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Some Taxonomic and Nomenclatural Considerations on the Class Reptilia in Australia. A New Genus of the Family Chelidae from Eastern Australia.

by

Richard W. Wells

*P.O. Box 826, Lismore, New South Wales
Australia, 2480*

Introduction

The following considerations relate to what is currently considered the *Elseya latisternum* species complex. A taxonomic re-consideration of this group is long overdue, as are the formal descriptions of other new taxa within the Australian Testudines. In this paper I briefly discuss this quite different group of turtles that currently reside within *Elseya* - generally known as the *latisternum* complex. Mr Scott Thompson previously of the University of Canberra requested some years ago that I refrain from naming the group as a new genus because this was also his intention. He advised me that in fact a paper was in press at the time that would formally erect a new genus for the group. Over 5 years have elapsed since his advice and I have not yet seen such an article, nor can anyone advise me that it has even been submitted for publication. Further I am led to believe that Thomson has apparently retired from any active interest in Chelid taxonomy. Wells (2007b) recently redefined the genus *Elseya* Gray, 1867 and restricted it to those species with a very wide mandibular symphysis and a distinct median alveolar ridge on the upper jaw. As all members of the *latisternum* complex lack a distinct median alveolar ridge on the upper jaw they are herein placed in a new genus:

***Wollumbinia* gen. nov**

Type Species : *Elseya latisternum* Gray, 1867 - Ann. Mag. Natur. Hist., (3) 20: 44.

Diagnosis : I have for several years considered that the morphology of the '*Elseya*' *latisternum* complex is so different when compared with other Australian elements of the Family Chelidae, that this group should be placed within their own genus, distinct from *Elseya*. Therefore I herein describe the genus *Wollumbinia* and distinguish it from the genus *Elseya* principally by the lack of a distinct median alveolar ridge on the upper jaw - which is present in all species of *Elseya*. Some other distinguishing features of the genus *Wollumbinia* are: large plastron with very rounded anterior lobe, which in some populations may extend past the level of the carapace when viewed from above; intergular about as wide as, or wider than the adjacent gulars; nuchal shield may be present or absent - but when present, usually a very narrow structure; head strong in appearance, fairly broad and deep, with a relatively wide mandibular symphysis in maturity and without a distinct median alveolar ridge on the upper jaw; horny plate (casque) on top of the head extends well off the dorsal of the head down almost as far as the tympanum; usually two to four small white barbels under the chin (although in some barbels are barely in evidence); in juveniles the head appears proportionally quite large, with a very prominent snout, but with age the head shape alters somewhat, with the snout becoming much reduced, presenting a flatter appearance to the face on side view by the time they reach maturity; the dorsal part of the neck is covered with small distinctly pointed tubercles, but in some there are also much enlarged (longer) sloping tubercles - forming a scattering of spine-like protuberances on the upper neck region; the shape of the mature carapace may be elongated or rounded depending on the population; hatchling carapace morphology varies slightly depending upon the location, but overall, most are ovate in appearance, with a distinct vertebral keel (but all trace of the vertebral keeling of the carapace is lost with maturity- replaced with a moderate central vertebral groove); the rear

marginals are distinctly serrated, and depending upon the species in the group, this posterior serration to the carapace may either disappear with age, or may be retained into adulthood.

Content : *Wollumbinia bellii bellii* comb. nov. (Gray, 1844); *Wollumbinia bellii dorriani* comb. nov. (Wells, 2002); *Wollumbinia georgesii* comb. nov. (Cann, 1997); *Wollumbinia latisternum* comb. nov. (Gray, 1867); *Wollumbinia purvisi* comb. nov. (Wells and Wellington, 1985).

Etymology : Named from *Wollumbin*, the Bundjalung people's name for Mt Warning, in north-eastern N.S.W., a significant place in the evolutionary history for this group of turtles.

Wollumbinia bellii comb. nov. (Gray, 1844)

1844 *Phrynops bellii* Gray, Cat. Tort. Crocod. Amphib. Coll. Brit. Mus.: 41. – Restricted type locality (Cann 1998): upper reaches of the both Namoi-MacDonald and Gwydir Rivers, above the New England escarpment, New South Wales.

1998 *Elseya bellii* – Cann, Austr. Freshw. Turtl.: 209.

2002 *Elseya dorriani* - Wells, Aust. Biodiv. Rec., 2002 - Type Locality (by original designation) Bald Rock Creek, south-eastern Queensland.

