

## Shelled sacoglossa from Lazarus and Saint John's Islands

**Subjects:** Bivalve slug, *Berthelinia singaporensis* (Mollusca: Gastropoda: Heterobranchia: Juliidae), Fig. 1;  
 Bivalve slug, *Berthelinia* cf. *singaporensis* (Mollusca: Gastropoda: Heterobranchia: Juliidae), Fig. 2;  
 Bubble snail, *Volvatella maculata* (Mollusca: Gastropoda: Heterobranchia: Volvatellidae), Fig. 3;  
 Bubble snail, *Volvatella* sp. 1 (Mollusca: Gastropoda: Heterobranchia: Volvatellidae), Fig. 4.  
 Bubble snail, *Volvatella* sp. 2 (Mollusca: Gastropoda: Heterobranchia: Volvatellidae), Fig. 5.

**Subjects identified by:** Kathe Jensen.

**Location, date and time:** Singapore Strait -

1. Lazarus Island, in a lagoon; 22 July 2016; 0500-0800 hrs.
2. Saint John's Island, along Tanjong Hakim; 3 & 4 August 2016; 0500-0700 hrs.

**Habitat:** Marine. Intertidal coral reef in a lagoon (Lazarus Island), and rocky shore (Saint John's Island). Among *Caulerpa* seaweed.

**Observers:** Contributors.

**Observation:** During a random sampling of *Caulerpa* seaweed (mainly *Caulerpa racemosa*, *Caulerpa* cf. *mexicana* and *Caulerpa* cf. *taxifolia*) on the intertidal coral reef in the lagoon at Lazarus Island, at least three *Volvatella maculata*, 20 *Volvatella* sp. 1, one *Volvatella* sp. 2 and six *Berthelinia singaporensis* were found.

The sacoglossans were observed in the laboratory for four days, during which all the species, except *Volvatella maculata* and *Volvatella* sp. 2, laid eggs. While *Berthelinia singaporensis* readily laid eggs in the plastic containers they were kept, *Volvatella* sp. 1 started laying eggs only when *Caulerpa* was placed in their containers.

At Saint John's Island, a few more *Volvatella* sp. 1 and three *Berthelinia* cf. *singaporensis* were discovered on small branches of *Caulerpa racemosa* collected for feeding the *Volvatella* snails.

**Remarks:** Due to their tiny size (adult shell lengths between 3 to 5 mm) and cryptic coloration, shelled sacoglossans are extremely hard to spot in the field, which may explain why they are rarely sighted. A surprising quantity and diversity of these molluscs were found in this small and random sampling of *Caulerpa* only through careful sieving and scrutiny.

The three examples of *Berthelinia* cf. *singaporensis* (Fig. 2) from Saint John's Island have white dots and speckles around their shells, and appear slightly different from the ones collected from Lazarus Island. Their identity can only be confirmed after their radula and penial stylet are examined, to determine if these are simply a colour variety of *Berthelinia singaporensis* or a different species.

The two species of unidentified *Volvatella* do not appear to be conspecific with those known from Singapore, which, apart from *Volvatella maculata*, also include *Volvatella ventricosa* and *Volvatella vigourouxi* (see: Jensen, 2009, 2015).

*Berthelinia singaporensis* and *Volvatella maculata*, both described from Singapore by Jensen (2015), were previously recorded from the Johor Strait, mainly Chek Jawa and Pulau Sekudu. The present findings indicate that these two species of shelled sacoglossans are also present in the Singapore Strait.

### References:

- Jensen, K. R., 2009. Sacoglossa (Molluscs: Gastropoda: Opisthobranchia) from Singapore. *The Raffles Bulletin of Zoology*. Supplement No. 22: 207-223.
- Jensen, K. R., 2015. Sacoglossa (Mollusca: Gastropoda: Heterobranchia) from northern coasts of Singapore. *The Raffles Bulletin of Zoology*. Supplement No. 31: 226-249.



Fig. 1. *Berthelina singaporensis*.



Fig. 2. *Berthelina* cf *singaporensis*.



Fig. 3. *Volvatella maculata*.



Fig. 4. *Volvatella* sp. 1.



Fig. 5. *Volvatella* sp. 2.

Photographs by Rene Ong

Contributors: Kathe **Jensen** & Rene S. L. **Ong**

Contact addresses: [krjensen@snm.ku.dk](mailto:krjensen@snm.ku.dk) (Jensen), [rene.ong@gmail.com](mailto:rene.ong@gmail.com) (Ong)