

AUSTRALIAN BIODIVERSITY RECORD

2007 (No 2) ISSN 1325-2992 March, 2007

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.

by

Richard W. Wells

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

Introduction

As a prelude to further work on the Chelidae of Australia, the following considerations relate to the *Elseya dentata* species complex. See also Wells and Wellington (1984, 1985) and Wells (2002 a, b; 2007 a, b.).

Elseya Gray, 1867

1867 *Elseya* Gray, Ann. Mag. Natur. Hist., (3) 20: 44. – Subsequently designated type species (Lindholm 1929): *Elseya dentata* (Gray, 1863).

Note: The genus *Elseya* is herein considered to comprise only those species with a very wide mandibular symphysis and a distinct median alveolar ridge on the upper jaw. All members of the *latisternum* complex lack a distinct median alveolar ridge on the upper jaw and so are removed from the genus *Elseya* (see Wells, 2007b). This now restricts the genus to the following Australian species:

Elseya albagula Thomson, Georges and Limpus, 2006

2006 *Elseya albagula* Thomson, Georges and Limpus, Chelon. Conserv. Biol., 5: 75; figs 1-2, 4 (top), 5a,6a, 7. – Type locality: Ned Churchwood Weir (25°03'S 152°05'E), Burnett River, Queensland, Australia.

Elseya dentata (Gray, 1863)

1863 *Chelymys dentata* Gray, Ann. Mag. Natur. Hist., (3) 12: 98. – Type locality: Beagle's Valley, upper Victoria River, Northern Territory.

1864 *Chelymys elseyi* Gray (nomen nudum), Proc. Zool. Soc. London, 1864: 132.

1865 *Podocnemis? dentata* – Strauch, Mém. Acad. impér. Sci. St. Pétersbourg, Sér. 7, 8 (13): 104.

1867 *Elseya dentata* – Gray, Ann. Mag. Natur. Hist., (3) 20: 44.

1870 *Chelymys elseya* Gray (nomen nudum), Suppl. Cat. Shield Rept. Coll. Brit. Mus., 1 (Testud.): 76.

1872 *Elseya intermedia* Gray, Append. Cat. Shield Rept. Coll. Brit. Mus., 1 (Testud.): 23. – Type locality: upper part of Victoria River, Northern Territory.

1985 *Elseya dentata dentata* – Obst, Welt der Schildkröten: 223.

Elseya irwini Cann, 1997

1997 *Elseya irwini* Cann, Monitor (J. Vict. Herpetol. Soc.), 9 (1): 36; figs pp. 31-32, 36-37, 39. – Type locality: Burdekin River (19°42'S 147°18'E), Queensland, approximately 18 km upstream from Ayr.

Elseya jukesi Wells, 2002

2000 *Elseya flaviventralis* Georges, Doody, Young and Cann (nomen nudum), Austr. Pig-Nosed Turtl.: 7.

2002 *Elseya jukesi* Wells, Austr. Biodiv. Rec., 2002 (2): 7 [Holotype: NTM 13985. Type Locality: Pul Pul Billabong, South Alligator River, Northern Territory (13 34'S, 132 35'E)]

Elseya lavarackorum (White and Archer, 1994)

- 1994 *Emydura lavarackorum* White and Archer, Rec. South. Austr. Mus., 27: 159; figs 1-4. – Type locality: Terrace Site, an excavation in fluvial sediments exposed on the south bank of the Gregory River, Riversleigh Station, northwestern of Mount Isa (Pleistocene).
1997 *Elseya lavarackorum* – Thomson, White and Georges, Mem. Queensl. Mus., 42: 327.
2006 *Elseya lavarackorum* Georges and Thomson in Merrick, Archer, Hickey and Lee (ex errore), Evolution Zoogeogr. Australas. Vertebr.: 292.