Description: In appearance this turtle appears quite rounded, broad and rather flat. The head when viewed from above is large, being moderately broad and deep, and from the lateral, rather pointed at the snout. There are 2-4 small barbels on the throat, and the dorsal part of the neck has a mixture of scattered prominent pointed and flat tubercles. The carapace is usually rounded anteriorly, but narrows strongly posteriorly rather than presenting a smooth hind curve to the shell. Additionally, the rear marginals flare slightly and are weakly serrated in mature specimens. Hatchlings have the central shields of the carapace only slightly ridged, and this becomes more distinctive until around 150 mm carapace length, thereafter the central ridging becomes much reduced. Additionally, juveniles have barely any serrations along the rear marginal shields. The anterior plastral lobes are broad and rounded in adults, and when viewed from above may extend beyond the boundary of the carapace (particularly in large females). The posterior of the plastron is straight and tapered into the anal shield. A nuchal shield is usually present on the carapace, and of the plastral plates, the anal shields are usually the longest. The colour and patterning of this species can be quite spectacular when young but less so with age. In juveniles, the carapace is brown with dark greyish mottling. There is a light yellow neck stripe that extends from the back of the mouth (where it is widest) and right along the lower lateral of the neck and through the tympanum to about the forelimb, but with age, this stripe becomes much less distinctive. The gular region and ventral part of the neck is similar in colour to the neck stripe, sometimes vaguely mottled with greyish patches, but as males grow this neck stripe and under-body colour may take on a pinkish hue as well. The ventral part of the tail has a bright yellow hue as does the bridge between the carapace and plastron and some of the marginals (under-surface). In hatchlings, the plastron is yellowish (or sometimes a yellowish-green) with extensive patches of dark grey throughout, and the limbs and exposed upper skin surfaces are steel-grey. By about 150 mm carapace length the plastral colour becomes progressively darker, with aged specimens being almost totally black ventrally. The iris colour also changes with age, with hatchlings being golden yellow with brownish mottling, but mature specimens being dull olive-green, with a light inner ring and a darker outer ring. This turtle can attain a maximum carapace length of nearly 300 mm., but mature specimens are usually slightly smaller.

Distribution: This species is only known from a small area of eastern Australia. It is restricted to the upper reaches of the Gwydir River, Macdonald River and Namoi River systems, on the New England Escarpment in northern New South Wales.

Habitat: This species lives mainly in the smaller tributaries of its rivers passing through open woodland on granite. It favours shallow depths (up to 3 metres) with a sandy and rocky bed, along relatively narrow stretches of watercourse (30-40 metres wide). However, even within this relatively shallow watercourse, it prefers the deeper waterholes near the banks.

Biology/Ecology: There is limited data published on the reproductive biology of this species. Nesting occurs in loamy soil on the river banks from late Spring through Summer (October-January). Up to 23 eggs may be laid in a clutch (usually about 12) and these hatch after about 3 months incubation (80-90 days) This species is omnivorous, consuming a range of aquatic

plants, invertebrates, small fish and carrion, although they appear to be mainly herbivorous. They may be seen basking on exposed logs during the day, and appear to be mainly diurnal in habits.

Survival Status: It is protected under the New South Wales National Parks and Wildlife Act (1974) and listed in that State as a Threatened Species (Vulnerable) in Schedule 2 of the NSW Threatened Species Conservation Act (1995). Although this can be a locally common species there have been reports of serious eye damage to natural populations and this is thought to be a result of agricultural pollution. The waters of its habitat are often made unclear by suspended sediment from runoff and this may be also having an impact on the species' conservation status. *Etymology:* The name '*bellii*' honours the 19th century British zoologist Thomas Bell.

Further Notes: This is a medium-sized Chelid turtle that was long regarded as merely a form of *Wollumbinia latisternum*, but as its distinctiveness became known, it was considered to be another undescribed species in the *latisternum*-group. Research by John Cann revealed that this turtle was a species described in the 19th century and subsequently ignored for over a hundred and fifty years. I have previously indicated that variation in this species' morphology suggests that it may be composite, but according to John Cann electrophoretic tests have failed to separate them as different taxa. Despite this contrary evidence, the apparently disjunct population from Bald Rock Creek in south-eastern Queensland still appears to me to be only slightly similar to *Wollumbinia bellii* in external appearances, and in 2002 was named as *Eelseya dorriani* (see Wells, 2002). Such differences may have taxonomic significance, or just reflect possibly different ecological conditions of the Bald Rock Creek locality. In this regard, there are a number of morphological differences between typical *bellii* and those from Bald Rock Creek which warrant serious consideration.

Specimens from Bald Rock Creek, south-eastern Queensland appear to be generally, when mature, more depressed in body-form than typical *Wollumbinia bellii*, with a shell depth of around 75 mm, versus about 100 mm in typical *Wollumbinia bellii*. The head is somewhat narrower and the snout may appear slightly more pointed in those from Bald Rock Creek at about 45 mm (from tympanum to tympanum), compared to those of typical *Wollumbinia bellii* (about 52 mm wide). The Bald Rock Creek specimens appear to differ from typical *Wollumbinia bellii* in a number of other important features. In Bald Rock Creek specimens the posterior of the carapace is usually smoothly rounded and in its mature condition seems to be barely serrated. In typical *Wollumbinia bellii* the posterior part of the carapace tapers sharply and there is moderate serrations in mature individuals. Additionally, there is a secondary serration along the rear marginals in Bald Rock Creek specimens and this is usually lacking in typical *Wollumbinia bellii* which has smooth outer edges to the posterior marginals. Further the rear marginal shields appear to be usually much wider in Bald Rock Creek specimens than the same shields in typical *Wollumbinia bellii*. In Bald Rock Creek specimens the femoral plates turn sharply before meeting the anal plates at the edges, but in typical *Wollumbinia bellii* these plates form a straight line or slightly concave line of contact. Although mature colouration is similar between the two populations, hatchlings appear quite different. In Bald Rock Creek specimens the carapace is olive-brown, speckled and radiated with greyish-black, and with the shields broadly edged with creamish-yellow. The plastron is very dark greyish-black with yellow edges to the sutures, and the bridge area is bright pinkish. The barbels in Bald Rock Creek specimens are quite prominently coloured golden yellow, unlike the even-coloured barbels of typical *Wollumbinia bellii* - however, the neck stripe is similar in both populations, but in juvenile Bald Rock Creek specimens the stripe is often edged with dark grey. Bald Rock Creek specimens are believed confined to Bald Rock Creek in south-eastern Queensland, where the population lives in broad, gently flowing water-bodies with a stony bottom. Specimens of the Bald Rock Creek population reach a maximum carapace length of about 265 mm, and carapace width of about 210 mm and there is a slight central groove. In typical *Wollumbinia bellii* the carapace is considerably larger, reaching a length of about 290 mm and width of around 235 mm. and the central groove is slightly deeper. The reproduction of the Bald Rock Creek population is poorly known, although there is one record of a clutch of 20 eggs that hatched after 48 days incubation - with both the eggs and hatchlings being reported to be noticeably smaller than those of typical *Wollumbinia bellii*. The Bald Rock Creek population is believed to be omnivorous, but primarily herbivorous in feeding habits like typical *Wollumbinia bellii*. This population would be protected under the Qld Nature

