

Freshwater Bryozoa of Lake Biwa, Japan

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(Received 18 June 2010; Accepted 14 October 2010)

Twelve species of bryozoan (ten phylactolaemates and two ctenostomes) were collected in Lake Biwa and the nearby satellite lakes. Phylactolaemate species were identified by statoblast morphology, and ctenostome species by colony morphology. Fredericellids were the most abundant phylactolaemates in Lake Biwa. Many colonies of *Fredericella indica* Annandale, 1909, identified by piptoblast morphology, were found in the southern part of the lake. In this genus, only *Fredericella sultana* (Blumenbach, 1779) had been previously reported from Japan; this is the first report of *F. indica*. A species of *Fredericella* having piptoblasts with a tiny, membrane-like ridge at the margin of the valves and weak reticulation on the surface was found in dredge material from the northern part of Lake Biwa; this species is herein described as a new species, *Fredericella toriumii*. The plumatellid *Plumatella fungosa* Pallas, 1768 represents an additional new record for Japan. An encrusting ctenostome was identified as a new species, *Hislopiopsis proluxa*, on the basis of zooid size and morphology, tentacle number, budding pattern, and gut morphology. *Hislopiopsis proluxa* was also collected from various other localities in Japan. The gut morphology reconstructed in 3D images, zooid morphology, and budding pattern are compared between *H. proluxa* and several other species of *Hislopiopsis*. The gut of *H. proluxa* is larger and the gizzard wall is thicker than in two other species. The budding pattern is similar to that of *H. malayensis* Annandale, 1916, but accelerated relative to two other species; young buds are already beginning to form the next generation of bud. Some colonies of *H. proluxa* had many ovaries; the average number was 40 per zooid. Colony morphology suggests that *H. proluxa* is more closely related to *H. cambodgiensis* (Jullien, 1880) than to *H. natans* Woods, Anurakpongsatorn and Mahujchariyawong, 2006.

Key Words: Lake Biwa, Ctenostomata, Phylactolaemata, *Hislopiopsis proluxa*, *Fredericella indica*, *Fredericella toriumii*, *Plumatella fungosa*, reconstructed 3D images, new Japanese records, new species.

Introduction

Bryozoans comprise a phylum of sessile, clonal, modular animals, with over 6,000 living species described (Gordon 1999), most inhabiting marine environments. Only around 80 species have been described from freshwater habitats worldwide (Wood and Okamura 2005; Wood *et al.* 2006). Most freshwater bryozoans belong to the class Phylactolaemata. Most phylactolaemates differ from the other classes with living representatives (Gymnolaemata and Stenolaemata) in having a U-shaped rather than circular lophophore, and in producing dormant bodies called statoblasts for the purposes of overwintering and dispersal. Statoblasts provide