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# Ecology of land snails and slugs

## Reproductive strategies

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*Formosana formosensis*

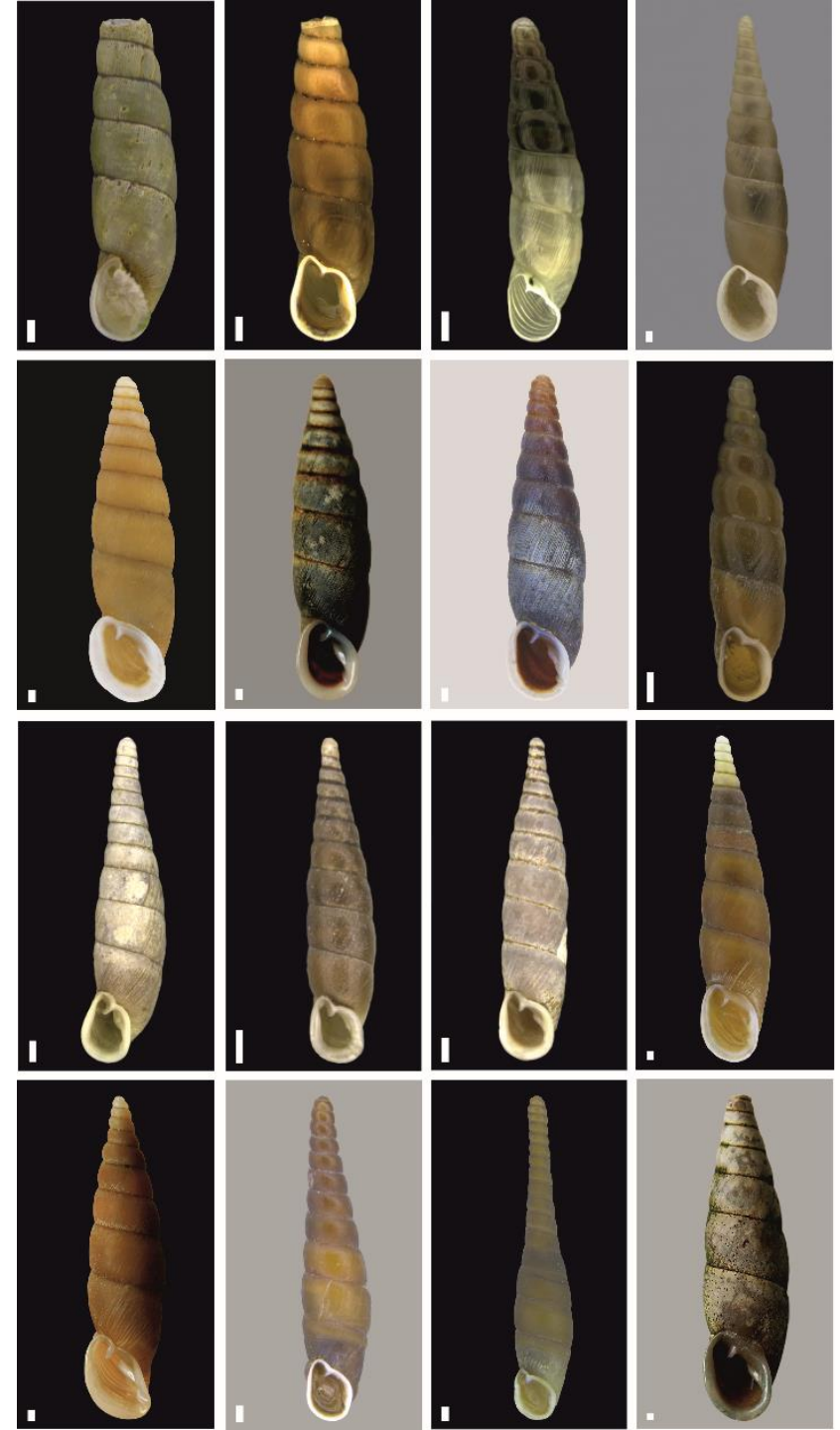
# Family Clausiliidae (Gastropoda: Stylommatophora)

