

A NEW SPECIES OF *ACANTHOCHITONA* (MOLLUSCA: POLYPLACOPHORA: ACANTHOCHITONIDAE), FROM SOUTH AUSTRALIA

by K. L. GOWLETT-HOLMES & W. ZEIDLER*

Summary

GOWLETT-HOLMES, K. L. & ZEIDLER, W. (1987) A new species of *Acanthochitona* (Mollusca: Polyplacophora: Acanthochitonidae), from South Australia. *Trans. R. Soc. S. Aust.* **111**(2), 111-114, 29 May, 1987.

A new species, *Acanthochitona saundersi* sp. nov., is described from Nuyts Archipelago, Spencer Gulf and Yorke Peninsula, South Australia. The new species most closely resembles *A. bednalli* but is distinguished from it by a narrower, deeply grooved jugum and by the spicule arrangement of the sutural tufts. The new species was located on rocks embedded in sand pockets amongst reef by divers.

KEY WORDS: Chiton, Polyplacophora, Acanthochitonidae, South Australia, *Acanthochitona*, new species.

Introduction

The chiton fauna of South Australia is relatively well known due to the past work of E. Ashby, W. G. Torr and others (Zeidler & Gowlett 1986). The last species description from South Australia was that of Weeding (1940). During studies on the Acanthochitonidae, one of us (KLG-H) located what was thought to be an aberrant form of *Acanthochitona bednalli* (Pilsbry, 1894). Later discovery of four more specimens with the same characters and from similar habitats has led us to recognise the form as undescribed. Here we describe this new species.

Materials and methods

The material reported here is deposited in the South Australian Museum, Adelaide (SAM) and was collected by "Hookah" diving. All wet material is preserved in 2% formaldehyde/propylene glycol solution. Measurements of specimens are linear when the specimen is laid flat rather than along the curved surface. The radula was removed from one of the paratypes (SAM D16698) for examination after the method of Ponder & Yoo (1976). As the holotype has not been disarticulated, diagnostic features of the articulamentum and radula are described from the above paratype. Colour descriptions follow Kornerup & Wanscher (1978).

Acanthochitona saundersi sp. nov.

FIGS 1, 2

Holotype: SAM D16699, dry, complete specimen 11.95 × 5.15 mm, collected on edge of granite slope, under sand in 8 m depth, in cove off NW point of East Franklin Island, Nuyts Archipelago, S. Aust. by K. L. Gowlett, 20.vii.1983.

Paratypes: SAM D16698, one specimen, disarticulated, in spirit 10.9 × 6.15 mm, collected on granite ledge, under sand at 6 m depth, on inside of reef off SW side of East Franklin Island, Nuyts Archipelago, S. Aust. by K. L. Gowlett, 18.vii.1983. SAM D17441, two dry complete specimens 12.8 × 6.8 mm and 8.05 × 5.4 mm respectively, collected on smooth rock, under sand at 12 m depth, on Far West Bottom, Tiparra Reef, Spencer Gulf, S. Aust. by K. L. Gowlett, 13.v.1982. SAM D17475, one complete specimen, in spirit 11.85 × 6.9 mm, collected on granite fragment in sand pocket on reef at 7 m depth, off Point Gilbert, Port Moorowie, Waterloo Bay, Yorke Peninsula, S. Aust. by N. J. C. Holmes, 29.iii.1986.

Diagnosis: Small chiton to 15 mm. Carinated. Tegmentum white to cream speckled with brownish yellow; jugum about 1/6 width of specimen with few nodulose ribs with deep narrow interspaces; beak of 4th valve with dark brown spot; pustules "U" shaped. Articulamentum white, slit formula 5/1/3. Girdle with alternating bands of white and brownish yellow; spiculate with prominent sutural tufts of various sized white spicules.

Description of Holotype: Anterior valve with five weak ribs, sculptured with distinct, random, "U" shaped pustules, smaller, but not coalescing near apex.

Median valves beaked, jugum narrow, 1/6 to 1/3 width of tegmentum, with longitudinal nodulose ribs containing deep, narrow interspaces, pustulose posteriorly. Lateropleural areas with longitudinal rows of distinct, elongated, triangular pustules near jugum; pustules becoming random and "U" shaped toward edges. Third median valve with distinct dark brown spot on beak.

Posterior valve tegmentum slightly longer than wide; jugum pustulose; antemucronal area with radially arranged, distinct, triangular to "U" shaped pustules; mucro dark brown, granulose, central;

* South Australian Museum, North Terrace, Adelaide, S. Aust. 5000.

