

194-13 - ENIGMATIC ECHINODERM: OLDEST POST-ORDOVICIAN MEMBER OF THE OPHIOCISTIOIDEA?



Tuesday, 24 September 2019



9:00 AM - 6:30 PM



Phoenix Convention Center - Hall AB, North Building

Booth No. 175

Abstract

A possible ophiocistioid echinoderm is reported from Telychian (Llandovery, Silurian) strata (Cybèle Member, Jupiter Formation) of Anticosti Island, Québec, Canada. This fossil is preserved along the concave, inner surface of an orthocone cephalopod mold. It consists of a subcircular disc with a large eccentric pore and ten partial or complete, narrow appendages. The central disc is approximately 4 mm in diameter and the entire organism was as much as 30 mm in diameter. Faint remnants of apparent tessellate plating exist on the central disc and appendages. The style of plating, ten appendages, and a large eccentric pore on the aboral surface rule out clades other than the Ophiocistioidea.

If an ophiocistioid, the aboral surface of the theca is covered with small plates and has an eccentric periproct. It has ten plated tube feet (two per ray) that extend beyond the theca and are visible from an aboral view. Plates on the theca and tube feet meet primarily in triple junctions, which is characteristic for tessellate plating. The generic assignment of this specimen is unresolved at this time, but this putative ophiocistioid shares similarities with some members of the Eucladidae and Sollasinidae. Anticosti Island strata record both Late Ordovician mass extinctions and the earliest Silurian recovery of benthic shelly faunas. If an ophiocistioid, this is the oldest, post-Late Ordovician extinction ophiocistioid known.

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Museum of Paleontology and Evolution

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Session

194: D18. Paleontology: Diversity, Extinction, Origination (Posters)



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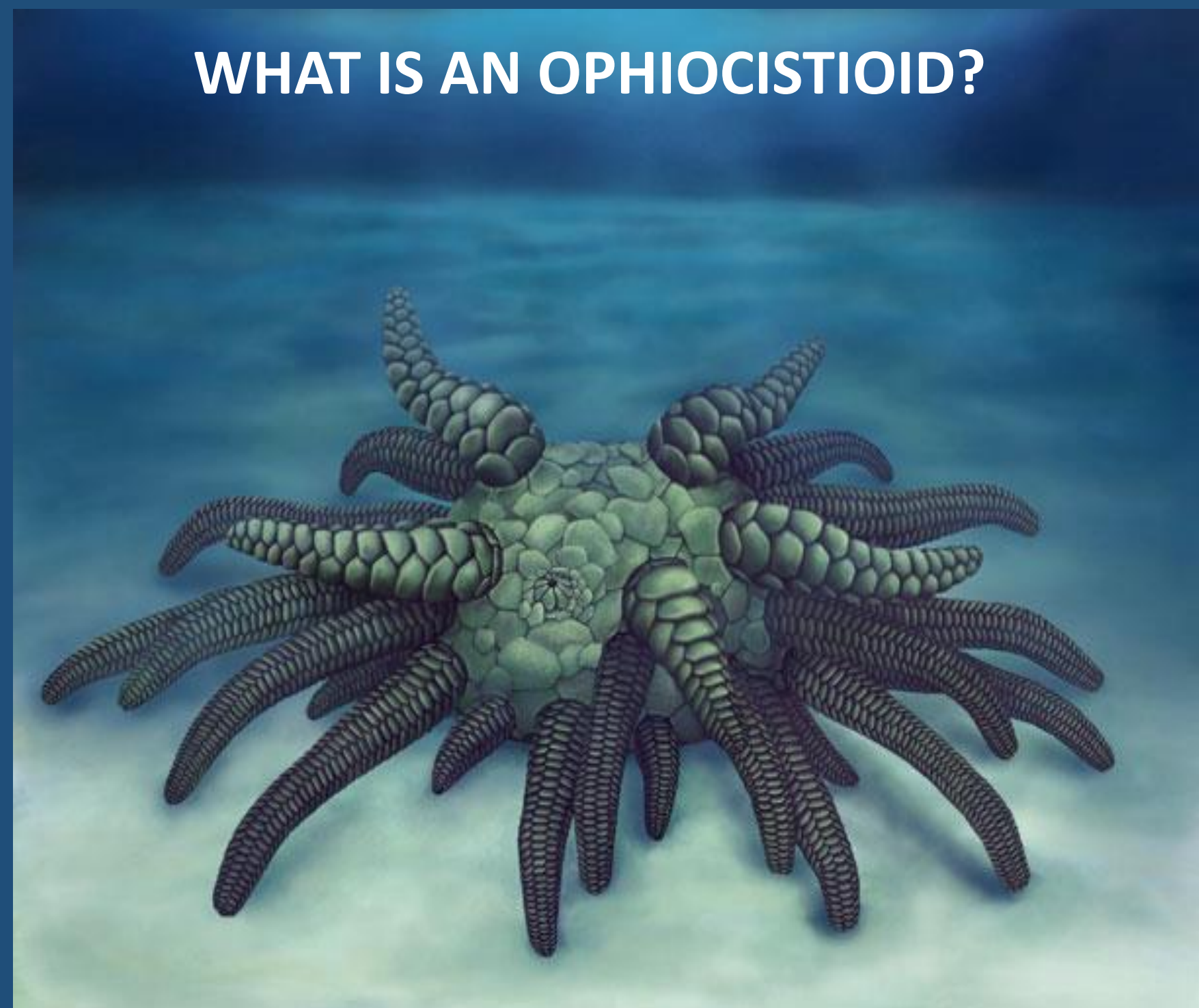
ENIGMATIC ECHINODERM: OLDEST POST-ORDOVICIAN MEMBER OF THE OPHIOCISTIOIDEA?