Elseya nadibajagu Thomson and Mackness, 1999

- 1999 *Elseya nadibajagu* Thomson and Mackness - Trans. Roy. Soc. S.A., 123 (3): 101-105 [Early Pliocene fossil]

Elseya stirlingi Wells and Wellington, 1985

- 1985 *Elseya stirlingi* Wells and Wellington, Austr. J. Herpetol., Suppl. Ser. 1: 9 - Type Locality: Barron River, near Kuranda, north-east Queensland.
1998 *Elseya stirlingi* Wells and Wellington in Cann (*errore typog., nomen nudum*), Austr. Freshw. Turtl.: 285.

Additionally I include the following New Guinea species as part of the genus *Elseya*:

Elseya branderhorsti (Ouwens, 1914)

- 1914 *Emydura branderhorsti* Ouwens, Contrib. Faune Ind. Neerl. (Buitenzorg), 1: 31. – Type locality: southern New Guinea.
1994 *Elseya branderhorsti* – Bour, Buskirk and Pritchard in David, Dumerilia, 1: 81.
2006 *Elseya branderhorstii* Georges and Thomson, In: Merrick, Archer, Hickey and Lee (ex errore), Evolution Zoogeogr. Australas. Vertebr.: 287.

Elseya novaeguineae (Meyer, 1874)

- 1874 *Platemys novaeguineae* Peters, Monatsber. Preuß. Akad. Wiss. Berlin, 1874: 128. – Type locality: Passim, New Guinea [located on the southwestern shore of Cenderawasih Bay on the southeastern Vogelkopf, Rhodin and Genorupa 2000].
1888 *Emydura novaeguineae* – Boulenger, Ann. Mus. Civ. Stor. Natur. Genova, (2) 6: 450.
1967 *Elseya novaeguineae* – Goode, Freshw. Tort. Austral. New Guinea: ix.
1969 *Elseya latisternum novaeguineae* – Blackmore, Vict. Natural., 86: 282
1974 *Elseya novaeguinea* Burbidge, Kirsch and Main (ex errore), Copeia, 1974: 393.
1979 *Emydura novaeguineae* Nutaphand (ex errore), Turtles of Thailand: 21.
1985 *Elseya dentata novaeguineae* – Obst, Welt der Schildkröten: 223.

Elseya schultzei (Vogt, 1911)

- 1911 *Emydura schultzei* Vogt, Sitzungsber. Ges. naturforsch. Freunde Berlin, 1911: 410. Type locality: River west of mouth of Tami River, New Guinea.
2000 *Elseya schultzei* – Rhodin and Genorupa, Chelon. Res. Monogr., 2: 129.

Comments on *Elseya dentata* (Gray, 1863)

This is a large species of Chelid turtle about which little is known due to the remoteness of its habitat, as well as past taxonomic conservatism. It was once considered to be a single, widespread and highly variable species that occurred across the tropical north of Australia, but in recent years it has emerged that there are several different species comprising the old concept of *Elseya dentata*. Specimen collections in recent years have revealed that this so-called single widespread 'species' actually has a much smaller distribution than previously thought.

Diagnosis: *Elseya dentata* is a large species of freshwater turtle of the Family Chelidae that is readily identified by the following combination of characters: The head is very broad and deep, with a very wide mandibular symphysis and a distinct median alveolar ridge on the upper jaw. The horny plate on top of the head does not extend laterally and there are two small white barbels under the chin. The neck is large and muscular with scattered enlarged conical tubercles over a covering of smaller flat tubercles. The mature carapace is robust,

thick and smoothly rounded anteriorly, generally oval in shape and with some posterior expansion. Additionally, there is slight upturning at the lateral marginals but the posterior of the carapace is largely un-serrated. In general shape, the posterior margin of the carapace is acutely tapered, not at all rounded in shape. The plastron is always long and relatively narrow, being widest at the bridge and gently tapering both anteriorly and posteriorly, although the anterior plastral lobe does tend to slightly widen with age. The intergular shield completely separates the gulars, and is longer than wide, and much narrower than the adjacent gular shields. Hatchlings differ somewhat in that they have a noticeably serrated posterior margin to the carapace and fairly prominent central ridging (both characters which are lost with age), and some lateral upturning to the carapace as well. In immature specimens, the carapace is pale to light brown, but with age it changes to very dark brown in colouration. Mature individuals have the dorsal colour of the head and neck a uniform dark greyish-brown, and no facial striping, however laterally these areas are much paler - and may even have a piebald or blotched pattern, to being almost totally white in some older specimens. The iris is brownish, with a very light inner ring and is distinctly flecked with darker brown, and usually the tympanic region is whitish also. The ventral colouration is distinctly variegated or piebald in pattern in both sexes, unlike other members of the *dentata*-complex which are either very pale or very dark and usually unpatterned. *Elseya dentata* attains a maximum carapace length of around 340mm, but this size would be exceptional, as most mature specimens are only about 280-300mm.