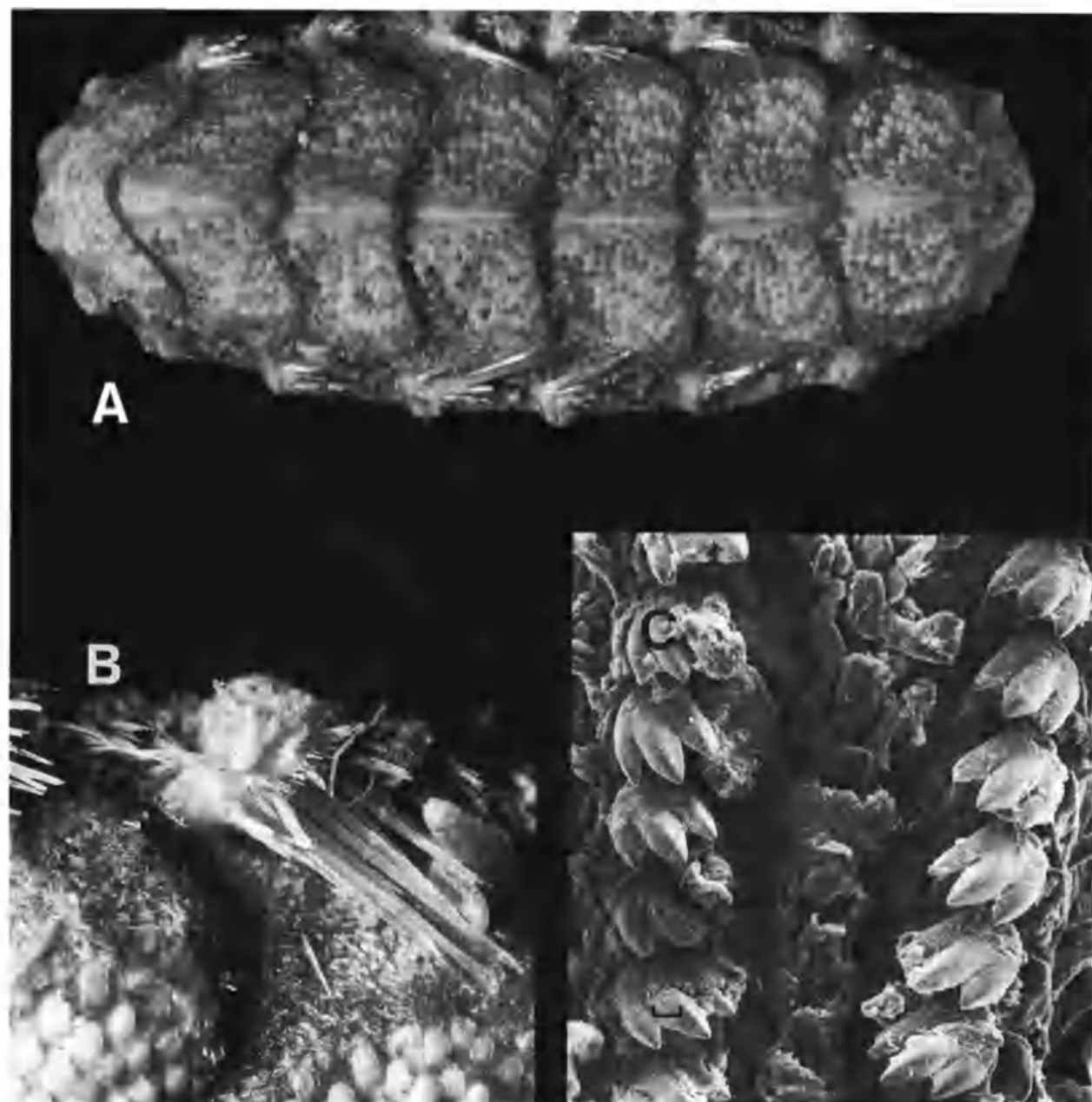


Fig. 1 *Acanthochitona saundersi* sp. nov. A. holotype, $\times 10.5$ (SAM D16699); B. girdle and sutural tuft, paratype, $\times 25$ (SAM D17441); C. radula, paratype, scale bar = $20\ \mu\text{m}$ (SAM D16698).

postmucronal area slightly concave but not steep, with distinct, random, "U" shaped pustules.

Girdle with numerous coloured, blunt-tipped spicules ($75\text{--}100\ \mu\text{m}$ long, $5\ \mu\text{m}$ wide), and sparse, long, clear, sharp-tipped spicules 4–5 times longer, more numerous toward outer edge. Some spicules in girdle encroachment at valve sutures and toward outer edge are clear, blunt-tipped, 3–5 times thicker and 2–4 times longer than coloured spicules. Sutural tufts (Fig. 1A, 1B) prominent, with many clear, tapering, sharp-tipped spicules ($100\text{--}350\ \mu\text{m}$ long, $20\text{--}30\ \mu\text{m}$ wide at base) with a few to 2 mm long, $600\ \mu\text{m}$ wide at base.

