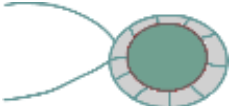
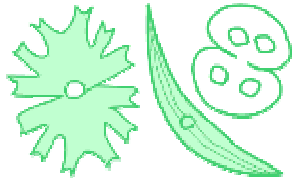
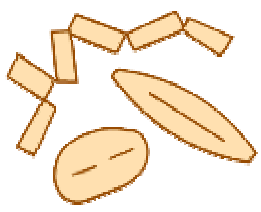


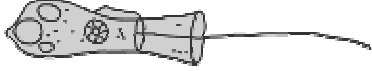
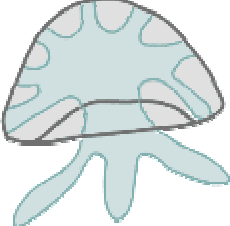
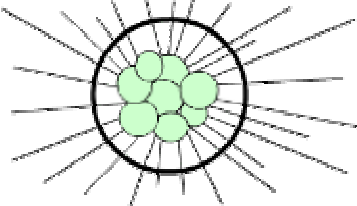
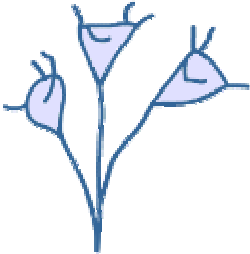
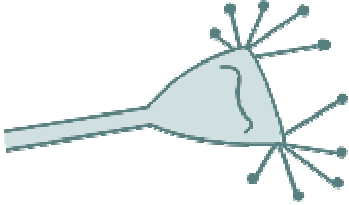


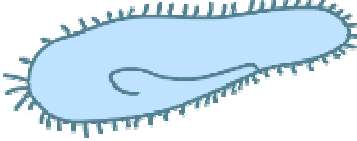
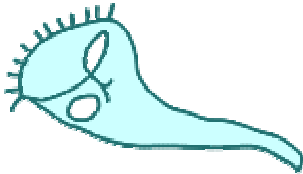
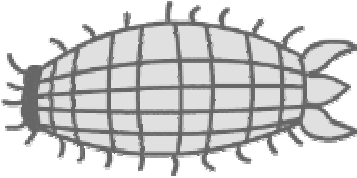
Guide to Identification of Fresh Water Microorganisms

Microscopic autotrophic organisms (i.e. algae)

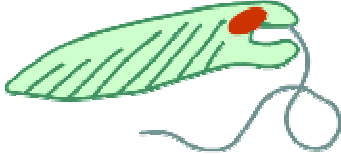
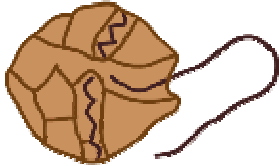
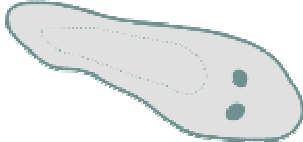
Name	Picture	Characteristic	Taxonomy
Green algae (with flagella, small) <.05 mm		1. flagella 2. small 3. solitary 4. rapid movement	Phylum Chlorophyceae i.e. <i>Chlamydomonas</i> sp.
Green algae (with flagella) .5-2mm		1. spherical 2. colonial 3. with two flagella	Phylum Chlorophyceae i.e. <i>Volvox</i> sp.
Green algae (no flagella) <.5 mm		1. spherical to conical 2. not attached to surface 3. no movement	Phylum Chlorophyceae i.e. <i>Pediastrum</i> sp.
Filamentous green algae <.1 mm – cms		1. non branching 2. chains of cells with chloroplast 3. no flagella	Phylum Gamophyceae i.e. <i>Zygnema</i> sp. <i>Spirogyra</i> sp.
Desmids <.5 mm		1. green 2. no flagella 3. mainly solitary, some colonial 4. various shapes 5. two semi-cell, mirror image	Phylum Gamophyceae i.e. <i>Desmidium</i> sp <i>Closterium</i> sp.
Diatoms <.5 mm		1. one cell 2. slow gliding motion 3. solitary or colonial 4. cell wall (frustules) made of silica	Phylum Bacillariophyceae i.e. Pennales, Centric

