

Snail Snap – Citizens helping document the special land snail genus *Bothriembryon*

Snail Snap 2023



Bothriembryon glauerti Iredale, 1939
©Melinda Moir



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Meet the Museum. Jun. 15, 2023



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What is a Both?

- Native Australian land snail ,
not a garden pest!
- Affectionately called “Boths”

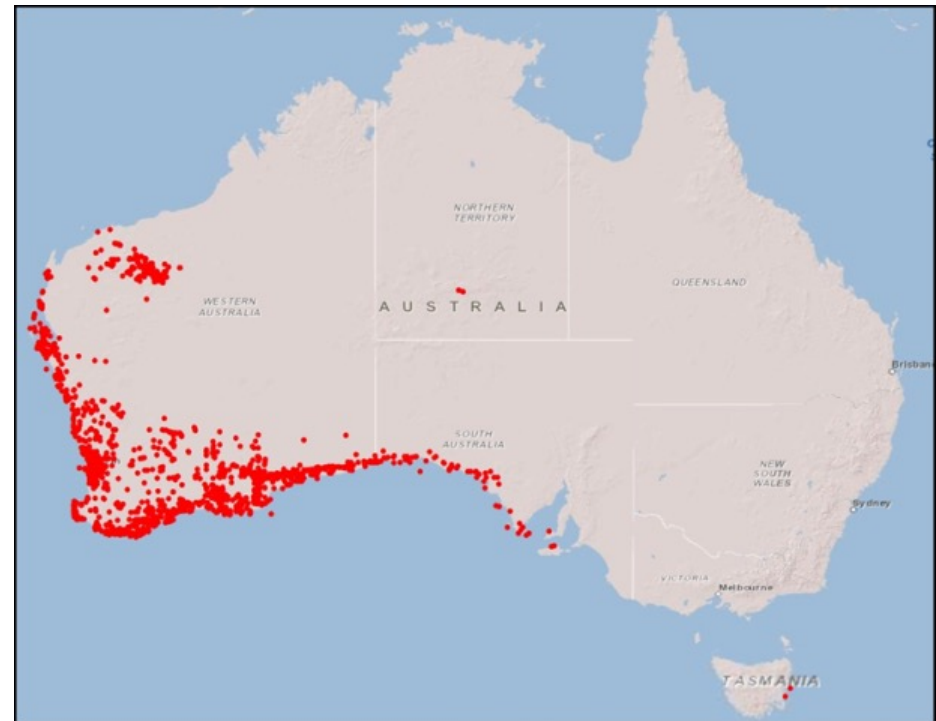


Cornu aspersum (O. F. Müller, 1774)
Belmont © Julianne Waldock



Bothriembryon perobesus Iredale, 1939
Moore River National Park
© Ben Schneider

- Very old group,
gondwanan ancestry
- Mostly confined to wet, cooler
SW region of WA where most
diverse
- 50 described species



Bothriembryon records in WA Museum

What is a Both?

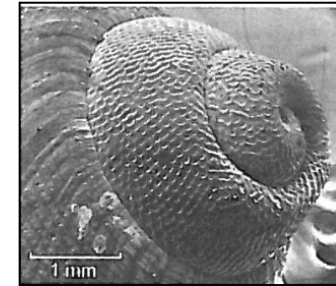
- Shell
 - 1-5cm in length (ovate to elongate-conical)
 - sculpture smooth to nodulose
 - colour uniform, striped or banded
 - `Honeycomb` protoconch sculpture



B. richeanus Iredale, 1939



B. perobesus Iredale, 1939



Protoconch SEM

- Soft-bodied animals
- Large foot, variety of colours
- Some possess nape stripe
- Two pairs of tentacles at anterior end



Bothriembryon jacksoni Iredale, 1939

© Corey Whisson

- Adapted to harsh Australian climate
- Aestivate during summer, mucoid or calcareous epiphragm
- Hermaphroditic, egg-layers in soil
- Occupy many habitats



Rocky Terrain



Woodlands



Gorges/Gullies



Coastal scrub/heath

Where to find them



- Healthy bushland with native vegetation
- During or after rainfall, often on vegetation
- Best early morning, or late in the day (crawling)
...footpaths!!
- During day often under fallen branches, logs etc.