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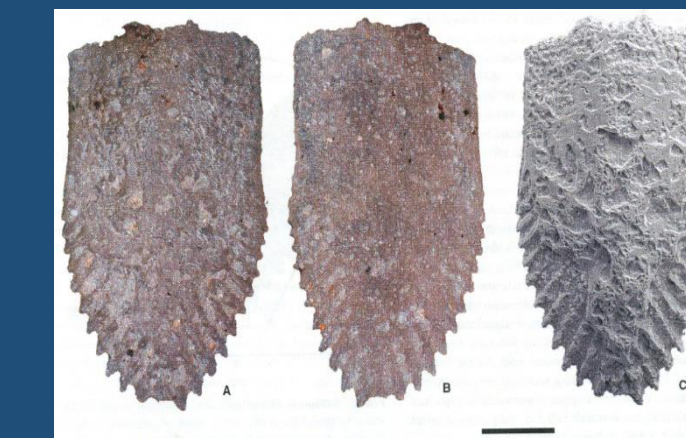
WHAT IS AN OPHIOCISTIOID?



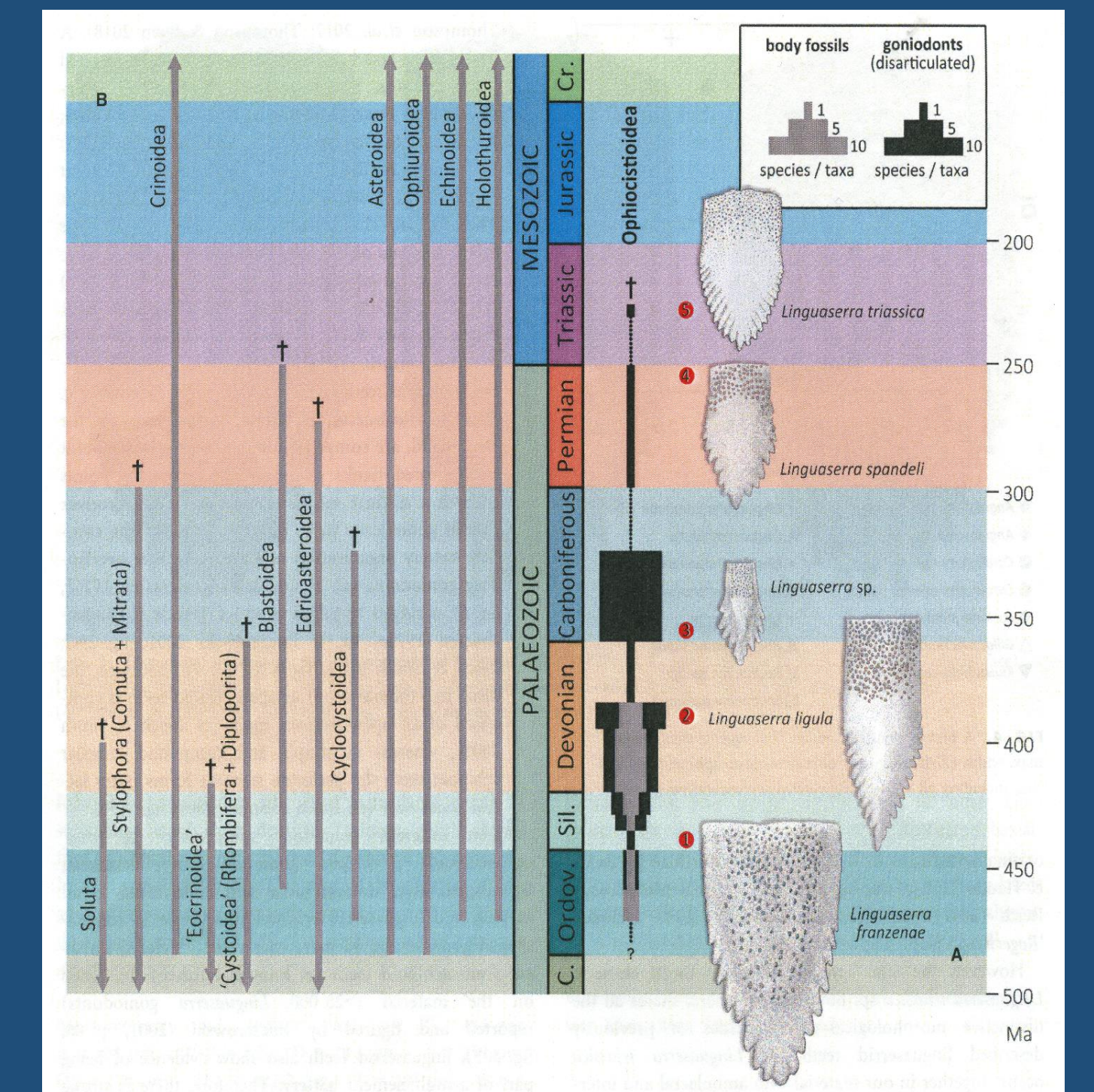
drawing by Elissa Martin; from Rahman et al., 2019

