

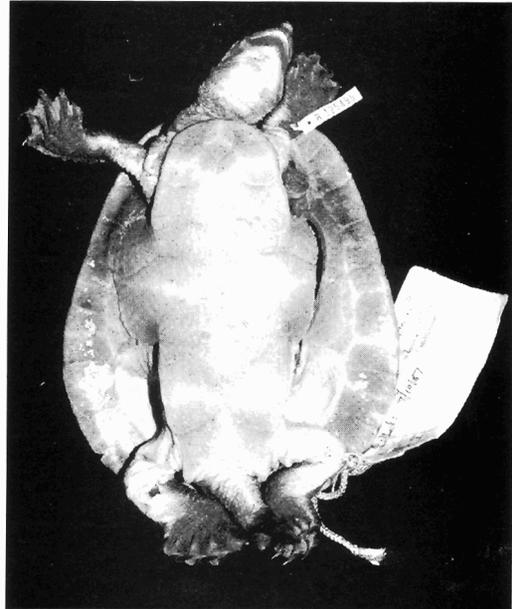
THE NORTHERN YELLOW-FACED TURTLE

Emydura tanybaraga sp. nov. HOLOTYPE A.M. R125498 COLLECTED BY DR. A. GEORGES

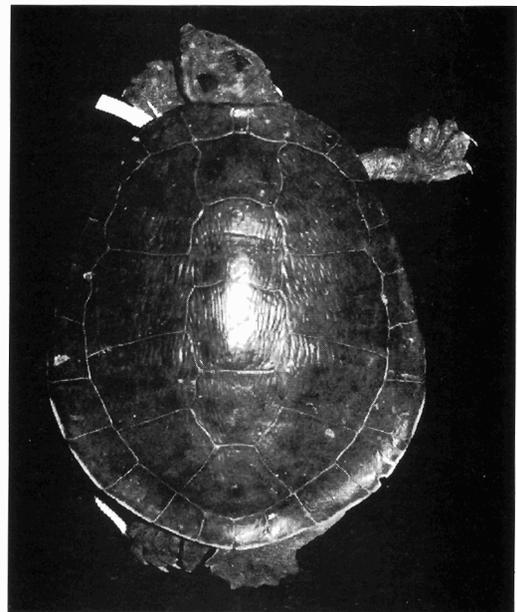
A new species of shortnecked chelid turtle with yellow facial markings is described and named from the Daly River of northern Australia. The type population occurs in the Daly River of the Northern Territory and genetic studies indicates that turtles also found in the South Alligator River of the Northern Territory and the Mitchell River of the western region of Cape York Queensland are conspecific. The morphological difference of large adult turtles from the extremes of this range indicate that further subdivisions within this species are required.

HISTORY

The Daly River was named by B. T. Finnis in 1865 after Sir Dominick Daly, the Governor of South Australia. The river itself came into prominence with turtle fanciers in 1970 when it was reported that the first Australian record of *Carettochelys insculpta* had been collected in the river. The following year I travelled to the Daly River at Policeman Crossing in an attempt to collect one, and while diving upstream from the causeway, two forms of *Emydura* were collected. In 1972 I published on the occurrence of two species of *Emydura* in sympatry in the Daly River at Daly River Mission and lodged some specimens with the Australian Museum, Sydney. Two of these specimens were the yellow-faced turtle which are here named as paratypes. Cogger in 1975 mentioned also that different species of *Emydura* were living together in the Daly River. Legler in 1981, writing in the National Geographic Research Report, states "the Genus of *Emydura* is recognised as distinct and consisting of a series of allopatric species; sympatry with other shortnecks occurs by not with other species of *Emydura* despite the statements of Cann (1972) and Cogger (1975)". In 1989 Georges and Kennett discovered a third species of *Emydura*, living in the upper reaches of the Katherine River, a tributary of the Daly River and Georges and Adams identified all three as genetically distinct.



◆ *Emydura tanybaraga* holotype, adult male. A.M. R125498.



