DESCRIPTIONS AND REDESCRIPTIONS OF LANDSNAILS (MOLLUSCA: PUNCTIDAE) IN THE GENERA PHRIXGNATHUS AND TAGUAHELIX

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Abstract. Types of Phrixgnathus francesci Webster, 1904 and Phrixgnathus elaioides Webster, 1904 contain more than one species in each case and lectotypes are here selected in line with the author’s original description. Both species are transferred to the genus Taguahelix Powell, 1955. Two new species, Phrixgnathus douglasi and Taguahelix crispata, are described. These snails have been confused in the past with the Webster species. Phrixgnathus brunnus is also described, a species which A.E. Brookes intended naming about 1930, having selected prospective types from the Bay of Plenty.

This paper finishes work started by two early collectors. The Rev. W.H. Webster described several species of small landshells and A.E. Brookes intended to describe new species for his tubes of “types” with names have been found in the Auckland Museum collections.

Most of Webster’s type material contained many specimens without a holotype being nominated. In this paper we reconsider the type series of Phrixgnathus francesci Webster, 1904 and Phrixgnathus elaioides Webster, 1904. The descriptions, however, which Webster gave did not wholly satisfy the characteristics of any one snail in the material offered. In 1987 F.M. Climo tentatively selected lectotypes and paralectotypes for the two species which offered the closest fit to the author’s description but never published this information. Since then the Auckland Museum landshells collection has been reviewed and re-housed by J.F. Goulstone and nothing has come to light in the Webster lots to contradict Climo’s choices of lectotype. It seems appropriate now to redescribe the two Webster species and also two others which have previously been confused with them, and which indeed may have confused Webster himself.

The other snail here described, Phrixgnathus brunnus, comes from the collections of the late A.E. Brookes which are held in the Auckland Museum and include about 80 specimens from the Motu River, Bay of Plenty. Other specimens have also emerged from Brookes’ bulk location lots which he had not separated. Again, it seems a fitting time to finalise an action he failed to complete about 1930.

We have used Taguahelix Powell, 1955 at a generic level to contain three of these species because they seemed to fall naturally within the genus typified by Taguahelix campbellicus

(Filhol). Powell (1955) included certain shells with hair-like processes from the sub-antarctic islands within the genus but we feel they would be better placed elsewhere. Climo (1992) discusses Taguahelix in a wider context and suggests better groupings for these other species. The remaining two we have left in Phrixgnathus, as a holding group until their proper affinities can be ascertained.

Distribution details have been included in the text for relevant specimens held in Auckland Museum and the Museum of New Zealand. Maps also show this information, though somewhat abridged.

The following names which occur frequently, particularly in the distribution sections, are referred to by initials only: A.E. Brookes, F.M. Climo, J.F. Goulstone, B.F. Hazelwood, P. Mayhill, D.J. Roscoe, W.H. Webster. Auckland Museum = AK, Museum of New Zealand = MNZ. Map references refer to the NZMS 260 series.

SYSTEMATICS

FAMILY: PUNCTIDAE Morse, 1864
GENUS: TAGUAHELIX Powell, 1955

TYPE SPECIES: Thermia expeditionis Suter, 1909 = Helix campbellica Filhol, 1880
Shells unicoloured, light horny, yellow or greenish, depressed helicoid or depressed turbinate with elaborate sculpture of numerous irregular axial or wrinkles, at times faint but often extended and crisp, on a surface pattern of dense microscopic spiral threads. Protoconch relatively large, low, rounded, sculptured with exceedingly fine dense spiral striations.

Taguahelix elaioides (Webster, 1904) Figs. 1-4


DESCRIPTION

Shell small, turbinate, olive green, sub-perforate, finely concentrically striate, these striations also prominent on the succeeding whorls. The post embryonic whorls also have fine radial sculpture, very faint on the base. This sculpture in places on some shells shows a pattern of wider stronger primary ribs but seems to be random. However, all the ribbing is at a microscopic level and the shell even with 10x magnification appears nearly smooth. Protoconch 1.25 whorls. Total whorls 3.75; periphery and base rounded. Suture deep. Collumella oblique, reflexed to slightly cover the narrow umbilicus.

REMARKS

There were two tubes of types, one labelled “Types” the other “Co-types”. The “Types” tube (T.M.384), examined by F.M. Climo in 1987, contained seven specimens comprising three specimens of Taguahelix elaioides Webster (AK 70384, MNZ M115631); one specimen
Figs. 1-3. *Taguahelix elaiodes*. 1. Geographic distribution. Solid dots are records from the Museum of New Zealand; open dots are records from the Auckland Museum. 2. Waiuku, 1.5 mm x 1.2 mm (lectotype AK 70384). 3. Waiuku, 1.4 mm x 1.2 mm (paralectotype AK 71557).
of Punctid n.sp.3 Climo ms. (AK 79434); one specimen of Punctid n.sp.29 Climo ms. (AK 79436); and two specimens of Punctid n.sp.32 Climo ms. (AK 79435).