Gills merobranchial, adanal, with 11 ctenidia on right side and 10 ctenidia on left side.

Etymology: Named for Mr Frank L. Saunders (1887–1982) who, as an amateur collector, contributed significantly to the study of the chiton fauna of southern Australia and was directly responsible for one of us (KLG-H) developing an interest in chitons.

Additional Characters from Paratype: Articulamentum white; anterior valve slits 5, short, $1/6\text{--}1/5$ width of articulamentum, in short grooves $1/4\text{--}2/3$ width of articulamentum (Fig. 2A); median valve slit 1, short, $1/5\text{--}1/3$ width of articulamentum,

in shallow groove to edge of tegmentum (Fig. 2B); posterior valve slits 3, 1/3-1/2 width of articulamentum, in grooves to edge of tegmentum, articulamentum edge between teeth pectinate (Fig. 2C, 2E).

Radula (Fig. 1C) with small, rectangular, concave, central teeth, slightly narrower apically, heads weak; first lateral teeth narrow, elongate, folded around base of central teeth; major lateral teeth elongate, narrower basally, with wider tricuspidate heads, central cusp slightly longer.

Variation: Apart from slight colour variations, the four paratypes are like the holotype and vary only in the number of gills, with 12-14 ctenidia on right side and 11-13 ctenidia on left side.

Range: Central to western South Australia.

Habitat: Singly on rock embedded in fine to medium sands, in sand pockets on reefs in areas usually exposed to moderate swell.

Comparison with other species: *A. saundersi* was compared with other species of *Acanthochitona* in the collections of SAM, the Australian Museum, Sydney (AM), the Museum of Victoria, Melbourne (NMV), the Western Australian Museum, Perth (WAM) and the Tasmanian Museum and Art Gallery, Hobart (TM). It most closely resembles *A. bednalli* (Pilsbry, 1894) and superficially resembles *A. granostriata* (Pilsbry, 1894). Both *A. saundersi* and *A. bednalli* are easily distinguished from other southern Australian species, including *A. granostriata*, by the jugum which is ribbed in these two species but is smooth or pustulose in the other

