

Supplementary online materials

Phyllozoon and *Aulozoon*—key components of a novel Ediacaran death assemblage in
Bathtub Gorge, Heysen Range, South Australia

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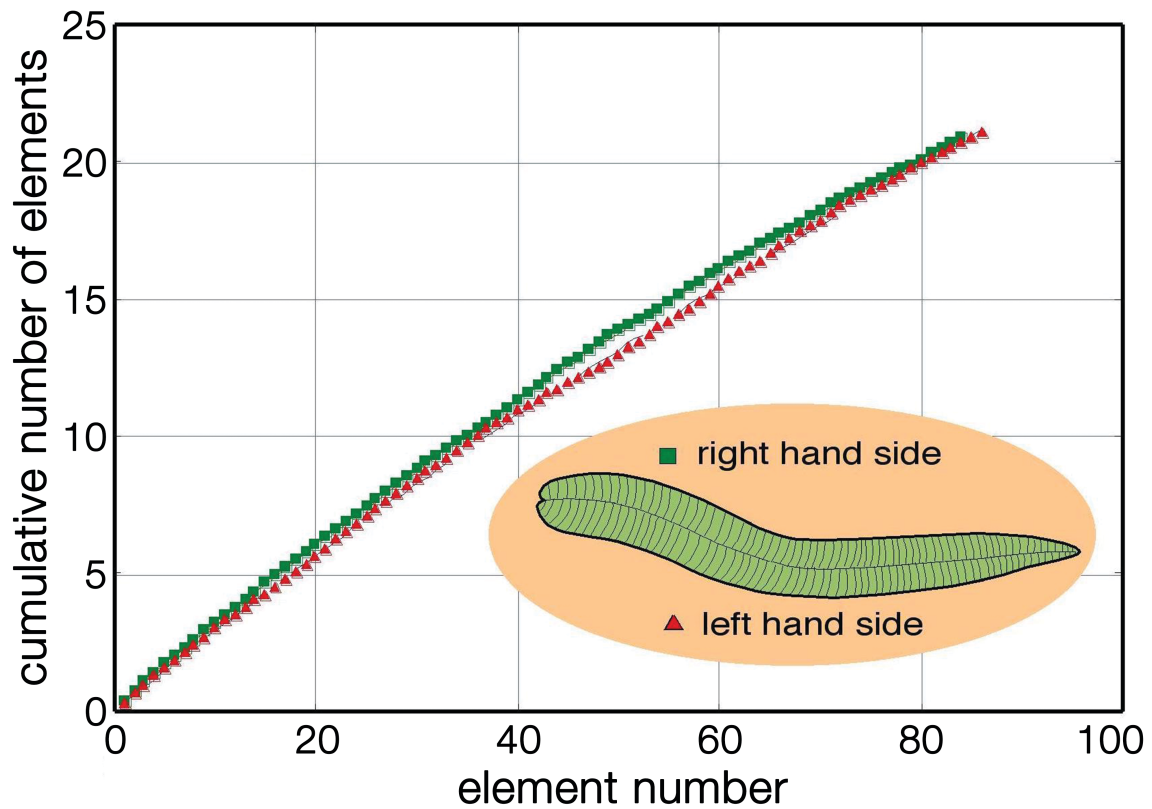


Fig. S1. Growth of *Phyllozoon hanseni* based on measurements of the width of right and left side modules of a nearly complete frond (Fig. 7e). Frond growth is thought to have resulted from the distal tip addition of laterally alternating tubular modules.



Fig. S2. Bottom right of Bathtub slab (Fig. 5, inverted in this image). Arrow points to a paratype of *Aulozoon soliorum*, SAM P58400, which is apparently overlain by *Phyllozoon hanseni*; 25 mm Australian \$1 coin for scale.