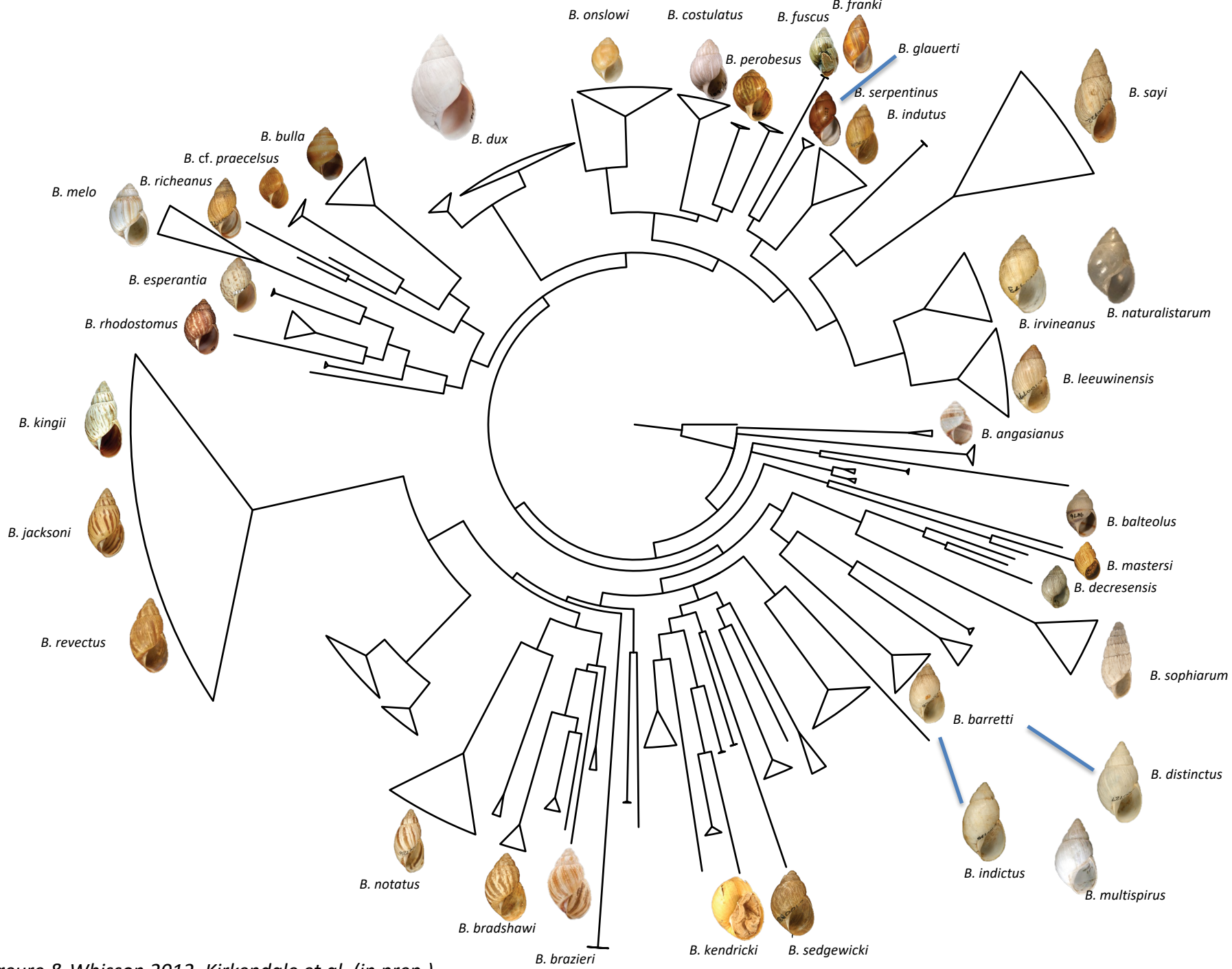


Why study *Bothriembryon*?



- Over 20 years working on molluscs at WAM, specializing in land snails
- Boths are an iconic, largely Western Australian fauna found near most populated areas
- Many public enquiries on *Bothriembryon*, but little known, we needed to know more.
- Completed my Masters in 2019 on the group
- Molecular tree highlighted many undescribed species

