

## **BIO-DIVERSITY**

**All the questions and activities are aimed at upper Key Stage 2 and lower Key Stage 3. Each of the questions is based upon the learning objectives and outcomes for Key Stages 2 & 3, emphasising creative and interactive learning. The resource is intended to reinforce and extend the knowledge and understanding of the children as they explore the way in which plants, animals and their environment are dependent upon each other. The activities are designed to encourage children to investigate and form conclusions and suggestions from their observations.**

**The material can be used to reinforce learning from Key stage 2 whilst introducing topics at Key Stage 3.**

**The questions and activities can be used in conjunction with the 'Bio-Diversity' game or as a 'stand-alone' resource.**

Q1 What are 'margins'?

(A field margin is any area that forms the perimeter of an agricultural field)

Activity: Find a large picture from a magazine. Using pieces of card, draw a different size of margin on each of the cards. Cut out each 'margin' so that it forms a frame around your chosen picture. Place the various margins over the picture one at a time. Can you identify what is the most useful width for a margin? Why do we need margins? What happens if we don't use margins?

Q2 Can you suggest what a 'beetle bank' might be? How many ideas can you think of? Share your ideas with the rest of the group. Who, do you think, has the best definition of a 'beetle bank'?

(A beetle bank is an isolated strip of perennial vegetation in an arable field. It is intended to support a wide range of creatures providing a habitat for ground-nesting birds and small mammals that prefer to nest in open farmland away from field boundaries).

Activity: Choose a neglected or unused part of the school grounds (make sure that you get permission to use the chosen area first!). Mark out an area approximately six metres long by one metre wide. Lightly dig the soil and rake it into a mound along the length of the marked area. Plant

or sow seeds of various grass varieties. Divide the length of the area into several sections and label each section either by number or names of group members). On a regular basis, count the variety of insects and other beasts (!) that you find in each section. Keep a log of your findings and use the information to create a database.

Q3 Why would farmers create 'beetle banks'? Can you think what benefits the farmers might expect from having beetle banks in their fields?

Activity: Find out what birds, mammals and other species might inhabit a beetle bank. You might like to use the Internet to investigate what you might expect to find in a beetle bank. ([rspb.org.uk](http://rspb.org.uk))

Draw and label the different birds, mammals and other species. During the next four weeks, keep a log of any birds, mammals or other species that you see in your garden at home or at school. Are any of the birds, mammals and other species that you see the same as those you would expect to find in a beetle bank?

Q4 Can you think of a definition for the word 'habitat'?

(Usually described as a place where there is a collection of plants and animals living together. Habitats include such places as gardens, seashore, forest, and wasteland).

Activity: Write the word 'habitat' as an acrostic. Can you think of different plants and animals, that you would find in a habitat, to match each letter of the word? For example, 'H' = hedgehog or hawthorn tree.

Q5 Why would a farmer grow bird food?

Activity: Can you find out what type of birds the farmer might like to attract to the fields? Can you identify any birds that the farmer would rather not have in the fields? Why are some birds less welcome than others? Create a database to include both sorts of birds.

Q6 Can you suggest why animals need the plants that are found in or around the farmer's fields? Why do the plants depend upon the animals?

Activity: Can you think of a definition of a 'food chain'? (The transfer of energy from one organism to another.) Find out what a 'primary producer', 'herbivore', 'secondary consumer', 'carnivore', 'primary consumer', and 'predators' might be. Draw a picture of each of these and, from the same food chain, make a hanging mobile for your classroom.

Q7 How are 'food webs' different to 'food chains'?

Activity: Design a set of playing cards where each card shows an item that you might find in a food web. Place all the cards together, shuffle the cards and distribute them between two to six people. In turn, each member of the group places one card, picture up, in front of them. The winner of that round is the person whose card shows the highest in the food web. For example, if you have five cards, which show a dandelion, fox, snail, rabbit and a blackbird would mean that the fox is the highest in the web because it can eat each of the other items (and where none of the other items can eat the fox, unless you find a really vicious dandelion!!). The winning player collects all the cards and play continues until there is only one person left with all the cards or the winner is the person with the most cards after an agreed number of rounds.