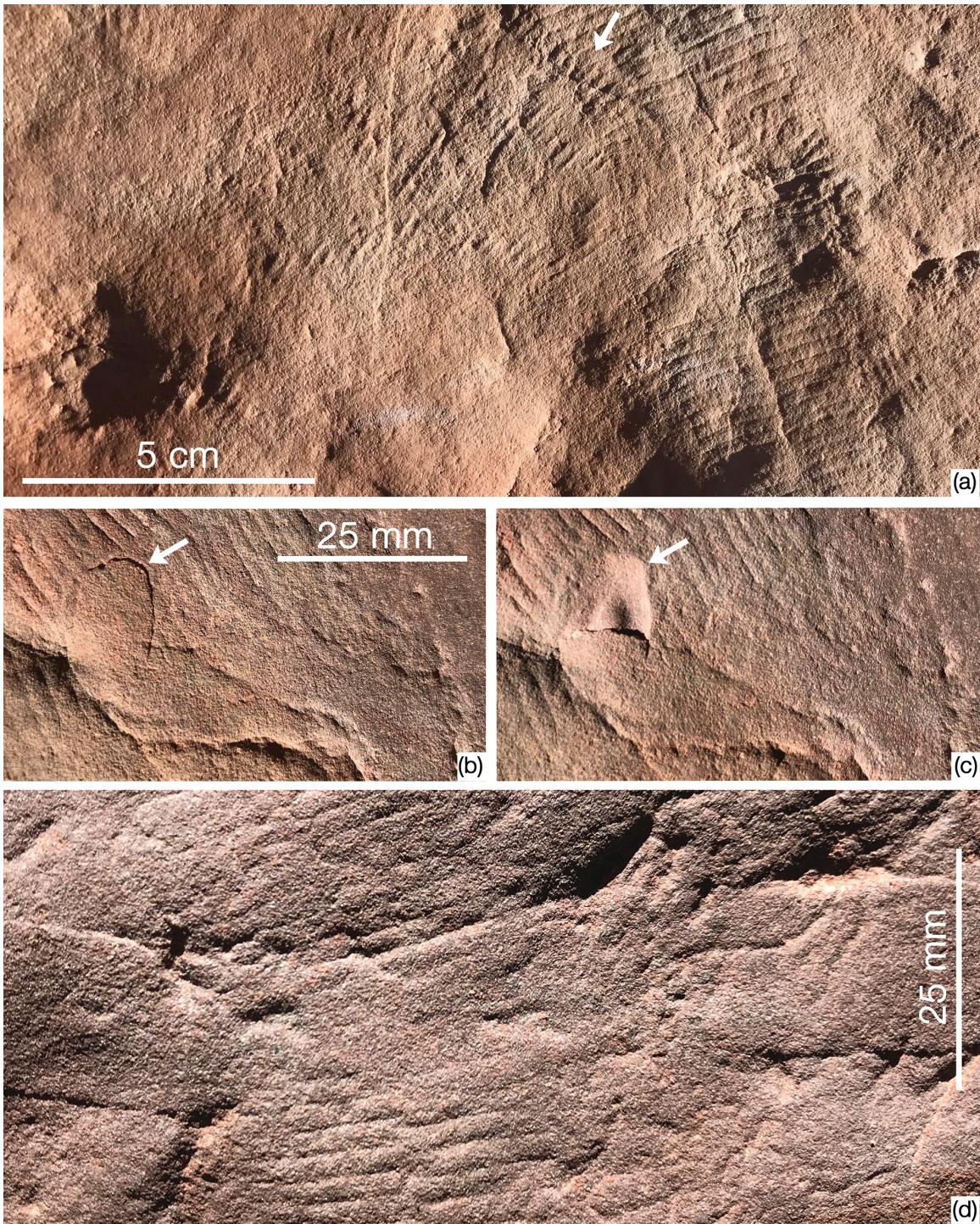


Fig. S3. Preservation and taphonomy of *Aulozoon*, *Kimberichnus* and *Phyllozoon* on the Bathtub slab surface. (a), part of the base of a slab with several specimens of *Phyllozoon* and several fan-shaped arrays of the scratch traces *Kimberichnus teruzzi*; whether or not the scratch marks were there first or were cut through a prostrate *Phyllozoon* frond, dead or alive, is a key taphonomic question. (b)-(c), before and after images of a taphonomic

experiment, suggested by an anonymous reviewer. In (b), a sand filled *Aulozoon* tube ending in a rounded termination apparently underlies a specimen of *Phyllozoon*; the expectation that removal of part of the tube would reveal the overlying *Phyllozoon* was not realized (c). (d), a case where the *Phyllozoon* was clearly beneath the *Aulozoon*. (a), a slab found loose in Bathtub Gorge, SAM P35664; (b)-(c), in situ pieces of the slab surface removed at the same time, SAM P35692 and SAM P35691, respectively.