Distribution: *Elseya dentata* is restricted to the Victoria River system, of the north-western Northern Territory and north-eastern part of Western Australia.

Habitat: *Elseya dentata* usually prefers the deeper sections of water, but may be found congregating in seasonally dry waterholes as the upper reaches of the river cease to flow with the Dry Season advances.

Biology/Ecology: Its reproductive biology is not well-known, but they may lay about 10 eggs in a clutch around the end of the Wet Season (February-May), and these hatch after about 4 months incubation. This is a mainly herbivorous turtle, feeding on various fruits that fall into the water from riparian vegetation (such as *Pandanus*), as well as aquatic weeds. Captive specimens also consume a range of aquatic invertebrates, small fish and carrion. It is a diurnal as well as nocturnal species that lives mainly in the slower flowing or still-water conditions of its habitat - often large numbers may co-exist together in billabongs beside watercourses or in larger waterholes at the base of low rocky rapids or falls. Specimens will bask on exposed rocks and logs, but will rapidly retreat to the safety of deeper water or under overhanging river banks when disturbed. It is a very long-lived species - probably exceeding 20 years - and it matures very slowly, with males becoming sexually mature at about 9 years, but females not reaching reproductive age until around 13 years old.

Survival Status: This species is protected under the WA Wildlife Conservation Act 1950 (as amended), and the Territory Parks and Wildlife Conservation Act (1998).

Etymology: The name '*dentata*' refers to the dentated or serrated edge of the carapace of the species.

Further Notes: Finally, I would like to make further comments on the broader *Elseya dentata* complex. As mentioned above, *Elseya dentata* has long been regarded by most authors as a single widespread species, occurring in most major river systems of the tropical part of Australia. Turtles loosely identified as *Elseya dentata* have been recorded across most of the northern inland, as well as from many of the river systems of north-eastern Queensland, across most of the far north of the Northern Territory, and into the Kimberley Zone of Western Australia, to about as far south as the King Edward River system. However, the obvious variation in morphology between the many different populations suggested that *Elseya dentata* was composite, and Cann (1978, 1997) clearly demonstrated that *Elseya dentata* was in reality, several different species. However, up until the present time only a few members of the complex have been formally named. In 1985 Wells and Wellington described *Elseya stirlingi* from the Johnstone and Barron Rivers drainage system in north-eastern Queensland, but this was variously ignored or treated as a *nomen nudum* (see Iverson et al 2001). A fossil

chelid was described in 1994 that was later determined to be conspecific with a living population of the *dentata* complex - *Elseya lavarackorum* (White and Archer, 1994). *Elseya irwini* was soon after described from the Burdekin River by Cann (1997). In 1999 a fossil relative of *Elseya irwini* from the Early Pliocene was named as *Elseya nadibajagu* by Thomson and Mackness. The next to be named was *Elseya jukesi* from the Alligator Rivers system in the tropical north of the Northern Territory by Wells (2002) and more recently *Elseya albagula* was described from the Fitzroy River in eastern Queensland by Thomson, Georges and Limpus (2006). Two of the described species in the *dentata* complex however, warrant further consideration. *Elseya stirlingi* Wells and Wellington (1985) and *Elseya jukesi* (Wells 2002) have both been virtually ignored - supposedly on nomenclatural grounds. To correct this situation both *Elseya stirlingi* Wells and Wellington (1985) and *Elseya jukesi* (Wells 2002) have been redescribed later in this present paper so as to provide the additional data necessary for their acceptance as valid species. Obviously, there are still other populations in the *dentata* complex that remain to be formally described. Among those are turtles regarded as '*dentata*' to the west of the Victoria River (in the Kimberley Division of WA) and those to the north-east (in the Daly River, NT) - both considered by me to be undescribed taxa. Additionally, the population confined to the Fitzroy-Dawson River system of north-eastern Queensland, that was recently described as *Elseya albagula* Thomson, Georges and Limpus, 2006, is in my opinion quite distinct from the presently undescribed '*dentata*' population in the Mary River, Queensland.