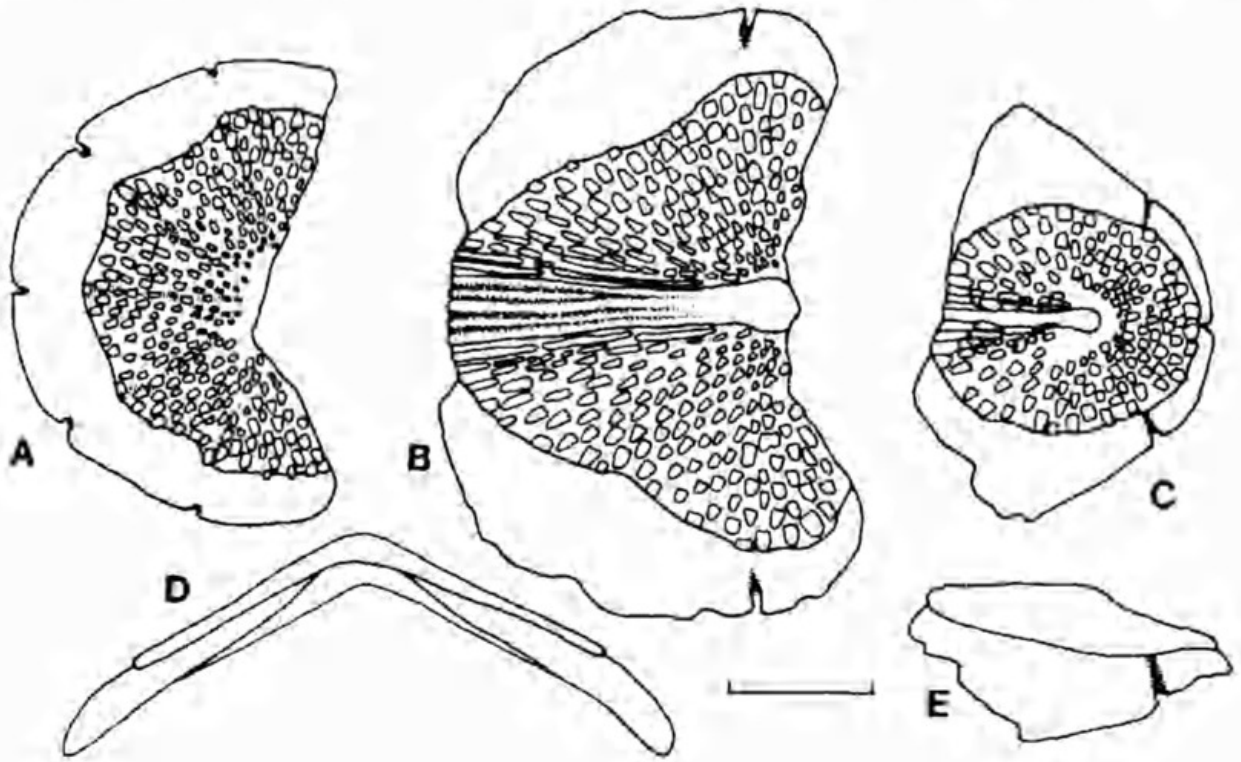


Fig. 2. *Acanthochitona saundersi* sp. nov. paratype (SAM D16698). A. anterior valve; B. median valve; C. posterior valve; D. median valve (anterior profile); E. posterior valve (side profile); scale bar = 1 mm.

TABLE 1. Distinguishing characters of *Acanthochitona bednalli* and *A. saundersi* sp. nov.

Character	<i>A. bednalli</i>	<i>A. saundersi</i>
Jugum	width approx. 1/3 width of specimen (dry); with many ribs with wide interspaces	width approx. 1/6 width of specimen (dry); with few nodulose ribs with deep narrow interspaces
Pustules on valves	elongate, drop or oval-shaped	"U" shaped
Sutural tufts	with very numerous, thin, sharp-tipped spicules, all of similar length	with fewer, slightly thicker spicules of various sizes
Colour	white and dark brown; beak of 4th valve without spot	white and brownish yellow; beak of 4th valve with dark brown spot
Habitat	intertidal, under rocks in silty areas	sub-littoral, on rock under sand, in sand pockets amongst reef

species. We consider *A. johnstoni* (Ashby, 1923) (holotype, SAM D12185) to be a synonym of *A. bednalli*, (Zeidler & Gowlett 1986). *A. saundersi* is best distinguished from *A. bednalli* by the characters given in Table 1, but is otherwise very similar.

Remarks: The kind of habitat occupied by *A. saundersi* and its relatively small size probably accounts for it not having been collected previously. It is probably rare as only five specimens have been collected despite extensive collection of chitons by SAM divers or associates for the past decade. None were found in the collections of other Australian museums.

Acknowledgments

We thank Ms M. A. Garback, Academy of Natural Sciences of Philadelphia, U.S.A., for the loan of the syntypes of *A. bednalli* (ANSP 64955) and *A. granostriata* (ANSP 64847) and the following curators and collection managers for providing data and specimens from collections held by their respective institutions: Mr I. Lock (AM), Ms S. Boyd (NMV), Dr F. E. Wells (WAM) and Ms E. Turner (TM). The photographs were taken by Mrs J. Forrest and Ms A. Renfrey (SEM). Mr Nigel Holmes is thanked for his many collecting efforts resulting in the discovery of the fifth specimen of *A. saundersi*.

References

- KORNERUP, A. & WANSCHER, J. H. (1978) "Methuen Handbook of Colour. 3rd Edition." (Eyre Methuen, London.)
- PONDER, W. F. & YOO, E. K. (1976) A revision of the Australian and tropical Indo-Pacific Tertiary and Recent species of *Pisinna* (= *Estea*) (Mollusca: Gastropoda: Rissoidae). *Rec. Aust. Mus.* **30**(10), 150-247.
- WEEDING, B. J. (1940) A new Flindersian chiton *Acutoplax cottoni*. *Trans. R. Soc. S. Aust.* **64**(1), 48-49.
- ZEIDLER, W. & GOWLETT, K. L. (1986) Mollusc type specimens in the South Australian Museum 3. Polyplacophora. *Rec. S. Aust. Mus.* **19**(8), 97-115.



Zeidler, Wolfgang. 1987. "A NEW SPECIES OF ACANTHOCHITONA MOLLUSCA POLYPLACOPHORA ACANTHOCHITONIDAE FROM SOUTH AUSTRALIA."
Transactions of the Royal Society of South Australia, Incorporated 111, 111–114.

View This Item Online: <https://www.biodiversitylibrary.org/item/128038>

Permalink: <https://www.biodiversitylibrary.org/partpdf/79437>

Holding Institution

South Australian Museum

Sponsored by

Atlas of Living Australia

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.