TYPE DATA

Holotype: A.M. R125498 Whole adult male with a carapace length of 167.0 mm, collected by Dr Arthur Georges on the 5th November 1987 near Policeman Crossing, Daly River, Northern Territory (13°46'S x 130°43'E). On the right anterior edge at the 9th marginal the shield is

**HOLOTYPE: *Emydura tanybaraga*
(Male) A.M. R125498**

Carapace length:

Straight line: 167 mm

Width: 135 mm

Central: (Vertebral)

	Length	Width
C1	27.6 mm	30.5 mm
C2	32.3 mm	34.2 mm
C3	32.3 mm	36.5 mm
C4	28.5 mm	33.4 mm
C5	30.2 mm	39.9 mm

Plastron length: (overall) 142.5 mm

Plastron width: 55 mm

Head width: 30.5mm

Bridge width: 47.5mm

Lengths:

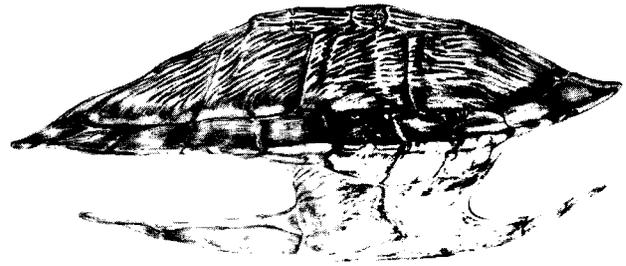
- Humeral 4.5mm

- Pectoral 31.3mm

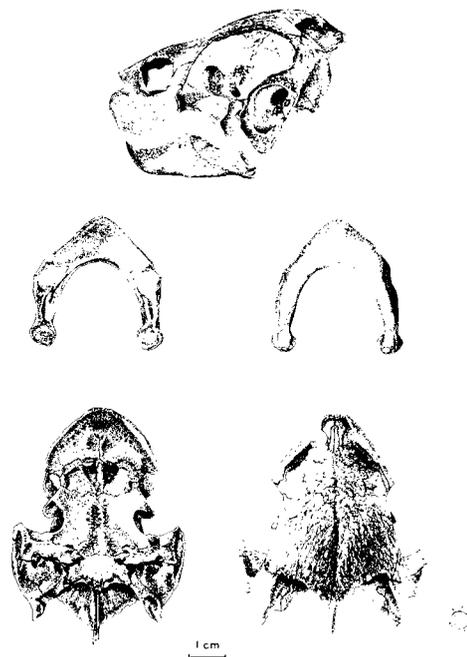
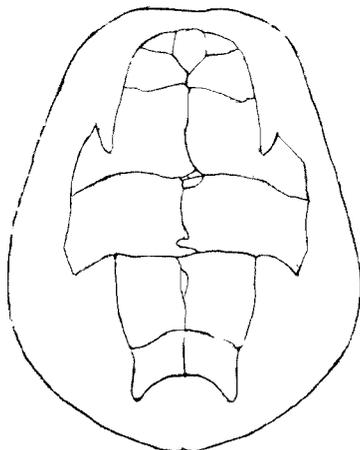
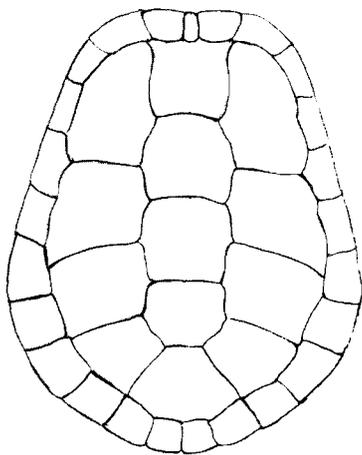
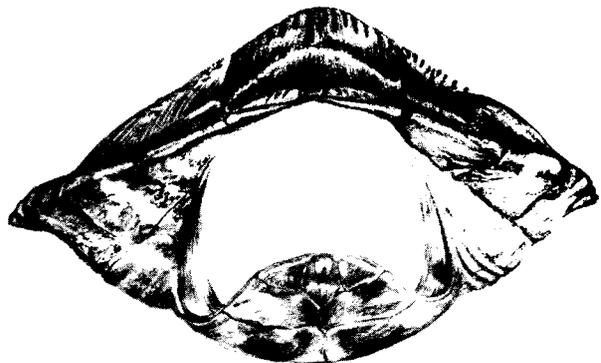
- Abdominal 31.3mm