Fig. S4. Field photograph of closely packed and aligned specimens of *Phyllozoon hanseni* on a bed base, lower Nilpena Sandstone Member, Mt Abrupt, Heysen Range (Fig. 2).

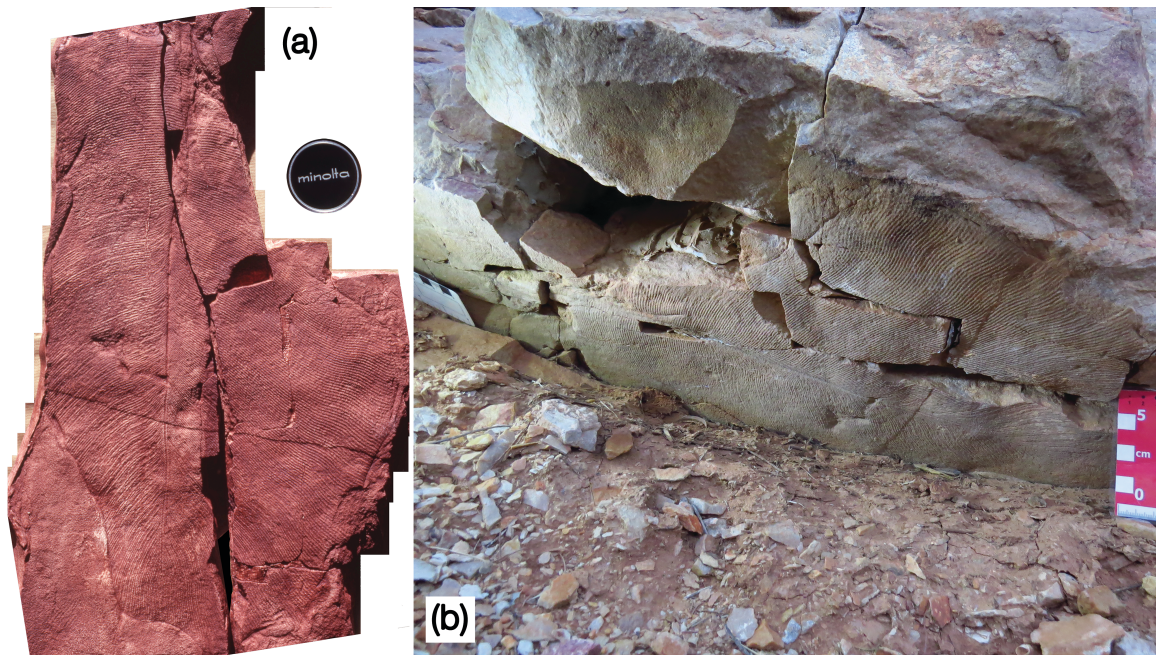


Fig. S5. Anterior half of ~1 metre-long specimen of *Dickinsonia rex*, lower Nilpena Sandstone Member, Rawnsley Quartzite, Brachina Gorge. (a), plaster cast of whole specimen, anterior down; 55 mm diameter lens cap for scale. (b), specimen in situ in Brachina Gorge following restoration, anterior to right. The specimen was discovered in 1984, half was removed for conservation purposes with the permission and assistance of the National Parks and Wildlife Service, South Australia and the local Indigenous community. Plaster casts were made and donated to both National Parks and the South Australian Museum (SAM P27980). The removed parts were reassembled and then reattached to the thick sandstone event bed in Brachina Gorge by Jo Bain in ~2015, who kindly supplied this image.



Fig. S6. *Dickinsonia rex* from the lower Nilpena Sandstone Member, Rawnsley Quartzite in section S31, east end of the Chace Range (a) and in situ on the base of a thick sandstone bed, 7.5 m level of section 1 (Fig. 3), lower Nilpena Sandstone Member, Bathtub Gorge (b); 25 mm Australian \$1 coin in (a) for scale. The fossil in (b) was figured by Jenkins (1992, fig. 14) when he proposed *rex* as a replacement name for *D. elongata* Glaessner and Wade 1966; it may therefore be considered a de facto paratype. It is 420 mm in length (left and right arrows) and the constriction that begins the ‘beaver tail’ is 77 mm wide (up and down arrows).

