Activity W1

MINIBEAST HUNT

Location: Site

Keystage: 1 or 2

Safely collecting and identifying a variety of minibeasts from a specific location.

Equipment:

1. White sheets
2. Sweep nets
3. Tray (optional, but useful for carrying each group's equipment)
4. Observation pots (ones with magnifying lids are helpful but not essential)
5. Soft paint brushes
6. Magnifying glasses (optional)
7. Identification books/sheets/keys – see Appendices 11-14 (plus Appendices 4a and b for tree guides)

Learning Outcomes

1. To discover animals and plants living in the local environment (KS2- Sc2, 5b) and relate life processes to these (KS1- Sc2, 1b and c and 5c).
2. To recognise and compare the main external body parts of animals (KS1- Sc2, 2a).
3. How to treat animals with care and sensitivity (KS1- Sc2, 2e).
4. To group living things according to observable similarities and differences (KS1- Sc2, 4b) and to identify organisms using the branching keys (KS2- Sc2, 5a,b).

Activity

Tree canopy

It is a good idea to show the children how to do this task first for safety reasons. Teamwork is vital and it is important to point out that the pupils should swap duties each time they shake a tree.

1. Find a tree with branches that can be reached easily by a child. Try to identify the tree using books/sheet/tree key.
2. Hold the white sheet out under the branches and shake the tree (tell the children to shut their eyes when they do this, as parts of the tree will fly about).
3. Carefully trap any minibeasts in pots and try to identify the species using books/sheet/key. TOP TIP: raise the sheet under the minibeast and gently brush it into pot using a soft paint brush.
4. Gently release the insects where they were found.

Grassland areas

This task should be done in areas with long grass, *tell the children to watch out for dog mess*. Again, this activity should be demonstrated to the pupils.

1. Lay out the white sheet on the ground and open the pots ready to put the minibeasts inside.
2. Using a sweep net, sweep backwards and forwards over an area of long grass repeatedly. *Ensure a safe distance is kept between the person sweeping and other children.*
3. Close the net to keep the minibeasts inside, then empty the contents onto the sheet.
4. Carefully trap any minibeasts in the pots and identify using books and sheets.
5. Gently release the minibeasts back into the grassland.

Woodland floor

Minibeasts can be found underneath small and large rocks, in rotting wood piles and in and under tree trunks.

1. Look under rocks/wood and carefully trap any minibeasts found. *Children should not attempt to lift any heavy rocks or logs and should beware of disturbing unstable woodpiles in case of falls.*
2. Replace the rocks/wood and identify the species using books/sheet//key.
3. Gently release the minibeasts where they were found.

Extensions:

- Make a record of what you have found (written, photographic and/or sketched).
- Use Appendix 32 to categorise the creatures into groups according to the number of legs.
- Investigate how different tree canopies support varying numbers of invertebrate species. Did you know that 500 species of invertebrates can live on an oak tree, whilst a sycamore supports only 20?
- Investigate seasonal variation of invertebrate abundance in each of the habitats examined.
- Record the frequency of different invertebrates in the various habitats on the site. Which habitats are best for which creatures?
- Identify the wildflowers in the meadow – see Appendix 14.
- Research the importance of wetlands for the reproduction cycle of some insects (especially dragonflies and damselflies) – do Activity W2- Pond Dipping and W5 – Wetland Lifecycles.
- Activity W3 - Woodland Food Chains.
- Look for birds and evidence of mammals (droppings, tracks etc.) See Appendices 15 and 16.

Skills:

- Collecting
- Trapping
- Identifying (could include the use of keys)
- Sorting
- Working as a team
- Communication
- KS2– SC1, SC2

Key Words:

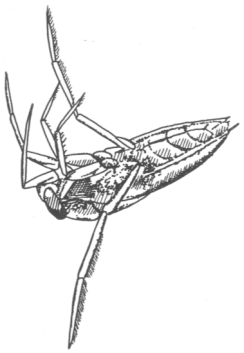
- Minibeasts
- Organism
- Invertebrates
- Insects
- Habitat
- Ecosystem

POND DIPPING

Activity W2

Location: Site

Keystage: 2+
(or younger if very well supervised)



This activity is intended for the large pond within the meadow area to the northwest of the site.

Equipment:
- Pond dipping nets
- Freshwater Invertebrate keys (see Appendix 17)
- Pollution indicators such as OPAL Survey (optional)
- White trays / ice cream containers etc. for holding creatures.
- Smaller clear pots/petri-dishes for examining creatures
- Wellington Boots (useful as the water depth is variable and the banks do get muddy)
- Magnifying glasses (optional)

Learning Outcomes
1. To discover animals and plants living in the local environment (KS2- Sc2, 5b) and relate life processes to these (KS1- Sc2, 1b and c and 5c).
2. To recognise and compare the main external body parts of animals (KS1- Sc2, 2a).
3. How to treat animals with care and sensitivity (KS1- Sc2, 2e).
4. To group living things according to observable similarities and differences (KS1- Sc2, 4b) and to identify organisms using the branching keys (KS2- Sc2, 5a,b).
5. That wetland habitats are vital for many creatures including the larval stages of several insects and all amphibians.