The co-type tube found by I.F. Goulstone in 1992 contained five specimens comprising one paratype of Taguahelix elaiodes Webster (Fig. 4, AK 71582); two specimens of Taguahelix viridula (Suter, 1909) (AK 79510); and two specimens of Punctid n.sp.32 (AK 79435). Other material collected by Webster and labelled P. elaiodes contained in addition to the above, Taguahelix crispata n.sp.

Webster mentions ribs at 10 per mm in his type description and these are hard to find except the somewhat random occurrence mentioned in the description. It seems he was describing features on several species for, though T. elaiodes Webster is always a difficult shell to identify because of its lack of strong features, all the specimens we have seen have shown uniformity.

Also lacking strong features is Punctid n.sp.32 which is a similar size and shape but shinier, smoother and lighter coloured and this is the species most often found together with T. elaiodes in Webster’s material. It could also be confused with a juvenile Taguahelix crispata n.sp., and particularly a similar new species discussed later (Figs. 6,9), though these are larger with stronger sculpture. The numbered Punctids are illustrated in Goulstone (1983, 1990).

TYPE LOCALITY: Waiuku

LECTOTYPE: Auckland Museum, AK 70384 (width 1.5 mm, height 1.2 mm).

PARALECTOTYPES (3): AK 71557, AK 71582, MNZ M115631, AK 70384, AK 71557 and MNZ M115631 are from the original “Type” tube (T.M.384) from Waiuku. AK 71582 is from the “Co-type” tube also from Waiuku.

HABITAT

Little known for the snail never seems common and few live ones are seen. Several specimens were found in rimu (Dacrydium cupressinum) litter.

DISTRIBUTION


**Taguahelix crispata** n. sp. Figs. 5, 7-8


**DESCRIPTION**

Shell small, turbinate, slightly compressed with 4.25 whorls. Protoconch of 1.75 whorls with very faint spiral striations, though on the rest of the shell they are prominent. Post embryonic whorls with prominent, irregular radial periostracal processes, facing backwards, about 30-40 on the final whorl of an adult specimen, with similar finer ribbing in between. The main ribs are quite solid based and in some specimens produced into thin sharp blades. If these processes are worn off the shell appears with quite solid ridges. This strong ribbing extends a little onto the base then muted radial and spiral striae exhibit about equal prominence. Umbilicus is open though narrow and partly covered by the reflexed columella. Colour golden in fresh shells.

**REMARKS**

This snail has a handsome prominent shell, overlooked by earlier collectors, so that very
Figs. 7-9. *Taguahelix crispata* and *Taguahelix* n.sp. 7. Geographic distribution of *Taguahelix crispata*. Solid dots are records from the Museum of New Zealand; open dots are records from the Auckland Museum. 8. *Taguahelix crispata*, Titirangi, Waitakere Ranges, 2.5 mm x 1.9 mm (holotype AK 71558). 9. *Taguahelix* n.sp., Piha Rd., Waitakere Ranges, 1.5 mm x 1 mm (AK 79622).
few specimens are present in the Auckland Museum collection. It is not plentiful in the Waitakeres.

There is one undescribed species which could be mistaken for T. crispata and though it needs further evaluation we have figured it here (Figs. 6,9). It has a more depressed shell and its ribbing is not so pronounced, more akin to that of T. viridula, though without the accelerated final whorl. The two species occurred together in the type location R11/581720, Titirangi.


HOLOTYPE: Auckland Museum, AK 71558 (width 2.5 mm, height 1.9 mm), Atkinson Reserve, Titirangi, under an old rimu, J.F.G. 4/92.


HABITAT

This species prefers an aerial habitat and has been found on trunks under bark and in living nikau (Rhopalostylis sapida) holes as well as on the ground. A tree platform in the Waitakeres 10 m off the ground yielded a remarkable number of species including T. crispata (Goulstone 1992).

DISTRIBUTION

Taguahelix francesci (Webster, 1904) Figs. 10-13


DESCRIPTION

Shell turbinate, 4.25 whorls, dark brown with the epidermis dull. Protoconch 1.75 whorls with about 15 strong spiral lirae. These lirae cover the whole shell somewhat muted on the following whors but strong again on the base. Prominent radial periostracal processes, 5-6 per mm (e. 20 on the final whorl of an adult specimen), directed backwards, cover the post embryonic whors and descend slightly onto the base. On a well preserved shell these can be quite tall and plate-like. Between these processes, in places, very fine hair-like ribs can be seen, but mostly these are rubbed off and irregular growth ridges are left. Periphery and base rounded, suture deep. Columella oblique, reflexed, slightly covering a narrow umbilicus.

