Water Minibeasts

Science; Life processes and living things 1a, c
Art; 1a, 5a
Aims: To look closely at a living thing. To record observations of nature through a detailed diagram.

Draw and label a detailed diagram of your minibeast

Encourage the group to look closely at their chosen minibeasts through a magnifying glass. The diagrams could be labelled with head, thorax, abdomen, wings, legs, segments, antennae etc. This is an excellent opportunity for follow-up art work in the classroom. As well as drawing and painting the minibeasts, the class could make models using junk/craft/natural materials. Make sure they include all the features they have noted - body segments, legs, wings, breathing tube, gills, mouth parts etc. When completed the paintings/models could be organised as herbivores and carnivores and tied with string to make a food web.

How does it move?

Does it crawl, walk, swim or slide?

Has it got oar-like hind legs like a water boatman?

How does it breathe?

Does it breath through a tube (water scorpion)?

Does it have gills (caddis fly, mayfly nymph)?

Does it carry around an air bubble like a water snail or water spider?

Where does it live?

Does it build its own protective case (caddis fly larva)?

Does it live on the surface (pond skater)?

Does it live in the vegetation (leech)?

Does it hide in the mud, swim in deep water or live just below the surface?

Has it any other interesting features which help it to survive?

camouflage

jaws

eyes

antennae

wings

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Water Minibeasts Key

1	Is the minibeast less than 5 mm long?	YES? **Water Flea**	NO? Go to 2
2	Does it have legs?	YES? Go to 7	NO? Go to 3
3	Does you minibeast have a hard shell?	YES? **Pond Snail**	NO? Go to 4
4	Is it divided into segments?	YES? Go to 6	NO? Go to 5
5	Does it have suckers?	YES? **Leech**	NO? **flatworm**
6	Are there more than 15 segments?	YES? **True Worm Larva**	TWO? **midge**
7	Does your minibeast have three pairs of legs?	YES? Go to 8	NO? Go to 15
8	Does your minibeast have 3 tails?	YES? **Mayfly Nymphs**	NO? Go to 9
9	Does your minibeast have 2 tails	YES? **Stonefly Larva**	NO? Go to 10
10	Does it have one tail?	YES? **Alderfly Larva**	NO? Go to 11
11	Does it have hard wing cases?	YES? Go to 12	NO? **caddis fly larva** (lives in a hard case made of debris)
12	Do the wing cases meet in the middle?	YES? **Water Beetle**	NO? Go to 13
13	Do the wings cross over?	YES? **Pond Skater**	NO? Go to 14
14	Does the minibeast swim on its back using oar like legs?	YES? **Water Boatman**	NO? **water scorpion**
15	Does it have 4 pairs of legs or more?	YES? **Water Spider**	NO? **water hoglouse**

Pond / River Dip

Science: Life processes and living things 4a, b, c, 5a, b, c
Aims: To describe observations. To understand how animals are adapted to their habitats. To safely explore and understand the habitats of aquatic invertebrates. To practice the use of keys.

1. Observations

Before pond dipping, get the class to look at the water and make observations.

a Can you see any signs of pollution? Describe.

This may be discolouration, smell, scum or litter.

b Can you see the bottom? Describe.

Is the water too muddy/cloudy to see the bottom?

Can the children see rocks, pebbles, sand, gravel, mud or vegetation?

What colours and textures can they see?

c Can you see any plants or animals? Describe.

Look in the water, on the surface and around the banks.

There may be birds such as ducks, or if you are lucky, a heron or kingfisher.

Likely mammals are rats or mink but you may see the rare water vole or otter.

If you cannot see any birds or mammals then look for evidence such as footprints, droppings, fur and feather. A good book to use here is the *Collins Guide to Animal Tracks and Signs* by Bang and Dahlstrom.

Can the children see fish swimming in the water?

Look for plants such as pond weed in the water, water lily floating on top and reeds around the shallows and banks.

Minibeasts may be skimming on the surface, clinging to plants or swimming around in the water.

d Your pond/stream will contain many different habitats where animals can live. Which different habitats do you think will be worth exploring for pond life?

Fresh water minibeasts live in definite places for which their bodily structure, adaptions and habits suit them. These habitats may be the surface, in the mud, hidden in, or attached to, vegetation, under rocks, in the shallows, in deep water.

