Dance Activity

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Insects, which includes butterflies and moths, can be found in many different types of habitats such as grassland, woodland, gardens and parks in towns/cities, and farmland. A habitat is a natural environment or home for many different types of living things like plants and animals. Each type of butterfly and moth lives in a habitat to which it is suited. A suitable habitat is one that provides the basic needs required for a butterfly to live successfully (survive), such as the right types and amount of food. Please see our handout for details of the life cycle of butterflies and moths. They have four stages in their life cycle: egg, caterpillar, pupa and adult. Changing shape through these four stages of the life cycle is called metamorphosis. The stage in which they eat (lots!) is the caterpillar stage. Most butterflies and moth caterpillars only eat plants. Animals that only eat plants are called herbivores. Moths and butterflies heavily rely on the plants the caterpillars eat to get the right nutrients and energy to grow and survive. During the adult stage, some types of moths and butterflies eat nectar from plant flowers. A suitable habitat for a butterfly or moth must therefore have the right type and quantity of food needed in both the caterpillar and adult life stages.

In some habitats, humans grow plants to either enjoy them (e.g. in parks and gardens) or to eat them (e.g. in farmlands). But, sometimes in these habitats moth and butterfly caterpillars like to eat these plants. Humans think of these caterpillars as pests, and have made chemicals, called pesticides, that can get rid of these unwanted caterpillars. A pesticide that is specifically made to kill insect pests is called an insecticide. Just like all other animals, humans need the right types and amount of food to eat. Without pesticides farmers would struggle to grow enough food, and the right types of food to feed all of the people that live in the UK, and food would become much more expensive to buy in the shops.

Although using pesticides makes sense, how can we protect caterpillars of moths and butterflies that live alongside the pests, but are not actually causing damage to the plants that humans want or need? Many of these types of butterflies and moths play an important role in nature. A large number of animals eat butterfly and moth caterpillars; for example other insects, spiders, frogs, toads, lizards, birds and small mammals like hedgehogs. This makes moth and butterfly caterpillars an important part of the food chain in the habitats in which they live. A food chain describes the order in which living things depend on each other for food. Most food chains start with living things that make their own food, like plants. Scientists call them

producers. Scientists call living things that eat other living things consumers. A moth and butterfly caterpillar that eats a plant is called a primary consumer – this is because it is the first living thing in the food chain to eat something else. Animal predators, like birds, that eat prey like caterpillars are called secondary consumers because they are the second living thing in the food chain to eat something else. An animal that eats the bird (e.g. a bird of prey or a fox) would be called a tertiary consumer because it is the third living thing in the food chain to eat something else. Each consumer in the food chain needs the energy from their food in order to grow and survive.

Butterflies and moths are well studied in nature. In UK the number of butterflies is recorded each year, and scientists use these numbers to estimate how healthy the environment is. If the butterflies suffer, many other animals will also suffer. If the number of butterflies becomes smaller, this means that the habitat has become less 'healthy' and less butterflies have been able to live there successfully (survive). A drop in the numbers of butterflies will affect the animals that use them as food (the secondary consumers), causing a drop in the number of secondary consumers too. A drop in the number of secondary consumers, will cause a drop in the number of tertiary consumers. Such that the whole of the food chain is affected, and the total number of animals living in that habitat becomes smaller. Butterflies are therefore very useful environmental indicators, and are called indicator species.

In the UK, butterfly and moth numbers are getting less in many of the habitats in which they live. There are many reasons why, but 3 examples are given below:

1. Their habitats have been destroyed – for example to plant more trees, to build roads, houses and towns, or to create more land to farm and make food for humans
2. Their habitats have been split-up into smaller places. This reduces the amount of space that the animals have to live, and it can also cause food resources to become spread out so that they are very far away or difficult to find. Splitting-up habitats in this way is called habitat fragmentation. Habitat fragmentation can also change the conditions in the habitat because sometimes it can change the structure, number and types of the plants in the habitat. For example, less tall trees, hedges and shrubs in a habitat can allow more sunlight to reach the habitat, making the habitat feel warmer and become drier. This can cause changes in plants that make them less healthy to eat. For example, plants that grow in dry conditions have less water and nutrients in their leaves. This means that a caterpillar that eats this plant will get less energy causing it to grow more slowly, and making it difficult for the

caterpillar to get enough energy to successfully reach the next stages of its lifecycle - the pupa and adult stages.

Insecticides used to kill insect pests can accidentally kill moth and butterfly caterpillars that are not pests, and are good for the environment. Sometimes, rather than immediately kill the moth or butterfly the insecticide can have unwanted side-effects like affecting how well the caterpillar grows, or how well the caterpillar can move to find food, or a safe place to hide from predators. These unwanted side effects can cause a drop in the number of moths and butterflies that survive.