Q8 Why is it important to have as many varieties of plants and animals in a particular habitat?

Activity: In a habitat of your choice, identify and note all the plants and animals that you can find. Create a branching database for each of these, which use questions to identify the plant or animal.

Q9 What does a crop need to grow, resist disease and ripen for harvesting?

Activity: Find out what the words 'pesticide', 'herbicide', 'insecticide' and 'fertiliser' mean. What does each one do? Can any of them be harmful to a habitat? Make a list of

all the positives and negatives of each item used. Try and find out if there are any alternatives for each item.

Q10 How do you think a habitat will change during a year? What type of changes will take place?

Activity: Choosing one habitat, keep a log of all the changes that take place during the school year. What changes occur? How do they affect the habitat? Can you think of ways which you can improve the habitat?

Q11 How many different habitats can you identify?

Activity: List as many different kind of plants and animals that you can in five minutes. Try and match the plants and animals to the habitats you identified earlier. Can some of the plants and animals live and survive in more than one habitat?

Q12 Can you identify what animals are active or resting during different times of the day?

Activity: Keep a detailed diary of animal activity around your garden and at school. Can you think of anything that might change this activity? (road works, construction, demolition).

Q13 How do different weather conditions affect the activities of different species of plants and animals?

Activity: Using the habitat chosen in Q10, determine how weather changes affect the plants and animals that you have already identified. Do some plants and animals prefer certain weather conditions than others?

Q14 In your chosen habitat, can you identify predators and prey?

Activity: Create a table of general features of predators and prey. What features of a habitat do predators/prey prefer? How can predators be of benefit to farmers?

Q15 How many food chains can you identify on an arable farm that incorporates margins, beetle banks and areas of bird food? (Try and identify producers, consumers, herbivores and carnivores).

Activity: Choose one predator or prey that can be found on a farm in your area. Can you find out the population for that particular predator or prey? Try and predict the population for your region and identify the areas of the United Kingdom where you are likely to find the highest concentration of that predator or prey.

Q16 What, do you think happens when part of the food web disappears?

Activity: Game: make a list of all the different types of habitats that you can think of eg pond, meadow, seashore, garden. Write the name of a habitat on a card and continue until you have a card for each identified habitat. Design a series of cards with each showing one item of the food web eg rabbit, dandelion, fox.

Shuffle each of the two packs of cards. Place the habitat cards in one pile and the food web items in another. Each player then takes one habitat card. Deal three food web item cards to each player. Each player then tries to match the cards to their habitat card. The first player takes one card from the food web pile and, if they need that card they place it with their habitat card. If, however, they do not need the card, they place it face up, next to the other food web cards. The next player can choose whether they need the card or they want to take a card from the food web pile.

The game continues until one player has completed their food web for their habitat.

Q17 Can you name the seven processes of life?

(Nutrition, Respiration, Locomotion, Excretion, Sensitivity, Maturation, Reproduction.)

Activity: Split into small groups and, using the seven processes of life, see if you can work out how they apply to each member of a particular habitat. For instance, how does a dandelion feed?

Q18 How dependent is each member of the food web on the other?

Activity: Using the cards that you made for Q16, recreate a series of food webs. Remove one card from the web and discuss what impact this would have on the rest of the food web.

Q19 What is an 'Ecosystem'?

(An ecosystem is a community of plants and animals and their environment)

Activity: Working in pairs, try and find out what 'community' means. Can you think of some examples of communities that you have contact with on a regular basis? (try thinking about your family or school or even where you live).

Draw your examples on a large piece of paper. Can you identify the links between each member of the community? Draw lines between each linked member to show how they are connected. What would happen if one of the links were broken or that member of the community disappeared? For instance, if the Fire Brigade or Hospitals were no longer available, what impact would that have on the rest of the community?

Q20 Why is 'ecology' important?

Activity: Working in small groups, write the word 'ecology' along the left-hand side of a piece of paper, as a mnemonic. Can you each suggest words for each letter that are connected to the study of living things and their surroundings?

Eg. E: environment C: community O: organism  
L: light O: ovule G: germinate Y: yoghurt (micro-organism).

Can you think of other words, related to ecology that you could make a mnemonic from?

