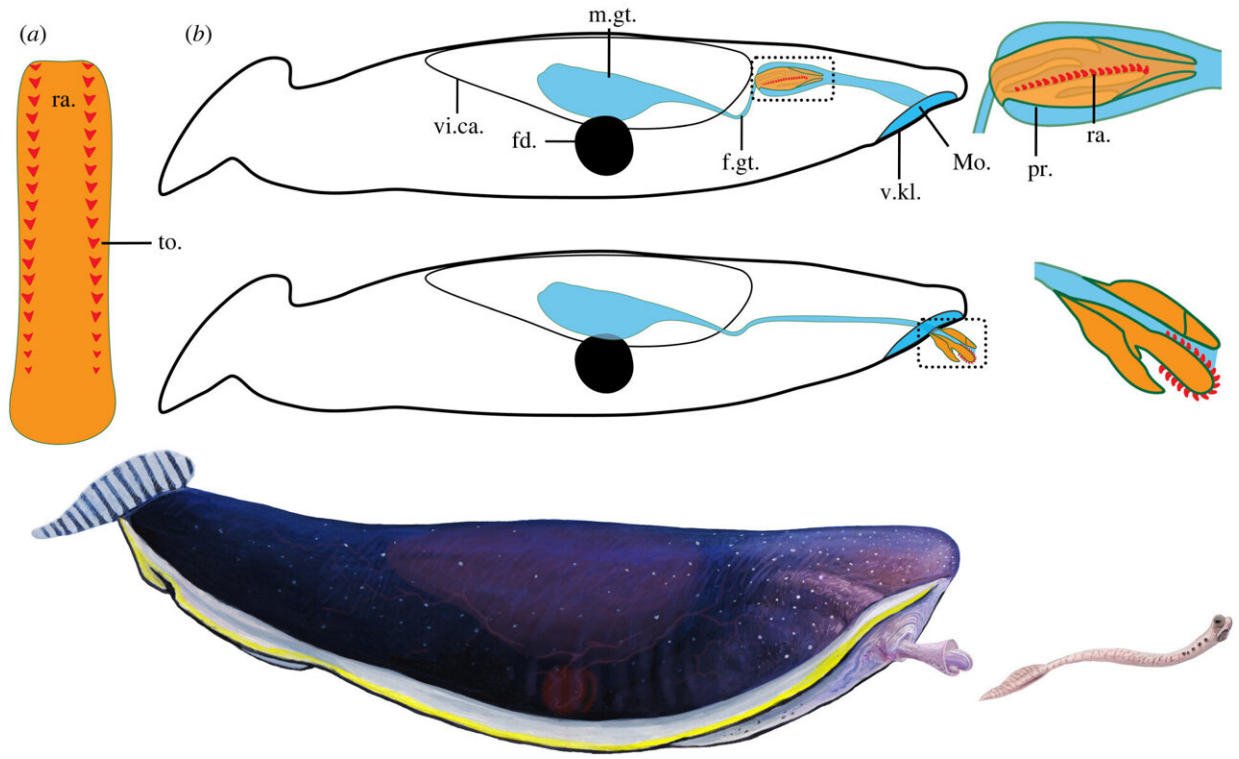
New clue found in 'alien goldfish' suggests it may have been a mollusk

September 21 2022, by Bob Yirka



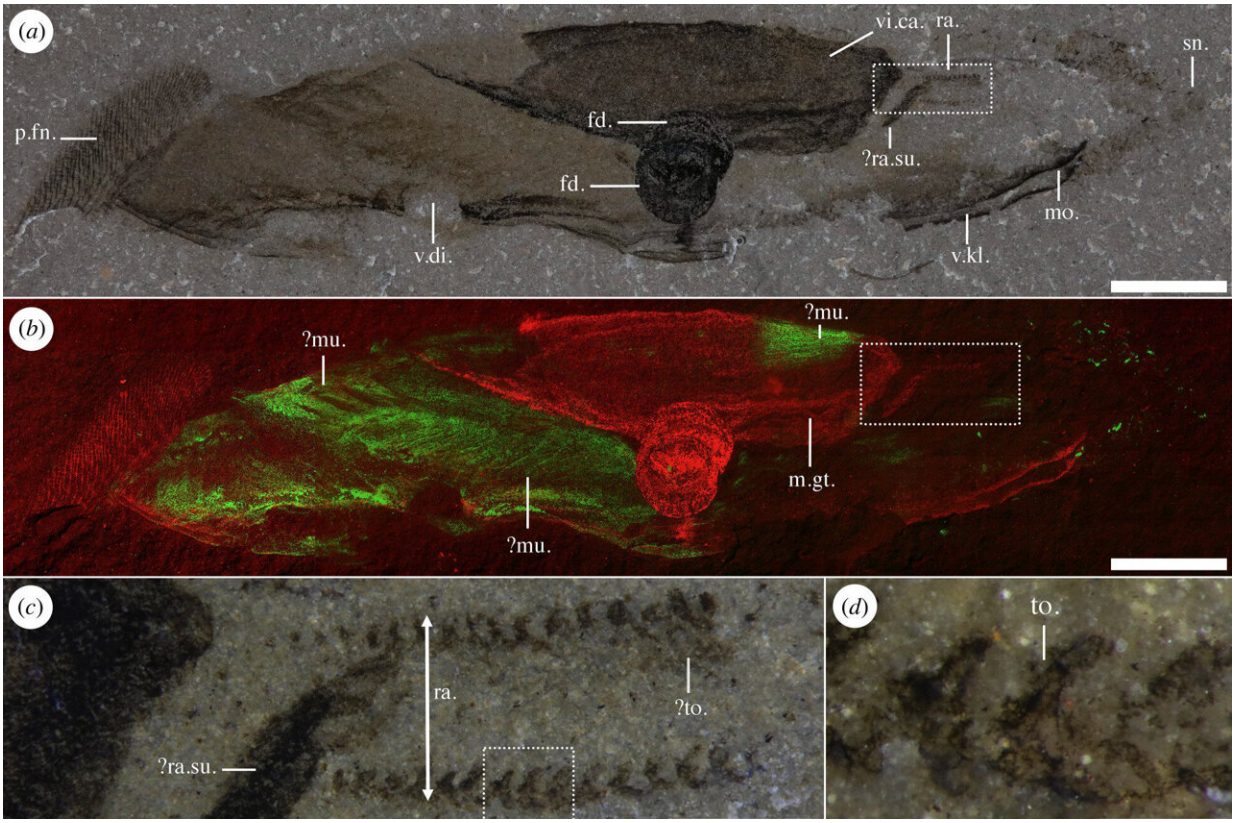
Typhloesus wellsi: anatomical schematic diagrams and artistic reconstruction. (a) Interpretative reconstruction of the radula fully outstretched as seen from above, anterior to the top, showing two main rows of lateral teeth (red triangles) decreasing in size towards the rear; (b) interpretative sagittal sections of the body showing the gut system (blue) with a blind gut and the proboscis with the radula complex (orange) in a fully inverted (top) and everted (bottom) position. Framed areas, close-ups of anterior region of the proboscis; (c) artistic representation of Typhloesus wellsi in the process of catching its conodont prey using its everted proboscis and radula. Drawing by Joschua Knüppe © Royal Ontario Museum.

