Aquatic biodiversity

While walking along the banks of a river, lake or wetland, you may wonder what creatures are living in these water bodies, and about how clean the water is.

Here are some simple ways to satisfy your curiosity.

Collect and analyse

Take some samples of organisms from the water, the silt at the bottom of the water body, and the water surface:

- Collect species living on the underside and surface of a few large stones using dipping nets, sieves or tweezers. Place them in a glass container. Observe the specimens one by one and identify their taxonomic classification. Carefully return all the identified and unidentified organisms to the water.

- Take three to five samples of silt from the bottom of the water body.
  Wash the samples through a sieve until only the organisms and larger stones remain.
  Record the results and then return everything to the river.

- Collect species from the water surface by moving the dipping nets in a figure 8 pattern over the surface (the mouth of the net should be perpendicular to the river bottom). Take three to five samples. Place the organisms in a jar and return them to the water after identification.

Water quality criteria

Determine the quality of the water on the basis of the following criteria:

- Which group of organisms is the most common?

- Which other groups are represented?

- How many organisms are there per group, and what type of water are they found in?

Biotic index

Calculate the biotic index by multiplying the number of organisms found in each group by the corresponding group index shown in the table. Total the results and find the average by dividing the total score by the number of sampled organisms.

The biotic index can be used to evaluate water quality. The index ranges from 0 (no life found) to 10 (diverse life forms). A higher index indicates clean water, a medium index indicates fair water quality, and a low index indicates pollution.

Zero values are rarely seen.

Biological indicators for determining surface water quality

Species groups	Group index	Distribution according to affinity to a certain water quality		
		Clean water	Fairly clean water	Polluted water
1. **Dragonfly larvae** (Odonata)	8	■	●	
2. **Leather-winged beetle larvae** (Cantharidae)	8	▲		
3. **Mayfly larvae** (Ephemeroptera)	10	■	■	
4. **Crawfish** (Astacus sp.)	10	■	■	
5. **Planarian flatworms** (Tricladida)	4		●	■
6. **Megaloptera larvae**	4		▲	
7. **Water measurers** (Hydrometridae)	5		▲	
8. **Water fleas** (Cladocera)	5		▲	
9. **Caddisfly larvae** (Trichoptera)	5	●	■	
10. **Ark shells** (Bivalvia)	6	●	■	
11. **Water beetles**	5		▲	
12. **Freshwater shrimp** (Gammarus sp.)	6		▲	
13. **Sludge worms** (Tubifex sp.)	1		●	■
14. **Leeches** (Hirudinea)	2		●	■
15. **Snails** (Gastropoda), **pond snails** (Limnaeidae)	3		●	■
16. **Isopods, waterlice** (Asellus aquaticus)	3		●	■

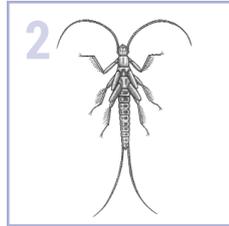**Note** The symbols indicate the probability of finding the given species in a certain type of water.
● Low probability   ■ Medium probability   ▲ High probability
The absence of a symbol means that no specimens from that group are to be found in the given grade of water quality.
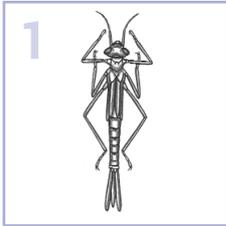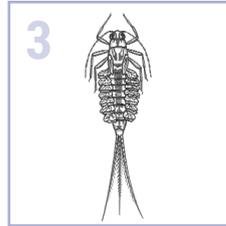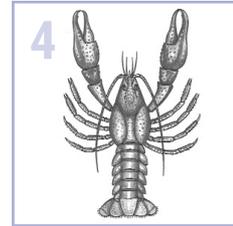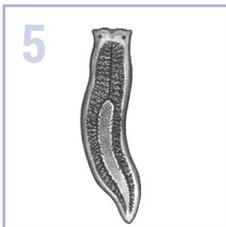
1 Dragonfly larvae
(Odonata)

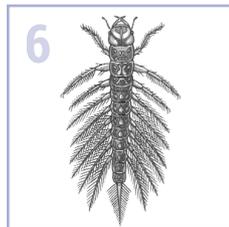**2** Leather-winged beetle larvae
(Cantharidae)

3 Mayfly larvae
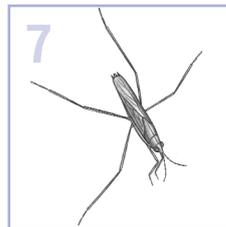*(Ephemeroptera)*

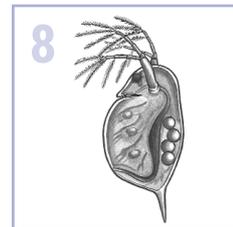**4** Crawfish
(Astacus sp.)
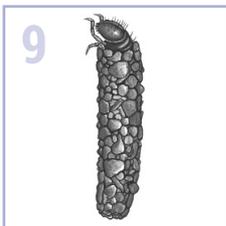
5 Planarian flatworms
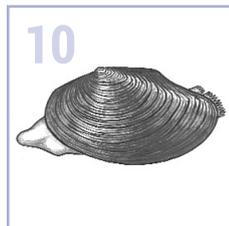*(Tricladida)*

6 Megaloptera larvae

7 Water measurers
(Hydrometridae)
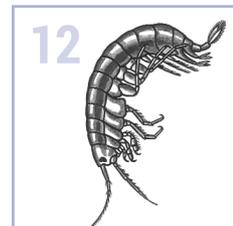
8 Water fleas
(Cladocera)

9 Caddisfly larvae
(Trichoptera)

10 Ark shells
(Bivalvia)
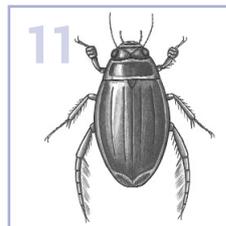
11 Water beetles

12 Freshwater shrimp
(Gammarus sp.)
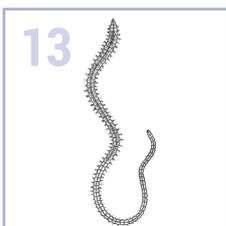
13 Sludge worms
(Tubifex sp.)

14 Leeches
(Hirudinea)
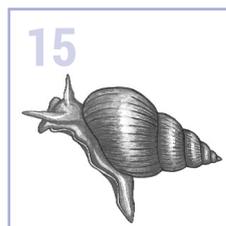
15 Snails
(Gastropoda), **pond snails**
(Limnaeidae)

16 Isopods, **water lice**
(Asellus aquaticus)