Conservation Act (1992), and given its restricted distribution it may be regarded as potentially vulnerable. As noted above, I have previously named this population *Elseya dorriani* Wells 2002, and given the above considerations I still maintain that it warrants taxonomic recognition. However, its apparent electrophoretic similarity with *Wollumbinia bellii* is according to John Cann surprising, so I herein only recognize the taxon as a subspecies at this time, and hereby list it as *Wollumbinia bellii dorriani* comb. nov. (Wells, 2002) until someone conclusively demonstrates that it is indeed indistinct taxonomically from *Wollumbinia bellii bellii* (Gray, 1844).

***Wollumbinia georgesii* comb. nov. (Cann, 1997)**

1997 *Elseya georgesii* Cann, Monitor (J. Vict. Herpetol. Soc.), 9 (1): 18; figs pp. 19-23, 31, 32.
– Type locality: Bellinger River (30°25'S 152°46'E).

Description: This is a small to medium-sized Chelid turtle which until recent times was confused with *latisternum*. The head is moderate in size and relatively deep with a prominent snout and lacks a median alveolar ridge along the upper jaw. There are a pair of distinct barbels under the chin in mature specimens, but these are far less noticeable in hatchlings. The neck is short, moderately thick and the upper neck skin is weakly covered with low tubercles. On the dorsum of the head there is a large, smooth, and evenly dark-coloured head shield that extends over the lateral to the tympanum. This is very different to the condition in its relatives in the *latisternum*-complex, where the shield is patterned with paler markings and quite rough or keratinised in surface texture. The overall shape of the mature carapace is oval with only the barest indication of marginal shield upturning, but without significant indication of posterior serration or flaring, and there is no central carapace groove at any stage of growth. These characters are in marked contrast to the distinct grooved condition in its closest relative *Wollumbinia purvisi*. However, in hatchling *Wollumbinia georgesii* the carapace has a slightly keeled ridge, and the marginals posterior to the bridge are slightly serrated. In hatchlings and immature specimens, the carapace is light brown or olive-brown with or without scattered darker splotching and flecking, but with age the carapace becomes more uniform brown with limited darker flecking if any. The throat and lower neck of hatchlings is bright yellow and this is boldly bordered with black, forming a clear line of demarcation along the yellowish neck/facial stripe. However, as the turtles age this bright throat colour changes to steel grey, adding further contrast to the yellow neck stripe - which itself disappears or becomes greatly reduced or faded in really old specimens. The plastron of juveniles is light lemon yellow (as is the soft skin areas) with narrow dark brown or blackish edging to the sutures, but as individuals mature the plastron colour may become darker yellowish - sometimes with a pale bluish hue - and the darker edging to the sutures becomes more well-defined. Overall, with maturity and in particular old age, this species becomes much darker in colouration and patterning, with the carapace becoming very dark brown, and the plastron a more dirty yellow with patchy areas of dark greyish-black spotting and blotching that, in some individuals, appears as irregular marbling. The iris is usually golden yellow infused with darker flecking, with the inner edge having a brighter yellowish ring, but eye colour may become somewhat duller with age. There are significant pattern differences between this species and its relatives. *Wollumbinia georgesii* differs from *Wollumbinia purvisi* in lacking the bright yellow colouration under the tail and throat, and particularly in lacking the dark throat stripe characteristic of *Wollumbinia purvisi*. *Wollumbinia georgesii* also has a continuous yellowish stripe that runs from the back of the mouth, over the lower part of the tympanum and along the lower neck, and this is lacking in other members of the *latisternum*-complex. This species can attain a maximum carapace length of around 250 mm., although about 200 mm. for an adult specimen would be the usual size.

Distribution: Known only from the Bellinger River (including the Kalang River) and its tributaries in north-eastern New South Wales.

Habitat: It lives in deeper pools in wide stretches of clear fast-flowing freshwater. The bottom conditions vary from sandy to rocky and the riparian vegetation is mainly sub-tropical rainforest and wet sclerophyll forest in the undisturbed sections of river, although the species is also known from down-stream parts of the Bellinger River that pass through agricultural lands.

Biology/Ecology: This is mainly a diurnal species that will also bask on exposed logs and rocks as well as on river banks. They are quite shy when approached, quickly diving into the water, swimming to the bottom and then remaining still amongst the large pebbles on the bed where they are particularly well-camouflaged because of their shape and overall colour and pattern. There is scant data on its reproductive biology, although it is known that from 10-15 eggs are laid in a clutch during October-December, and the incubation period is about 72 days. This is essentially a carnivorous species that consumes a range of invertebrates, small fish and carrion. Herbivory is also practised with various aquatic plants being taken, but this represents only a small part of the diet.

