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BULLETIN of the PORCUPINE MARINE NATURAL HISTORY SOCIETY

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Bulletin of the

Porcupine Marine Natural History Society

No. 16 Autumn 2021

Aims of the Society

- To promote a wider understanding of the biology, ecology and distribution of marine organisms.
- To stimulate interest in marine biodiversity, especially in young people.
- To encourage interaction and exchange of information between those with interests in different aspects of marine biology, amateur and professional alike.

Porcupine MNHS welcomes new members - scientists, students, divers, naturalists and all those interested in marine life.
We are an informal society interested in marine natural history and recording, particularly in the North Atlantic and 'Porcupine Bight'.

Members receive 2 Bulletins per year (individuals can choose to receive either a paper or pdf version; students only receive the pdf) which include proceedings from scientific meetings, field visits, observations and news.

Membership fees: Individual £18 Student £10

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Cover Image: Porcupines working together during the September 2021 field trip to Oxwich Bay (Photo: Vicki Howe)

First record of a live specimen of *Acanthocardia paucicostata* (G. B. Sowerby II, 1834) from Britain and Ireland

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These in their dark nativity the deep,
With heaven's ray, and tempered, they shoot forth
So beauteous, opening to the ambient light

- Milton

In 2016, evidence was found that the poorly-ribbed cockle, *Acanthocardia paucicostata* might be living in UK coastal waters (Barfield, 2017). The 2017 publication focused on the initial dead and empty shells picked up during survey work in the Solent area. It was the first evidence that the species had made it as far north as the south coast of England. But no live specimens had been recovered at that time. A short summary, and some additional images, are available at the Sea-nature Studies website (see the link at the end of this article).

On September 26th 2019, some three years after the first discovery and, after picking up many more dead examples in the intervening years, a single live specimen was found in the Solent where previously, dead examples had been frequently encountered. It was stranded high on the shore where the tidal-flat meets the slope of the sand/gravel beach. There were many other shells of different species and some debris strewn along the shoreline at this height. Six images of the live specimen, from different viewpoints, are provided here (Figures 1–6). The dimensions of the shell were 28.95mm (length) x 25.28mm (width) x 19.50mm (breadth).

The specimen was in good condition and clearly live, as it opened and shut whilst held and resisted being opened when this was attempted (Figures 1–6). As is evident from the imagery presented here, all visible features are consistent with those attributed to *A. paucicostata*. In particular, the presence of 18 widely spaced, strong radial ribs in each valve; the cross-section of the ribs shows them to be quite angular, broad and low, as opposed to being more rounded and narrow; the striations which run between and across the ribs are very fine; and, the shell itself fits the description of being thin, but not fragile. The UK species it might potentially be confused with is *A. echinata*. However, that species has 18–22 radial ribs, which are less broad and more rounded in shape; the striations are less fine than those in *A. paucicostata;* and, the shell itself is robust rather than thin (Oliver *et al*. 2016).

Note that the number of ribs, or costae, are relatively few in comparison to other species in the genus, hence '*paucicostata*', or 'poorly-ribbed' (Figure 3). In fact a previous common name was the more prosaic, 'The Few-Ribbed Cockle'. The original description of the species as provided by Reeve (1843) refers to the ribs as, "flatly convex" (Figure 4), "keeled in the middle, keel armed with scale-like spines, interstices concave, wide, crisply wrinkled" (Figures 3, 4 & 6).

Verification of this record was sought from Anna Holmes at the National Museum Wales who has seen the images of the live specimen presented in this article.

To date only this single live specimen has been found, though in the opinion of the author, where there was one, there will be others, not least given the abundance of empty shells.

A map showing the location of both specimens is provided (Figure 7) and a short video presentation of the shore that day and, the specimen prior to freezing, can be seen by following the link to YouTube provided at the end of this article.

It is highly likely that the live specimen was flushed out and washed up by harsh weather in the period just prior to Thursday 26th September 2019 (weather which continued for some days afterwards). Informal field notes from the day indicate that the conditions were 'wild' with very strong winds, gusting to more than 30 knots. It was also noted that there was clear evidence of physical disturbance to the intertidal area as a result of these conditions.