Redescription of *Elseya stirlingi* Wells and Wellington, 1985

Diagnosis: This is a large, heavy-bodied species of freshwater turtle that bears some similarities to its close relative *Elseya dentata*. As in the case of *E. dentata*, the head of *Elseya stirlingi* sp. nov. is very broad and deep, with a very wide mandibular symphysis and a distinct median alveolar ridge on the upper jaw. The horny plate on top of the head does not extend laterally and there are two small white barbels under the chin. The neck is large and muscular with scattered enlarged conical tubercles over a covering of smaller flat tubercles. In general shape, the lateral edge of the mature female carapace of *Elseya stirlingi* is distinctly straight-edged, giving this species a rather oblong and comparatively broader shape than *Elseya dentata* (*sensu stricto*). This is most unlike the condition in *E. dentata* females, where the carapace is somewhat oval-shaped with the posterior margin of the carapace acutely tapered and more depressed. Generally, *Elseya stirlingi* is a larger and more heavy-bodied turtle than *Elseya dentata*. Additionally, in *Elseya stirlingi*, the dorsal colouration is very dark in mature specimens with younger specimens marbled with darker brown or black. The ventral colouration (plastron) is unpatterned and varies from bone-white in juveniles to bluish in immatures through to the mature condition of bluish-black, to very dark greyish or even totally black in old individuals. In marked contrast, *Elseya dentata* has a distinctive piebald pattern ventrally. In *Elseya stirlingi* the iris colour darkens with age, but always has a very light inner ring, and is much darker brownish than in *Elseya dentata* and always lacks the distinctive flecking pattern of *E. dentata* as well. *Elseya stirlingi* attains a maximum carapace length of around 380 mm, but males are much smaller than females as is the case with the entire *E. dentata* complex. I herein designate the following Type material for *Elseya stirlingi*: Holotype: Queensland Museum: QM 48059, South Johnstone River, Qld (17 38'S, 145 05'E). Paratypes: Australian Museum: AM93048 (previously AM68848) Cairns district, Qld (16 55'S, 145 46'E); AM 125468 Malanda, North Johnstone River, Qld (17 21'S, 145 35'E); Queensland Museum: QM 23053-4, 23056-7, 23060, 23175-6, 23299-300, 23322, 28954, Malanda, North Johnstone River, Qld (17 21'S, 145 35'E); QM 48059, 48064-5 South Johnstone River, Qld (17 38'S, 145 05'E); QM 48060 nr. Cairns, Qld (16 55'S, 145 46'E); QM48064-5 South Johnstone River, Qld (17 38'S, 145 05'E); QM 48062, 48068 Hartley Creek, Qld (15 46'S, 145 19'E).

Distribution: This species is mainly confined to the eastern flowing river systems (such as the South and North Johnstone Rivers, and the Barron River) of the Atherton Tableland of north-eastern Queensland.

Habitat: It inhabits fast-flowing watercourses, and may be found occupying both deep-water pools at the base of waterfalls as well as amongst the rocky bottoms of rapids.

Biology/Ecology: This is a largely diurnal species that basks at the surface of the water or on occasions on exposed rocks or logs. During late afternoon and early evening specimens may be observed apparently foraging in the shallower waters adjacent to larger pools. When disturbed, this turtle will rapidly swim into deeper water or hide under submerged boulders and logs or beneath eroded river banks. It is believed that about 10 eggs in a clutch are laid around the end of the Wet Season (February-May), and these hatch after about 4 months incubation. Mature specimens are mainly herbivorous, feeding on various fruits that fall into the water from riparian vegetation, as well as aquatic weeds, and on occasions carrion but juveniles and immature specimens feed largely on aquatic invertebrates. Captive adult specimens also consume a variety of invertebrates, as well as small fish and raw meat.

