

A new name for *Altivasum typicum* Hedley, 1916 fide Dekkers and Maxwell, 2018 and the description of *Altivasum clarksoni* n. sp.

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ABSTRACT This paper addresses the taxonomy irregularity concerning *Altivasum typicum* Hedley, 1916 fide Dekkers and Maxwell, 2018 that has historically been synonymized under *Altivasum flindersi* Verco, 1914. We introduce the erection of *Altivasum hedleyi* n. sp. correcting this taxonomical conundrum that originated from the Hedley (1916) paper. Furthermore, this paper presents a new morph of *Altivasum* restricted to Esperance in Western Australia. *Altivasum clarksoni* n. sp. morphologically differs from *Altivasum flindersi* Verco, 1914 having solid pyramidal knobs on an acute shoulder and a form that is much more equi-biconic. *Altivasum hedleyi* nov. sp. is also sympatric in part with *Altivasum clarksoni* n. sp. but is much smaller and the early teleoconch differs in structural form. This paper brings the number of described *Altivasum* and their forms to four.

KEY WORDS *Altivasum*, *A. hedleyi*, *A. clarksoni*, Vasiniae, Australia, morphology, taxonomy

INTRODUCTION

Dekkers and Maxwell (2018) reviewed the genus *Altivasum* Hedley, 1914 and recognized three taxa in what was once considered a monotypic genus after Abbott (1959). One possible explanation for the over synonymization that occurred under Abbott (1959) was a possible ridged adherence to a biological species conception and the reflection of this in a cline driven taxonomy. The process of unraveling the taxonomy of *Altivasum* Hedley, 1914 ex Abbott, 1959 is an ongoing one, particularly as more material becomes available. One of the major draw backs in the stabilizing of *Altivasum* Hedley, 1914 taxonomy is the lack of material with sufficient data to map distributions and morphology. The known range limits of *Altivasum* are not fixed and as more material becomes available, the overlap between the three existing taxa without significant morphological integration is becoming more

evident. This overlap and species morphological stability justifies the rank of species rather than subspecies for these taxa.

This paper presents a new *Altivasum* species, which provides another evolutionary reference point within the nomenclature to assist in gaining an understanding of the radiation and distribution patterns within the complex. Furthermore, this paper presents a rejection of the Dekkers and Maxwell (2018) taxonomic conservancy with the acceptance of *Altivasum typicum* Hedley, 1916, which was grounded in the Hedley (1916) description being sound in construction and the availability of the name “*typicum*”. However, we identify two problems with this use of “*typicum*” for this taxon: first is that it is an objective junior synonym of *Altivasum flindersi* Verco, 1914; and, second with the underlying intent of Hedley (1916) when presenting “*typicum*”. Additionally, a dwarf sympatric taxon, *Altivasum clarksoni* n.

sp. is identified, from Sandy Hook Island, Esperance, Australia.

SYSTEMATICS

Superfamily: Turbinelloidea Rafinesque, 1815

Family: Turbinellidae Swainson, 1835

Subfamily: Vasiniae Adams and Adams, 1853

Altivasum Hedley, 1914

Type species: *Latirus aurantiacus* Verco, 1895
(= *Altivasum flindersi* Verco, 1914).

Synonymy.

Altivasum Hedley, 1914, p. 68. Dekkers and Maxwell 2018, p. 246.

= *Vasum* (*Altivasum*) Hedley - Wenz 1946, p. 1300. Abbott 1950, p. 213. Abbott 1959, p. 25. Wilson 1994, p. 60.

Altivasum hedleyi Maxwell & Dekkers,
new species (Figure 3A)

Synonymy.

Altivasum typicum Hedley, 1916, p. 207.

Dekkers and Maxwell 2018, p. 249, figs. 2b, 4, 6b.

Altivasum aurantiacum Verco - Hedley 1914, p. 69, pl. 9, fig. 2.

Altivasum flindersi Verco - Hinton 1972, p. 46, fig. 1. Wilson and Gillet 1972, p. 112, pl. 7 fig. 3. Wells and Bryce 1986, p. 11, fig. 436.

Vasum flindersi Verco - Wilson 1994, p. 60, pl. 8, figs. 12a and b.

Dekkers & Maxwell (2018: 249, figs. 2b, 4, 6b) erroneously considered this new species to be *Altivasum typicum* Hedley, 1916. The name *Altivasum typicum* Hedley, 1916 is unavailable as it is an objective synonym for *Altivasum aurantiacum* Verco, 1885 (= *Altivasum flindersi* Verco, 1914).