„door-snails“

about 60 species in Taiwan (Nordsieck 1997)

Subfamily: Phaedusinae

Genera: *Formosana*, *Zaptyx*, *Thaumatoptyx*, *Phaedusa*,  
*Reinia*, *Euphaedusa*, *Changphaedusa*



Cooperation with:

- **Dr Chung-Chi Hwang**, Department of Life Sciences, National University of Kaohsiung, Taiwan
- **Dr Shu-Ping Wu**, Department of Earth and Life Science, University of Taipei, Taiwan

## Life histories of Taiwanese clausiliids based on observations in the laboratory culture:

*Zoological Studies* 57: 38 (2018)  
doi:10.6620/ZS.2018.57-38

*Zoological  
Studies*

Open Access

**High Fecundity, Rapid Development and Selfing Ability in Three Species of Viviparous Land Snails Phaedusinae (Gastropoda: Stylommatophora: Clausiliidae) from East Asia**




Anna Sulikowska-Drozd<sup>1,\*</sup>, Takahiro Hirano<sup>2</sup>, Shu-Ping Wu<sup>3</sup>, and Barna Páll-Gergely<sup>4</sup>

MOLLUSCAN RESEARCH  
<https://doi.org/10.1080/13235818.2021.1984189>

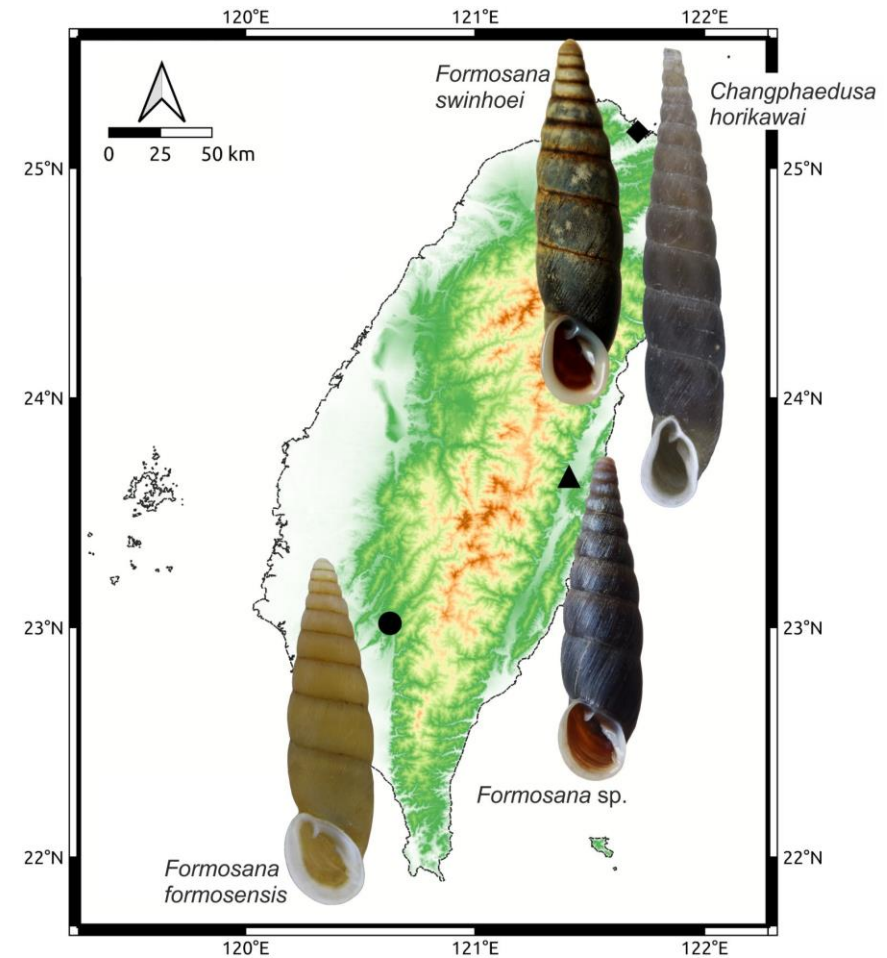


Check for updates

**Giants of Taiwan – comparative analysis of life history traits in four land snail species *Changphaedusa horikawai*, *Formosana swinhoei*, *F. formosensis*, and *Formosana sp.* (Stylommatophora: Clausiliidae: Phaedusinae)**