- Femoral 32.2mm

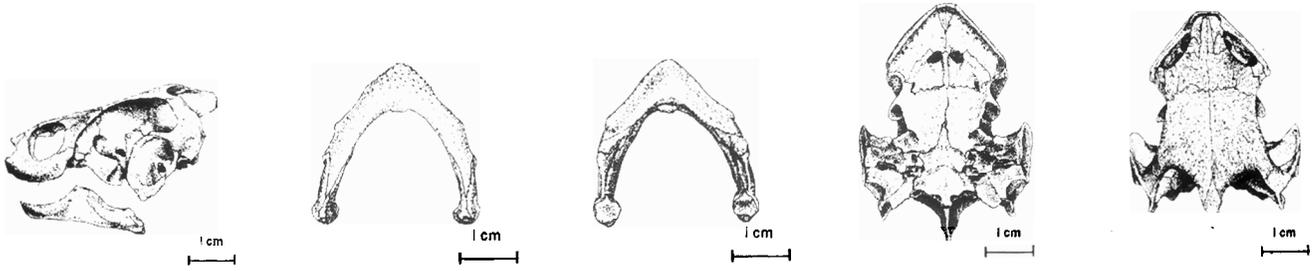
- Anal 22 mm



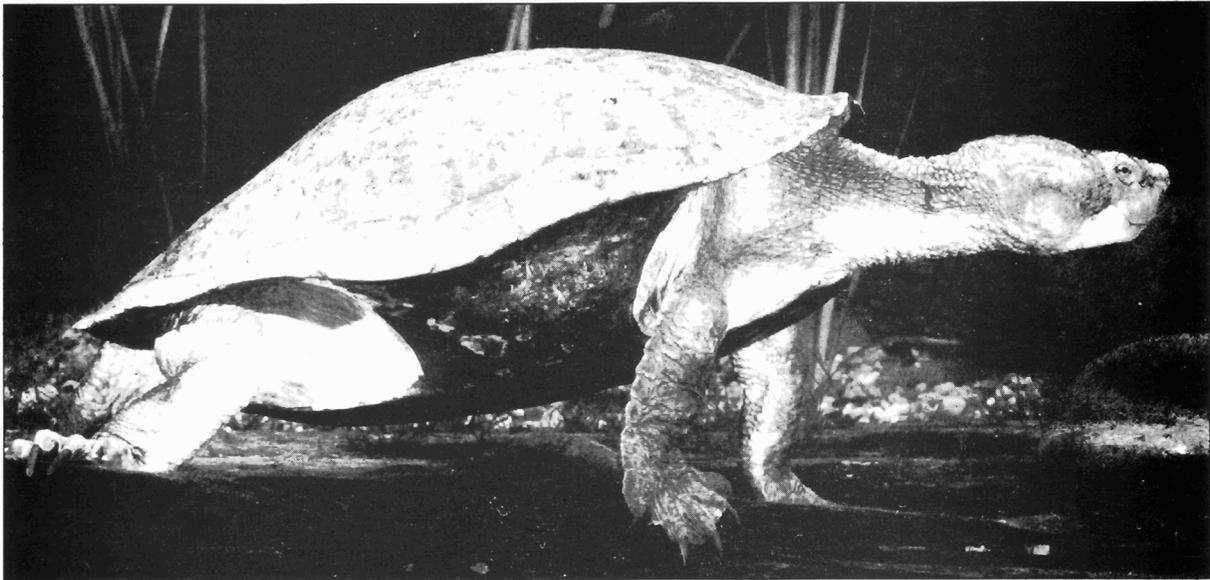
◆ *Emydura tanybaraga*, Policeman Crossing, Daly River, Northern Territory, carapace length, 185mm. Credit: Colin South.