Type material. Holotype: Hedley (1914), pl. 9, fig. 2.

Type locality. Great Australian Bight between Long. 126° and 129°, 220 metres (crabbed).

Etymology. Named in honour of Charles Hedley (1862-1926) whose early work on Australian Mollusca was ground breaking.

Altivasum clarksoni Maxwell & Dekkers,
new species (Figures 1 and 2)

Description/Diagnosis. Shell similar in form to *Altivasum hedleyi* n. sp. but is greatly diminished in size. The shell is finely sculptured with scales. The spire possesses broad flat axial ribs that become acute with later whorls at the shoulder. The body whorl has large broad flat raised axial ribs that shoulder with distinctive solid acute pyramidal knobs but never develop into long hollow spines. The anterior of the body whorl has strong concave enlarged scales that form hollow short spines. The shoulder of the teleoconch is somewhat angulate. All whorls show strong axial cording. The shape is near equi-biconic.

Type material. The holotype is held in the West Australian Museum No. 69372 (Figure 1). The specimen was donated by Trevor and Marguerite Young, of Cannonvale, Queensland. A total of four other syntypes of the new taxon were also acquired from the Clarkson Collection (Figure 2).

Type locality. SSE side of Sandy Hook Island, off Esperance, Western Australia. Diver at 30 m, 2010. All known specimens are from this location and collected on the same date.

Etymology. Named in honour of Peter Clarkson, on the recommendation of collection Trevor and Marguerite Young, of Cannonvale, Queensland who donated the specimen to the West Australian Museum. Although we did not experience it ourselves, Peter's enthusiasm and

drive to explore new habitats for seashells made him inspirational to all shell collectors. He is remembered fondly by many for his enthusiasm, generosity and friendship which touched many lives [see Peter Clarkson memorial page <http://www.facebook/groups/324024881799666>]

DISCUSSION

This revision brings the total number of described *Altivasum* Hedley, 1914 to four (see Figure 3). *Altivasum clarksoni* n.sp. provides a new taxonomic reference point on which to develop a greater understanding of the *Altivasum* Hedley, 1914 complex. In relation to *Altivasum hedleyi* n. sp., the authors demonstrate that revision of any complex involves the re-examination and reconsideration of information as it comes to hand. In the case of *Altivasum* Hedley, 1914, all species have more or less defined ranges, and morphological differences. *Altivasum hedleyi* n. sp. and its forms can be readily distinguished by the subsutural fimbriations, which is in contrast to *Altivasum profundum* Dekkers and Maxwell, 2018, where the subsutural fimbriations are lacking.

Altivasum clarksoni n. sp. is a small species reaching a maximum size of 65 mm. This is in contrast to the sympatric *Altivasum hedleyi* nov. sp. which is known to reach over 200 mm. While the soft parts of the animal have not been examined, there are no recorded examples of sexual dimorphism in Vasinæ Adams and Adams, 1853 that would equate to a large size discrepancy nor such significant changes in morphological form between the two taxa (Abbott 1959). We do not believe that *Altivasum clarksoni* n. sp. is a male form of *Altivasum hedleyi* n. sp.

The choice of species rank over form or subspecies for this taxon reflects a more

nuanced understanding of the role of infra-specific ordering. We consider forms to reflect a consistent variant within a wider population. The new species is not a form, *Altivasum clarksoni* n. sp. represents both the consistency in size and form, and names a localized variant. Páll-Gergely *et al.* (2019) argued that the rank of subspecies was arbitrarily applied based on “human factors”. These factors reflect the choices that the taxonomist has to make with regard to the differentiating of taxa in terms of morphology, homology and the pre-existing taxonomic hypotheses (Páll-Gergely *et al.* 2019). However, Páll-Gergely *et al.* (2019) offer no practical solution to how subspecies should be identified; rather they are seeking a rule to “prohibit taxonomic decisions resulting in uneven subspecies rates across taxonomic groups.” This raises the serious question of what is a “subspecies”, and in particular once you move away from the biological species concept how do you demarcate between subspecies and what is considered a full species. We argue that subspecies should be restricted to cryptic species, where the difference between taxa are grounded on the unobservable genetic distance; there is no morphological difference and typically no test for biological isolation between isolated populations or their clines. That is, we argue that the rank of subspecies should be applied to reflect genetic differences within a species complex, rather than used to distinguish unique taxonomic entities with observable differences. These are species. Subspecies therefore, is a rank that should be restricted to cryptic species. This approach would provide a level of taxonomic stability to the species rank and at the same time address the issues identified in Páll-Gergely *et al.* (2019). Where a taxon can be readily identified based on observable differences we argue, as the case of the species herein, that the rank of species is justified.

