

At the Water's Edge: Temporarily reuniting 375 mya tetrapod fossils

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Abstract:

In the early 19th century, fossil collectors found bone fragments in Devonian rocks at Scaat Craig, Moray. A review in 1991 by (Professor) Per Ahlberg, a colleague of the late Jenny Clack, correctly identified some of the 'fish' bones as early tetrapod remains; he subsequently named this animal *Elginerpeton pancheni* in 1995.

Elgin Museum has no tetrapod fossils in its Recognised collection and, to mark the Scottish Government's *Year of Coasts and Waters*, plans were made to return the remains of the 'crawler from Elgin' to its home ground, albeit temporarily. Volunteers worked with staff from National Museums Scotland (NMS) to facilitate the loan of their fossils, which were supplemented by loans from the British Geological Survey (BGS) and Oxford University Museum of Natural History (OUMNH): none of this material has been displayed before. Funding for an exhibition was secured from the Weston Loan Programme with Art Fund.

Tetrapod models were provided by a private collector and a specialist 3D plastic printing firm reproduced an earlier tetrapod trackway from Tarbat Ness, captured in latex in 1990 for OUMNH; this footprint data has now been shared with an international review team.

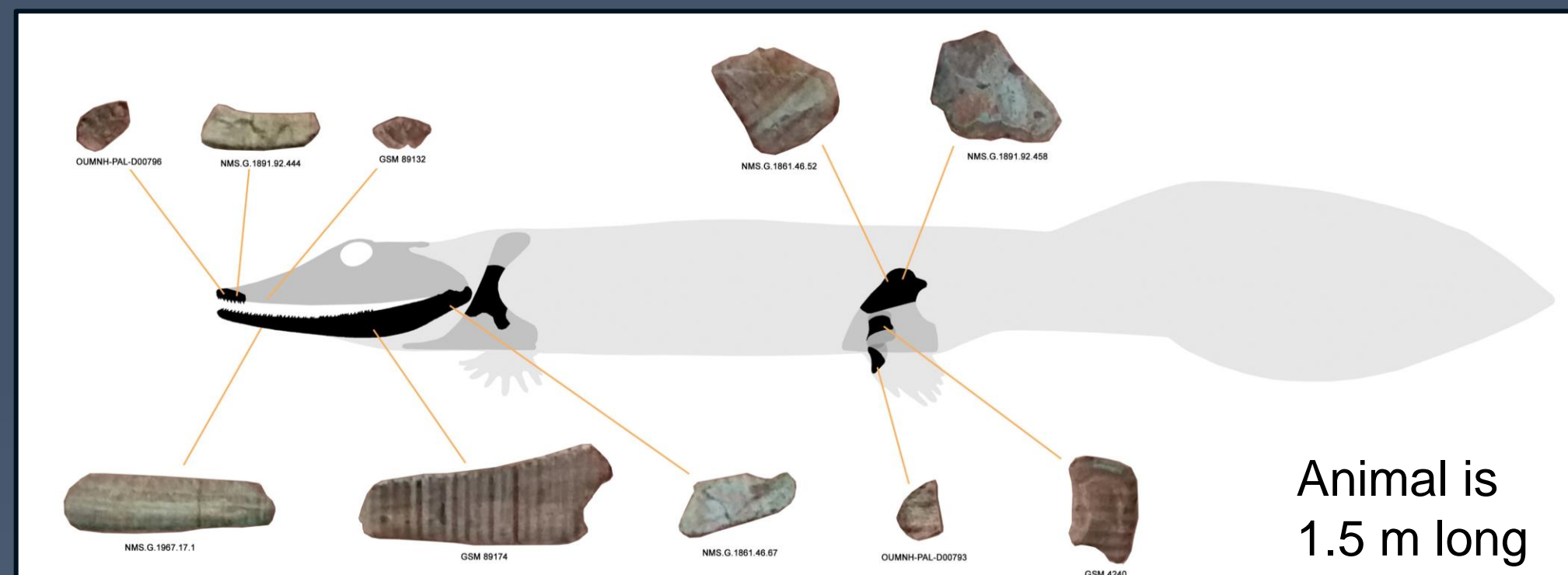
This project has been a collaboration, some 375 million years in the making.