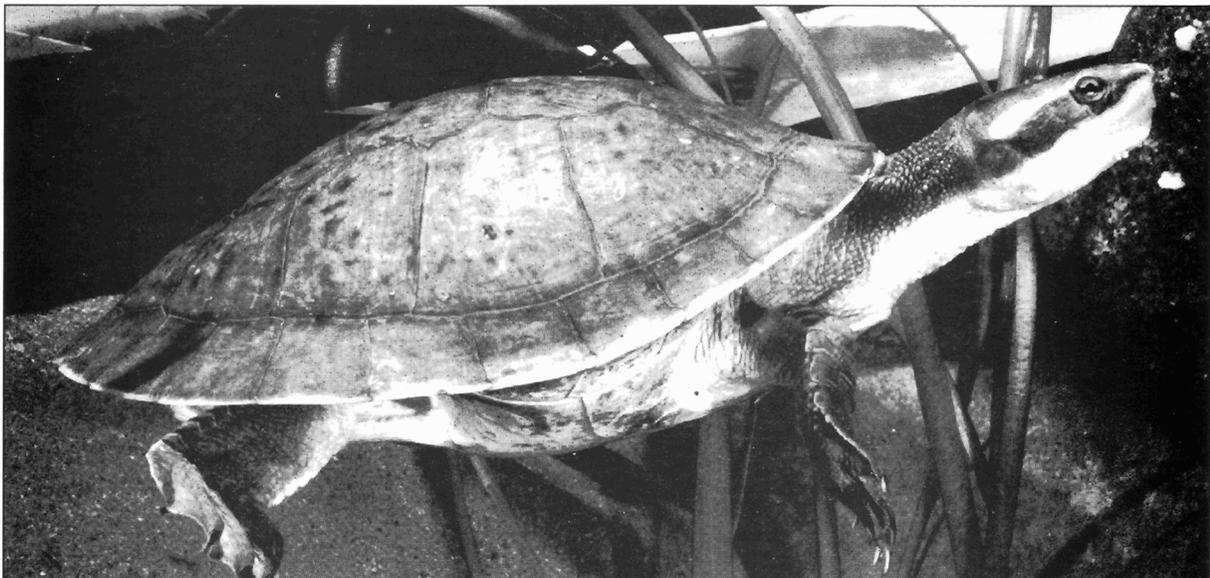
▲ *Emydura tanybaraga*, MacKinley River, Northern Territory. Large female. Credit: Ian Smales.



▲ Female *Emydura tanybaraga*, Policeman Crossing, Daly River, Northern Territory, U.C. R17339.
Credit: Colin South.



▲ Female *E. tanybaraga* from the Walsh River, Queensland. These turtles are morphologically distinct from those at the type location, genetically they tested the same.



▲ A mature *E. tanybaraga* from the McKinley River, Northern Territory.



▲ The lower Daly River at Ooloo, Nth. Territory.

slightly scalloped from an early injury. Both bridges have been cut for electrophoretic analysis.

PARATYPES: All specimens are from the same location as the Holotype. A.M. R31723-4. A.M. R128999 whole juveniles. A.M. R125499, A.M. R125492, (see Georges & Adams, species examined, 1992) juveniles with shell split at the bridges. A.M. R125498 adult male with shell split at the bridges, N.T.M. R20416 adult male.

ETYMOLOGY

Tanybaraga is the name given to the adult yellow-faced turtle in the Daly River, the species name is to be used as a noun in apposition. This is pronounced tanybar-arrga.

DIAGNOSIS

Four species of *Emydura* occur in the waterways of the Northern Territory and Western Australia; *Emydura australis*, *Emydura victoriae*, *Emydura worrelli* and *Emydura tanybaraga*. The last three are known from the Daly River.

Emydura tanybaraga is a yellow faced turtle with prominent dark markings through the iris as the level of the pupil. In aged individuals a large broad palate covers approximately half the roof

of the mouth, but maintains a medial division at all ages.

The facial colouration distinguishes this turtle from *Emydura australis*, *Emydura victoriae* and populations of *Emydura worrelli* in the Northern Territory, which all have a reddish-pink colouration to the face.

Facial colouration fades with age in all of these species. However, the presence of dark markings through the eye and a median division to the palate in aged *E. tanybaraga* will further distinguish this turtle from similarly aged individuals of *E. australis* and *E. victoriae* which have no dark markings through the eye and have broad, undivided palates.