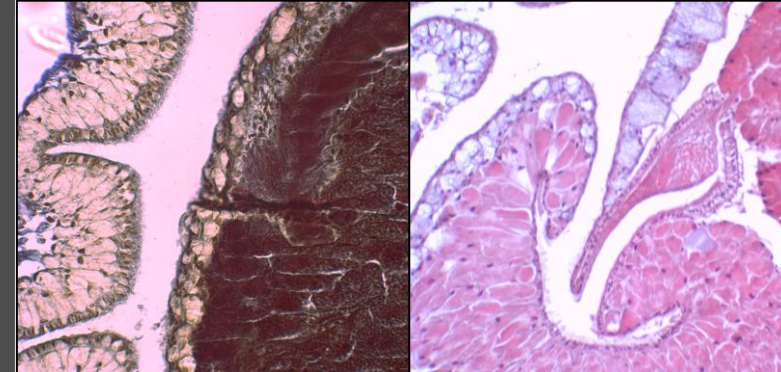
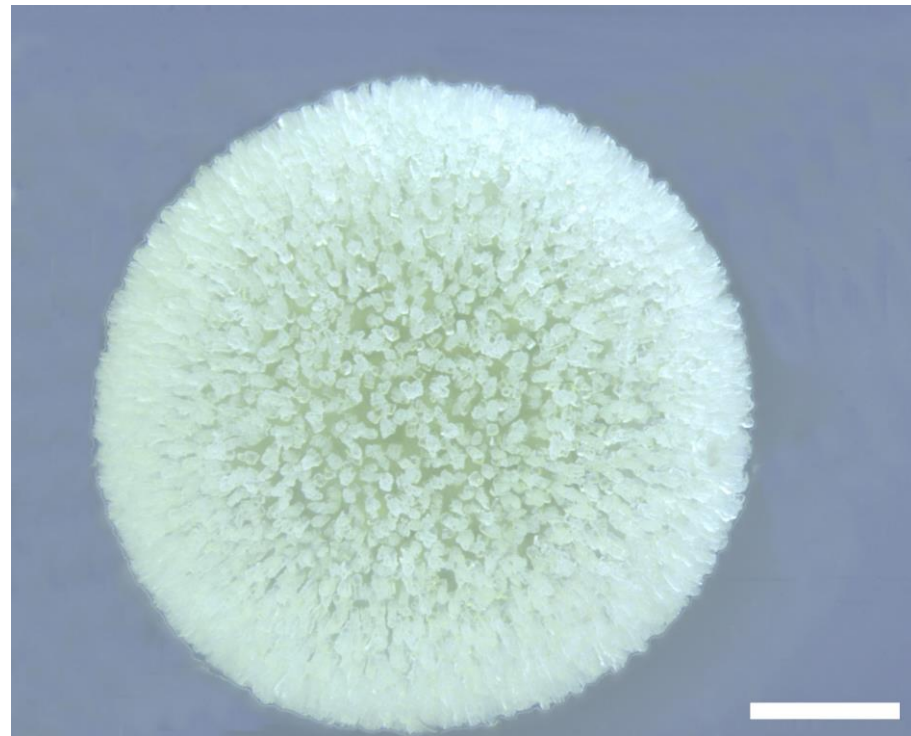
Anna Sulikowska-Drozd <sup>a</sup>, Chung-Chi Hwang<sup>b</sup>, Barna Páll-Gergely <sup>c</sup> and Shu-Ping Wu <sup>d</sup>

In preparation papers on life cycles of:  
*Zaptyx ventriosa*  
*Z. pseudosheridani*  
*Z. lushanensis*  
*Reinia eastlakeana*



## Life history traits:

- Size of eggs, juveniles and adults
- Time needed for growth and maturation
- Longevity
- Life-time fecundity
- Number of eggs in a clutch
- Egg incubation time
- Selfing ability
- **Oviparity/embryo retention/viviparity**