Loan items:

Fossils of the early tetrapod *Elginerpeton pancheni* were dispersed to several UK institutions in the 19th and 20th centuries. Per Ahlberg, who identified and named the animal, helped determine the specimens necessary to explain *Elginerpeton*'s role in the transition of fins to feet for the exhibition *At the Water's Edge*. The type material is at NMS but BGS and OUMNH also have important specimens.

At the Water's Edge:

Exhibition made possible with a grant from the Weston Loan Programme with Art Fund



Preparation:

Specimens were photographed and three of the BGS fossils 3D scanned. These scans are accessible through the exhibition webpage (<https://elginmuseum.org.uk/atwe2020/>), allowing details of the material to be examined more closely. One of the larger fragments was 3D printed at BGS and has been accessioned to add to the Museum's archive for the Recognised collection.



Top: Fossil fragment of *Elginerpeton* lower jaw (mandible)
BGS GSM 89174

Bottom: 3D plastic print of the scanned fossil above, capturing many of the details seen in the original
ELGNM: 2019.34

Tetrapod trackway:

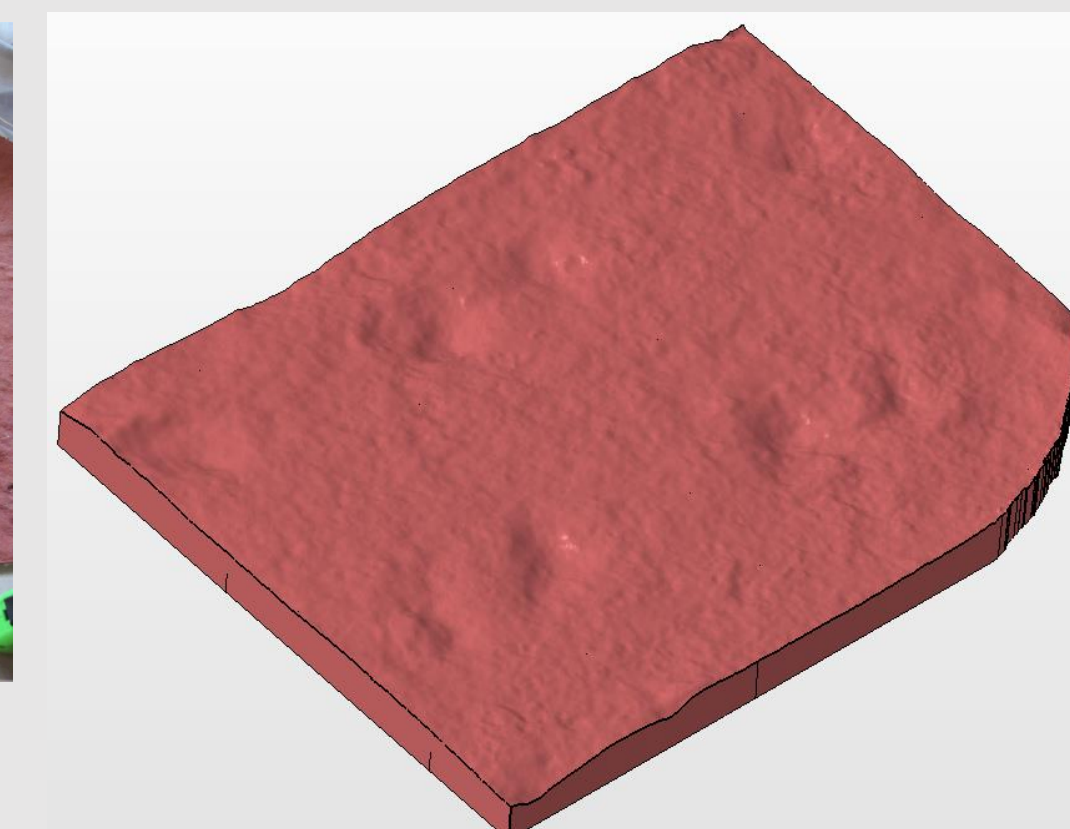
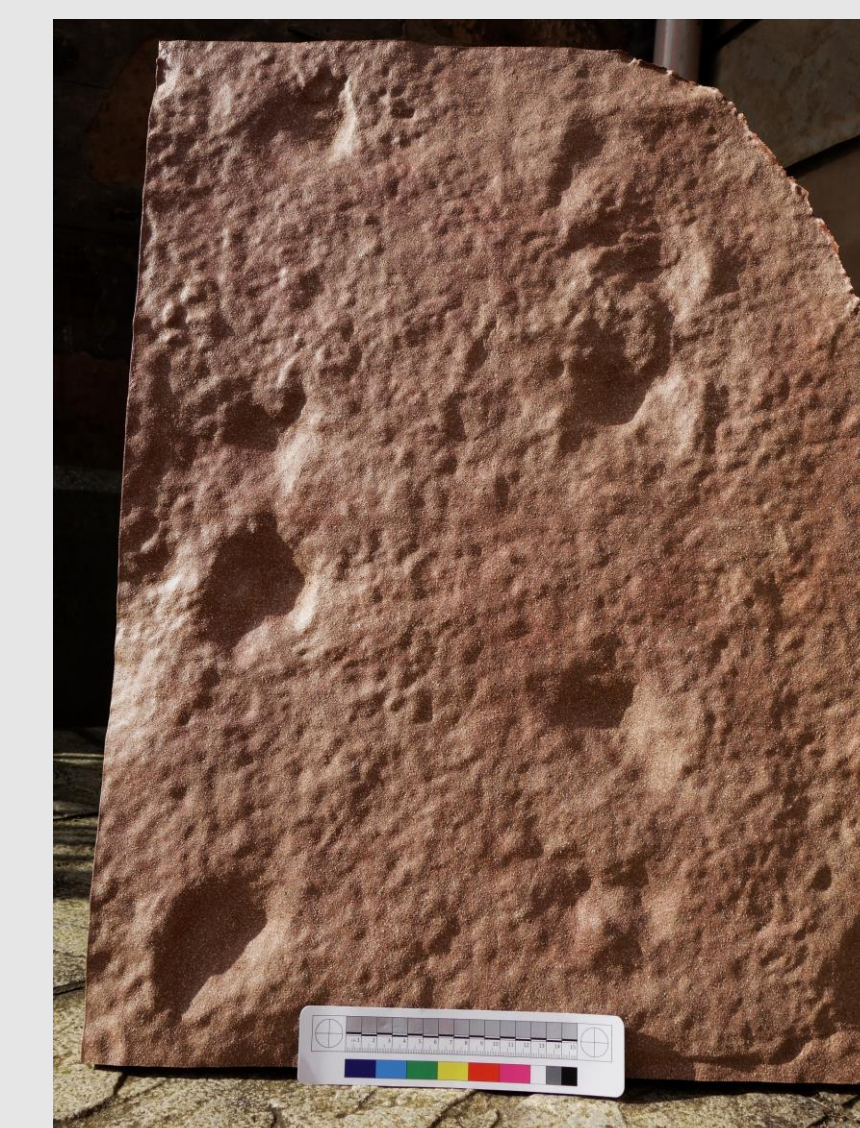