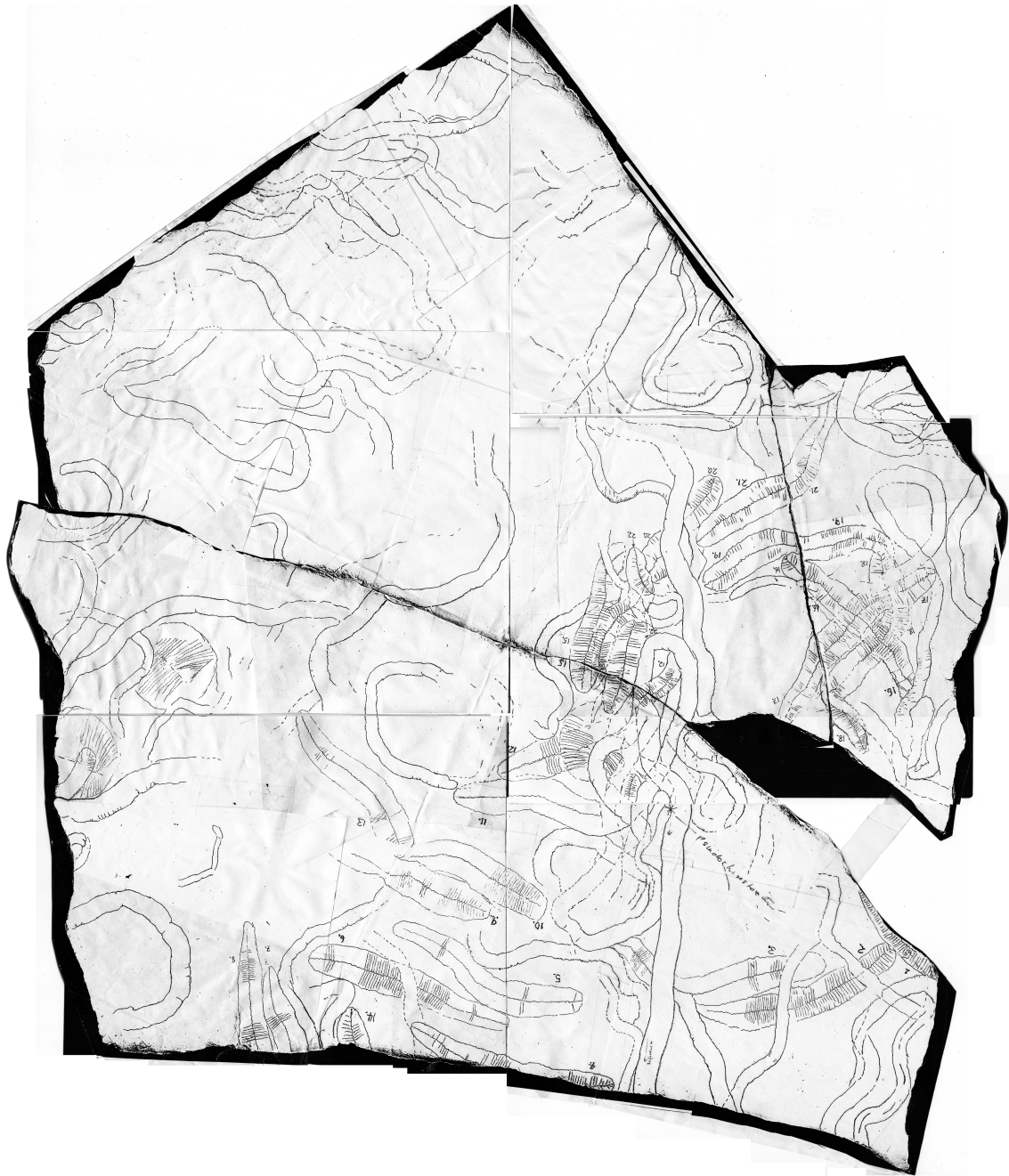


Fig. S7. Working sketches for the line drawing of the Bathtub slab shown in Fig. 5. As explained under methods, the three separated pieces of the assembled slab were cast in dental plaster from latex moulds and the outlines of the fossils were drawn directly on the plaster casts. Photocopies at half original size were then assembled to make an accurate base from which the linework for Fig. 5 could be traced. This is a scanned version of the photocopied mosaic.