REMARKS

The types of Taguahelix francesci in the Auckland Museum collection examined by F.M. Climo in 1987 contained two species. There were six specimens of Taguahelixfrancesci Webster and 11 specimens of Phrixognathus douglasi (AK 79437) though two of the latter were just pieces. Climo chose a lectotype and five paralectotypes from the ones which were closest to the original description.

Webster described the secondary ribbing of T. francesci as hairlike and some authors have taken this to mean that the shell had hairs, which is a feature of Phrixognathus douglasi. However, the shells of P. douglasi in the type series had lost their hairs and this made the two species somewhat similar. For a few years before 1987 the hairy shell was recognised as T.
Figs. 10-12. Taguahelix francisci. 10. Geographic distribution. Solid dots are records from the Museum of New Zealand; open dots are records from the Auckland Museum. 11. Waiuku, 1.4 mm x 1.4 mm (lectotype AK 70385). 12. Waiuku, 1.4 mm x 1.4 mm (paralectotype AK 71556).
francesci but this was clearly wrong. Earlier collectors had not had this perception (see Discussion). Although only one Webster specimen in the Auckland Museum had one or two epidermal hairs (Fig. 21), it seems unlikely that Webster would have missed this feature if indeed this was the species he was describing.

There are two other small undescribed shells in the Auckland area (Punctid cf. n.sp.7 and Punctid n.sp.69 drawn in Goulstone 1990) which could be mistaken for T. francesci but the latter’s brown colour when fresh should always separate it from these.

TYPE LOCALITY: Waiuku.

LECTOTYPE: Auckland Museum, AK 70385 (width 1.4 mm, height 1.4 mm).

PARALECTOTYPES (5): AK 71556 (two specimens), AK 71583, MNZ M115629 (two specimens). All these types are from Webster’s type series.

HABITAT

A South Auckland survey (Goulstone 1990) showed that this species preferred more disturbed bush remnants or edges of bush and was not present in the deeper podocarp litter. It appears to be a ground dweller.

DISTRIBUTION

Phrixnathus douglasi n. sp. Figs. 14, 16-22


DESCRIPTION

Shell small, turbinate of four whorls and sometimes five. Protoconch of 1.5 whorls faintly spirally striate, the striations continuing over the whole shell. The post embryonic whorls have thin radial periostracal processes rather distant, about 16-40 on the body whorl, which culminate in two rows of spiky hairs on each whorl. Some of these hairs are doubled and sometimes trebled (Fig. 18) in a staghorn effect, particularly on the last whorl. The space between this ribbing contains weak irregular growth lines rather overshadowed by the spirals. There are short, bristle like hairs on the base at each joint of a spiral and radial rib, sometimes the first two rows around the perimeter being closer together. The umbilicus is narrow and often partly covered by a reflexed columella.

REMARKS

The shell of this snail changes with age. A full-grown adult will have five whorls and dimensions of 1.5 mm x 1.5 mm but a specimen of only four whorls will measure 1.3 mm x 1.0 mm. At the start of the Okura Walkway, North Shore, where they are reasonably common in damp, taraire-puriri (Beilschmiedia tarairi, Vitex lucens) forest they never seem to grow beyond four whorls. The same is true at Piha, Waitakere Ranges, in damp nikau (Rhopalostylis sapida) litter. Also in these two locations the rib count is low, only about 16 on the last whorl. Other rib counts on final whorls are: Little Barrier Island - 36 on a five-whorl specimen, 26 on a four-whorl specimen. Hen & Chickens Islands - 26 on a 3.5-whorl specimen. Mt. Huarua - 24 on a 4.5-whorl specimen, 22 on a four-whorl specimen. Kaingaroa - 36 on a five-whorl specimen, 40 on a five-whorl specimen.

One site at Okaihau had shells with elaborate epidermal processes not seen elsewhere (Fig. 18) and the base hairs of all the multi-ribbed shells seem to be more profuse and better developed (Fig. 19).

Samples from Mt. Huarua and north contain specimens that are globular (Fig. 20) and at the Herekino Gorge all the adult shells are taller and narrower (Fig. 17). Here also few had processes or hairs.

On Little Barrier Island shells had an interstitial sculpture of many sharp radial riblets, and indistinct spiral ridges (Fig. 14), which was at variance with all the mainland material. However, we have seen only specimens collected by A.E. Brookes many years ago.