Fig. 1: In situ *photograph of the live specimen as encountered in the field, 26th September 2019, Solent, UK*

Fig. 2: In situ *close up of the live specimen, 26th September 2019, Solent, UK*

Fig. 3: Acanthocarida paucicostata *(left valve), 26th September 2019, Solent, UK.*

Fig. 4: Ventral view of Acanthocarida paucicostata*, 26th September 2019, Solent, UK.*

Fig. 5: Dorsal view of Acanthocarida paucicostata*, 26th September 2019, Solent, UK.*

Fig. 6: Acanthocarida paucicostata*, gaping, 27th September 2019, UK.*

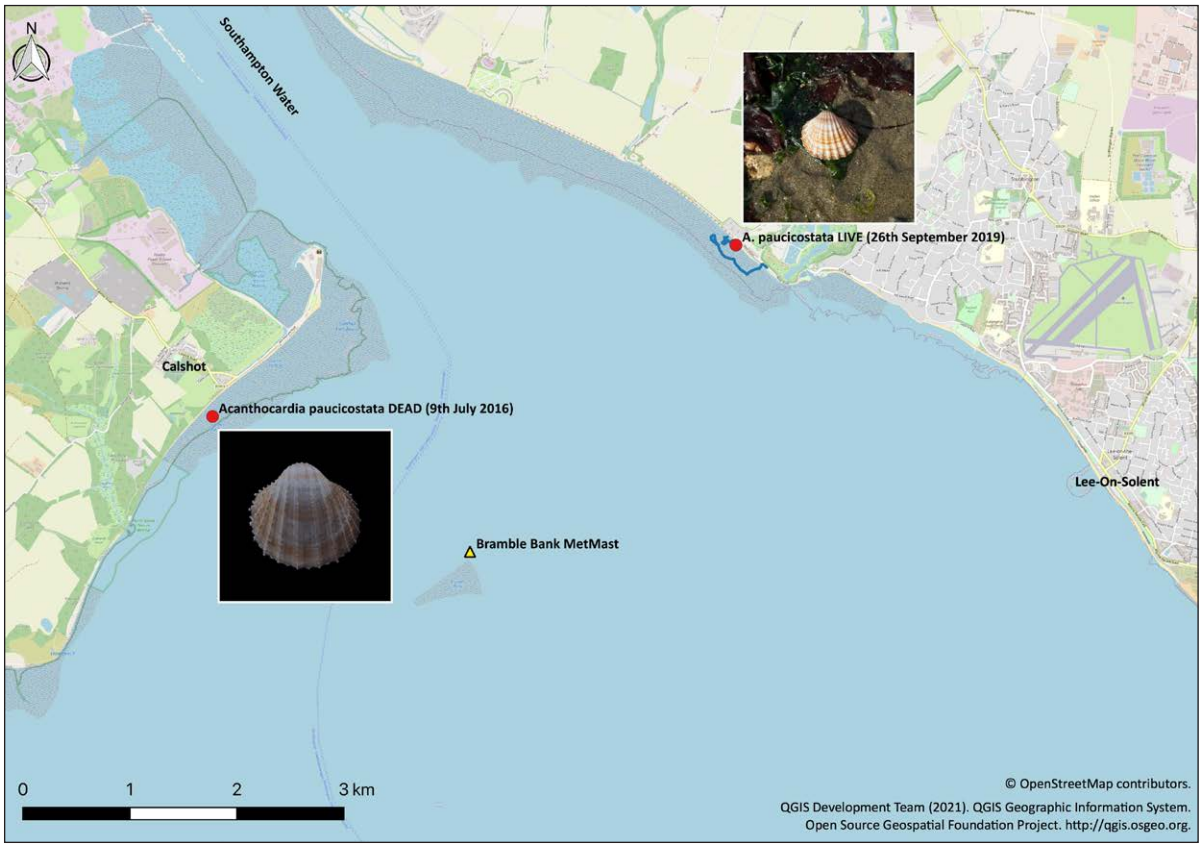

Fig. 7: The location of the dead and live specimens of Acanthocardia paucicostata

