Investigations into feeding structures of juvenile freshwater pearl mussels (*Margaritifera margaritifera*) through scanning electron microscopy

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Introduction

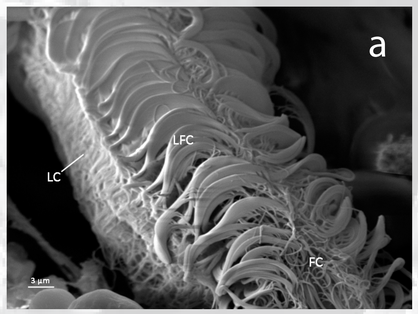
Only a small number of studies have investigated the **biological development** of early life stages in *Margaritifera margaritifera* using **scanning electron microscopy** (SEM) e.g. Nezlin et al. (1994); Lepennec & Jungbluth (1983). This investigation studied biological development in **three different juvenile age classes**: pre-transformation (0-4 months old), around the time of suspected transformation (10-16 months old) and post-transformation (3 years old). A better understanding of biological development could help tailor captive rearing methods and improve survival.

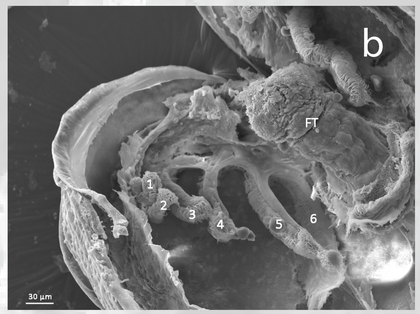
Methods

Juveniles were prepared for SEM as per the hexamethyldisilazane method in Trump (2010).

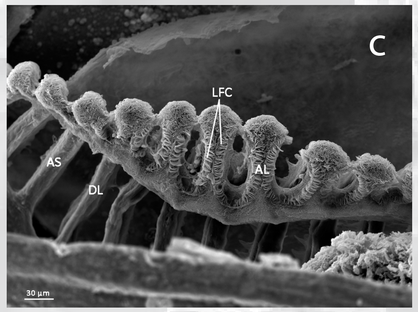


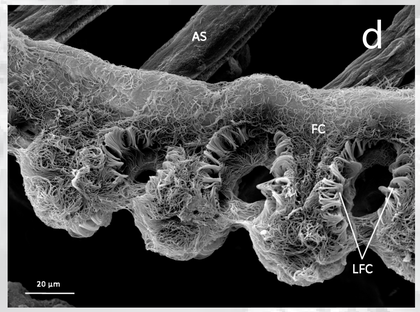
0-4 MONTHS



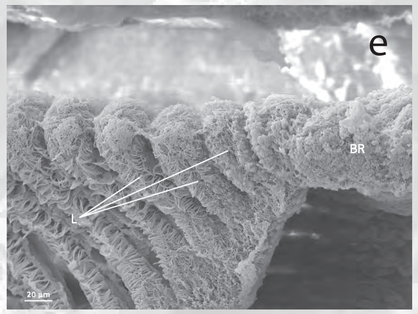


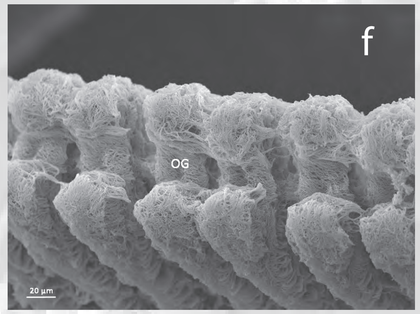
10-16 MONTHS



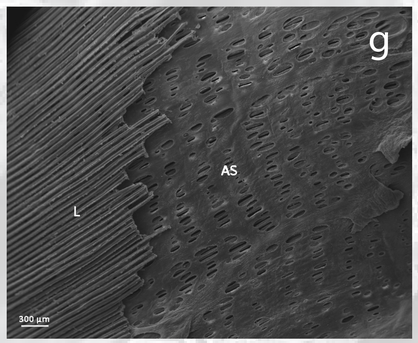


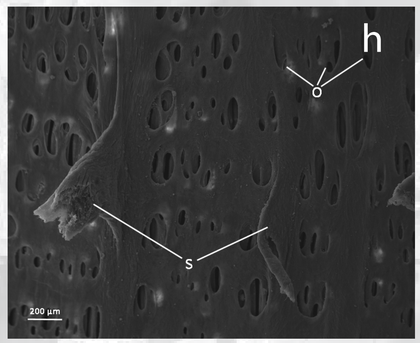
3-3½ YEARS





ADULT





Key: AL = Ascending lamella; AS = abfrontal surface; BR = budding region; DL = descending lamella; FC = frontal cilia; FT = foot; L = lamellae; LC = lateral cilia; LFC = latero-frontal cirri; O = ostia; OG = oral groove; S = speta.

Conclusions and findings to date

Pre-transformed individuals

- Have the same **complex latero-frontal cirri** as adult mussels (a)
- Have between **5-6 gill lamellae** and number increases with shell length (b)

Transforming individuals

- Gill reflection begins at approximately **16 months** (c)
- When lamellae reflect, they are **fused at the terminal end** by tissue which will eventually fuse to the mantle (d)

Transformed individuals

- Have distinct **gill buds** where new lamellae are formed (e)
- Have an **oral groove** which transports particles to the labial palps for sorting (f)
- Even at three years old juveniles **do not have the adult gill condition** of ostia on the frontal gill surface (g & h)

References & Acknowledgements

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