E. tanybaraga and *E. worrelli* can have similar eye markings and palate shape until well into maturity, at this stage *tanybaraga*'s palate becomes larger.

DESCRIPTION

There is a reasonable morphological variation between forms of this turtle at old age from the type location and Mitchell River. Large juveniles and medium sized specimens from throughout the distribution are quite similar. The heads of adult females can grow quite large but not as regularly or to the extent that megacephaly effects

Emydura australis or *victoriae*. The small barbells may be present.

A light yellow band of different intensity extends back from the eye to just above the tympanum which usually fades completely with old age. Young from the Daly may have a band that starts at the tip of the nose. Another lighter band extends from the angle of the mouth along the neck. This region also later fades. The top of the head is not a thickly cornified crown but rather has a light shield, though occasionally this may be absent. Regardless, the crown of the head is usually mottled with dark patches. Similar coloured patches or spots occur on the fawn to dark brown-grey carapace. When viewed dorsally, juveniles and young adults are noticeably pear shaped, and as they age they become more oval in shape. Flaring on the rear of the carapace is distinctive from M6 back and remains throughout life, but on older turtles flaring is normally confined to the rear most marginal from M8 back. Viewed from the side, indications of central ridging is still evident on large juveniles and turtles in early maturity. Viewed also from the side the apex of the carapace hump in the McKinley and Daly River turtles is close to the mid line, while in those living in the Walsh River, (at least on the larger specimens), the apex of the hump is forward, giving a distinctively longer taper to the rear. The carapace colours are similar and the shields are smooth and slightly waxy, with an indication of longitudinal sulcations as they begin to age. The bone coloured plastron may occasionally have a slight indication of pink and is bulged in the centre and both lobes of the plastron turn up, consequently the turtle appears quite deep in profile. The longest carapace seen in the Daly was 210 mm, the McKinley 250 mm with a depth of 115 mm, while one from the Finnis River was 285 mm in length with a depth of 120 mm. This latter specimen is almost comparable in size to a large female collected in the Walsh River, a tributary of the Mitchell. Dorsally the soft parts are steel grey, below a creamy white, the neck is covered with small smooth tubercles, the barbells are small or non-existent.

Large female heads from the Walsh River are 'V'-shaped when viewed dorsally or ventrally. If this feature occurs in the Daly it is not known.



▲ Carapace differences between *E. tanybaraga* and *Emydura victoria* (with head extended) from the Daly river.

Although the large females seen from the McKinley River had conventional head shapes. The red-faced *Emydura victoriae* hatchlings also have a broad horny sheath inside the upper mouth, which extends back to about the centre line to form a secondary plate, though some young may have a division splitting the centre of this sheath which gradually meets. Hatchling *Emydura tanybaraga* are not similarly equipped with this strong palate with the exception of old specimens. Hatchlings of yellow-faced turtles have the palate or sheath which forms a narrow band along the upper jaw. As these turtles grow, the sheath extends inwards and on old specimens the roof of the mouth is well protected from possible damage during the feeding process.

The plastron and carapace of hatchling *Emydura tanybaraga* are distinctively different from the *Emydura victoriae* and very similar to other yellow-faced *Emydura* from the McKinley River. The front section of the carapace is wider than the rear unlike the *Emydura victoriae*, and it is somewhat heart-shaped without the 'V'. There are no serrations on the marginals as there are on *Emydura victoriae*, however, what I call serrations is often viewed differently by other turtle researchers. The centrals are also high ridged, and the shield crinkling is almost restricted to the central scutes, the others are smooth. The bone coloured plastron can have small dark patches and has a wider front lobe than the hatchling red-faced turtles, and they are also more tapered on the rear lobe. Ventrally the bone coloured marginals have dark patches at the seams, with the bone colour slightly extending

around on to the upper surface. As they grow into juveniles, they also grow high ridged, and the marginals flare slightly less than the broader medium sized red-faced turtles. The edges of the marginals from M3- M6 turn up slightly on both species. At this stage of growth both red and yellow-faced species look quite similar (like many turtles across northern Australia) although the crown on the head of the yellow-face only has dark mottling unlike the normally plain colour of *Emydura victoriae* or *Emydura worrelli*. The attractive iris is similar in colour to *Emydura victoriae*, but it normally has the dark split or dots, often in both directions giving the cross effect previously mentioned. The original two I gave to the Australian Museum were 102 mm and 110 mm long and both showed distinctive annuli.