Survival Status: *Elseya stirlingi* is protected under the Qld Nature Conservation Act (1992) (as *Elseya dentata*). It is generally considered to be a common species.

Etymology: The name '*stirlingi*' honours the Australian naturalist the late Stan Stirling.

Redescription of *Elseya jukesi* Wells, 2002

Diagnosis: *Elseya jukesi* sp. nov. is similar in most morphological characters to *Elseya dentata*, with which it has previously been associated, as the head is very broad and deep, with a very wide mandibular symphysis and a distinct median alveolar ridge on the upper jaw. The horny plate on top of the head does not extend laterally and there are two small white barbels under the chin. The neck is large and muscular with scattered enlarged conical tubercles over a covering of smaller flat tubercles. The mature carapace is robust, thick and smoothly rounded anteriorly, and generally oval in shape. The posterior margin of the carapace is rounded in shape in *Elseya jukesi* rather than being acutely tapered (as in *Elseya dentata*), and the body-form in *Elseya jukesi* is much more depressed than is the case in *Elseya dentata*. Additionally, there is slight upturning at the lateral marginals but the posterior of the carapace is largely un-serrated. The plastron is always long and relatively narrow, being widest at the bridge and gently tapering both anteriorly and posteriorly, although the anterior plastral lobe does tend to slightly widen with age. The intergular shield completely separates the gulars, and is longer than wide, and much narrower than the adjacent gular shields. Hatchlings differ somewhat in that they have a noticeably serrated posterior margin to the carapace and fairly prominent central ridging (both characters which are lost with age), and some lateral upturning to the carapace as well. In hatchling and immature specimens, the carapace is pale to light brown or olive-brown, with each costal and vertebral shield having a small, pale-edged blackish or dark brown spot. With age the spotting disappears, and the overall carapace colour changes to brownish-red when immature to a fairly uniform very dark brown in the adult condition. Mature individuals have the dorsal colour of the head and neck a uniform dark greyish-brown, and no facial striping. However, the lateral part of the head and neck are usually at least in part much paler - a sort of patchy whitish - or may even be piebald or blotched in pattern; older specimens may be almost totally white on the anterior part of the neck. The iris is brownish without flecking, with a very light inner ring. Hatchlings or juveniles on the other hand, may have a fairly plain, greyish-brown head and neck. Usually the pattern is simple in juveniles, with only the upper margin of the tympanic area having a faint whitish crescent pattern, and the temporals and a few enlarged tubercles being a soft olive-green. The ventral colouration differs significantly in *Elseya jukesi*, being very pale creamish to bone-white on the plastron and is without pattern, unlike other members of the *dentata*-complex which are either very dark or usually patterned on the plastron. *Elseya jukesi* attains a slightly larger maximum carapace length than *Elseya dentata* from the Victoria River system, reaching around 350 mm., but this size would be exceptional, as most mature specimens are only about 300mm. I herein designate the following Type material for *Elseya jukesi* - Holotype: NTM 13985 Pul Pul Billabong, South Alligator River (13 34'S, 132 35'E). Paratypes: Northern Territory Museum: NTM 13512 South Alligator River (13 30'S, 132 28'E); NTM 34496 Deaf Adder Creek (13 04'S, 132 58'E); Australian Museum: AM 43532 Deaf Adder Creek (13 04'S, 132 58'E); AM 38325-6 Koongarra, Brockman Range, Arnhem Land (12 47'S, 132 39'E); AM 128001-4 Magela Creek (12 29'S, 132 52'E); AM 129342 Bowerbird Lagoon, 15 km S, 16 km E of Jabiru (12 47'S, 133 03'E).