Survival Status: It is protected under the New South Wales National Parks and Wildlife Act (1974). Although this is a locally common species, it could be considered as potentially vulnerable due to its limited distribution.

Etymology: The name 'georgesii' honours Australian turtle expert Arthur Georges.

Wollumbinia latisternum comb. nov. (Gray, 1867)

1867 *Elseya latisternum* Gray, Ann. Mag. Natur. Hist., (3) 20: 44. – Type locality: North Australia.

1871 *Euchelymys spinosa* Gray, Ann. Mag. Natur. Hist., (4) 8: 118. – Type locality: North Australia.

1871 *Elseya latisternon* Gray (ex errore), Ann. Mag. Natur. Hist., (4) 8: 292.

1872 *Elseya spinosa* – Gray, Append. Cat. Shield Rept. Coll. Brit. Mus., 1 (Testud.): 23.

1889 *Emydura latisternum* – Boulenger, Cat. Chelon. Rhynchoceph. Crocod. Brit. Mus. (Natur. Hist.): 233.

1969 *Elseya latisternum latisternum* – Blackmore, Vict. Natural., 86: 281.

Description: By far one of the main distinguishing features of *Wollumbinia latisternum* is its large plastron with its very rounded anterior lobe - which in some populations may extend past the level of the carapace when viewed from above. The intergular is about as wide as, or wider than the adjacent gulars, and in some specimens the nuchal shield is absent, but in others it may be present - but when present, it is usually a very narrow structure. The head is strong in appearance, being fairly broad and deep, with a relatively wide mandibular symphysis in maturity and without a distinct median alveolar ridge on the upper jaw. The horny plate (casque) on top of the head extends well off the dorsal of the head down almost as far as the tympanum and there are usually two to four small white barbels under the chin (although in some barbels are barely in evidence). At the time of hatching, the head appears proportionally quite large, with a very prominent snout, but with age the head shape alters somewhat, with the snout becoming much reduced, presenting a flatter appearance to the face on side view by the time they reach maturity. The dorsal part of the neck is covered with small distinctly pointed tubercles, but in southern populations, there are also much enlarged (longer) sloping tubercles - forming a scattering of spine-like protuberances on the upper neck region. There are prominent differences though in the shape of the mature carapace from different populations. Topotypic *Wollumbinia latisternum* tend to have a more elongated shape to the carapace, while other populations are much more rounded in appearance. The shape of the carapace in hatchlings varies slightly depending upon the location, but overall, most are ovate in appearance, with a distinct vertebral keel, and with the rear marginals distinctly serrated - hence the common name. In some populations this posterior serration to the carapace disappears with age, but in others it may be retained into adulthood. Well before the turtles reach maturity all trace of the vertebral keeling of the carapace is lost, and a moderate central groove begins to form - the groove becoming very prominent by the time of maturity. There is some geographic as well as ontogenetic variation in colour and patterning of this species. Depending upon the location, the carapace of hatchlings may be either light brown, blackish or light greenish, with variable amounts of blackish or dark brownish flecking, mottling, streaking or spotting. As the carapace reaches a mature size the colouration becomes a more even brownish or in some a pale yellowish-brown, but usually with a least some darker flecking overall, but with age it usually becomes quite darker - even black in some areas. The plastron colouration of juveniles is similarly quite variable from one location to another. Topotypic specimens are a dirty creamish-yellow ventrally, with the sutures being very thinly edged in black - or at least clearly differentiated from one another - and some

specimens may have a faint greyish blue hue to the plastron as well. Turtles from other locations may be variably blotched or patterned with a deep greyish purple or even black, with the dark edges to the plastral sutures being thicker and accordingly more distinctive. The head and neck colouration of young specimens is similarly variable across the species' range. Most are usually steely-grey or bluish-grey, with the neck tubercles being somewhat paler or undifferentiated, and there is always a creamish-yellow facial stripe of variable intensity that runs from the snout, along the mandibles, through the tympanum and along the lower neck to about the forelimbs. As the turtle matures the head colours may become more intense, with the distinctive head casque sometimes being a golden yellowish or mustard orange colour. The iris colour also differs significantly from one population to another. In some the iris may be coppery-brown with a black-edged inner ring of silver, and there is usually a large black spot either side of the pupil, which creates the image of a split iris. In the topotypic population the hindlimbs have a distinctive row of enlarged white scales present also. *Wollumbinia latisternum* attains an overall maximum carapace length of around 280 mm., but adult specimens are more in the order of 200-250 mm. in length and there appears some differences in size between populations. It should be noted that the variation in morphology mentioned above strongly suggests that this species is indeed composite and in need of taxonomic revision. As presently defined, this is a highly variable small to medium-sized freshwater turtle, but it almost certainly represents at least three different species. The present definition must therefore represent a fairly artificial construct in part until a thorough taxonomic study is undertaken on the 'species' over its entire range.

Distribution: As herein defined, this species is found across most of the tropical and sub-tropical eastern coastal areas of Australia. It has been recorded in eastern-flowing river systems over the entire Queensland coast (including the Gulf Country), and also occurs in parts of the far north-east of New South Wales. It has also been reported from the north-east of the Northern Territory, (including the vicinity of Arnhem Land).