# Clausiliid phylogeny and reconstruction of ancestral reproductive strategies

Contents lists available at [ScienceDirect](http://ScienceDirect)

**Molecular Phylogenetics and Evolution**

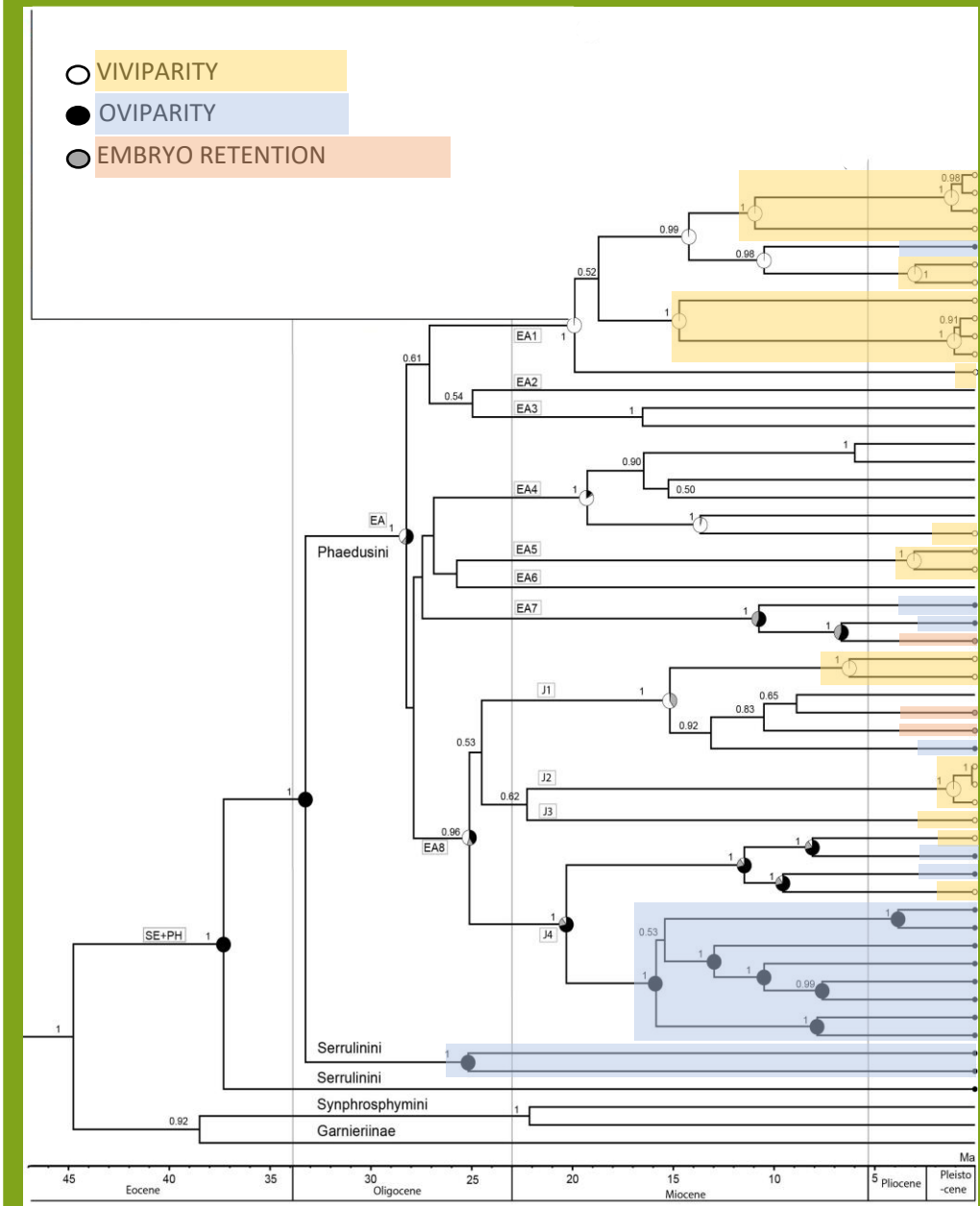
journal homepage: [www.elsevier.com/locate/ympev](http://www.elsevier.com/locate/ympev)