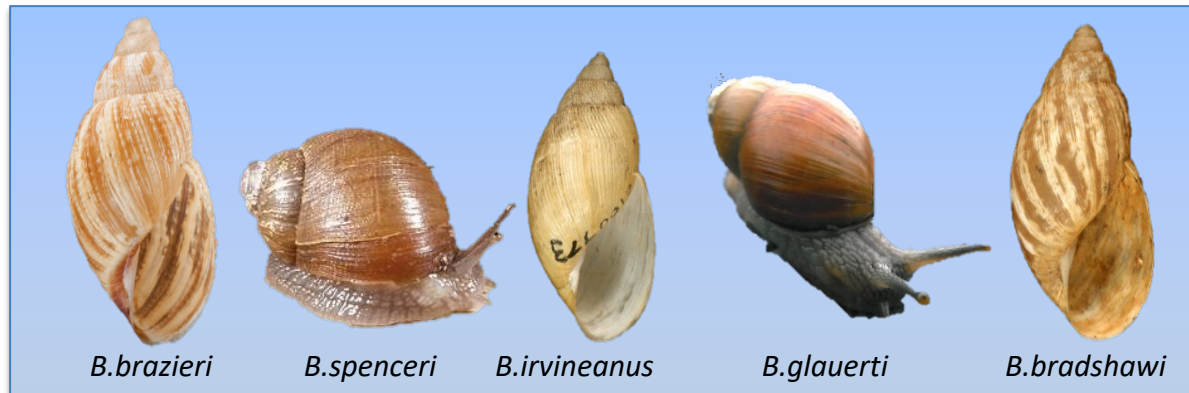




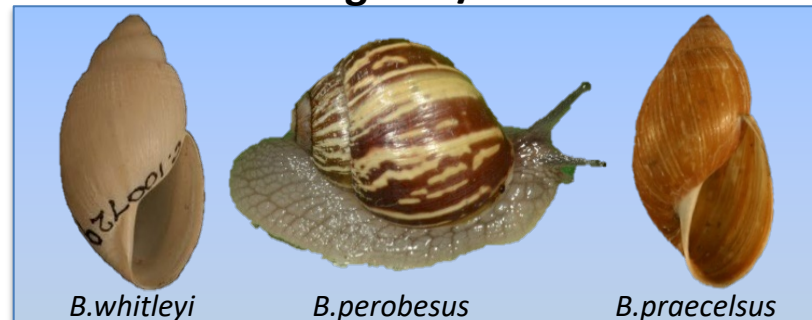
Breure & Whisson 2012, Kirkendale et al. (in prep.)

- Eight species (17%) listed as threatened on IUCN Red List (2018), **7 of these SWWA species**, many with short distributional ranges (SRE's)
- Threats when listed ranged from few recollections; land clearing; fires and urban sprawl
- Onset of mining led to focus on land snail conservation, especially Boths

Priority Listed and/or Vulnerable

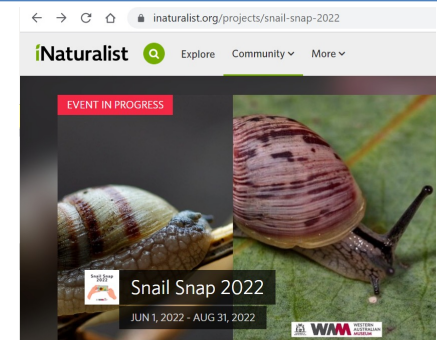
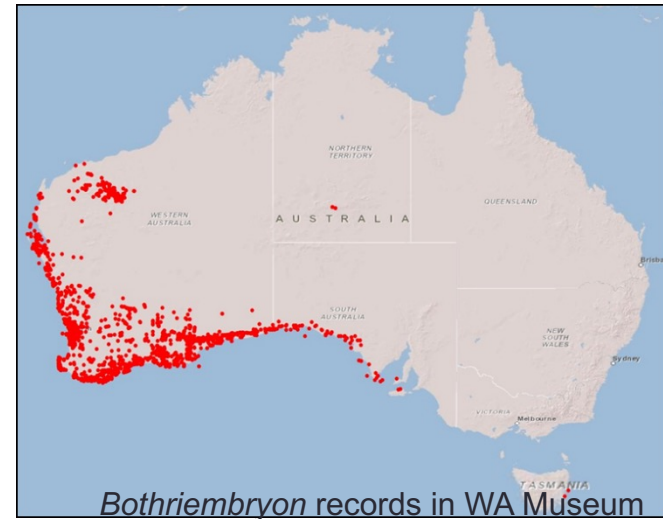


Endangered/Extinct



Why Snail Snap?

- Western Australia is a vast state, impossible for museum scientists to cover it all.
- Sampling is incomplete. Many more species to be discovered....“Both in my Backyard”
- Boths relatively large (visible) but only active during winter (short window)
- Fun, healthy activity for bushwalkers, families, naturalists etc.
- Sparse ecological data (diet, predation, life-span, habitat)
- Free, online user-friendly platform iNaturalist available for the project



What is Snail Snap 2023



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The screenshot shows the iNaturalist website interface for the 'Snail Snap 2023' project. At the top, there's a navigation bar with the iNaturalist logo, a search bar, and links for 'Explore', 'Your Observations', 'Community', 'Identify', and 'More'. A green 'Upload' button is visible on the right. Below the navigation is a large banner image of a snail on a twig. To the right of the image is a green sidebar with the title 'About' and a 'Members' button showing 9 members. The text in the sidebar describes 'Bothriembryon land snails (affectionately called 'Boths')' and provides a 'Read More' link and a 'Your Membership' link. Below the banner, there are statistics: '35 OBSERVATIONS', '9 SPECIES', '4 IDENTIFIERS', and '10 OBSERVERS'. A 'Stats' button is also present.