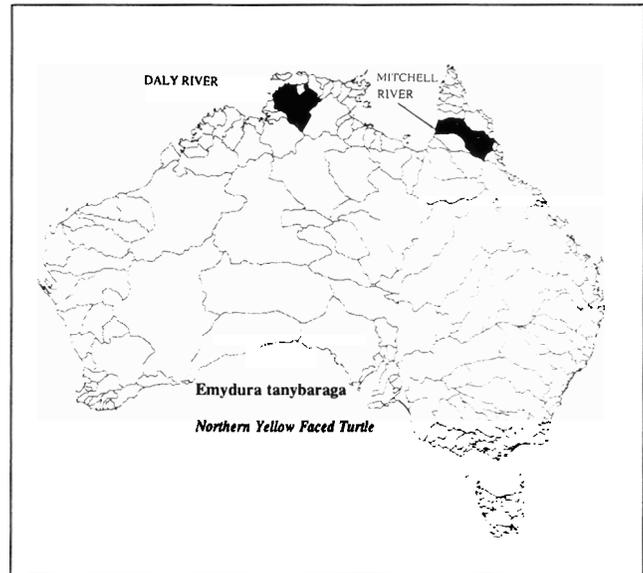
The skull form of adult *Emydura victoriae* and *Emydura tanybaraga* is distinctive. On young turtles of *Emydura tanybaraga*, the mandibular symphysis is smaller than the near equal orbit and tympanic cavities. As the turtle ages the symphysis will become wider than these orifices but never to the extent of *Emydura australis* or *Emydura victoriae*.

DISTRIBUTION

Georges and Adams research indicates that *Emydura tanybaraga* occur in the Daly, South Alligator and Mitchell Rivers. In the Daly they are known to be found in the general vicinity of Daly River Mission, up and down stream of Policeman Crossing. The South Alligator River has some of its headwaters near Coronation Hill, it runs in a general northerly direction, and is fed by Jim Jim Creek in the flood plains near Nourlangie. Most of this system is in Kakadu National Park. In this general region of the Northern Territory I would expect that *Emydura tanybaraga* will also be in the Reynolds, Adelaide, McKinley, Mary, Howard and East Alligator Rivers and associated water ways.

1200 km to the east is the Mitchell River. Its headwaters are within 15 km of the eastern seaboard to the south of Mossman and is the longest of Cape York water ways. Before entering the Gulf of Carpentaria it is joined by the Hodgkinson, Palmer, Alice, Lynd and Walsh

Rivers. The upper reaches of the Mitchell are not far from Mount Carbine on the main Peninsula Road. Yellow-faced turtles are reported to the north of the Mitchell in the Edward and Wenlock Rivers, so at this stage without seeing these forms, I will still include them in this group. It is unlikely that they will extend into the Jardine River where *Emydura subglobosa* occurs.



TYPE LOCATION

The type location at Daly River Mission is a typical monsoonal river with the majority of rain falling during December to April with up to 1200 mm per annum being recorded. Daily temperatures are approximately 29° - 32°C. During the dry season the river is bordered by high timbered banks, which accommodate a possible 15m rise during the monsoon. In this region the river width varies between 30m - 80m and up to 4m deep. There are large bank sand bars and the vegetation is chiefly pandanus, melaleuca, eucalyptus, casuarina and fig. A concrete causeway, known as Policeman Crossing, dams back the tidal effect from Anson Bay, 70 km to the north west. Both fresh and salt water crocodiles are present. The aquatic fauna is abundant and many salt water fishes intermingle with the fresh. Both grey nurse and black tip reef sharks are occasionally sighted along with giant mangrove stingray and sawfish.