Ophiocistioids are rare echinoderms and regarded as a class that is a paraphyletic group of stem holothurians. They were free-moving benthic echinoderms and are known from the Middle Ordovician to the Middle Triassic. They have a subelliptical to pentaradiate theca (test) that was either plated, speculate or devoid of skeletal elements. The oral surface (down during life) had a central jaw apparatus with goniodonts ("serrated teeth") and five ambulacra lined with small to large, plated, speculate, or non-skeletal tube feet. An internal structure may be the ring canal of the water vascular system. The periproct is eccentric on the aboral surface, and distal tube feet may extend beyond the theca.

Sollasina cthulhu Rahman et al., 2019 is an exceptionally preserved specimen. Typically thecae are rare and poorly preserved. The bulk of ophiocistioid fossils are goniodonts isolated from washed residues.

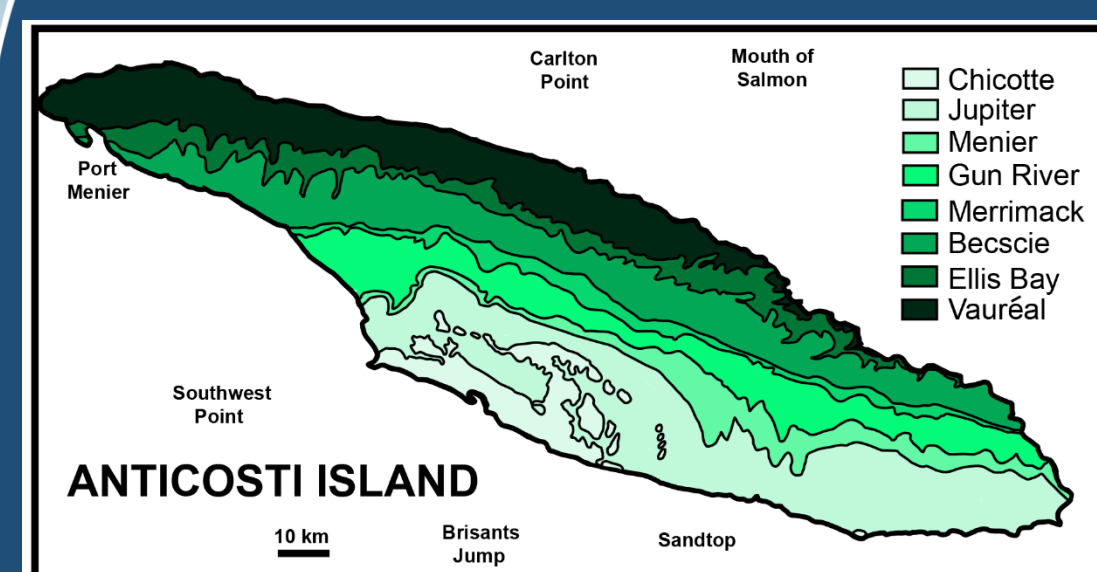


from Reich et al., 2018



from Reich et al., 2018

Anticosti Island Geologic Map



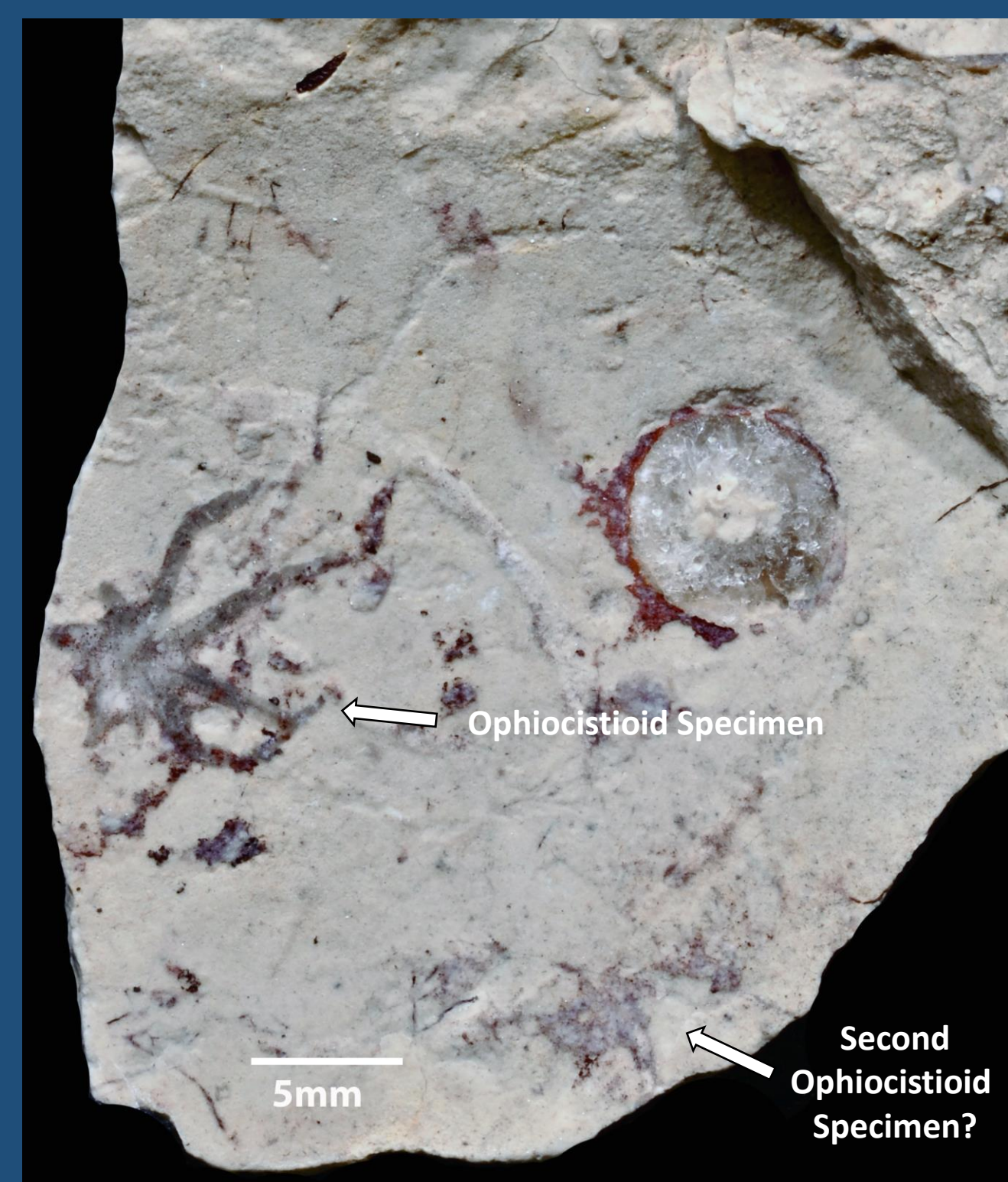
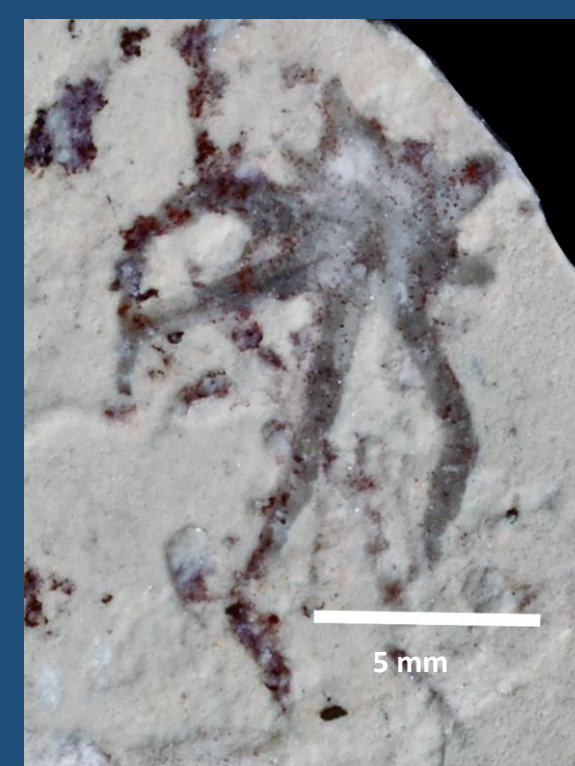
ANTICOSTI SPECIMEN AS AN OPHIOCISTIOID

Is this an ophiocistioid? This enigmatic fossil is from the Telychian (Llandoverly, Pavillon Member, Jupiter Formation) of Anticosti Island, Québec, Canada. It may be an ophiocistioid based on the following characteristics: subcircular disc, style of plating on the theca, large eccentric pore (periproct?) on aboral surface, ten (two per ray) partial or complete, long narrow plated appendages, and a central internal structure that may be a ring canal.