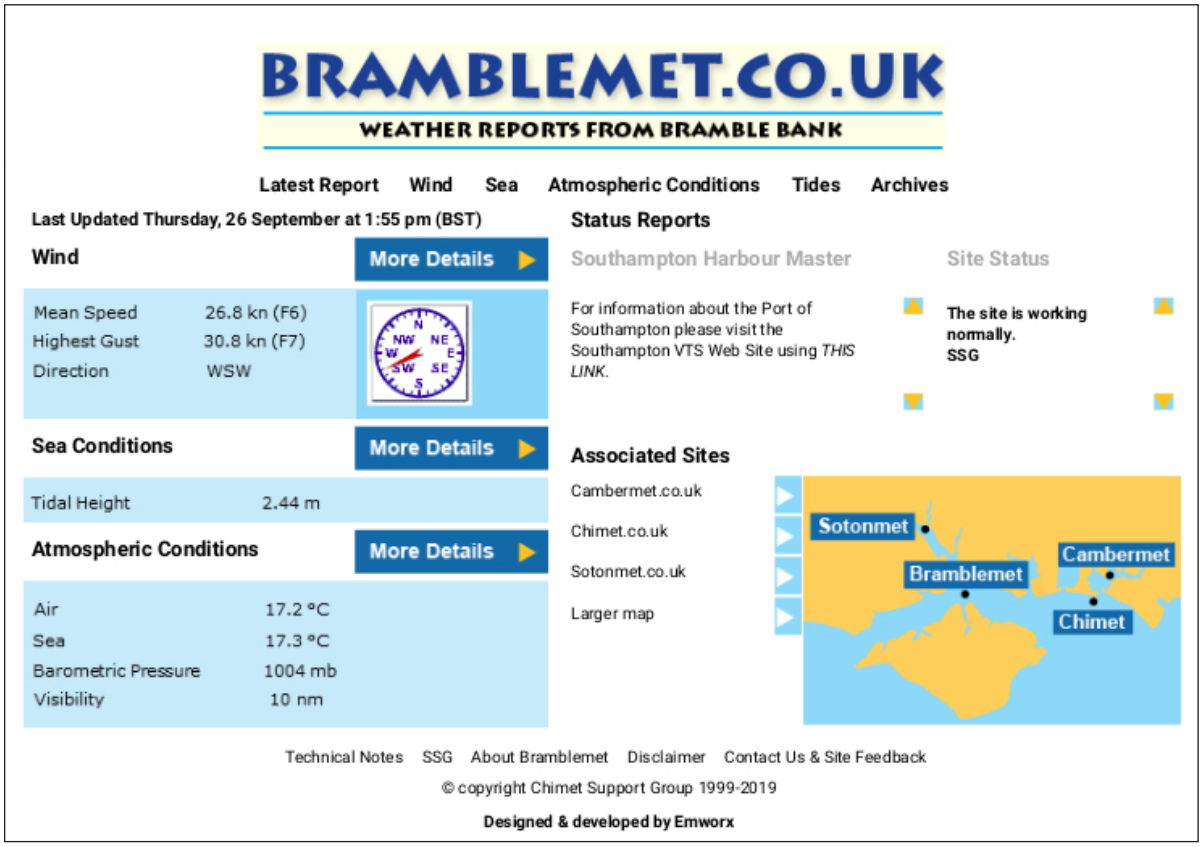

Fig. 8: Environmental conditions as recorded by Bramblemet, 26th September 2019

Data taken from the Bramblemet meteorological mast (Figure 7 & Figure 8) and, the Channel Coastal Observatory (CCO) wave-rider buoy off Milford-on-Sea, confirmed the weather and environmental conditions. For those not familiar with Bramblemet the site notes that it 'is a comprehensive weather information system, recording weather conditions in the Central Solent, both in real-time and historically'. It is located on the Bramble Pile roughly equidistant from Cowes, Calshot and Hill Head in the Solent and about 3.5km from the location where the live specimen was found.