Activity

1. Ensure a **full pond dipping risk assessment** has been completed and is adhered to. Main warnings and precautions are:
   - unhealed cuts are a possible point of infection, and therefore should be kept out of the water (waterproof gloves can be used);
   - Weils disease is carried in water (through rat urine). Hands should be cleansed with Anti-bacterial rub/wipes and washed properly on return to school;
   - show pupils how to hold the pond nets while moving around so as not to knock other people (with the handle upwards and one hand on the end);
   - do not stand too near to the edge of ponds or streams where the water is deep;
   - for water greater than 1 metre depth, a throw-line or pole is recommended.
2. Split children into small groups, with one adult per group (depending on age of children), with each group working in a different area of the pond if possible eg. shady, weedy, open. To reduce the numbers working around the water, split the class into two or three groups, and rotate the groups around different areas doing woodland and/or meadow activities.
3. Demonstrate to the pupils how the nets should be used. Try three long sweeps at surface, middle and bottom depths of water.
4. Empty the nets into trays with a little pond water in each (2cm depth). The nets should be turned inside out and dipped into the water.

5. Explain how to use the key by working through a sample. Work through from the start even if you know what the animal is.
6. Children can then observe the animals at close range using a magnifying glass, or carefully capture (with water) into small clear pots to minimise movement.
7. List all organisms found and use a pollution indicators form if desired to assess water quality.

N.B. Encourage children not to touch the animals as they are very fragile and remember to gently return them all to the pond at the end of the session (keep tray at water's level when tipping them out).

Extensions:

- Animals could be collated into groups according to shape e.g. no. of legs. Use Appendix 32 to help.
- Compare the wildlife found in contrasting locations – e.g. pond versus ditch or school pond.
- Temperature and pH of ponds in various locations could be taken to determine any correlation between this and the species found there.
- Children could sketch the pond including shaded areas & surrounding vegetation.
- Children could draw, paint or model animals or plants.
- Investigate food webs and pond life cycles in the classroom later; Research the importance of wetlands for the reproduction cycle of some insects (see Appendix 18 - Caddis Fly Lifecycle Sheet). Do Activity W5 – Wetland Lifecycles.
- Are there lots of one species? Why might this be? Would the same exercise give the same result in the winter / summer?
- Do Activity W3 – Wetland Food Webs.

Skills:

- Identification
- Classification
- Investigation
- Use of Keys
- KS1/2 Sc2

Key Words:

- Diversity
- Indicator species
- Pollution
- Key
- Freshwater

Activity W3

WOODLAND AND WETLAND FOOD WEBS

Keystage: 2

Location: Site or classroom

Equipment:

1. 30+ lengths of string about 30 cm long (skipping ropes also work well)
2. Cards with appropriate animals etc. on - see Appendix 19 for masters to copy (and laminate)

A practical way to demonstrate food webs and the effect of environmental changes.

Learning Outcomes

1. That animals need food and water to stay alive (KS1- Sc2, 2b).
2. That animals move, feed, grow, use their senses and reproduce (KS1- Sc2, 1b).
3. To use food chains (and webs) to show feeding relationships in a habitat (KS2- Sc2, 5d).
4. That nearly all food chains start with a green plant (KS2- Sc2, 5e).

Activity

1. Give each child (or pair, if more than 26 children) a card and a piece of string.
2. Ask children with cards having a food type only on them to stand in a line facing the rest of the children. They should hold their picture up to the group and say what they are.
3. Ask pupils with cards saying they eat those things to link to their food sources with string. Provide additional string if required.
4. Ask remaining children what their creatures eat, and they should link up with the correct food sources.
   NOTE – If plenty of time is available or the group is more able, simply ask the pupils to link up on their own.
5. Once the web is 'complete' (don't worry if not everything is linked – it's the principle that matters), as the children to raise their arms in the air, with the picture of their organism facing you. If you have a camera, take a picture.
6. Now introduce environmental factors - e.g. 'remove' or decrease an organism. Ask the child to lower their arms, thus pulling on the string; Which organisms feel the effect? Will they increase or decrease? Continue this through the web.

Extensions:

- Discuss factors which may cause organisms to decrease e.g. pesticides, felling trees, disease, pollution, shooting etc.
- Consider the impact of introducing a new organism into an ecosystem – e.g. competition, increased predation etc.
- Do Activity W1 – Minibeast Hunt.
- Do Activity W2 – Pond Dipping.
- Consider the role of different organisms within ecosystems (Do Activity W6 – Nature's Recycling).