Apparent tessellate plating on the central theca and tube feet are not typical for ophiocistioids. If not an ophiocistioid, is it an asteroid, echinoid, ophiuroid, ???, or leaverite?

Previously, Telychian ophiocistioids were only known from goniodonts.

Photographed under water

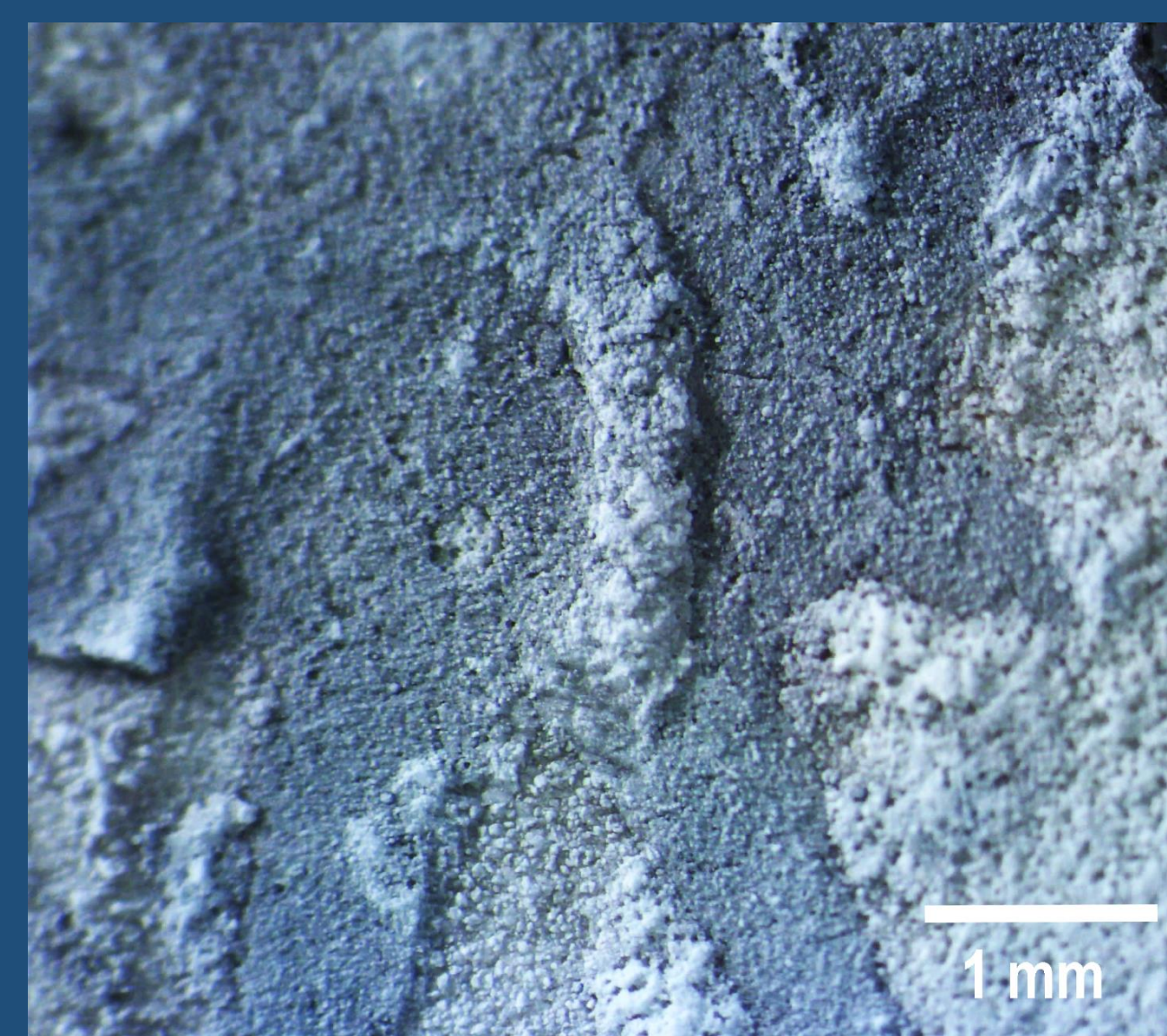


Ophiocistioid Specimen

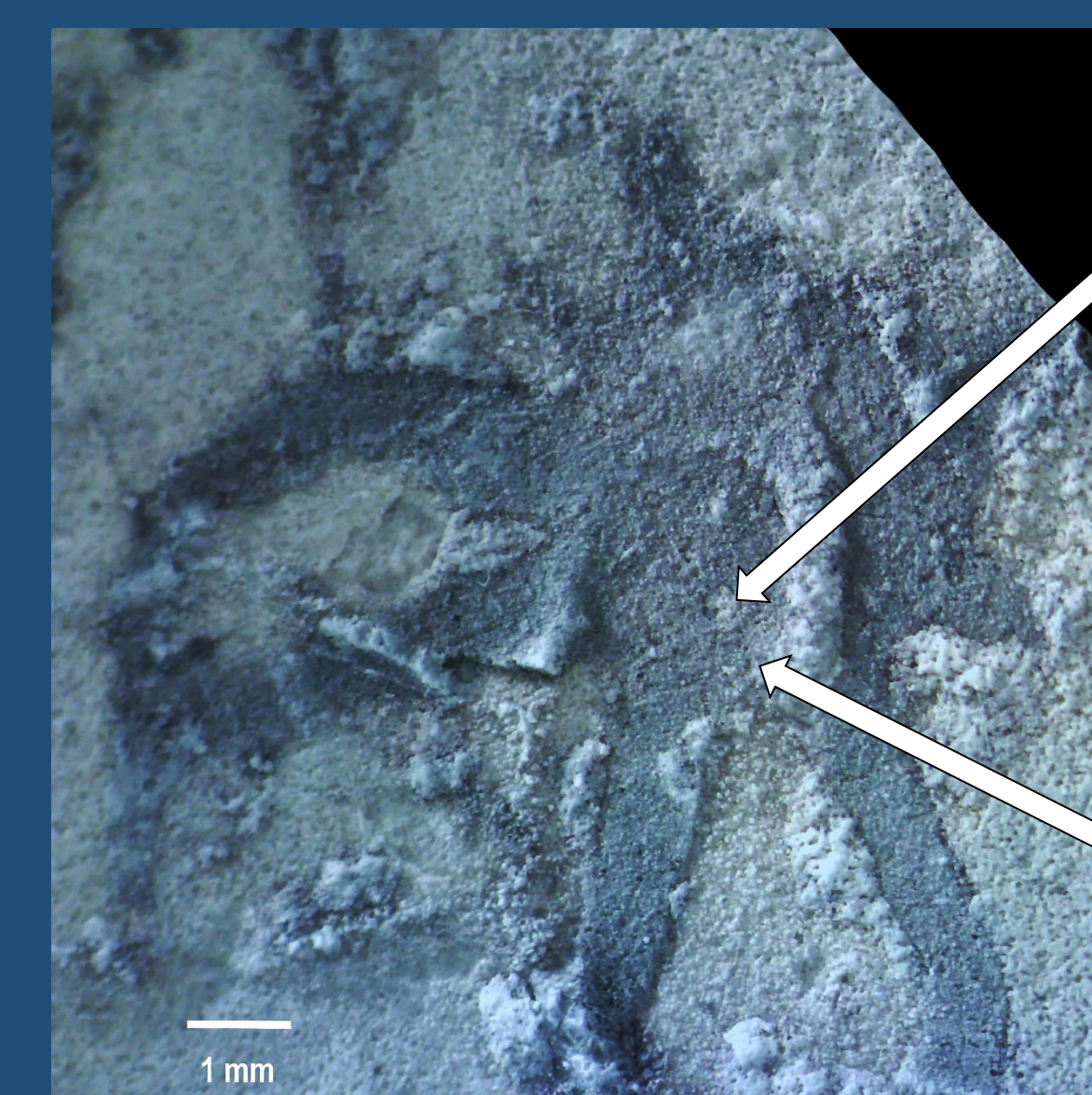
Second Ophiocistioid Specimen?