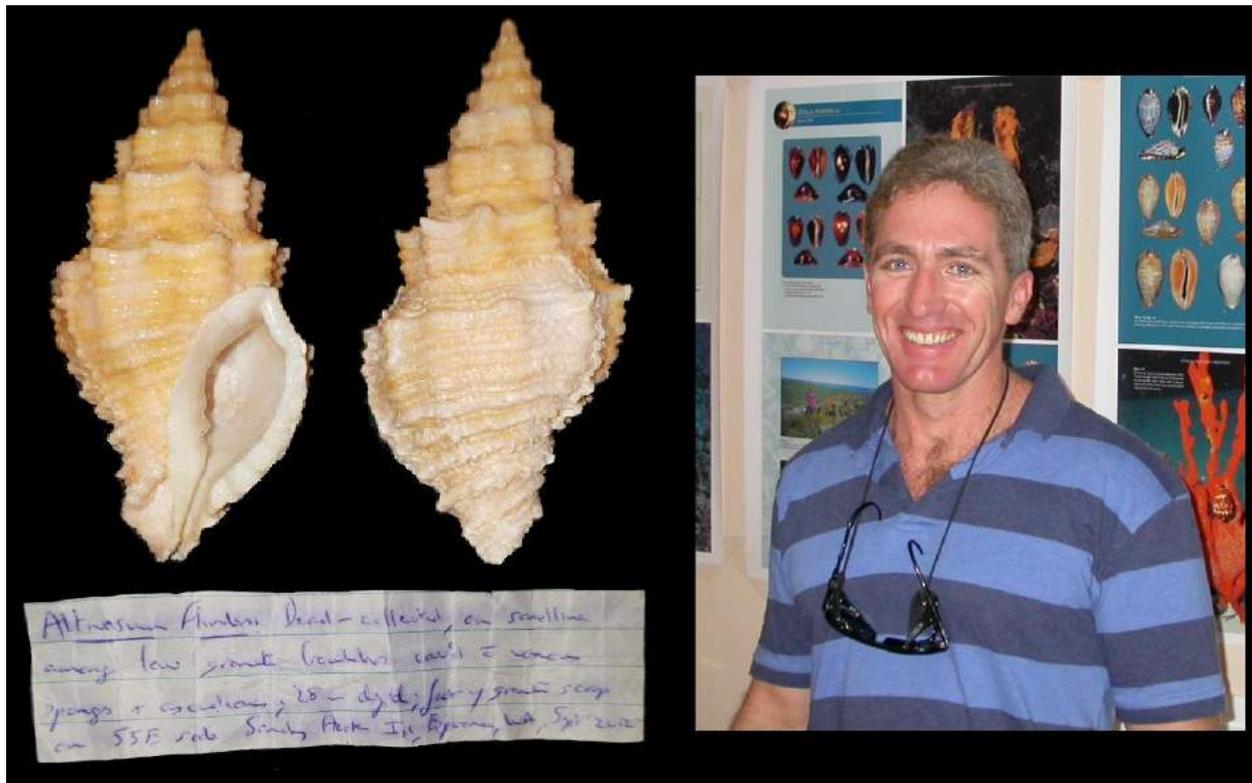


Figure 1. The holotype of *Altivasum clarksoni* n. sp. (West Australian Museum No. 69372) Sandy Hook Island, Esperance, Western Australia, with original label, and a photograph of Peter Clarkson after whom the shell is named (Collection of Trevor and Marguerite Young, height Syntype 2: 65 mm; Image – <http://www.facebook.com/groups/324024881799666> accessed 03/06/2019). The original Clarkson label reads: “*Altivasum flindersi*, dead collected on sand line among low granite boulders covered with various sponges and ascidians, 28 m depth, foot of granite scarp. On SSE side of Sandy Hook Island, Esperance, West Australia, September 2010”.

