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19. DISTRIBUTIONAL NOTES ON THE TURTLES OF WESTERN MYANMAR

At least 22 species of tortoises and freshwater turtles inhabit Myanmar, including six which are endemic (Iverson 1992, van Dijk 1997, Platt *et al.* 2000). However, the chelonian fauna of Myanmar is one of the least known in Asia (McCord 1997), and old fragmentary observations remain the principal source of information (Kuchling 1995, van Dijk 1997, Platt *et al.* 2000). Basic studies have not been undertaken and most distribution records originated prior to 1900 (van Dijk 1997). Species inventories of particular regions are essential for conservation, and acquiring baseline data on the occurrence even of common species is important (Dodd and Franz 1993, Oliver and Beattie 1993). We report recent distribution records of turtles in western Myanmar and discuss the significance of our findings.

Data on the occurrence of turtles in western Myanmar were gathered in conjunction with a tortoise survey of Shwe Settaw Wildlife Sanctuary (SSWS), conducted from August 3-24, 1999 (Platt 1999). SSWS (20° 11' N, 94° 28' E) was established in 1940 to protect Eld's deer (*Cervus eldi thamin*) (Salter and Sayer 1986). It is located on the western edge of the central dry zone within the rain shadow of the Arakan Yoma Mountains (FAO/UNDP 1982). Consequently, mean annual rainfall is low (*c.* 90 cm) with an extended dry season from December through May. Except for major rivers, there are no permanent streams, and available surface water is extremely limited during much of the year (FAO/UNDP 1982).

The dry zone is characterized by deciduous

forest, locally known as *Indaing*, and dominated by fire-resistant trees such as *Dipterocarpus tuberculatus*, *Shorea oblongifolia*, *Pentacme siamensis* and *Tectona hamiltoniana*. Canopy height rarely exceeds 6 m, and the understorey consists of low shrubs and grass. Dense vegetation and stands of bamboo occur along ephemeral watercourses (FAO/UNDP 1982; Salter and Sayer 1986). Anthropogenic fires are common during the dry season (FAO/UNDP 1982; van Dijk 1994).

We interviewed SSWS personnel, villagers, hunters and turtle traders in the villages surrounding the sanctuary to obtain data on the turtle fauna of our study area. Local residents are generally an excellent source of information and shells are often sold to buyers who periodically visit the villages (Thirakhupt and van Dijk 1994). We measured carapace (CL) and plastron length (PL), and photographed available specimens. Voucher photographs were deposited in the Campbell Museum (CUSC), Clemson University, Clemson, South Carolina, USA. Taxonomy follows Ernst and Barbour (1989).

Cyclemys spp.

Three *Cyclemys* spp. were examined; two living turtles (CUSC 1797; CL = 19.4 cm, CUSC 1798; CL = 19.5 cm) and a carapace (CUSC 1770; CL = 20.4 cm). The specific identity of these specimens is not possible. *Cyclemys dentata* was reported from Myanmar (Iverson 1992). However, in a recent revision of the

genus, Fritz *et al.* (1997) contend that *C. dentata* actually represents a complex of cryptic species, and the nominal species occurring in Myanmar is *C. oldhamii*. Our specimens were obtained from a trader in Padan village, who was unsure of their origin. These turtles were probably collected in Rakhine State (formerly known as Arakan), where the occurrence of *Cyclemys* has been verified (Iverson 1992, Platt 2000). *Cyclemys* inhabit deep pools in permanent streams (Thirakhupt and van Dijk 1994, Sharma 1998), a habitat generally absent in the dry zone. The posterior neural and costal scutes of one living turtle were discoloured and fused with no evident sutures. Similar shell anomalies among *Terrapene carolina* were attributed to fire damage by Dodd *et al.* (1997).

Lissemys scutata

Approximately 15 *Lissemys scutata*, ranging in size from small juveniles to adults, were observed in an earthen pond (c. 0.25 ha) at a pagoda on Mya Kyaing Taung [=Emerald] Mountain (20° 16.76' N; 94° 29.01' E). Pagoda visitors probably released these turtles into the pond, a common practice at Buddhist temples. One turtle (CUSC 1766; CL = 13.8 cm) was captured for identification and released. Another adult appeared to be completely white, but we were unable to discern the eye colour and determine if the turtle was a true albino. Seven additional living *L. scutata* (CUSC 1767; CL = 16.0 to 18.8 cm) were obtained from a trader in Padan village. According to the trader, *L. scutata* is common in nearby rice fields, irrigation ditches and ponds. Our observations constitute the first records of *L. scutata* from this region of Myanmar (Iverson 1992, van Dijk 1993).