2. Equipment

pond net

white tray (margarine tubs)

white plastic spoon

magnifying glass

recording table

identification key

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Pond / River Dip Recording Table

Name	
Alderfly larva	
Caddis fly larva	
Flatworm	
Leech	
Mayfly nymph	
Midge larva	
Pond skater	
Pond snail	
True worm	
Water boatman	
Water flea	
Water hoglouse	
Water scorpion	
Water spider	
Other	
Other	
Other	
Other	

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Water Minibeast

Choose one of your freshwater minibeasts to investigate in detail

1 **Draw and label a detailed diagram of your minibeast.**

2 **Where does it live?**

3 **How does it move?**

4 **How does it breathe?**

5 **Has it any other interesting features which help it to survive?**

Water plant

Science: Life processes and living things 1b, 3a, b, c
Art; 1a, 5a
Aims: To look closely at a living thing. To record observations of nature through a detailed diagram.

Draw and label a detailed diagram of your plant (as it looks in the water).

Stem
Leaves
Roots
Flowers
Seeds

Pull a small piece of the plant out of the water. What happens?

Can the plant support itself out of water?

Does the colour look different?

Do the children think the plant could survive out of water i.e. replanted in a garden?

Is the stem stiff? Yes No

Underwater stems need not be rigid as the water supports the plant

How do you think your plant has adapted to suit its environment?

Finely divided underwater leaves have a large surface area for absorbing carbon dioxide from the water. Leaves which grow out of the water (e.g. water lily) are flat and broad so have a greater surface area for absorbing sunlight. Plants use carbon dioxide, water and sunlight in photosynthesis to produce energy. Oxygen is released into the water as a by-product of photosynthesis.

Has the plant any other interesting features?

How is it anchored to the ground/mud/rock?

Does it have flowers or seeds?

Is anything living on the plant or is there any evidence that something has been eating it's leaves?

If possible use books and resources to identify the plants. If this is not possible then once again encourage the children to make up their own names using colour, shape etc. eg. green flat plant, yellow floater.

Forestkeepers

Water Plant

Choose one of your freshwater plants to investigate in detail

1 **Draw and label a detailed diagram of your plant.**

(as it looks in the water)

2 **Pull a small piece of the plant out of the water. What happens?**

Is the stem stiff?

YES ◯ **NO** ◯

3 **How do you think your plant has adapted to suit its environment?**

4 **Has your plant any other interesting features?**

Water Safety

Science: Breadth of study 2b
Aims: To raise awareness of health and safety when visiting water bodies.

WORKING NEAR WATER CAN BE DANGEROUS.

A wildlife pond with a dipping platform or a slow flowing shallow river are ideal for dipping. Always visit the site before taking your group out and complete a risk assessment. Look for slippy or unstable banks. Is there any sign of pollution? Check up and downstream for any potential dangers. Use a stick to test the depth of the water to see if children can wade out in wellies. Also take into account the strength of the current. Avoid the area if the water is scummy and smelly.

Do not take out more children than you can supervise. Enlist the help of parents for extra supervision. Make sure you have a first-aid kit (and a first aider) and lots of waterproof plasters to cover cuts and grazes. Take a piece of rope to throw out in the event of someone falling in and be aware of where the nearest phone is located.

Running close to water/playing near water

Banks can be slippy and steep. To reduce the risk walk and sensible behaviour at all times.

Drinking river or pond water

WEILS DISEASE

A bacterial infection carried in rat urine which can be contracted from infected water. Cover any broken skin with waterproof plasters. Wash thoroughly after any contact with water or objects which have been in contact with water. Symptoms are a flu-like illness and headache which can take up to 2 weeks to develop. Medical help must be sought if these symptoms occur.

BLUE GREEN ALGAE

A toxic algae which appears as a scum on the water surface in hot weather. The algae can irritate the skin. Seek medical help if there has been ingestion of, or extensive skin contact with, the algae.

For further information on Weils disease and blue green algae, contact your local environmental health officer.

Wandering away from group/adult

Children must stay close to their teacher. Leaving the group increases risk of attack from dogs and people.

Wading in too deep

Water can be cold and deep with dangerous currents. Do not go in unless an adult says it is safe. If you need to wade, never wade deeper than wellies. If you are unsure about the depth of water test it with a stick first.

Water Safety

Water can be very dangerous. There are four hazards pictured below. Identify each hazard. Discuss with a partner whether you think the hazards are low, medium or high risk and how you can reduce the risks.

Hazard

Risk Level **Low** **Medium** **High**

How can the risks be reduced ?

Hazard

Risk Level **Low** **Medium** **High**

How can the risks be reduced ?

Hazard

Risk Level **Low** **Medium** **High**

How can the risks be reduced ?

Hazard

Risk Level **Low** **Medium** **High**

How can the risks be reduced ?