- Runs for 3 months during winter (Jun-Aug), look out for crawling snails or even shells
- Users can install iNaturalist APP on phone, become SNAIL SNAP 2023 MEMBER, then allow LOCATION and take photo and upload.
- Or users can become MEMBERS on iNaturalist website and upload images
- For those less tech savy users, they can email to WA Museum, and we upload for them.

What is Snail Snap 2023



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- Museum scientists maintain active profile on the Snail Snap 2023 page:
 - identify images every few days
 - comment on images
- Museum scientists provide clues to identifying species and the significance of the records
- Museum scientists provide regular updates on project page and museum facebook page

Snail Snap 2023



coreywhisson suggested an ID

Improving 8d



Bothriembryon kingii

a member of Helicinan Snails and Slugs (Suborder Helicina)

Compare

The off-white background with often mottled axial flames is characteristic of this species. Also is from the type locality of the species.

Very successful first year!

- 166 observations across 31 members (One CS a staggering 79 observations!)
- Membership has grown to 36 citizen scientists
- At least 17 described species captured
- At least 6 undescribed species found, some not encountered by WAM scientists before
- Habitat information (where found, GPS)
- Ecological information (feeding, mating pairs)



Bothriembryon observations from Snail Snap 2022

Stunning Images – New Species



Northcliffe area
© Joshua Goodchild



B. roseotinctus Morrison & Schneider, 2022
© Kath Gray



Mount Barker area
©Loxley Fedec



Albany region
© Kath Gray



Jurien Bay area
© thebeachcomber

Ecological Observations



Bothriembryon bulla (Menke, 1843)
Kings Park, mating pair
© lwsimmons



Bothriembryon kendricki Hill et al, 1983
Shenton Park, mating pair
© fancytuna03



Bothriembryon fuscus Thiele, 1930
Walpole, likely rodent predation,
© HSeaman

14 days in.....!

- 35 observations across 10 contributors
- Membership has grown to 11 citizen scientists
- At least 9 described species captured
- At least 2 undescribed species found)



Bothriembryon observations from Snail Snap 2023

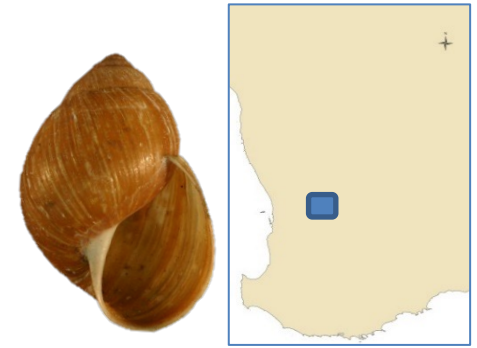


Potential new species Albany region, Kath Gray

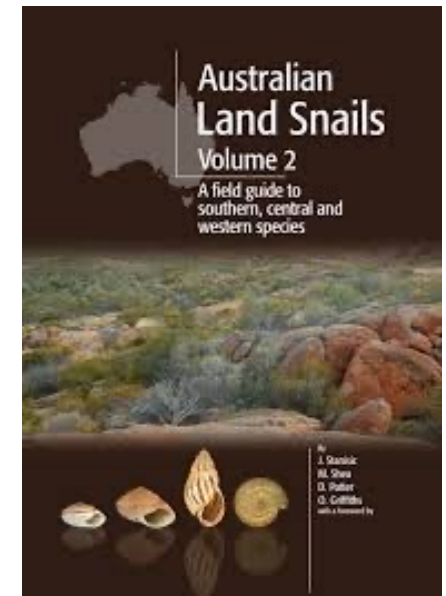


Potential new species Porongurup region, Kevin Bull

- Will outline some focus areas for Citizen Scientists:
 - wheatbelt region
 - goldfields region
 - rare taxa
- Conduct a joint Citizen Science/WAM fieldtrip (based on Snail Snap 2022 results)
- Provide similar talks on Snail Snap to community groups across WA
- WA Museum scientists will revisit locations of putative new species to collect, sequence and describe
- List vulnerable species for conservation
- Can visit Boola Bardip see *Bothriembryon* on display, and other native land snails



Bothriembryon praeceus Iredale, 1939
Type Locality: Kellerberrin





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Questions?



<https://www.inaturalist.org/projects/snail-snap-2023>



Gorgon Barrow Island
Net Conservation Benefits Fund
www.gorgon-ncb.org.au



Royal Belgian Institute of Natural Sciences

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