Habitat: This species generally favours freshwater creeks, or billabongs or slow-flowing relatively shallow rivers with rocky and/or sandy beds in tropical and sub-tropical regions. It appears to favour second or third order streams and their associated lagoons rather than the major river courses. The northern river systems comprising its habitat may also in part become seasonally dry, and when flow ceases, the upper parts of these systems contract to chains of deeper water holes, where large numbers of this turtle may retreat until flow is restored in the following Wet Season. They may be observed basking during the day on exposed rocks and logs, but although this species is mainly diurnal in habits, it prefers the sheltered, deeper waters under banks or under submerged logs and rocks, rather than the more exposed shallower waters of streams or lagoons. This is particularly the case with very clear water conditions where it may be unusual to see specimens in the more open expanses of water. However, during the evening they will move out of the deeper pools or from under the banks out into the shallower waters to forage.

Biology/Ecology: Very little is known of this species' reproductive biology. However, mating occurs in January - late Summer (mid-Wet Season) - and nesting has been recorded from early Spring through to Summer (September-January). A number of separate clutches may be produced each year by a single female, resulting in around 50 eggs in total being laid by one female in a season (up to 17 eggs in a single clutch). The eggs have been recorded to hatch after about 60 days incubation. This is mainly a carnivorous species, consuming a range of amphibians (including young *Bufo marinus* and their larvae!), small fish, invertebrates and carrion, but in some areas it may also take aquatic plant matter.

Survival Status: The species is protected under the New South Wales National Parks and Wildlife Act (1974) but not listed in that State as a Threatened Species in any of the Schedules of the NSW Threatened Species Conservation Act (1995). It is also protected under the Territory Parks and Wildlife Conservation Act (1998) and the Queensland Nature Conservation Act (1992).

Etymology: The name '*latisternum*' is from the Latin '*latitude*' meaning 'breadth or extent of', and '*sternum*' (which itself is from the Greek '*sternon*') meaning 'chest or breast', so in effect '*latisternum*' refers to the broad plastron of the species.

Wollumbinia purvisi comb. nov. (Wells and Wellington, 1985)

1985 *Elseya purvisi* Wells & Wellington, Austr. J. Herpetol., Suppl. Ser. 1: 8. – Type locality: 15 km S, 32.3 km E of Nowendoc (31°39'S 152°04'E), New South Wales.

2006 *Elseya purvesi* Georges & Thomson in Merrick, Archer, Hickey & Lee (ex errore), Evolution Zoogeogr. Australas. Vertebr.: 291.

Description: This is another medium-sized Chelid turtle that is restricted to a single river system in eastern Australia. The long-time confusion of this species with *Wollumbinia latisternum* is puzzling as this is one of Australia's most colourful turtles and is really very distinct morphologically. By far the most significant feature of this species is the presence of neural bones, which are absent in its closest relative *Wollumbinia georgesii*. The head is moderate in size and relatively deep with a prominent snout particularly when young, and it lacks a median alveolar ridge along the upper jaw. The pair of distinct barbels under the chin in mature specimens, are far less noticeable in hatchlings. The neck is short, moderately thick and the upper neck skin is weakly covered with low rounded tubercles. On the dorsum of the head there is a large, smooth, and evenly dark-coloured head shield (casque) that only slightly extends over the side of the head. The overall shape of the mature carapace is oval with only the barest indication of marginal shield upturning, but barely any posterior serration or flaring, and there is a central carapace groove when mature. These characters are in marked contrast to the smooth carapace condition in its closest relative *Wollumbinia georgesii*. However, in hatchling *Wollumbinia purvisi* the carapace has a slightly keeled ridge, and the marginals posterior to the bridge are slightly serrated. The plastron is rather broader anteriorly, and the rounded anterior plastral lobe may extend just beyond the boundary of the carapace when viewed from above. There is marked sexual dimorphism in colouration, with males being much more brightly coloured than the females although some pattern similarities are still evident. Old specimens may completely lose the brightly coloured iris pattern and the bold yellow throat colour and pattern, and other pattern features become subdued as well. The dorsum of the head is a rich glossy brown, but that of the neck is more dark greyish and there are two small golden yellow barbels under the chin. There is a distinct yellow facial stripe running right from the snout, along the horny mouth sheaths, over and including the tympanum, and along the neck right to the front limbs. This stripe is usually edged with greyish-black along its upper margin. Further, in both the adult and juvenile stages, the chin and ventral part of the neck is greyish-black, with the throat area golden yellow with a central black stripe dividing this yellow gular area. The iris of juveniles is golden with rich brownish speckling, unlike that of *Wollumbinia georgesii* which is mainly a golden brown with sparse speckling of brown. The adult carapace is a variable shade of brown with scattered black blotching - particularly around the edges, with aged specimens becoming very dark brown. The plastron is a rich yellowish with the sutures thinly-edged with black, compared to *Wollumbinia georgesii* which is a soft bluish-green. However, the black edging to the plastral sutures is not present in the hatchlings. There is a gradual darkening or blackening of the plastron with age, particularly towards the posterior, but the bright yellowish base colour is always present at least in part. The under-surface of the soft skin and limbs is pale yellow in females and bright yellow in reproductive males, with the long tail of the male being very attractively patterned. In the case of the male tail, the ventral part of the tail has a central yellow stripe reaching to the vent, and on either side there a broader greyish stripe on the ventro-lateral of the tail that also reaches the vent. Immediately behind the vent, the tail is greyish, and this is followed by a yellow terminal area. This species attains a maximum carapace length of about 250 mm.