ELSEVIER

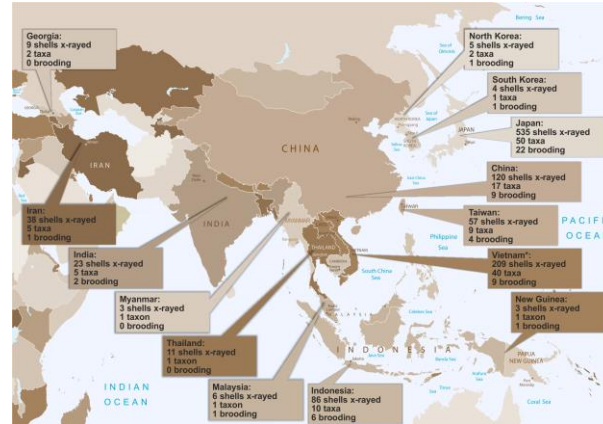
Check for updates

Evolution of reproductive strategies in the species-rich land snail subfamily Phaedusinae (Stylommatophora: Clausiliidae)

Tomasz Mamos<sup>a,b</sup>, Dennis Uit de Weerd<sup>c,d</sup>, Parm Viktor von Oheimb<sup>e,f</sup>, Anna Sulikowska-Drozd<sup>a,\*</sup>



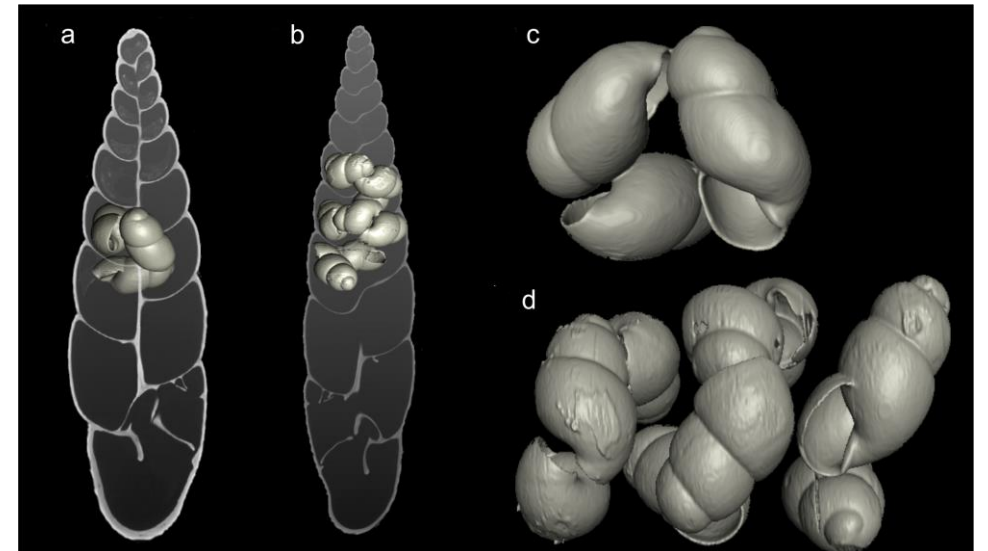
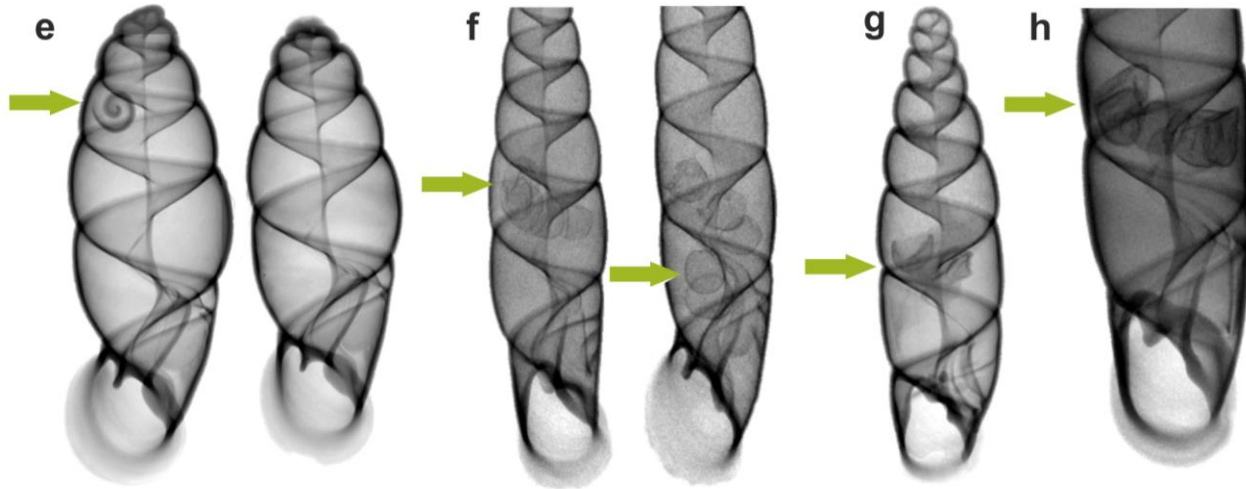
# Collection based study



