

## Fishes, shrimps and aquatic molluscs observed at Singapore Quarry

**Subjects:** Common carp, *Cyprinus carpio* (Teleostei: Cyprinidae), Fig. 1;  
 Spanner barb, *Barbodes lateristriga* (Teleostei: Cyprinidae), Fig. 2;  
 African sharp-tooth catfish, *Clarias gariepinus* (Teleostei: Clariidae);  
 Whitespot, *Aplocheilichthys panchax* (Teleostei: Aplocheilichthyidae), Fig. 3;  
 Western mosquitofish, *Gambusia affinis* (Teleostei: Poeciliidae);  
 Mayan cichlid, *Mayaheros urophthalmus* (Teleostei: Cichlidae), Fig. 4;  
 Mozambique tilapia, *Oreochromis mossambicus* (Teleostei: Cichlidae), Fig. 5;  
 Marbled gudgeon, *Oxyeleotris marmorata* (Teleostei: Eleotridae), Fig. 6;  
 Three-spot gourami, *Trichopodus trichopterus* (Teleostei: Osphronemidae);  
 Common snakehead, *Channa striata* (Teleostei: Channidae), Fig. 7;

Johnson's shrimp, *Caridina johnsoni* (Crustacea: Decapoda: Atyidae), Fig. 8;  
 Riceland shrimp, *Macrobrachium lanchesteri* (Crustacea: Decapoda: Palaemonidae), Fig. 9;

Golden apple snail, *Pomacea* sp. (Mollusca: Gastropoda: Ampullariidae), Fig. 10;  
 Bladder snail, *Physa acuta* (Mollusca: Gastropoda: Physidae), Fig. 11;  
 Malayan trumpet snail, *Melanooides tuberculata* (Mollusca: Gastropoda: Thiariidae), Fig. 12;  
 Quilted Melania, *Tarebia granifera* (Mollusca: Gastropoda: Thiariidae), Fig. 13;  
 Chinese pond mussel, *Sinanodonta woodiana* (Mollusca: Bivalvia: Unionidae), Fig. 14.

**Subjects identified by:** Tan Heok Hui (fishes), Darren C. J. Yeo (fishes and shrimps), Ng Ting Hui (molluscs), Tan Siong Kiat (molluscs) and Cai Yi-xiong (shrimps).

**Location, date and time:** Singapore Island, Bukit Timah, Dairy Farm Nature Park, Singapore Quarry; 6 August 2015; 0930-1500 hrs.

**Habitat:** Freshwater. Flooded quarry in parkland setting, surrounded by earth banks, rock walls and riparian vegetation.

**Observers:** Contributors.

**Observations:** Ten species of fish, two species of shrimp and five species of aquatic molluscs (listed under Subjects) were obtained during a faunal survey of the quarry lake. Most of the specimens were caught by push nets (60 by 40 cm, mesh 2mm), cast nets (3 m, 2.5 cm mesh), scoop nets (1 cm mesh) and gill nets (5–8 cm mesh). Other specimens were opportunistically collected by hand or obtained by set nets. Most specimens were released after identification, but some were kept as voucher specimens and deposited in the Lee Kong Chian Natural History Museum at the National University of Singapore. Species that have only been sighted and not caught or photographed, are not herein illustrated.

**Remarks:** The featured list is compiled from the first qualitative survey of Singapore Quarry's aquatic biodiversity since it was incorporated into the Dairy Farm Nature Park by the National Parks Board in 2009. It must be noted that this body of freshwater was formed out of a disused granite quarry, and fed by rains and small streams flowing from Bukit Timah Hill. The aquatic fauna, whether locally native or otherwise, would have colonised the quarry from nearby sources of freshwater, or more likely (as with the fishes) introduced by humans.

Of the ten species of fish, five (50%) can be regarded as native to Singapore. These are *Barbodes lateristriga*, *Aplocheilichthys panchax*, *Oxyeleotris marmorata*, *Trichopodus trichopterus* and *Channa striata*. All the non-native fish species have been previously recorded from reservoirs and elsewhere in Singapore (Ng & Tan, 2010). In addition, one example of the red giant gourami (*Osphronemus latiflavus*), presumably an abandoned pet, was recorded from Singapore Quarry in October 2010 (Lim, 2013). Of the two shrimps, only *Cardina johnsoni* is native to Singapore (Cai et al., 2007). Among the molluscs, only *Melanooides tuberculata* and *Tarebia granifera* are considered to be native to Singapore. The specific identity of the golden apple snail is unconfirmed pending

further investigation. The two species known to occur in Singapore are best distinguished using molecular genetic methods (Ng et al., 2016).

**Note:** The contributors thank the staff of Bukit Timah Nature Reserve (in particular Cheryl Chia and Lily Kwan), for logistical support and permission to participate in this survey. They are also grateful to Cai Yixiong for identifying the shrimps, and to Ng Ting Hui and Tan Siong Kiat for identifying the molluscs.

The sizes of the fish are given in standard length (SL), measured from the tip of the snout to the base of the caudal fin. For the shrimps, TL refers to total length. For the molluscs, SH refers to shell height of the gastropods and SW refers to shell width of the bivalves.

**References:**

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Fig. 1. *Cyprinus carpio* (about 300 mm SL).



Fig. 2. *Barbodes lateristriga* (42.2 mm SL).



Fig. 3. *Aplocheilichthys panchax* (38.5 mm SL), top dorsal view, bottom side view.



Fig. 4. *Mayaheros urophthalmus* (adult top 160.0 mm SL; juveniles left 47.6 mm SL, right 19.8 mm SL).



Fig. 5. *Oreochromis mossambicus* (200.0 mm SL).



Fig. 6. *Oxyeleotris marmorata* (100.2 mm SL).



Fig. 7. *Channa striata* (about 400 mm SL).

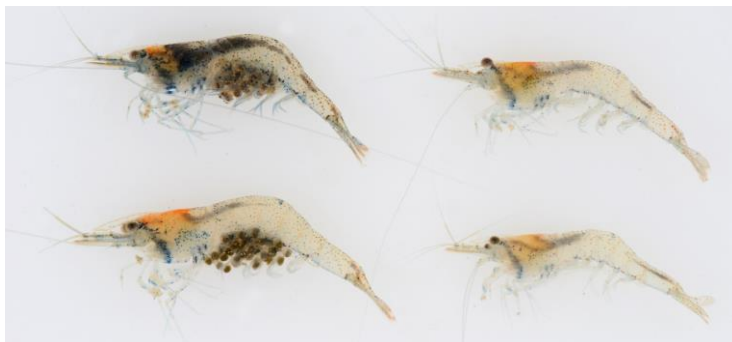


Fig. 8. *Caridina johnsoni*, left females, right males (all around 10 mm TL).



Fig. 9. *Macrobrachium lanchesteri*, top male, below female (both around 50 mm TL).



Figs. 10-14. Molluscs. Fig. 10. Dorsal (left) and ventral views of *Pomacea* sp. (around 60 mm SH). Fig. 11. *Physa acuta* (around 10 mm SH). Fig. 12. *Melanoides tuberculata* (around 20 mm SH). Fig. 13. *Tarebia granifera* (around 15 mm SH). Fig. 14. *Sinanodonta woodiana* (around 120 mm SW).

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