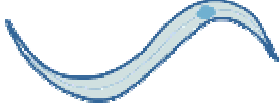
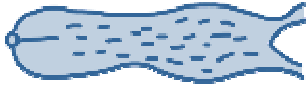
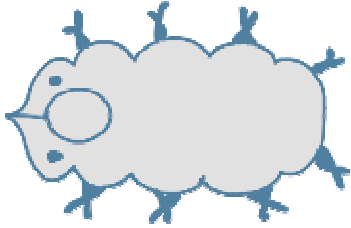
Protozoa – heterotrophic only

Name	Picture	Characteristic	Taxonomy
Flagellates <.5mm		1. one or more flagella 2. colonial or free living 3. with or without lorica	Zoomastigophora i.e choanoflagellates
Amoeba .02 –5 mm		1. pseudopodia 2. slow movement 3. engulfs food	Sacrochina Order Amoebina i.e. <i>Amoeba proteus</i>
Shelled Amoeba .1-.4 mm		1. amoeba with a shell, usually sand grains 2. pseudopodia 3. slow movement	Sacrochina Order Testacea i.e <i>Arcella</i> sp.
Heliozoans .01-1 mm		1. spherical 2. radiating hair like pseudopods 3. no movement	Sacrochina Order Heliozoa
Ciliates – Peritrich < .25 mm		1. cylindrical or bell shaped bodies 2. undulating cilia 3. some stalked 4. often colonial 5. attached to different substrate	Ciliophora Order Peritrichida i.e. <i>Vorticella</i> sp.
Ciliates – Suctoria <.7 mm		1. no cilia, sticky tentacles - some attached to other organisms (i.e. <i>Suctoria</i>)	Ciliophora Order Eridogenida i.e. <i>Tokophyra</i> sp.

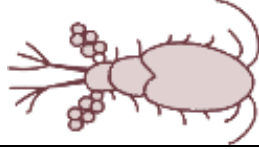
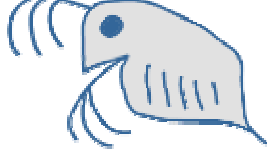
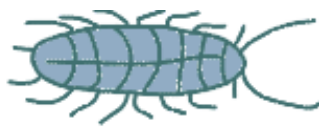
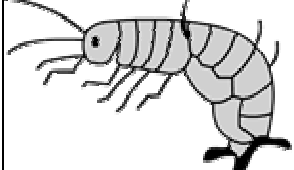
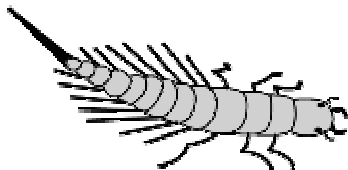
Ciliates Paramecium .01 – 4mm		1. mostly free living forms 2. cell of fixed shape 3. movement by contraction and use of cilia 4. fixed mouth and anal pore	Ciliophora Order Oligohymenophorea i.e. <i>Paramecium</i> sp
Ciliates Stentor .01 – 4 mm		1. large body 2. contractile 3. cilia on mouth end	Ciliophora Order Heterotrichea i.e. <i>Stentor</i> sp.
Ciliates Coleps .01-4mm		1. barrel-shaped 2. spinous projection at posterior end 3. cytosome apical	Ciliophora Order Prostomatea i.e. <i>Coleps</i> sp.

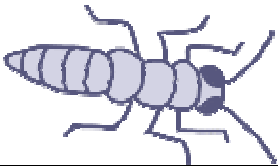
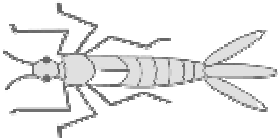
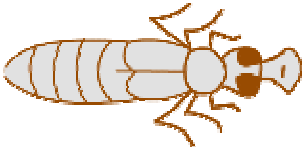
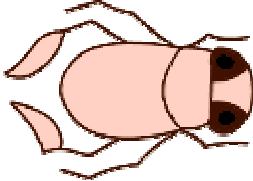
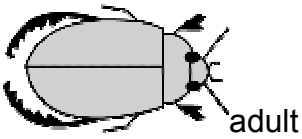
Other fresh water plankton (Animalia, Monera, etc)