**SCIENTIFIC REPORTS**  
nature research

Micro-CT screening of old shell collections helps to understand the distribution of viviparity in the highly diversified clausiliid clade of land snails

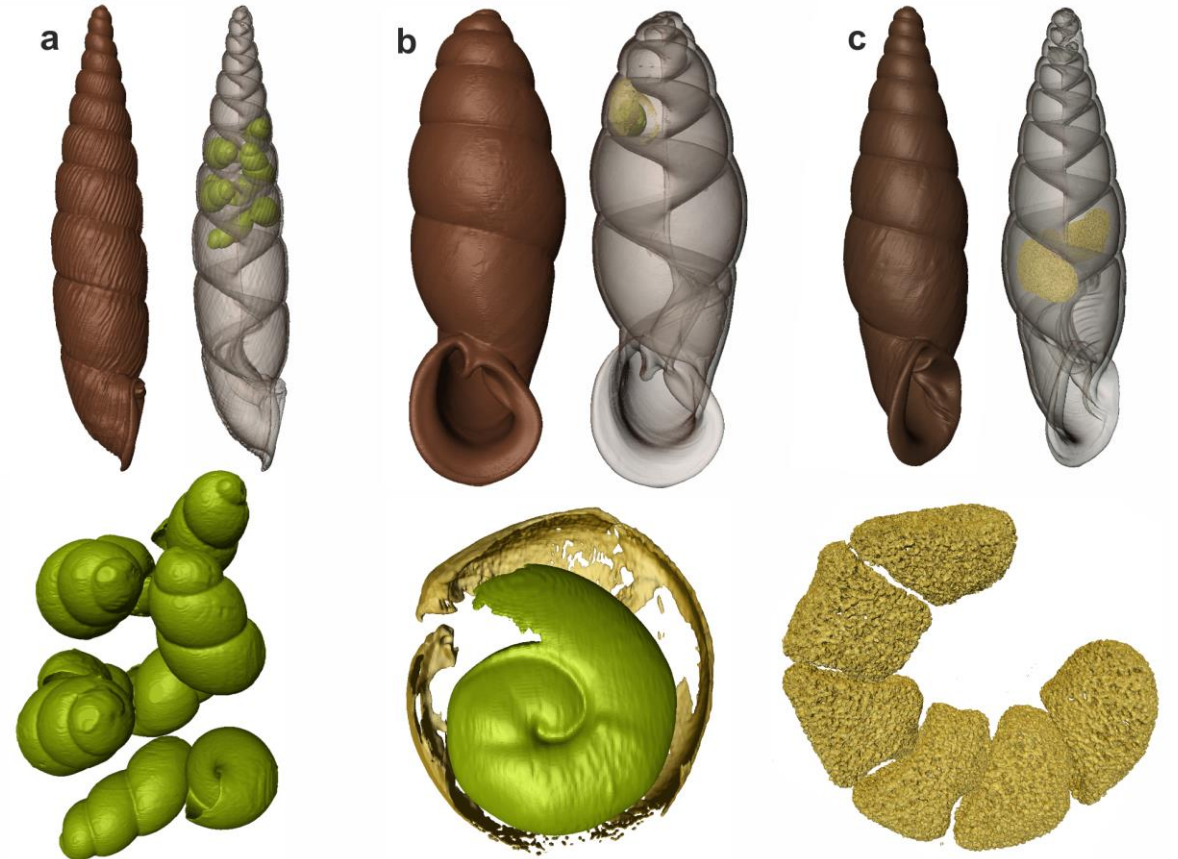
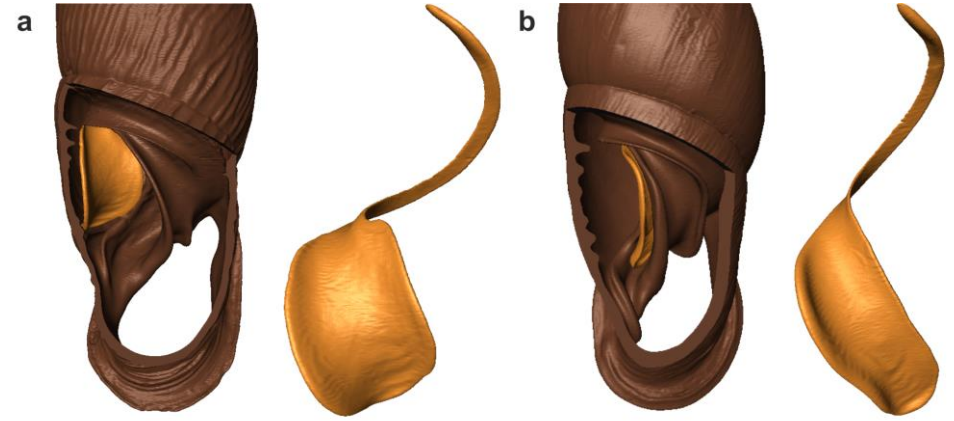
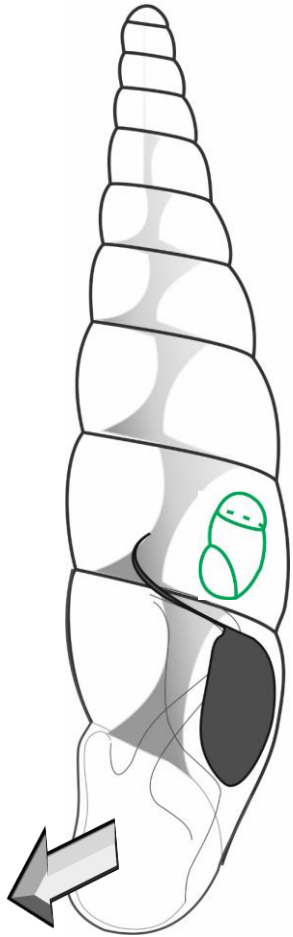
Anna Sulikowska-Drozd<sup>1\*</sup>, Piotr Duda<sup>2</sup> & Katarzyna Janiszewska<sup>3</sup>