Distribution: This species is only found in the Manning River system of mid-eastern New South Wales.

Habitat: It inhabits a relatively shallow, fast-flowing river system with a rocky and sandy bottom. It occurs mainly on boulder beds at about 2-3 metres depth and often shelters around underwater boulders and submerged logs, often in small aggregations. This is mainly a

diurnal species that will bask on exposed logs and rocks or river banks near deep pools. However, it may also be observed foraging during the evening in weed beds in shallower water.

Biology/Ecology: Mating usually occurs during Autumn (March-April), and up to 23 eggs are produced in a single clutch during Summer, the eggs hatching after around 8 weeks incubation. This is mainly a herbivorous species that consumes a range of aquatic plants. It is also known to feed on invertebrates, small fish and carrion.

Survival Status: *Wollumbinia purvisi* is protected under the New South Wales National Parks and Wildlife Act (1974) but not listed in that State as a Threatened Species in any of the Schedules of the NSW Threatened Species Conservation Act (1995).

Etymology: The name '*purvisi*' honours Australian amateur herpetologist and teacher Malcomb Purvis.

References

- Bell, T., 1828. Characters of the order, families, and genera of the Testudinata. Zool. J., 3: 513-516.
- Bell, T., 1836-1842. A Monograph of the Testudinata. London, xxiv + 80 unnumbered pages, 40 pls.
- Blackmore, E.H. 1969. On the Australasian Chelidae (Chelonia). Victorian Naturalist, 86 (10): 280-283
- Boulenger, G.A. 1889. Catalogue of the Chelonians, Rhynchocephalians, and Crocodiles in the British Museum (Natural History). London, Taylor and Francis, x, 311 pp., 6 pls.
- Burbidge, A.A., Kirsch, J.A.W. and Main, A.R. 1974. Relationships within the Chelidae (Testudines: Pleurodira) of Australia and New Guinea. Copeia, 1974 (2): 392-409
- Cann, J. 1978. Tortoises of Australia. Angus and Robertson, London [Pp. 1-79 + 92 Plates]
- Cann, J. 1997. Georges short-neck turtle *Elseya georgesi* sp. nov. Monitor: Journal of the Victorian Herpetological Society, 9 (1): 18-23
- Cann, J. 1998. Australian Freshwater Turtles. Beaumont Publishing, Singapore [Pp. 1-292]
- Cogger, H.G. 1975. Reptiles and Amphibians of Australia. Reed, Sydney [1st Edition]
- Cogger, H.G. 1979. Type specimens of reptiles and amphibians in the Australian Museum. Records of the Australian Museum, 32 (4): 163-210
- Cogger, H.G. 1979. Reptiles and Amphibians of Australia. Reed, Sydney [2nd Edition]
- Cogger, H.G. 1983. Reptiles and Amphibians of Australia. Reed, Sydney [3rd Edition]
- Cogger, H.G. 1986. Reptiles and Amphibians of Australia. Reed, Sydney [4th Edition; Pp. 1-688]
- Cogger, H.G. 1988. Reptiles and Amphibians of Australia. Reed, Sydney [A reprinting, but due to changes, should be regarded as a 5th Edition]
- Cogger, H.G. 1992. Reptiles and Amphibians of Australia. Reed, Sydney [6th Edition; Pp. 1-775]

- Cogger, H.G. 1994. Reptiles and Amphibians of Australia. Reed, Sydney [7th Edition - another substantially altered edition that included an updated Appendix of recently described taxa]
- Cogger, H.G. 1996. Reptiles and Amphibians of Australia. Reed, Sydney [8th Edition]
- Cogger, H.G. 2000. Reptiles and Amphibians of Australia. New Holland, Sydney [9th Edition]
- Cogger, H.G. and Heatwole, H.F. 1981. The Australian reptiles: Origins, biogeography, distribution patterns and island evolution. [Pp. 1331-1373] In: Keast, A. (Editor): Ecological Biogeography of Australia. Junk, The Hague [Monographiae Biologicae, Volume 41; Pp. 1-2142]
- Cogger, H.G., Cameron, E.E. and Cogger, H.M. 1983. Zoological Catalogue of Australia. Volume 1. Amphibia and Reptilia. Australian Government Publishing Service, Canberra [Pp. i-vi, 1-313]
- Cogger, H.G., Cameron, E.E., Sadler, R.A. and Egger, P. 1993. The Action Plan for Australian Reptiles. Australian Nature Conservation Agency [Canberra], Endangered Species Program, Project No 124 [Pp. 1-254]
- Corwin, E. 1985 The reproductive behaviour of two Australian chelid turtles, *Emydura macquarii* and *Elseya latisternum*, at the Dallas Zoo. [Pp. 121-124]. Proceedings of the Ninth International Herpetological Symposium.
- De Vis, C.W. 1897. The extinct freshwater turtles of Queensland. Annals of the Queensland Museum, 3: 3-7
- Dunson, W.A. and Heatwole, H. 1986 Effect of relative shell size in turtles on water and electrolyte composition. American Journal of Physiology, 250: R1133-R1137 [Regulatory Integrative Comp. Physiol. 19]
- Ernst, C.H. and Barbour, R.W. 1989. Turtles of the World. Smithsonian Inst. Press, Washington, D. C., 313 pp.
- Ernst, C.H., Altenburg, R.G.M. and Barbour, R.W. 2000. Turtles of the World. World Biodiversity Database, CD-ROM Series, Windows, Version 1.2. Amsterdam, Biodiversity Center of ETI.
- Gaffney, E.S. 1977. The side-necked turtle family Chelidae: A theory of relationships using shared derived characters. American Museum Novitates, No 2620: 1-28
- Georges, A. and Adams, M. 1992. A phylogeny of Australian Chelid turtles based on allozyme electrophoresis. Australian Journal of Zoology 40: 453-476
- Georges, A. and Adams, M. 1996. Electrophoretic delineation of species boundaries within the short-necked freshwater turtles of Australia (Testudines: Chelidae). Zoological Journal of the Linnaean Society, 118 (3): 241-260
- Georges A. and Thomson, S. 2006. Evolution and zoogeography of the Australian freshwater turtles. In: Merrick, J.R., Archer, M., Hickey, G., Lee, M. (eds), Evolution and Zoogeography of Australasian Vertebrates. Sydney, Australian Scientific Publishing Pty Ltd.
- Goode, J. 1967. Freshwater Tortoises of Australia and New Guinea (in the Family Chelidae). Lansdowne Press, Melbourne [Pp. 1-154]