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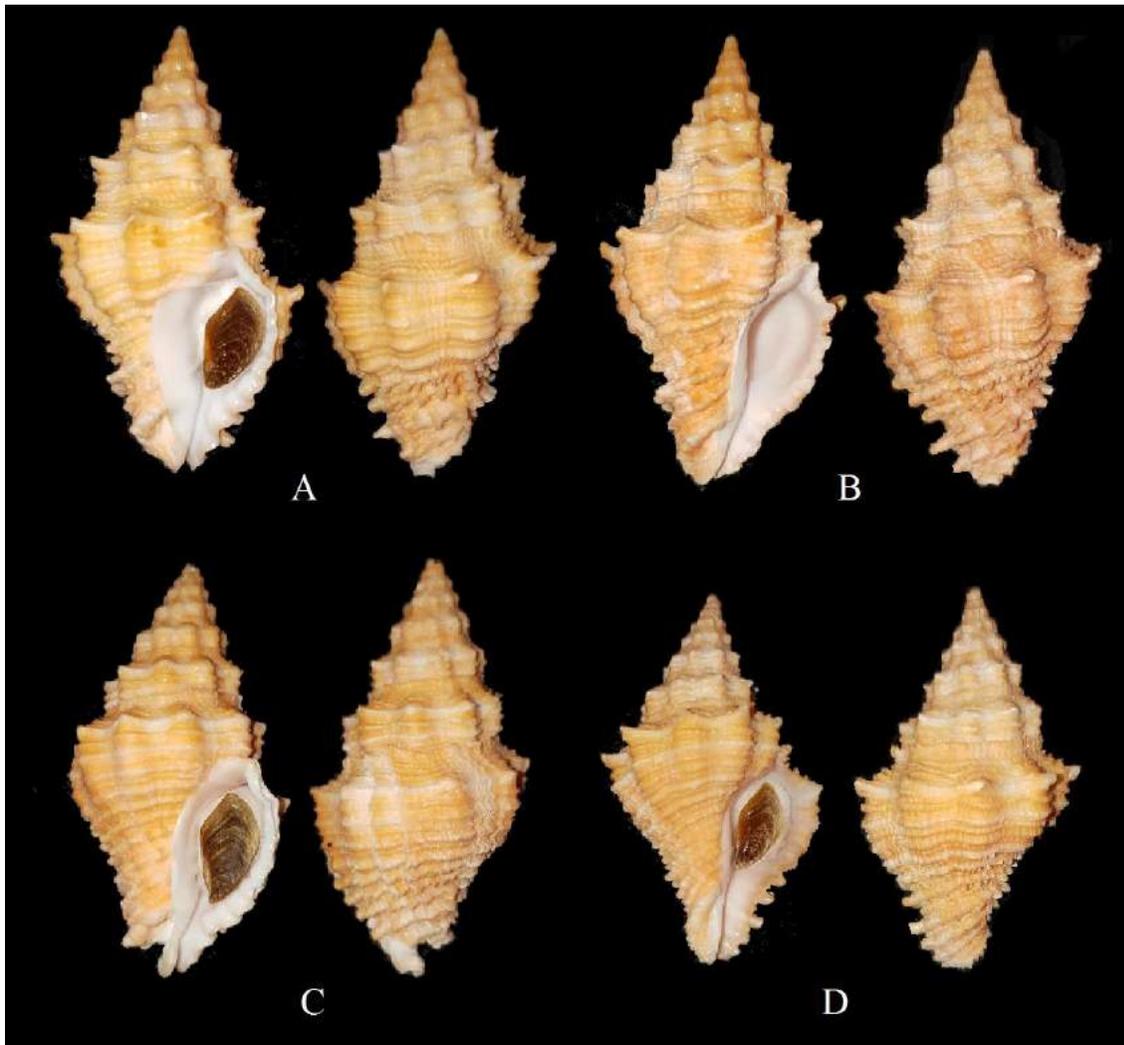


Figure 2. The paratype set for *Altivasum clarksoni* n. sp. (All Sandy Hook Island, Esperance, Western Australia): **A** = paratype 1: collection of Trevor and Marguerite Young, height 62.0 mm; **B** = paratype 2: collection of Trevor and Marguerite Young, height 63.5 mm; **C** = paratype 3: collection of Aart M. Dekkers, height 55.6 mm; and **D** = paratype 4: collection of Stephen Maxwell, height 48.0 mm (sub-adult).



Figure 3. The current *Alivasum* Hedley, 1914 taxa shown in relative size: **A** = *Alivasum hedleyi* n. sp., Esperance, Western Australia (Weinreich collection, height 222.0 mm); **B** = *Alivasum profundum* Dekkers and Maxwell, 2018, off Augusta, West Australia, ROV-collected at 162 m, (WAM No. 72381, height 77.0 mm); **C** = *Alivasum flindersi* Verco, 1914, Port Lincoln, South Australia. Dived 10-20 meter in gravelly sand gutters (MNHN IM-2014-6965, height 110.3 mm); **D** = *Alivasum clarksoni* n. sp. Esperance, Western Australia, 30m by diver (Collection of Trevor and Marguerite Young, paratype 1), height 62.0 mm.