As is the case with other members of the *dentata*-complex, *Elseya jukesi* inhabits permanently flowing freshwater rivers, and may be found occupying both deep-water rocky

pools as well as on the muddy or sandy bottoms of shallower waters. This is also a largely diurnal species that basks at the surface of the water or on occasions on exposed rocks or logs. During late afternoon and early evening specimens may be observed apparently foraging in the shallower waters adjacent to larger pools. When disturbed, this turtle will rapidly swim into deeper water or hide under submerged boulders and logs or beneath eroded river banks. Its reproductive biology is at present poorly known, but like *E. dentata* it would likely produce about 10 eggs in a clutch around the end of the Wet Season (February-May), and these probably would hatch after about 4 months incubation. Mature specimens are mainly herbivorous, feeding on various fruits and flowers that fall into the water from riparian vegetation (such as *Pandanus*), as well as aquatic weeds, and on occasions carrion but juveniles and immature specimens feed largely on aquatic invertebrates. Captive adult specimens also consume a variety of invertebrates, as well as small fish and raw meat. Like all other turtles, *Elseya jukesi* is protected under Territory Parks and Wildlife Conservation Act (1998). The population that has been previously identified as *Elseya dentata* from the Roper River is likely an undescribed species (although some consider this to be part of the distribution of *Elseya lavarackorum*) - which see below. The populations in the Nicholson, Gregory and possibly the Leichhardt Rivers have been recently referred to *Elseya lavarackorum*. Etymology: The specific epithet of '*jukesi*' honours Australian naturalist Brian Jukes, a past resident of the area where this species lives.

Comments on *Elseya lavarackorum* (White and Archer, 1994)

Description: The populations of the *Elseya dentata* complex known from the river systems in the north-eastern NT and northern Queensland that drain into the Gulf of Carpentaria are taxonomically enigmatic. They have been variously regarded as *Elseya dentata*, then later as an undescribed species a belief which persisted until relatively recently, when it was discovered that the description of a fossil turtle from the Pleistocene Era actually represented the living species (Thomson et al. 1997). This species is nevertheless closely related to *Elseya dentata*, and the major difference linking the species to the fossil species is the bone structure of the plastron. Both the fossil species and this member of the *dentata* complex share the same undulating suture condition between the pectoral and humeral shields, rather than the straight suture condition as in *Elseya dentata*. The Gulf species also reaches a very large size that is comparable to the fossil type.

Diagnosis: The following combination of characters readily differentiates this species from all other members of the *Elseya dentata* complex: In keeping with other members of the *dentata* complex, the head is very broad and deep, with a very wide mandibular symphysis and a distinct median alveolar ridge on the upper jaw. The horny plate on top of the head does not extend laterally and there are two small white barbels under the chin. The neck is large and muscular with scattered enlarged rounded or conical tubercles over a covering of smaller flat tubercles. The mature carapace is robust, thick and smoothly rounded anteriorly, generally oval in shape and with some posterior expansion. Additionally, there is only the slightest upturning at the lateral marginals but the posterior of the carapace is largely unserrated. In general shape, the posterior margin of the carapace is rounded in shape. The plastron is always long and relatively narrow, being widest at the bridge and gently tapering both anteriorly and posteriorly, although the anterior plastral lobe does tend to slightly widen with age. The intergular shield completely separates the gulars, and is longer than wide, and much narrower than the adjacent gular shields. Hatchlings differ somewhat in that they have a noticeably serrated posterior margin to the carapace and fairly prominent central ridging (both characters which are lost with age), and some lateral upturning to the carapace as well. In immature specimens, the carapace is pale to light brown, but with age it changes to very dark brown in colouration. Mature individuals have the dorsal colour of the head and neck a uniform dark greyish-brown and the jaws yellowish. The throat and lower neck is white, and the white throat colour extends upwards to the back of the mouth. There is no facial striping, but there is a clear mid-lateral line of demarcation on the neck between the ventral and dorsal colours. The iris is pale brownish, with a very light inner ring and has a distinct median brown spot (either side of the pupil). The ventral (plastron) colouration is creamish white and largely without pattern in both sexes. *Elseya lavarackorum* attains a maximum carapace length of around 400 mm., but this size would be exceptional, as most mature specimens are only about 340 mm.