Name	Picture	Characteristic	Taxonomy
Blue-green algae (cyanobacteria)		1. blue green color 2. gliding movement 3. prokaryote	Kingdom Monera i.e. <i>Anabaena</i> sp.
Euglenoids <.4mm		1. sometimes green 2. flagellate 3. red eye spot	Phylum Euglenida i.e. <i>Euglena</i> sp.
Dinoflagellates <.4mm		1. free swimming 2. tough armor 3. flagellate 4. autotrophic, heterotrophic	Phylum Dinoflagellate
Rotifers .4mm - 2 cm		1. corona with cilia 2. hairy appendages 3. transparent with lorica 4. free swimming or attached 5. organs, compressed body	Phylum Rotifer Class Bdelloidea Class Monogononta
Hydra 2 cm		1. green brown or colorless 2. body and tentacles contract and stretch 3. primitive organs	Phylum Cnidaria i.e. <i>Hydra</i> sp.
Flatworms 1-15+ mm		1. flattened 2. eye spots 3. move in gliding motion	Phylum Platyhelminthes Class Turbellaria i.e. <i>Planaria</i> sp.

Roundworms .2-10 mm		1. moves in rapid "s" form 2. round body 3. bilateral 4. anterior, posterior openings	Phylum Nematodes
Oligochaetes 1.5 mm - >2 cm		1. segmented 2. worm motion 3. hair bundles (setae)	Phylum Annelida Class Oligochaeta
Leeches > 1 cm		1. predatory or parasitic 2. terminal suckers 3. hermaphroditic	Phylum Annelida Class Hirudinea
Gastrotricha .1-1.5mm		1. mainly benthic 2. head bristles 3. eat algae, bacteria, protozoa	Phylum Gastrotricha Order Chaetonotida
Tardigrades Little water bears < 1 mm		1. head and 4 trunk segments 2. 4 pair legs 3. eyes 4. herbivores	Phylum Tardigrada

Arthropods - segmented, exoskeletons

Name	Picture	Characteristic	Taxonomy
Ostracods <2mm		1. bean-like shell 2. filter feeders 3. bivalve carapace	Class Crustacea Order Ostracoda i.e. <i>Cypris</i> sp.
Copepods .5-3mm		1. long antennae 2. tiny eyespot 3. holoplankton	Class Crustacea Order Copepoda
Water fleas .3-10mm		1. antennae 2. large compound eye 3. holoplankton	Class Crustacea Order Cladocera i.e. <i>Daphnia</i> sp
Isopods 5-20mm		1. flattened 2. 7 pairs legs 3. scavengers	Class Crustacea Order Isopoda
Amphipods 5-25mm		1. curved 2. compressed body 3. humped back 4. scavengers	Class Crustacea Order Amphipoda
Water mites .5-5mm		1. 8 legs 2. round body 3. larvae (parasitic) 4. nymph looks like adult	Class Arachnida Order Acarina
Alderfly nymph 5-25mm		1. one tail 2. long filaments along the abdomen 3. meroplankton	Class Insecta Order Megaloptera Family Sialidae
Caddisfly larva 3-40mm		1. cylindrical case for protection 2. distinct case but different materials	Class Insecta Order Trichoptera

Stonefly nymph <15 mm		1. two jointed tails (cerci) 2. carnivorous 3. indicates clean water	Class Insecta Order Plecoptera
Mayfly nymph <15mm		1. three jointed tails 2. leaf-like gills on sides	Class Insecta Order Ephemeroptera
Damselfly Nymph <15mm		1. three leaf like tail appendages (gills) 2. extendable jaws	Class Insecta Order Odonata Zygoptera
Dragonfly nymph <15mm		1. robust 2. no tail appendages 3. extendable jaws	Class Insecta Order Odonata Anisoptera
Water boatman nymph and adult 10-15mm		1. no jaws 2. tube-like beak 3. nymphs don't have wings	Class Insecta Order Hemiptera Family Corixidae
Water beetle <45mm	 adult	1. strong jaws 2. tough shield 3. fierce predator	Class Insecta Order Coleoptera Family Elmidae
	 nymph	1. strong jaws 2. long segmented body 3. short legs	
Mosquito larva 1-20 mm		1. long slender body 2. moves in undulating s curves	Class Insecta Order Diptera

Drawings redrawn from <http://www.microscopy-uk.org.uk/pond/index.html>