fd., ferrodiscus; m.gt., midgut; mo., mouth; ra., radula; pr., proboscis; vi.ca., visceral capsule. Credit: *Biology Letters* (2022). DOI: 10.1098/rsbl.2022.0179

A pair of researchers, one with the University of Cambridge, the other the Royal Ontario Museum, has found a clue that might help place Typhloesus wellsi, nicknamed the "alien goldfish," on the tree of life. In their paper published in the journal *Biology Letters,* Simon Conway Morris and Jean-Bernard Caron, describe their study of several samples of a 330-million-year-old fossil and what they discovered about the mysterious ancient sea creature.

Since it was first observed back in 1973, T. wellsi has confounded scientists trying to determine its location on the tree of life. Its attributes are so unique that the creature is nearly impossible to classify. When alive it was just 90 mm long and had a somewhat ball-shaped body. It also had no fins other than a single blade-like entity on its tail. It also had no backbone, anus, eyes or shell. Several specimens have been found, one of which had what appeared to be tiny teeth—but that finding turned out to be the remains of a last meal. And that has left the creature an orphan of sorts on the tree of life because no parentage has been identified. In this new effort, the researchers took a close look at a handful of specimens held in the Royal Ontario Museum and found something new.

The researchers found what they describe as a toothy structure in the creature's gut. They describe it as similar to a toothed ribbon with double rows of 20 teeth curved backward. A similar structure is found in modern mollusks, and is called a radula. In T. wellsi, it was situated in the foregut, suggesting that it was pushed out of the mouth into the surrounding water to capture prey, similar, the researchers note, to the way that lizards push out their tongue.



Typhloesus wellsi showing radula. (a–e) ROMIP 48528; (a) full view; (b) elemental map showing possible phosphatized traces of muscles tissues (carbon in red, phosphorus in green); (c) close-up of the radula; (d) details of radular teeth; (e) elemental maps of the radula showing slight enrichment in carbon (center—red)) and sulfur (right) but little evidence of calcium (left) and phosphorus (center—green). (f–h) ROMIP 48526; (f) full view; (g) close-up of the radula; (h) details of radular teeth. (i–k) ROMIP 47470; (i) full view; (j) close-up of the radula; (k) details of radular teeth. (l–n) ROMIP 58284; (l) full view; (m) close-up of the radula; (m) details of radular teeth. All specimens flipped horizontally, anterior to the right. fd., ferrodiscus; m.gt., midgut; mo., mouth; ?mu., possible musculature; p.fn. posterior fin; ra., radula; ?pr., proboscis; ?ra.su., radula support; r.ti., reticulate tissues; sn., snout; to., tooth; v.di., ventral diastema; v.kl., ventral keel; vi.ca., visceral capsule. Scale bars = 10 mm (f,l); 5 mm (a,b,g,i,m); 2 mm (e,j); 1 mm (c,h,k,n); 0.25 mm (d). Credit: *Biology Letters* (2022). DOI: 10.1098/rsbl.2022.0179

The researchers suggest that T. wellsi was a type of mollusk—they also suggest that when alive, it may have resembled a tiny seal elephant. They acknowledge that their work has not determined its location on the tree of life, but point out that it might help scientists learn more about the evolution of mollusks.

More information: Simon Conway Morris et al, A possible home for a bizarre Carboniferous animal: is Typhloesus a pelagic gastropod?, *Biology Letters* (2022). DOI: 10.1098/rsbl.2022.0179

© 2022 Science X Network

Citation: New clue found in 'alien goldfish' suggests it may have been a mollusk (2022, September 21) retrieved 25 April 2024 from https://phys.org/news/2022-09-clue-alien-goldfish-mollusk.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.