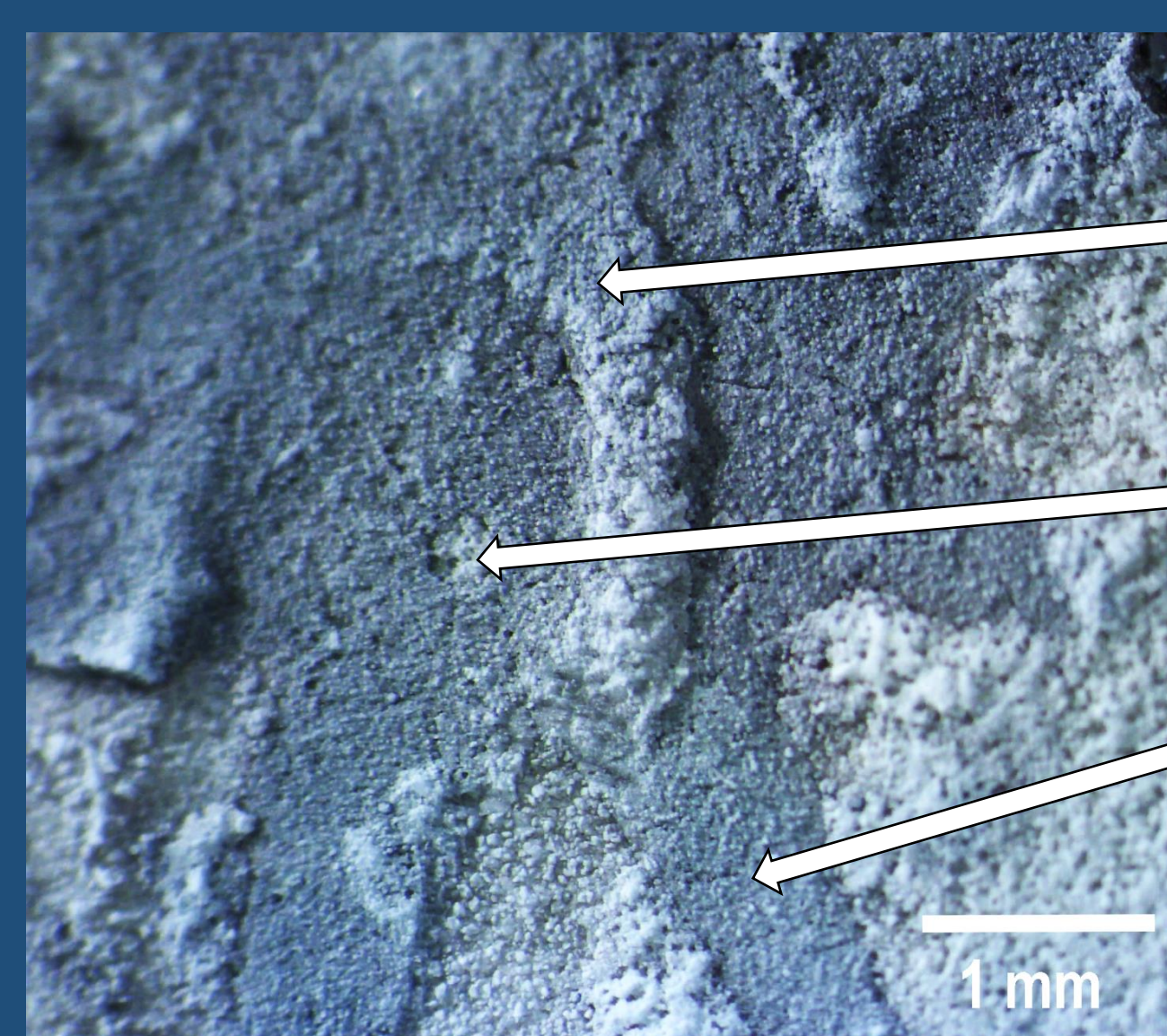
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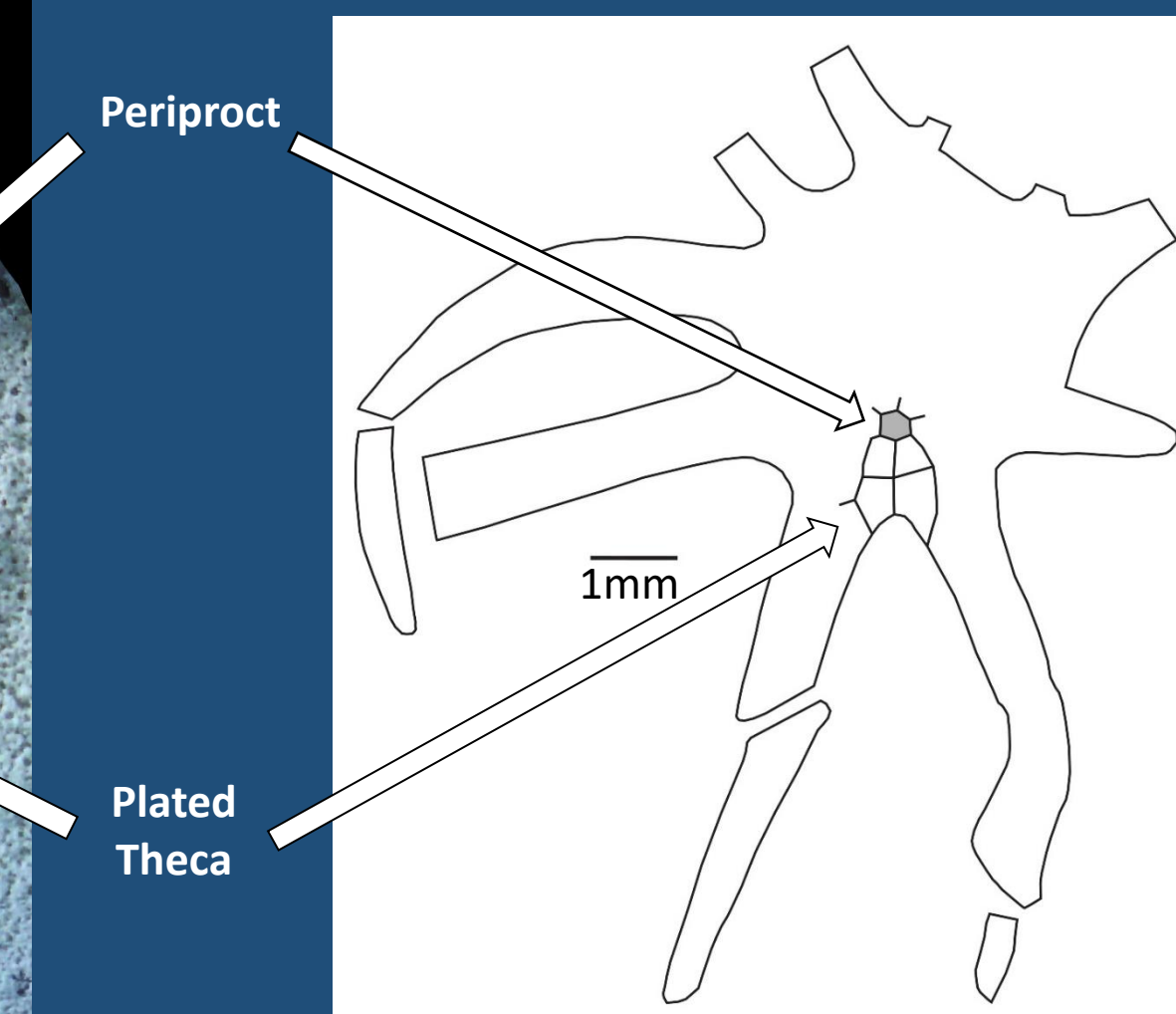