Skills:
- KS2- SC2
- Team work
- Communication
- Co-operation

Key Words:
- Interaction
- Environmental factor
- Organisms
- Competition
- Predator
- Prey

Activity W5

NATURE TRAIL GAME

Location: Classroom

Keystage: 2

A simple game to reinforce lessons learnt on site.

Equipment (for each group):
(see Appendix 20 for photocopiable resources)

1. A3 copy of the board
2. Card copies (on two different colours) of question and 'well done'/'too bad' cards
3. Counters
4. Dice (one die per group)

Learning Outcomes

1. To reinforce conservation lessons learnt through other activities.
2. To introduce new ideas in a fun way.

Activity

1. Organise children into small groups.
2. All players must first of all cut out the cards and make their own counter or use something small that they have found.
3. All players begin on the start stone.
4. The first player rolls the die. One of the other players must ask him/her a question from the question cards. If (s)he gets the question correct they can move forward the amount of spaces shown on the dice. If the player answers the question incorrectly they cannot move forward and have to wait until his/her next turn.
5. Play continues around the circle.
6. If you land on the square containing a paw/footprint/boat, pick up a 'well done'/'too bad' card. If you pick up a 'well done' card you can move to the other paw/footprint/boat, allowing you to move through the game quicker. If you get a 'too bad' card you stay where you are and wait for your next turn.
7. When you get to the end of the game, you must move past the stones onto the hikers. To win the game you must answer one final question correctly.

Extensions

- The board can be coloured before starting the game.
- Ask the groups to make up new questions and/or 'well done'/'too bad' cards for other groups to use. These could specifically relate to things learnt during a site visit or other related activity.

Skills:

- Teamwork and co-operation
- Reading and asking questions
- Playing fairly

Key Words:

- Die
- Dice

WETLAND LIFECYCLES **Activity W5**

Keystage: 2

Location: Site or classroom

Learn about lifecycles of dragonflies, cased caddis flies and frogs to discover why ponds are so important for reproduction.

Equipment:
1. Lifecycle cards;
2. Increase/decrease cards.
3. Arrows;
4. 'Chance' cards.

(See Appendix 21 for resources to copy, cut out and laminate.)

Learning Outcomes
1. Be able to describe the lifecycle of at least one pond creature.
2. Be aware of factors which can affect the biodiversity in a pond.
3. Know that animals move, feed, grow, use their senses and reproduce (KS1- Sc2, 1b).
4. Understand the importance of Ecology – i.e. the interaction of living organisms with each other and their physical environment.

Activity

1. Pupils to work in groups of 4-6. Give out the lifecycle cards – (dragonfly, frog, newt, cased caddis fly – groups can have different ones)
2. Ask the pupils to arrange the lifecycle in order. Check they have it right, and in a cycle.
3. Give each group a chance card. Ask them to work out what effect this with have on each stage of the lifecycle. They should use the increase/decrease cards to show this. Allow groups to exchange card sets and chance cards or swap tables/floor space so they can look at other groups' lifecycle diagrams.
4. Discuss the findings with the class, reinforcing the message of ecology – i.e. the knock on effect of a change in one organism/environmental factor because everything is linked. Mention the fact that the creature in the adult phase is likely to be the one that can 'escape' the pond, but then there are issues regarding where it can go next: Is there another clean pond available? There will be competition with creatures already there. Therefore it is a really good to create new ponds!

Extensions:
- Investigate the lifecycles of other (pond) creatures.
- Research other factors which may disturb organisms' lifecycles.
- Do Activity W2 – Pond Dipping.
- Map out the ponds in your local area to see where adult organisms could 'escape' to if required. Do Activity M1 - Habitats Trail, with a focus on finding the ponds on the site (there are 14 at the time of printing).

Skills:
- KS2- SC2
- Team work
- Communication
- Co-operation

Key Words:
- Interaction
- Environmental factor
- Organisms
- Competition
- Predator
- Prey

NATURE'S RECYCLING **Activity W6**

Keystage: 2

Location: Site (or around a hall, field or even a classroom)

An active way to discover the different roles within an ecosystem, with a particular focus on decomposition and decay.

Equipment:
- Nature's Recycling Flags (Appendix 22) laminated and hole-punched;
- Pipe-cleaners/string;
- Nature's Recycling Activity Sheets (Appendix 22);
- Clipboards;
- Pencils.

Learning Outcomes
1. Understand that organisms within an ecosystem have contrasting but complementary roles.
2. Increased awareness of the different 'jobs' within an ecosystem, in particular decomposition.