Gray, J.E. 1831. Synopsis Reptilium or Short Descriptions of the Species of Reptiles. Part 1. Cataphracta, Tortoises, Crocodiles, and Enaliosaurians. London, British Museum (Natural History), 85 pp.

Gray, J. E. 1844. Catalogue of the Tortoises, Crocodiles and Amphibaenians in the Collection of the British Museum. Edward Newman, London [80pp.]

Gray, J.E. 1863. On the species of *Chelymys* from Australia, with the description of a new species. *Annals and Magazine of Natural History*, 3 (12): 98-99

Gray, J.E. 1863. Additional observations on *Chelymys dentata*. *Annals and Magazine of Natural History*, (3) 12: 246

Gray, J.E. 1867 Description of a new Australian tortoise (*Elseya latisternum*). *Annals and Magazine of Natural History*, (3) 20: 43-45

Gray, J.E. 1869. Notes on the families and genera of tortoises (Testudinata), and on the characters afforded by the study of their skulls. *Proc. Zool. Soc. London*, 1869: 165-225.

Gray, J.E. 1870. Supplement to the Catalogue of Shield Reptiles in the Collection of the British Museum. Part 1, Testudinata (Tortoises). London, Taylor and Francis, 120 pp.

Gray, J.E. 1871 Notes on Australian freshwater tortoises. *Annals and Magazine of Natural History*, (4) 8: 366

Gray, J.E. 1872. On the genus *Chelymys* and its allies *Euchelymys* and *Elseya* from Australia. *Proceedings of the Zoological Society of London*, 1872 (23): 504-514

Gray, J.E. 1873. Hand-List of Specimens of Shield Reptiles in the British Museum. London, British Museum, iv, 124 pp.

Hamley, T. and Georges, A. 1985 The Australian Snapping Tortoise *Elseya latisternum*: A successful predator on the introduced Cane Toad? *Australian Zoologist*, 21 (7): 607-610

ICZN [International Commission on Zoological Nomenclature], 1999. International Code of Zoological Nomenclature. Fourth Edition. London, International Trust for Zoological Nomenclature, XXIX, 306 pp.

Iverson, J.B. 1985. Checklist of the turtles of the world with English common names. *SSAR. Herpetol. Circ.*, 14: 1-14.

Iverson, J.B. 1992. A Revised Checklist with Distribution Maps of the Turtles of the World. Richmond, Indiana (Published by the Author), xiii, 363 pp.

Iverson, J.B, Thomson, S. and Georges, A. 2001. Validity of the taxonomic changes for turtles proposed by Wells and Wellington. *J. Herpetol.*, 35: 365-368

King, P.D. 1991 Aquatic Respiration in Freshwater Turtles, *Elseya sp.* BA Thesis, University of New England, Armidale

King, P.D. and Heatwole, H. 1994 Partitioning of aquatic oxygen uptake among different respiratory surfaces in a freely diving pleurodiran turtle, *Elseya latisternum*. *Copeia*, 1994 (3): 802-806

Legler, J.M. 1981. The taxonomy, distribution and ecology of Australian freshwater turtles (Testudines: Pleurodira: Chelidae). *National Geographic Society Research Reports*, 13: 391-404

Legler, J.M. and Georges, A. 1993. Family Chelidae. [Pp. 142-152]. In: Glasby, C.J., Ross, G.J.B. and Beesley, P.L. (Editors): Fauna of Australia. Volume 2A. Amphibia and Reptilia. Australian Government Publishing Service, Canberra

Legler, J.M. and Winokur, R.M. 1980 Unusual neck tubercles in an Australian turtle, *Eseya latisternum*. *Herpetologica*, 35 (4): 325-329 [dated 1979, but not published until 1980]

Lindholm, W.A. 1929. Revidiertes Verzeichnis der Gattungen der rezenten Schildkröten nebst Notizen zur Nomenklatur einiger Arten. *Zool. Anz.*, 81: 275-295.

Mertens, R. and Wermuth, H. 1955. Die rezenten Schildkröten, Krokodile und Brückenechsen. *Zool. Jb., Syst.*, 83: 323-440.

Obst, F.J. 1985. Die Welt der Schildkröten. Leipzig, Edition Leipzig, 235 pp.