Distribution: It is known principally from the Nicholson River system of north-western Queensland and north-eastern Northern Territory. The populations of the *Elseya dentata* complex inhabiting the Gregory River and possibly the Leichhardt River systems as well as other rivers that enter the Gulf of Carpentaria around lower Cape York Peninsula are also tentatively considered to be referable to *Elseya lavarackorum*.

Habitat: This species lives only in a few deep-water tropical rivers with either sandy, rocky or muddy bottoms. Their rivers may be associated with spectacular rocky gorges and have rich tropical monsoon or savanna vegetation fringing the watercourse. This is a diurnal as well as nocturnal turtle that lives mainly in the slower flowing or still water conditions of its habitat - often in larger waterholes at the base of low rocky rapids or falls. Specimens will bask on exposed rocks and logs, but will rapidly retreat to the safety of deeper water or under overhanging river banks when disturbed.

Biology/Ecology: No direct reproductive information is currently available. If this species is as similar to *E. dentata* reproductively as it is morphologically, then it probably would produce about 10 eggs in a clutch around the end of the Wet Season (February-May), and the eggs would hatch after about 4 months incubation. *E. lavarackorum* is mainly herbivorous, feeding on various fruits that fall into the water from riparian vegetation (such as *Pandanus*), as well as aquatic weeds. Captive specimens also consume a range of aquatic invertebrates, small fish and carrion.

Survival Status: This species is protected under the Territory Parks and Wildlife Conservation Act (1998) and the Qld Nature Conservation Act (1992).

Etymology: The name '*lavarackorum*' honours Jim and Sue Lavarack who discovered the fossil on which this name is based at Riversleigh, Queensland.

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). Taylor and Francis, London [Pp. i-x, 1-311, 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
- Cameron, E.E. and Cogger, H.G. 1992. The Herpetofauna of the Weipa Region, Cape York Peninsula. Technical Reports of the Australian Museum, 7: 1-200
- Cann, J. 1978. Tortoises of Australia. Angus and Robertson, London [Pp. 1-79 + 92 Plates]
- Cann, J. 1997. Irwin's turtle, *Elseya irwini* sp. nov. Monitor: Journal of the Victorian Herpetological Society, 9 (1): 36-40
- Cann, J. 1998. Australian Freshwater Turtles. Beaumont Publishing, Singapore [Pp. 1-292]
- Cogger, H.G. 1972. Turtles and Tortoises. [Pp. 1049-1051]. In: Ryan, P.A. (General Editor): Encyclopaedia of Papua and New Guinea. Volume 2. Melbourne University Press, Melbourne
- 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. and Heatwole, H.F. 1984. The Australian reptiles: Origins, biogeography, distribution patterns and island evolution. [Pp. 343-370]. In: Archer, M.A. and Clayton, G. (Editors): *Vertebrate Zoogeography and Evolution in Australia. (Animals in Space Time)*. Hesperian Press, Carlisle [Republication of Cogger, H.G. and Heatwole, H. (1981)]
- 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]
- Coventry, A.J. and Tanner, C. 1973. Notes on the short-necked tortoises *Emydura australis* (Gray) and *Elseya dentata* (Gray) in the Victoria River System, Northern Territory. *Victorian Naturalist*, 90 (12): 351-353
- De Vis, C.W. 1897. The extinct freshwater turtles of Queensland. *Annals of the Queensland Museum*, 3: 3-7
- 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 Linnean 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. 1831. Additional observations on *Chelymys dentata*. *Annals and Magazine of Natural History*, 3 (12): 246

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. 1867. Description of a new Australian tortoise. *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. 1872. On the genus *Chelymys* and its allies *Euchelymys* and *Eiseya* 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.