BREEDING BIOLOGY

The only published data on this species (at the time considered conspecific with *Emydura*

victoriae) of turtles' breeding activities was by Smith and Wood in 1985. They noticed hatchlings emerging from a nest at 7am on 21st October 1984. The nest site was 3m from and 1.5m above the water level of a billabong associated with the McKinley River. It was estimated that the nest contained 16 - 17 hard-shelled eggs. Of these 10 hatchlings were retrieved, their dimensions were:

MEAN DIMENSIONS OF TEN MCKINLEY RIVER HATCHLINGS

	Mean	Standard
Error Range		
Total weight (g)	5.73	0.14
4.89 - 6.20		
Yolk weight (g)	0.34	0.07
0.14 - 0.93		
Carapace height (cm)	1.59	0.02
1.46 - 1.66		
Carapace length (cm)	3.16	0.05
2.81 - 3.31		
Carapace width (cm)	2.87	0.06
2.50 - 3.11		
Head width (cm)	0.99	0.01
0.93 - 1.02		

In addition to this, Legler reports that nesting for this species (as *Emydura australis*) occurs between early August to mid-November in this region. On 25th September 1990 I dived for turtles with Rod Kennett at Girraween Lagoon near Humpty Doo. We collected 23 yellow-faced turtles, many of which were gravid.

SYMPATRY

Throughout its length the Daly river has six forms of freshwater turtles: *Chelodina insculpta*, *Chelodina rugosa*, *Elseya dentata*, and three *Emydura* each of which can have a different facial colouration. The Alligator River system has an undescribed form of *Elseya dentata*, while just below the escarpment a small number of *Elseya latisternum* are present, probably swept from the plateau during the wet. The Mitchell also contains *Chelodina novaeguineae* sp. and *Chelodina rugosa*.

NATURAL HISTORY

The habitats of *Emydura tanybaraga* are extremely diverse, which is not surprising considering its vast distribution. To what extent the yellow-faced turtles extend upstream from Policeman Crossing at Daly River Mission is not known. I have caught them as far as Olloo about 80 km upstream, but there has been limited research in this river and the turtles, to my knowledge, have not entered traps. The original pair I collected in 1971 was by snorkel diving 500m upstream from the crossing. Today diving in this section of the river is out of the question because of salt water crocodiles. These turtles can be seen by spotlight of a night amongst fallen timber or the roots of living vegetation. Small juveniles have been noted at night basking amongst debris.

Emydura tanybaraga are present in numerous lagoons, swamps and billabongs and there are distinctive morphological forms throughout what is referred to as the top end. I would expect that in a region such as this where the country is not split by mountain ranges and the rivers can extend greatly across the flood plains during the wet season, that the turtles would all be similar. Many rivers exit to the sea in low swampy flood plains and some rivers have a common ground however, this does not appear to be the case. Many of the yellow-faced turtles of the 'top end' have distinctively different carapace texture, some are smooth while others are quite sulcated, occasionally from the same river. It appears to be age related. However, I have not seen many of these turtles except for the occasional specimens while sampling for photographs, or those which are in zoological collections. Unfortunately often when this is the case, locations are not always known, although distinctive differences are at times noticed.

The largest of the turtles captured at Girraween Lagoon measured 221 mm, but there was no indication of megacephaly. These lagoon turtles are smooth on the carapace shields, and they lack the spots or blotches which are well defined on those from the McKinley and Daly Rivers. The temporal markings on the Girraween *Emydura* are a dull yellow and even before old age are virtually nonexistent, while those from the

McKinley and Daly Rivers have an attractive yellow band which is also slightly brighter than the Pul Pul Creek specimens from the South Alligator.

At the eastern extremity of the range of *Emydura tanybaraga* is the apparently disjunct populations of the Mitchell River. At the location from which Georges and Adams genetic samples were collected the river has good stretches of diveable water which flows well into the dry season. Although not numerous the *Emydura* can always be found by diving with a little persistence. *Elseya latisternum* were in the larger numbers. Drum net traps were set over night and only the later form were collected.

ACKNOWLEDGMENTS

Many people and organisations have helped me with this species of turtle. Foremost is Arthur Georges and Scott Thompson, both of the University of Canberra, A.C.T.; Rod Kennett from the University of the Northern Territory and Paul Horner of the Northern Territory Museum; Mark Casey, Andrea and Pat Anderson of the Daly River region assisted in fieldwork. Special

thanks also to my artist friends Colin South and Ian Smales.

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