo-, hypo-, and xiphiplastral bones and the left pelvic bone were recovered. All bones except for the pelvic are quite strongly granulated. The last two pair of costals are contiguous at the midline of the carapace with the last pair large and well-formed. The ribs protrude only slightly beyond the costals. The hyo- and hypoplastra are fused. The broad xiphiplastral bones are also fused medially for more than half their length. The carapace is rather dome-shaped, much more so than in the native Trionychidae. The carapacial length measured in a straight line from the sixth-last to the last pair of costals is 260.4 mm while the greatest carapacial width is 83.5 mm, measured across the widest pair of costals. All measurements were made with vernier calipers accurate to 0.1 mm.

These bones almost certainly belong to *Lissemys punctata* (Lacepède, 1788) (Cyclanorbinae). This subfamily also includes the exclusively African genera *Cyclanorbis* and *Cycloderma*. These African turtles share with *Lissemys* the characteristics of a fused hyo-hypoplastra, the xiphiplastral surrounding the middle prong of the posteromedial process of the hypoplastra, seven or more callosities and cutaneous femoral flaps on the plastron (Ernst & Barbour, 1989: 97). It is also the only genus of Trionychidae which still retains the presence of marginal bones, none of which were recovered from Seletar. The specimen collected is estimated to have a complete carapace length of between 280 to 300 mm. Although Ernst & Barbour (1989: 115) state that *L. punctata* grows to 275 mm in length, Deraniyagala (1939: 305) noted that it “. . . frequently attains . . . 370 mm or more.”

Lissemys punctata, with its three subspecies, *L. p. punctata*, *L. p. andersoni*, and *L. p. scutata* (see Ernst & Barbour, 1989: 116), occurs in the Indus and Ganges drainages of Pakistan, India, Sikkim, Nepal, Bangladesh, Sri Lanka and the Irrawaddy and Salween rivers of Burma. It is said to inhabit shallow, quiet, often stagnant waters of rivers, streams, marshes, ponds, lakes, irrigation canals and tanks (Ernst & Barbour, 1989: 116). Waters with sand or mud bottoms are preferred, which agrees well with the existing biotope at the Seletar Reservoir, a large lake with a predominantly muddy bottom.

Its presence in Singapore could be due to the release of captive specimens, a practice which is quite common, especially during the Buddhist festival of Vesak, where the release of animals is considered a virtue. *L. punctata* is sometimes offered for sale by pet dealers in Britain (see Pritchard, 1967: 254), and the same probably applies for Singapore.

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