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; Pp. i-xiii, 1-363]

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

Jeffree, R.A. 1991. An experimental study of ²²⁶Ra and ⁴⁵Ca accumulation from the aquatic medium by freshwater turtles (fam. Chelidae) under varying Ca and Mg water concentrations. *Hydrobiologia*, 218 (3): 205-231

- Jeffree, R.A. and Jones, M.K. 1992. An Accumulation of Radiocalcium from the aquatic medium via the cloaca and bucco-pharynx of Australian freshwater turtles (Chelidae). *Comparative Biochemistry and Physiology*, 1992 (1): 85-91
- Kennett, R.M. 1988 Ecology of two species of freshwater turtles from the wet-dry tropics of northern Australia, *Chelodina rugosa* and *Elseya dentata*. PhD Thesis, University of Queensland, Brisbane
- Kennett, R.M. 1999 Reproduction of two species of freshwater turtle, *Chelodina rugosa* and *Elseya dentata*, from the wet-dry tropics of northern Australia. *Journal Zoology*, 247 (4): 457-473
- Kennett, R.M. and Tory, O. 1996. Diet of two freshwater turtles, *Chelodina rugosa* and *Elseya dentata* (Testudines: Chelidae) from the wet-dry tropics of northern Australia. *Copeia*, 1996 (2): 409-419
- 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
- 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.
- Meyer, A.B. 1874. *Platemys novaeguineae* sp. nov. Dr W.H. Peters legte vor: Eine mitteilung von Hrn. Adolf Bernhard Meyer über die von ihm auf Neu-Guinea unter den Inseln Jobi, Mysore und Mafoor im Jahre 1873 gesammelten Amphibien. *Monatsber. Konig. Preuss. Akad. Wiss. Berlin*. 39:128-140
- Obst, F.J. 1985. *Die Welt der Schildkröten*. Leipzig, Edition Leipzig, 235 pp.
- Ouwens, P.A. 1914. List of Dutch East Indian Chelonians in the Buitenzong Zoological Museum. *Contributions a la Faune des Indes Neelandaises*, 1: 29-32
- 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. *Abstracts of the First World Congress in Herpetology* [p. 248]
- Rhodin, A.G.J. and Genorupa, V.R. 2000. Conservation Status of Freshwater Turtles in Papua New Guinea. *Chelonian Research Monographs*, 2: 129-136
- 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 *Elseya*. *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 *Elseya* (Testudines: Chelidae) from central coastal Queensland, Australia. *Chelonian Conservation and Biology*, 5 (1): 74-86.
- Thomson, S.A., White, A. and Georges, A. 1997. A re-evaluation of *Emydura lavarackorum*: Identification of a living fossil. *Memoirs of the Queensland Museum*, 42: 327-336
- 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.
- Vogt, T. 1911. *Emydura schultzei*, sp. nov. *Reptilien und Amphibien aus Neu Guinea*. *Sber. ges. naturf. Freunde, Berl.*, 9: 410-412
- 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. 2002b. 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. 2007a. 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. A new genus of the Family Chelidae from Eastern Australia. *Australian Biodiversity Record*, 2007 (3): 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
- 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]

Australian Biodiversity Record
ISSN 1325-2992

EDITORIAL NOTICE

The Australian Biodiversity Record is published at no cost for permanent scientific record in accordance with the International Commission of Zoological Nomenclature Rules (Code of Zoological Nomenclature). Copies may be obtained by sending a written request to be placed on a mailing list. The address for submission of manuscripts, subscriptions and all other enquiries relating to this Journal is:

Australian Biodiversity Record
P.O. Box 424,
Cowra, New South Wales, Australia 2794

Note: Although the articles published by the Australian Biodiversity Record always remain the Intellectual Property of the authors concerned, it is an expressed condition of publication that articles may be freely copied by any person or downloaded electronically from the Internet after publication and distributed worldwide by any means whatsoever for the sole purpose of research or criticism. All articles so copied from the Australian Biodiversity Record must include full bibliographic data that identifies the author name/s, the journal name and number, and date of publication. Therefore, the Australian Biodiversity Record recommends that any article copied be a full and complete copy to ensure that due credit is given to authors and to also allow their information to be considered in accurate context.