In fact, the wave-rider data indicated that the 2.8m storm threshold, presented by the CCO for the site off Milford-on-Sea, had been exceeded with wave heights in access of 3m prior to the find on September 26th. This is of some importance because typically such extremes are considered likely to result in the movement of 'significant quantities' of beach material. This is clearly consistent with what was observed on the shore.

Speculation as to how the species has achieved the evident range expansion northwards into the English Channel has been presented previously (Barfield, 2017).

I hope this short article encourages your own intertidal rambles because this is the heart of observational science, elemental natural history. There are nuggets of hitherto hidden data, right beneath our feet, made invisible by those voices which would argue that this is not a 'serious activity'; that discovery must be mandated; or that, "there is nothing new under the sun". But there is, for those who look, and I'm bound to say, Porcupines are very good at truffling around, by and in, the sea.

Additional information

Sea-nature Studies:

https://www.seanature.co.uk/acanthocardia_paucicostata.html

Sea-nature Studies YouTube Channel, link to the video evidence for this live find:

https://youtu.be/CdXbs20TcYg

Environmental data sources

Bramblemet:

https://bramblemet.co.uk/(S(po4pt145a1llzv45xsdvbbep))/default.aspx

Channel Coast Observatory (CCO):

https://www.channelcoast.org/realtimedata/?chart=73&tab=waves).

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Reeve, L. A. 1843. *Conchologia iconica, or, Illustrations of the shells of molluscous animals, 1843-1878. Volume 2, Monograph of the Genus* Cardium. London: Reeve, Brothers. Available from: https://www.biodiversitylibrary.org/item/35859 [Accessed: 29 December 2020].

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Title should be concise, informative and in bold type. Include author(s) names each with one full Christian name. In multiauthored contributions, the last name is separated by an ampersand, e.g., John Smith, David G. Jones & Susan White.
Include any institution/place of residence & contact details to appear with your name at the beginning of your article. Multiple author addresses can be linked to authors by superscript numerals.

Text

- Times New Roman font, 12pt, single line spacing, saved as a Word document (.doc/.docx)
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- Reference tables & figures in the text as Figure 1, Table 1 etc. and in legends as Table 1: , Fig. 1: (individual parts A, B etc should be described also).
- Indicate where figures should be placed e.g. Insert Fig.1 here (send image files separately to text)

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- Graphs, histograms, etc. can be supplied as line drawings, or Excel files, each saved as a separate sheet

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Scientific names
Latin names should be italicized. The entire scientific name should be given in full the first time it is mentioned, but thereafter the genus can be abbreviated — except at the beginning of a sentence. Authorities for taxa follow standard taxonomic guidelines, with a comma before the date; e.g., *Zeuxo holdichi* Bamber, 1990; *Melinna albicincta* Mackie & Pleijel, 1995; *Neanthes irrorata* (Malmgren, 1867).

References

- Do not leave a line space between references. Journal titles should be cited in full.
- Citations in text: ….Brown & Lamare (1994)…or... (Brown & Lamare 1994)…, Dipper (2001)… or…(Dipper 2001).
- The main reference styles are as follows:

Brown, M.T. & Lamare, M.D. 1994. The distribution of *Undaria pinnatifida* (Harvey) Suringar within Timaru Harbour, New Zealand. *Japanese Journal of Phycology* **42**: 63–70.

Dipper, F.A. 2001. *Extraordinary Fish*. BBC Worldwide Ltd, London. 96pp.

Ellis, J.R., Lancaster, J.E., Cadman, P.S. & Rogers, S.I. 2002. The marine fauna of the Celtic Sea. In J.D. Nunn (Ed) *Marine Biodiversity in Ireland and adjacent waters*. *Proceedings of the ECSA Conference, 26-27 April 2001*. Ulster Museum, Belfast. pp. 83-82.

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