Figs. 16-22. Phrixognathus douglasi. 16. Geographic distribution. Solid dots are records from the Museum of New Zealand; open dots are records from the Auckland Museum. 17. Herekino Gorge, 1.2 mm x 1.4 mm (AK 79614). 18. Forest Rd., Okaihau, 1.5 mm x 1.8 mm (MNZ M47325). 19. Waina Forest, 1.4 mm (AK 79615). 20. Tangihua Range, 1.1 mm x 1.2 mm (AK 79617). 21. Waiuku, 1.5 mm x 1.5 mm (AK 79618). 22. Okura River, 1.3 mm x 1.0 mm (holotype AK 71560).
HOLOTYPE: Auckland Museum, AK 71560 (width 1.3 mm, height 1.0 mm). Okura River, J.F. Goulstone, 4/2/93.


HABITAT

Litter, especially fairly damp litter. Undisturbed bush, though B. Hazelwood (pers. comm.) reports the site at Okahau mentioned in the Remarks was disturbed.

DISTRIBUTION


ETYMOLOGY

We have named this species after the late Norman Douglas, from Waiuku, who sometimes collected small land snails.

Phrixgnathus brunneus n. sp. Figs. 15, 23-24

DESCRIPTION

Shell small, flat, spire only slightly raised. Protoconch 1.25 whorls, faintly concentrically striate. Shell 3.25 whorls quickly accelerating. Post-embryonic whorls with close, irregular, sharp radial periostracal processes sweeping backwards and proceeding half way over the base before reducing to little more than ridges near the umbilicus. Between these processes there are a few fine radials crossed by stronger concentric striae though somewhat fainter on the base. The umbilicus is quite narrow but open, not much affected by the columella which is oblique, thin and hardly reflexed. Colour dark brown when fresh.

Figs. 23-24. Phrixognathus brunneus. 23. Geographic distribution. Solid dots are records from the Museum of New Zealand; open dots are records from the Auckland Museum. 24. Motu River, 2.5 mm x 1.3 mm (holotype AK 71562).
REMARKS

The 80 specimens collected by A.E. Brookes c. 1930 at the Motu River are lighter brown in the centre than others we have examined and golden at the perimeter, but this could be due to the age of the collection. This snail looks like a Flammulind but it has affinities with both a Lord Howe Island Punctid and two sub-antarctic islands species and is better left in *Phrixgnathus* until its true position is evaluated.

TYPE LOCALITY: Motu River, Bay of Plenty. The Museum of New Zealand has specimens collected by Brookes labelled Motu River Bridge, Opotiki-Cape Runaway Highway.

HOLOTYPE: Auckland Museum, AK 71562 (width 2.5 mm, height 1.3 mm), Motu River, A.E. Brookes.


HABITAT

Under bark on fallen rotting logs. At Clevedon, South Auckland, it occurs in modified bush.

DISTRIBUTION


DISCUSSION

The Rev. W.H. Webster, an early collector of New Zealand mollusca (c. 1900-1910), was a contemporary of H. Suter. He came to New Zealand later in his life and took up an appointment at a small church in Waimauku (now Mauku) near Waiuku. His landsnail collection, comprising 124 lots now in the Auckland Museum, was built up by his sharp-eyed
son Francis. Waiuku, on the Manukau lowlands is a closely settled farming area today and most of the bush in which the snails were collected is gone. The Waipipi Scenic Reserve, several kilometres north of the township, is the best remaining bush close to Waiuku and samplings in recent years have found both T. francesci (Webster, 1904) and T. elaiodes (Webster, 1904) though they are scarce.

A.E. Brookes about 1930 put aside prospective types of P. douglasi which he intended dividing into three species, “Aeschrodomus chrysomorphus” from Little Barrier Is.; “Aeschrodomus pagodaela” from Kaingaroa, Northland and “Aeschrodomus fairburni” from the Tangihua Range. From the more extensive material which is now available this division of P. douglasi into three species seems feasible, but in this paper we have preferred to take a conservative view and treat it as one. Also, it is not a Charopid species but has obvious affinities with what was known prior to 1979 as Phrixognathus regularis (Pfeiffer, 1855). (Climo 1979 explains the status of P. regularis now). This is a widespread snail further south, which does not overlap the range of P. douglasi.

For P. brunneus there were tubes labelled “Holotype” and “Paratypes” in the Auckland Museum collection with the labels “Flammulina brunneum or Flammulina innotatum”. A.E. Brookes actively collected snails from the 1920s to the 1950s over most of New Zealand and N. Gardner believes that he worked as a builder on the construction of the Motu River bridge. The Auckland Museum has 600-700 lots which Brookes presented and he was a president of the Auckland Museum Conchology Section Shell Club for some years. The club owns the “Brookes Collection”, a display series containing many snails arranged for easy viewing. The Museum of New Zealand also has many of his specimens. His obituary appears in the Conchology Section Bulletin No. 11, 1955.

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