Habitats

These activities are designed to introduce children to the different habitats around them

Ageing a Hedge
It is believed that the age of a hedgerow can be determined roughly by multiplying the number of tree and shrub species within a 30m length by 100. This is complicated by the fact that sometimes extra species have been planted purposely to increase diversity, and that Cornish hedges are somewhat different in nature from the traditional hedges found elsewhere in Britain, but it should nevertheless yield some interesting comparisons between hedges in the area.

Classroom Vivaria
An indoor vivarium gives excellent opportunities for investigating the habitat needs of species, how they use their environment, how they interact with other species and how they live in general. Place the vivarium in a cool place, away from direct sun.
An aquarium tank, a plant propagator or even a sweet jar may be used. Put damp, but not wet, soil in the base of it. Try to recreate the essential features of the creatures' observed natural habitat; this is a useful educational exercise in itself. The habitat must provide the correct food. A piece of cuttlefish is a good source of calcium for various creatures. Water is essential: a dish of water, a wet sponge and a daily spray should satisfy the needs of the various creatures. Air is not usually a problem, as small invertebrates consume very little oxygen. Various types of shelter will be needed. Normally the decomposer organisms will deal with the waste materials produced by others.
Such a vivarium should be suitable for ground-living creatures like woodlice, millipedes, slugs, snails and earthworms. Slugs and snails need fresh lettuce, sliced vegetables and porridge. The others should find their food within the materials you have gathered from their habitat. Take care over predators such as centipedes and ground beetles: their numbers should be strictly limited, unless your priority is to demonstrate predation.
For animals feeding above ground, e.g. caterpillars, ladybirds and aphids, a different approach is needed.
For higher animals, e.g. amphibians and reptiles, consult the Cornwall Wildlife Trust for specialist advice.

Follow That Rain Drop
Visiting different sites on the school grounds; discuss what might happen to rainwater falling on each type of surface. With reference to a map, try to work out where it will end up, what route it might take, what habitats it will pass over or through on its way and what substances it might pick up on its journey. Ideas

might be tested to some extent by making subsequent observations on a rainy day.

Freshwater Aquarium
Pond creatures can be maintained in the classroom in a tank of water. Place your tank in a warm and light place but not in permanent direct sunlight. Introduce some pond water and pond sediment to start off your community of pond life. Tap water used to top up the aquarium should be left for two days to allow its chlorine to be released. Aquatic plants should be included, as well as some emerged plants or sticks to allow creatures to crawl out of the water, and an island with a slope for beaching if tadpoles are to be kept through metamorphosis. Be careful not to include too many predators. Once set up, the aquarium should be self maintaining. Remember to use a cover which prevents escapes.

Freshwater Studies
Study a river or stream. Many of the principles of freshwater life can be studied equally using ponds. Emphasise the importance of wetlands (the marginal vegetation around some of the ponds is a small scale example of such habitats) in ensuring a clean and reliable supply of fresh water: these habitats filter out pollution, store rainfall and release water steadily into rivers and streams; their destruction leads to floods and droughts.

Geological Foundations
Explore the non-living basis upon which habitats depend for their existence, including rocks, soil and water. Consider how the nature of these materials determines the types of animal and plant communities found in association with them. Look at weathering in rocks and buildings, and recognise its importance to nature. Extend the study to manufactured materials, and discuss the reasons for their usefulness or otherwise to nature.

Habitat Comparison
Survey animals and/or plants in two different habitats using methods described in species surveys. Consider how their differences can be related to the differences between the habitats. Comparing the species between zones within a habitat (e.g. pond bank, hedge or field edge) or between examples of the same habitat subjected to different conditions (e.g. sheltered/exposed, shaded/unshaded sites), allows observation of more subtle adaptations.

Habitat Profiles
The distribution of animals and plants along a transect line is affected by the profile of the land, of the modified features (e.g. ponds and hedges) and of some of the plants themselves (particularly trees and shrubs). Cross-sections of woodlands, hedgerows, ponds and other habitats should be produced from measurements taken, and species distribution should be plotted onto them.

Hedge Zonation
Quadrats; Transects. Remember to look at the vertical as well as the horizontal zonation, and compare zonation between the two sides of the hedge (which will vary in their exposure to sun and wind).

Invent an Animal
Ask pupils to design (on paper or as a model) an animal adapted to cope with specified environmental conditions. They should consider how it will feed, drink, excrete, breed and survive adverse conditions and predation.

Living with Trees
Compare the life associated with different species of trees and shrubs: some are much more beneficial to wildlife than others, and, in general, native species will support a much more varied surrounding flora and fauna than exotics, while conifers (all exotic as far as Cornwall is concerned) will have little to offer.
Look for the following: signs of leaves or other parts of the tree being eaten or inhabited; birds, insects or other creatures visiting, or sheltering within the tree; lichens or plants growing on the tree; galls; fungi on or under the tree; abundance and variety of plants beneath the tree; creatures in the leaf litter and dead wood (see decay); whether decay of dead material seems to be rapid or slow; tracks, droppings and empty nut shells etc.

