

# Wonderfalls Pond Micro-Life Notes

Big or small, ponds soon become ecosystems teeming with life. Too much light or not enough oxygen will encourage bacteria and algae at the expense of everything else. To achieve shade in the sun, floating plants help greatly underwater plants such as Anacharis, Cabomba and Parrot's Feather consume nutrients that feed algae. So shade is good, and water flow, especially over rocks, will mix the water with air and replenish oxygen. Changing the water, or using chemicals to try to control algae will wipe out your ecosystem. On the other hand, the longer the healthy water remains, the greater the diversity of animals and plants within, even if you don't see them.

## Slides

These photographs were taken of creatures found in just 50 ml of water from David and Richard's pond, using a phase contrast microscope. All photos are phase contrast, except 9 and 12, which are darkfield images. The magnification is shown in the table ("Mag."). In some (7,9,10) rotifers are attached to small plant stalks, and in the low-power image (9) dozens of rotifers can be seen attached to a stalk. In others (7,8), algae cells are easily seen in the gut of the rotifers, showing how these tiny animals help clean the water.

Slide	Mag.	Kingdom	Phylum	Class	Species
1. Amoeba	250	Protoctista	Rhizopoda	Tubilina	Amoeba proteus
2. Actinopod	250	Protoctista	Actinopoda	-	-
3. Actinopod	250	Protoctista	Actinopoda	Heliozoa	Acanthocystis sp.
4. Rotifer	125	Animalia	Rotifera	-	-
5. Rotifer	250	Animalia	Rotifera	-	-
6. Rotifer	250	Animalia	Rotifera	-	-
7. Rotifer	250	Animalia	Rotifera	-	Philodina sp.
8. Rotifer	250	Animalia	Rotifera	-	Collotheca ornata
9. Rotifers	50	Animalia	Rotifera	-	-
10. Rotifer	250	Animalia	Rotifera	-	-
11. Daphnia	125	Animalia	Arthropoda	Crustacea/Cladocera/Daphnia	
12. Daphnia	50	Animalia	Arthropoda	Crustacea/Cladocera/Daphnia	

Ian Trounce, for Wonderfalls, 3/97, updated 11/03 ©White Trash Press 2003

In most slides many single celled algae (Chrosphytes, Euglanophytes, Chlorophytes and Baccillariophytes) can be seen. Rotifers like to eat them and you can see them in their gut (eg slide 08). Bacteria are visible as dark dots or tubes, but are not abundant, a good sign. Filamentous green or blue-green algae are also not common, another good sign since these are the bacteria that will flourish in poorly oxygenated or overly sunlit water at the expense of everything else. Amoebas and actinods are single-celled organisms, from the Kingdom Protoctista. There are 5 Kingdoms; the Bacteris, Protoctista (single celled eukaryotes), Fungi, Plantae and Animalia. All are represented in your pond! There are 30 phyla of living things, the next division from Kingdom. Rotifers have their own phylum, Rotifera, and there are about 200 described species, mostly found in freshwater. They are among the smallest multicellular animals, not larger than a millimeter. They feed by creating a water current with a ring of hairs (cilia) found at their anterior end (giving them their name), hauling in algae and bacteria which are ground with a muscular pharynx. Next up the food chain, Daphnia is a common genus of 'water fleas', which are really more closely related to shrimp than insects. They are filter feeders, which at their size means they will be feeding on algae and larger organisms, including free-swimming rotifers. Daphnia in turn becomes a main food source for larger invertebrates such as water beetles and small vertebrates such as tadpoles and small fish.