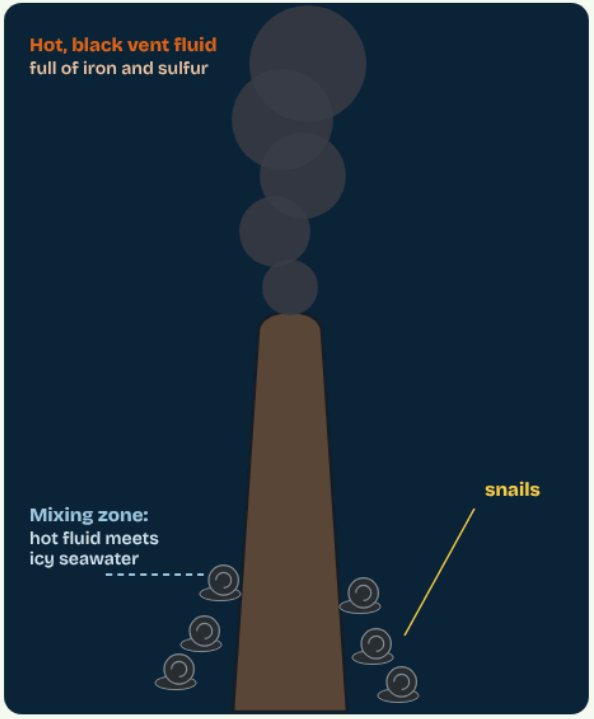
That is why

Why does the scaly-foot snail wear iron?

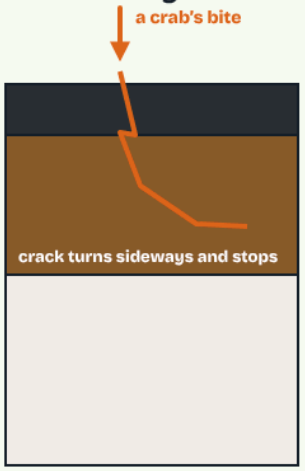
Living by deep-sea hot vents, it coats its shell and foot scales in iron sulfide, the only animal known to do so.

A Where it lives



Indian Ocean vents, 2,400 to 2,900 m deep: the Kairei, Solitaire and Longqi fields.

B A three-layer shell



Iron sulfide
about 30 µm, hard and black

Organic layer
about 150 µm, tough and flexible

Calcified layer
about 250 µm, rigid support

The hard outside breaks into tiny cracks that soak up energy; the soft middle absorbs the blow; the rigid inside stops the shell from bending.

Iron-coated foot scales



Hundreds of overlapping scales, coated with iron sulfide; the mineral greigite is magnetic.

C Key facts

1 Bacteria feed it

Bacteria in a huge throat gland make food from vent chemicals (chemosynthesis).

2 A giant heart

About 4% of its body volume; ours is about 1.3%.

3 Waste becomes metal

Iron sulfide may lock away toxic sulfur from its bacteria. Solitaire snails are white.

Endangered since 2019

The first species listed because of the risk of deep-sea mining.

Toxic waste locked into iron: a coat that also works as armor.

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Diagram: https://thatiswhy.com/diagrams/why-scaly-foot-snail-has-iron-shell/ · Full guide: /why-volcano-snail-is-actually-an-iron-knight/