Mapping School Grounds
Give pupils a basic outline of the school grounds, taken from a ground plan or other map, perhaps showing only the main buildings and landmarks to allow orientation. Ask them to follow prescribed routes, mapping out further features as they go. Then ask them to prepare a detailed map of the school grounds, using symbols as in printed maps and showing in particular the different habitats (short grass, rough grass, hedges, trees, ponds etc.). Invite them to produce what they would consider to be a better design for the school grounds. This might include the planning of a trail taking in the features of interest. The activity can also be used to introduce the use of simple co-ordinates.

Matching Beaks to Feeding
There is a tremendous variety in beak shape and size within the birds of any habitat. Try to relate each species' beak to its feeding method and food.

Mini Nature Reserve
Designate a small area as a mini nature reserve. This could be, for example, a section of pond bank, a short length of hedge or a portion of any other habitat. Ask each pupil to map out his or her own nature reserve, marking features of interest. The nature trail can be interpreted by the pupil through an annotated map, a written nature trail guide corresponding to numbered posts, or a guided tour.

Model Habitats
Make a model of the habitat you are studying, showing its zonation and perhaps including the species found within each zone.

Murals
Paint a mural on a large sheet of paper. Show the structure of the habitat and ask the pupils to paint animals and plants in the appropriate zones.

Natural Art Exhibition
Ask children to collect from each habitat studied (in a non-destructive way) and somehow display a number of objects which represent, to them, the essence of that habitat. Alternatively, very small objects or fragments taken from each habitat can be mounted on a sticky surface (double-sided carpet tape is ideal).

Natural Succession
Record changes from year to year in habitats which have been left to natural succession. It is useful to mark positions for quadrats and transects (see species surveys) so that these can be compared each year. Transect studies can show interesting patterns of migration of species and habitat zones.

Plan a Nature Trail
Using an OS map, plan a route which will allow you to look at a number of contrasting habitats. Try to write the basis of a trail guide using information on the map alone. Follow the planned route on foot, using the map and a compass. Note how some areas vary from the impression given by the map, and amend your guide accordingly. Decide on which features/habitats are of most interest, and mark numbered points on the map to show where they might best be observed. Keep these points fairly regularly spaced. Write an interesting account of each point.

Self Sufficiency
Use a classroom vivarium or aquarium as an example of a (more or less) self contained and self perpetuating ecosystem.

Soil Studies
Different plants are adapted to live in different types of soil, as indicated in the descriptions in wildflower identification books. Try to deduce soil types from species present. Examine the soil to confirm. Compare soils in various ways: examine closely for particle size and organic content; test pH; compare texture (sticky, sandy etc.); compare drainage by placing equal quantities in filter funnels and seeing how long an equal volume of water takes to pass through each; compare communities of decomposers (see decay); consider human influences on soil.

Tadpole Tank
Set up and maintain an aquarium. Use only a small amount of spawn, as

tadpoles will die if overcrowded. An air pump is a useful precaution against deoxygenation, but make sure it does not stir up the water too much. Drop a few rabbit food pellets into the water each day during the tadpoles' early (vegetarian) stages; feed a little flaked fish food daily from the time they grow hind legs. Other creatures should take up any surplus, as long as it is not too excessive, so you should not need to change the water. Release the froglets or toadlets next to, but not in, their original pond. Newt tadpoles can be kept in the same conditions, but will find their food (small creatures) within the community of pond life within the aquarium. As well as monitoring growth and development, you will be able to observe life processes such as feeding, breathing and locomotion; each of these varies with age. Factors affecting development rates can be investigated by varying temperature and population density.

Treasure Hunt
Mark a cross on a "treasure map" of the area. The children must find the spot and dig with trowels for "treasure" (stones, worms, twigs, dead leaves etc.). These can be temporarily displayed on a large sheet of paper to show the diversity of soil contents.

Wet and Dry Plants
Compare structures carefully between plants in the different zones in and around a pond, including the surrounding dry land. Some of the differences observed might be as follows: the most aquatic plants will have little supporting strength, while land plants will be rigid; submerged leaves will be divided to increase surface area for respiration; plants will vary in their buoyancy; semi-aquatic plants may have air spaces for internal movement of oxygen.

What Goes on in School Grounds?
Explore the features of the school site, including its buildings, playgrounds, sports fields, nature areas etc. Examine how each is used and managed and by whom. Discuss the need for each, and the ways in which they must co-exist. This can lead to discussion of the compromises necessary to accommodate all activities (including nature conservation).

Woodland Zonation
If possible, a visit should be made to a "natural" woodland area to relate its structure to that which planting on the school grounds should aim to achieve. There should be both a vertical (canopy layer; shrub layer; herb layer; ground layer) and a horizontal zonation. Transects can also be taken from individual trees to open areas, both on the school grounds and in a woodland. Also compare life on different sides of tree trunks and trees.

Woodlouse Habitat Choice
Woodlice are convenient subjects for habitat choice experiments. Take care when dealing with these creatures as they are actually quite delicate: they may die from desiccation if conditions are dry or "drown" almost instantly on contact

with water. A rotting plank of wood placed over vegetation will act as a good source for collection, and they should be returned as soon as possible.
Set up tanks or other containers in which the woodlice have clear choices and see where they go - in some cases their decision might take some time while in others they will respond immediately. Examples might include damp/dry, light/dark, warm/cool, sheltered/open.