OUMNH also have a latex mould of a ~380 mya tetrapod trackway from Tarbat Ness in Ross-shire created in 1990 by researcher David Rogers. Now too fragile to loan, the mould was 2D scanned and the data converted to 3D by a specialist plastic-printing company. Part of the trackway was printed and sprayed with textured paint to give a sandstone-effect finish.

Reference: Roger, D.A. 1990. Probable tetrapod tracks rediscovered in the Devonian of N Scotland. *Journal of the Geological Society London*, 147, 746-748.

Tetrapod trackway:



OUMNH-PAL-D00790



Inverted and extruded 3D data (PlastiPrint3D)

The completed panel shows the footprints as depressions, as they would have appeared in the Tarbat Ness sandstone when they were recorded by Rogers (1990).

ELGNM: 2020.8

Plastiprint3D allowed their data to be shared with an international review team, who confirmed that the trackway is similar to those seen on Valentia Island, Northern Ireland.

Tetrapod model:

Palaeontologist Bob Davidson (below) kindly loaned his model of *Elginerpeton* for the exhibition. Although the



fossils are the highlight of the exhibition, the use of models to aid their interpretation should not be underestimated. 3D plastic printing is a useful method of capturing information that might otherwise be lost and of sharing material that, in this instance, is 380–375 million years old.