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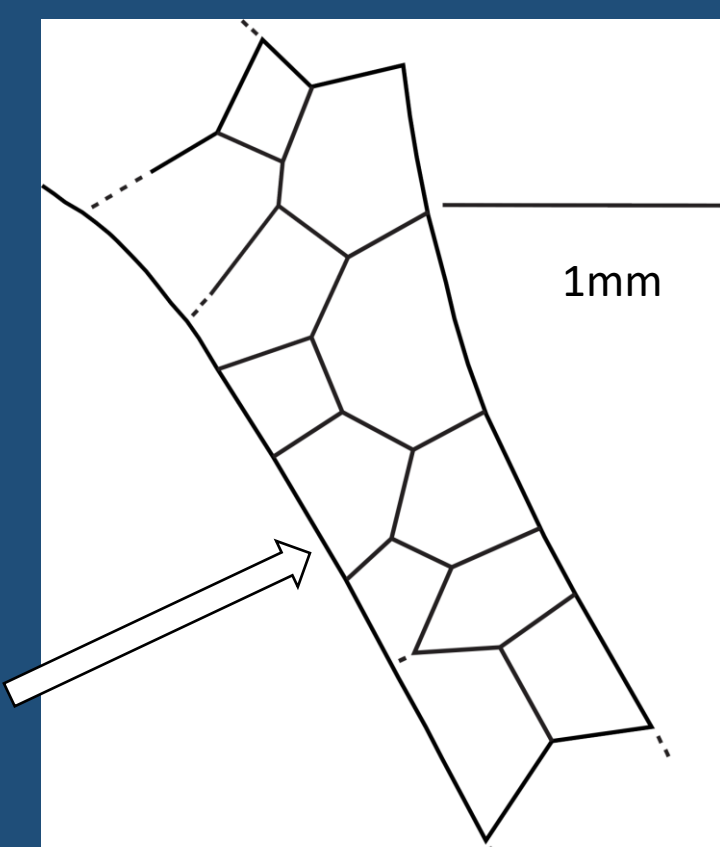