Peters, U.W. 1979. Australische Wasserschildkroten der Familie Chelidae. *Das Aquarium [Minden]*, 13: 360-364

Pritchard, P.C.H. 1967. Living Turtles of the World. Neptune City, New Jersey, T.F.H. Publications, 288 pp.

Pritchard, P.C.H. 1979. Encyclopedia of Turtles. T.F.H. Publications, Neptune, New Jersey, 895 p.

Rhodin, A.G.J. 1989. Phylogenetic relationships of the side-necked turtle family Chelidae. First World Congress in Herpetology Abstracts [p. 248]

Seddon, J., Georges, A., Baverstock, P. and McCord, W. 1997. Phylogenetic relationships of Chelid turtles (Pleurodira: Chelidae) based on mitochondrial 12S rRNA gene sequence variation. *Molecular Phylogenetics and Evolution*, 7: 55-61

Stubbs, D. 1989. Tortoises and Freshwater Turtles. An Action Plan for their Conservation. IUCN/SSC Tortoise and Freshwater Turtle Specialist Group [Pp. 1-47]

Thomson S. (2000). A Revision of the Fossil Chelid Turtles (Pleurodira) Described by C.W. De Vis, 1897. *Memoirs of the Queensland Museum*, 45(2):593-598

Thomson, S.A. and Mackness, B.S. 1999. Fossil turtles from the Early Pliocene Bluff Downs Local Fauna, with a description of a new species of *Eseya*. *Transactions of the Royal Society of South Australia*, 123 (3): 101-105

Thomson, S.A., Georges, A. and Limpus, C.J. 2006. A new species of freshwater turtle in the genus *Eseya* (Testudines: Chelidae) from central coastal Queensland, Australia. *Chelonian Conservation Biology*, 5: 74-86.

Thomson, S., White, A. and Georges, A. 1997. Re-evaluation of *Emydura lavarackorum*: Identification of a living fossil. *Memoirs of the Queensland Museum*, 42: 327-336

Trutnau, L. 1982 Erfolge und misserfolge mit *Eseya latisternum*. *Aquarien und Terrarien Zeitschrift*, 35 (6): 232-235

Vetter, H. and van Dijk, P.P. 2006. *Terralog, Turtles of the World, Vol. 4. East and South Asia*. Frankfurt am Main and Rodgau, Chimaira and Aqualog, 160 + [1] pp.

Wells, R.W. 2002a. A new subspecies of *Carettochelys* (Reptilia: Carettochelydidae) from Northern Australia – *Carettochelys insculpta canni* ssp. nov. *Australian Biodiversity Record*, 2002 (1): 1-7.

Wells, R.W. 2002. Taxonomic notes on some Australian freshwater turtles of the genera *Chelodina* and *Elseya* (Reptilia: Chelidae). *Australian Biodiversity Record*, 2002 (2): 1-30

Wells, R.W. 2007. Some Taxonomic and Nomenclatural Considerations on the Class Reptilia in Australia. Notes on the Recently Described Freshwater Turtle *Chelodina canni* McCord and Thomson, 2002 and a Redescription of *Chelodina rankini* Wells and Wellington, 1985. *Australian Biodiversity Record*, 2007 (1): 1-5

Wells, R.W. 2007b. Some Taxonomic and Nomenclatural Considerations on the Class Reptilia in Australia. Some Comments on the *Elseya dentata* (Gray, 1863) complex with Redescriptions of the Johnstone River Snapping Turtle, *Elseya stirlingi* Wells and Wellington, 1985 and the Alligator Rivers Snapping Turtle, *Elseya jukesi* Wells 2002. *Australian Biodiversity Record*, 2007 (2): 1-12

Wells, R.W. and Wellington, R.C. 1984. A Synopsis of the Class Reptilia in Australia. *Australian Journal of Herpetology*, 1 (3-4): 73-129

Wells, R.W. and Wellington, R.C. 1985. A Classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology*, Supplementary Series No 1: 1-61

Wermuth, H. and Mertens, R. 1961. Schildkröten, Krokodile, Brückenechsen. Jena, Fischer, 422 pp.

Wermuth, H. and Mertens, R. 1977. Testudines, Crocodylia, Rhynchocephalia. *Das Tierreich*, 100: I-XXVII, 1-174.

White, A. and Archer, M. 1994. *Emydura lavarackorum*, a new Pleistocene turtle (Pleurodira: Chelidae) from fluvial deposits at Riversleigh, Northwestern Queensland. *Records of the South Australian Museum*, 160-167

White, J. 1979 Courtship display of the Snapping Tortoise, *Elseya latisternum* Gray. *Herpetofauna*, 11 (1): 27-28

Wilson, S. and Swan, G. 2003. *Reptiles of Australia*. Princeton, New Jersey, Princeton University Press, 480 pp.

Worrell, E. 1963. *Reptiles of Australia: Crocodiles - Turtles - Tortoises - Lizards - Snakes*. Describing all Australian species, their appearance, their haunts, their habits, with over 330 illustrations, many in full colour. Angus and Robertson, Sydney [Pp. i-xv + 1-207]

Worrell, E. 1970. *Reptiles of Australia: Crocodiles - Turtles - Tortoises - Lizards - Snakes*. Describing their appearance, their habits, with over 330 illustrations, many in full colour. Angus and Robertson, Sydney [2nd Edition, without synonymic checklist; Pp. i-xv + 1-169]

Zietz, A.H.C. 1891 *Emydura latisternum*. *Transactions of the Royal Society of South Australia*, 14: 362

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