Manouria emys

We examined the carapace of an adult

(CUSC 1764; CL = 44.2 cm) in Pyaw Bwe (20° 01.08' N, 94° 38.08' E), collected in May 1998 about 6.4 km southwest of the village. Villagers regard *M. emys* as extremely rare and that was the only specimen they had found in recent years. Residents of other villages that we visited had never encountered *M. emys*. Given the dense human population and intensive hunting pressure (Platt 1999), few *M. emys* are believed to survive in this region. We also examined the plastron of an adult (CUSC 1765; PL = 35.0 cm) from Rakhine State at a trading establishment in Padan village. The plastron was uniformly dark in colour, with pectorals meeting at the midline, indicating the presence of subspecies *M. emys phayrei* in this region of Myanmar (Ernst and Barbour 1989). These specimens constitute the only recent records of *M. emys* from Myanmar. Theobald (1876) reported *M. emys* from Arakan (Rakhine) and Moulmain (Mawlamyaing). Earlier records are available from Tenasserim (Taninthayi) and the vicinity of Yangon (Iverson 1992). *M. emys* is regarded as rare and declining throughout most of its historic range (Moll 1989).

Melanochelys trijuga edeniana

Four shells of this endemic subspecies were examined; two in Padaung (CUSC 1772; CL = 20.7 cm and CUSC 1773; CL = 15.8 cm), and one each in Padan village (CUSC 1771; CL = 12.2 cm) and Laybin (CUSC 1774; CL = 14.2 cm). Carapaces were dark brown with lighter keels, plastrons were black with prominent yellowish margins. Additionally, van Dijk (1994) obtained a shell (CL = 16.7 cm) from an unspecified village near SSWS Headquarters. These specimens represent the first records from western Myanmar (Iverson 1992). According to SSWS rangers, *M. trijuga* inhabits intermittent streams and is active during the wet season.

Morenia ocellata

A carapace we photographed in Padan village (CUSC 1769; CL = 18.0 cm) constitutes the first record of *M. ocellata* from west central Myanmar. We also obtained a photograph (CUSC 1768) taken by U Hla Win (Deputy Director General; Department of Fisheries, *pers. comm.*), of two juveniles in a market at Sittwe, the only location west of the Ayeyarwady river where *M. ocellata* has been previously collected (Iverson 1992). The records available suggest that *M. ocellata* is restricted to southern Myanmar (Iverson 1992). However, Kuchling (1995) found at a market in southern China *M. ocellata* that appeared to have been collected locally, and speculated that these turtles may be more widespread than suggested by earlier records.

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STEVEN G. PLATT

*Wildlife Conservation Society,
P.O. Box 9345, Siem Reap, Cambodia.*

SAW TUN KHAING,

WIN KO KO,

KALYAR

*Wildlife Conservation Society, Bldg. C-1,
Aye Yeik Mon 1st Street, Yadanamon
Housing Ave., Hlaing Township,
Yangon, Myanmar.*

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20. DIFFERENCE IN BREEDING COLORATION IN *CALOTES VERSICOLOR* OF THE SOUTHERN AND NORTHERN ARAVALLIS IN RAJASTHAN

(With one text-figure)

During the breeding season, the male *Calotes versicolor* acquires a brilliant crimson or scarlet colour on the forehead and shoulder parts of the body towards dorsal and ventral sides, and black patches upon the neck, cheeks and throat (THE FAUNA OF BRITISH INDIA, Vol. 11, Smith 1935). During my field studies in the Aravalli hills, Rajasthan, I noticed a remarkable difference in the black patches of male *Calotes versicolor* at the northern and southern ends of the Aravalli range. Towards the extreme southern end in Udaipur district (23° 46' to 26° 2' N; 73° to 74° 35' E), in Phulwari Wildlife Sanctuary, forest areas of Jhadol, Ogna, Gogunda, Kotra, Khairwara and Udaipur Forest Ranges and the adjoining forests, individuals have black patches on their neck region, which just touch the swollen cheeks and at a distance from the tympanum (Fig. 1a). On the other hand, individuals confined to Nahargarh (26° 55'-27° 15' N' 75° 45'-76° E) and Jamwa Ramgarh Wildlife Sanctuaries, nearly 25 km away from

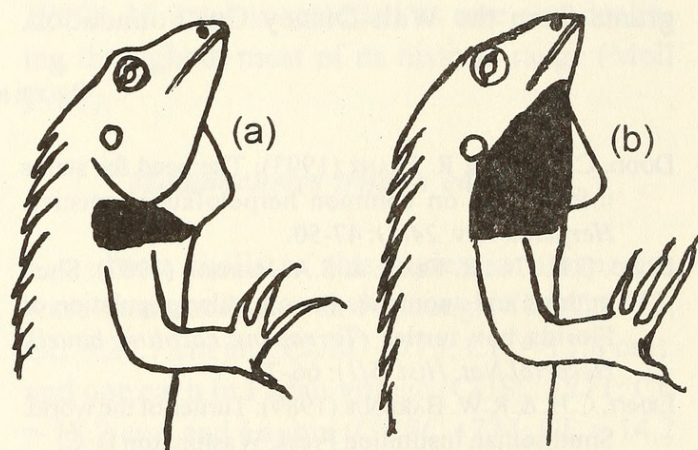


Fig. 1: (a) Black patch on the neck of Udaipur specimen. (b) Black patch on the neck of Jaipur specimen

Nahargarh towards the eastern side (27° 0'-27° 15' N and 76°-76° 15' E), in Jaipur district, towards northern Aravalli, have broader black patches, which extend to the swollen cheeks. Tapering black patches extend forward and terminate at the base of the lower jaw, below the



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