1 mm



Periproct

Plated Theca



???????

Periproct

Plated Tube Foot

1mm

REFERENCES

Rahman, I.A., J.R. Thompson, D.E.G. Briggs, D.J. Siveter, D.J. Siveter, and M.D. Sutton. 2019. A new ophiocistioid with soft-tissue preservation from the Silurian Herefordshire Lagerstätte, and the evolution of the holothurian body plan. *Proc. Royal Society, B*, 286 [http://dx.doi.org/10.1098/rspb.2018.2792]

Reich, M. 2010. Evolution and diversification of ophiocistioids (Echinodermata, Echinozoa), p. 51-54. In L.G. Harris, S.A. Böttger, S.A. Walker, and M.P. Lesser (eds.), *Echinoderms Durham: Proc. of the 12th International Echinoderm Conference*, Taylor and Francis.

Reich, M., and R. Haude. 2004. Ophiocistioida (fossil Echinodermata): an overview, p. 489-4494. In T. Heinzeller and J.H. Nebelsick (eds.), *Echinoderms München: Proceedings of the 11th International Echinoderm Conference*, A.A. Balkema.

Reich, M., T.R. Stegemann, I.M. Hausmann, V.J. Roden, and A. Nützel. 2018. The youngest ophiocistioid: a first Palaeozoic-type echinoderm group representative from the Mesozoic. *Palaeontology*, 61: 803-811.