Preparation for activity

1. Hang the flags (Appendix 22) around the site/hall within an easily defined area which is straightforward to supervise.
2. Decide which of the worksheets (Appendix 22) is suitable for the children in your group – you may want to differentiate, according to ability, within the group.

Activity

1. Provide children with a copy of the Nature's Recycling Activity Sheet (Appendix 22) as well as a clipboard and a pencil.
2. Explain that organisms in the environment all have different roles – see what they already know – e.g. predators, prey, scavengers, decomposers etc. Can they name any of these organisms and any special characteristics they have to help them with their role? e.g. speed, forward/side vision, good sense of smell etc.
3. Show the children an example flag and how to work out the answer (filling the blanks).
4. Explain the area the flags are hanging in and make it clear they do not need to go beyond certain boundaries.
5. Let the children work in small groups or pairs as appropriate to complete the activity.

Extensions:
- Investigate the organisms on the flags further. What do they eat specifically? What eats them? Would we describe any of them as pests or diseases?
- Consider what the environment would be like without the decomposition organisms.
- Do a fungal foray (particularly in autumn) use Appendix 5 to help you identify them.
- Research other types of fungi and bacteria (e.g. diseases, symbiotic associations).

Skills:
- Reading and comprehension
- Teamwork
- Making connections/filling gaps

Key Words:
- Interaction
- Decomposer
- Organisms
- Fertiliser
- Predator
- Prey

ENVIRONMENTAL ART **Activity W7**

Keystage: 1 or 2

Location: Site or School/Centre

Some ideas for craft activities to do after or during your visit.

Equipment:
- Variable depending on your choice of medium/activity. e.g. clay, wool, string, willow, fir cones, seeds/pulses;
- Natural materials collected from the site.
- Examples of what you are to make (see Appendix 23 for some pictures – you can add pictures of your own creations to this collection).

Learning Outcomes
1. To be aware of the creative potential of natural materials found at the site.
2. To have learnt or developed at least one practical skill.

Activity

1. Show some of the types of materials available (to collect).
2. Show some examples of what you are going to make. Suggest they might want to make a creature that can be found on the site. Give a quick demonstration (incorporating health and safety instructions). When bending willow/hazel into loops, tell them to do this firmly but gently to prevent snapping. When making willow circles, encourage them to overlap at least two thirds of the wood then twist them around. These can be used to make spiders' webs, bird nests or interesting mobiles, with natural materials hanging off.
3. Children to explore the site/materials, gathering items to make their art work. Tell them how long they have – 10-20 minutes, depending on the size of the site. Tell them not to pick flowers (except in short mown grass), and try to gather materials which are on the ground, not living. (If appropriate, some leaves, stems etc. may be removed, with permission.)
4. Gather everyone together. Provide additional materials and support for children to produce artwork. Photograph.

Extensions:
- Research where the materials used have come from; Are they Animal, Vegetable or Mineral? Predict and investigate the properties of the materials used. See Appendix 24 for extension worksheets and ideas.
- Link with Activity T6 – Leaf Rubbing and T7 – A Tree's Skin to make a collage of a tree.

Skills:
- Art/Sculpture
- Observation
- Creativity
- Fine motor skills (e.g. tying knots)

Key Words:
- Natural materials
- Sustainable
- Gathering
- Mobiles

ENVIRONMENTAL GAMES **Activity W8**

Keystage: 1 or 2

Location: Site or School/Centre

This Bat-Moth game is an easy game to use as an introductory or follow-up activity, or simply fill a spare moment during a visit. More ideas in Appendix 25.

Equipment:
- Blindfold;
- Enough people to make a circle.
- See Appendix 25 for some more detailed guidance/

Learning Outcomes
1. To have learnt, in a practical way, how bats locate their food by echolocation.
2. To use their senses to experience being 'predator' and 'prey'.

Activity

1. Ask the group what they know about how bats feed and echolocation. Discuss their nocturnal lifestyle.
2. Have the group standing in a circle. Ask who would like to be the bat and wear a blindfold. Stand them in the middle of the circle.
3. Choose 2-4 volunteers to be the moths. They should also stand in the circle.
4. Explain how the game is to be played: The aim is for the bat to tag one of the moths. (S)he should say, "Bat!" then the moths need to echo, "Moth!" each time. The bat needs to locate the moths using hearing only, and tag them. The moths can of course move to escape the bat, so do be aware of the risk of minor collisions!
5. Swap the bat and moths around so everyone has chance to have a go.

Extensions:
- Investigate the bats that live in the local area/park: What do they feed on specifically? When do they hibernate? When can you see them? Where do they roost?
- Do an evening bat watch – use some bat detectors and/or contact a local 'bat group' for some expert help.

Skills:
- Listening
- Locating sound

Key Words:
- Echolocation
- Nocturnal