X-rayed dry shells revealed shelled embryos or calcified eggs

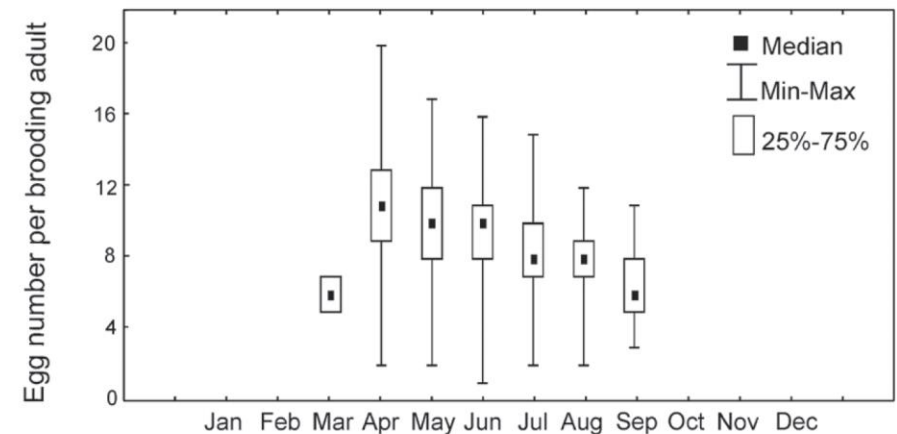
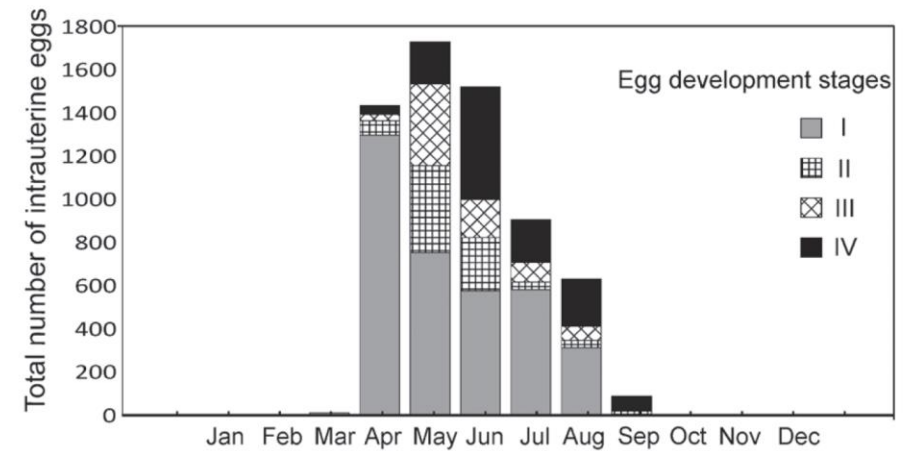
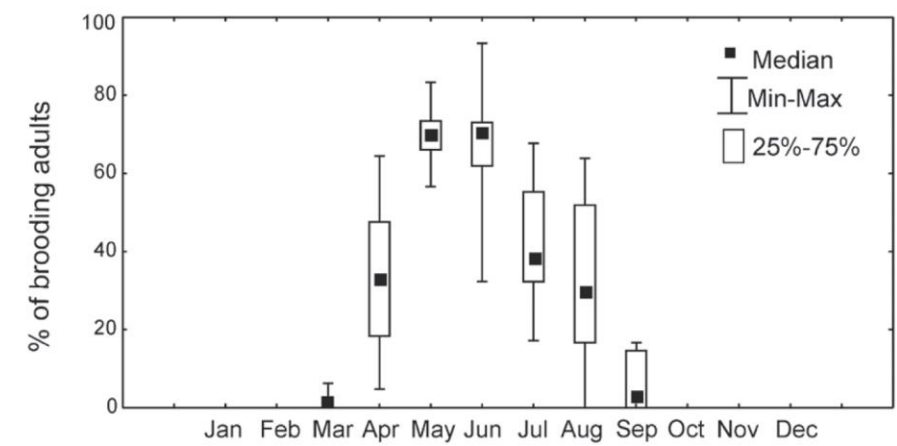
## Shell apertural barriers

- Protective role against small predators
- Hindrance for passage of embryo



## Timing of reproduction [under climate change]

- Phenology/ reproductive period
- Time of embryo retention
- Heat/dry stress during gestation period



Contributions to Zoology, 82 (2) 85-94 (2013)

### Brooding in a temperate zone land snail: seasonal and regional patterns

Anna Sulikowska-Drozd<sup>1,4</sup>, Tomasz K. Maltz<sup>2</sup>, Heike Kappes<sup>3</sup>



National Science Centre NCN OPUS nr 2016/21/B/NZ8/03086 „Alternative reproductive strategies (oviparity/viviparity) in the diverse group of land snails” (2017-2022)

