

First published in 2009 by Orpheus Books Ltd.,
6 Church Green, Witney, Oxfordshire OX28 4AW England
www.orpheusbooks.com

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Created and produced by Orpheus Books Ltd

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ISBN 978 1 905473 51 9

A CIP record for this book is available from the British Library.

Printed and bound in Singapore



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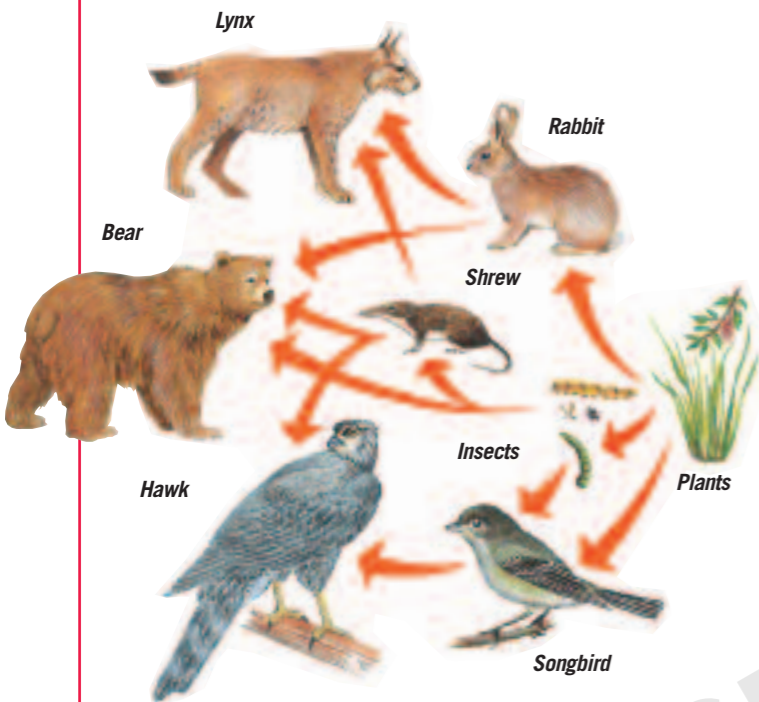
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ECOLOGY

THE WORD ecology comes from the ancient Greek *oikos* (*ecos*) meaning “house”. It can be thought of as the study of “nature’s house-keeping”. Ecology looks at how animals, plants and other living things survive together. It studies how they depend on and relate to each other, such as being plants and plant-eaters, predators and prey or parasites and hosts. It also examines how living things fit into the environment with their non-living surroundings including air, water, soil and rocks, and how they cope with changing conditions such as weather, climate and seasons.

The green tiger beetle is a fierce hunting insect with large jaws to seize prey such as worms. It is a single organism or individual but it cannot live alone. It needs other animals for food, plants for shelter and a mate of its kind for breeding.

The green tiger beetle is part of the soil community (*below*). It competes for small prey with others such as centipedes and spiders. It may be hunted itself by larger predators such as shrews or moles. The part or role that an organism plays in its community, in this case as a small predator, is called its ecological niche.



One of the most important activities living things do is feeding. Plants “feed” on sunlight and minerals from the soil and form the group known as primary producers. Animals that eat plants form another group, herbivores. They range from tiny insects to rabbits. Animals that eat animals are carnivores. When plants and animals are linked in this way, it is called a food chain. Since animals eat more than one kind of food, food chains are part of more complex food webs, such as this example (*left*) from a North American forest.

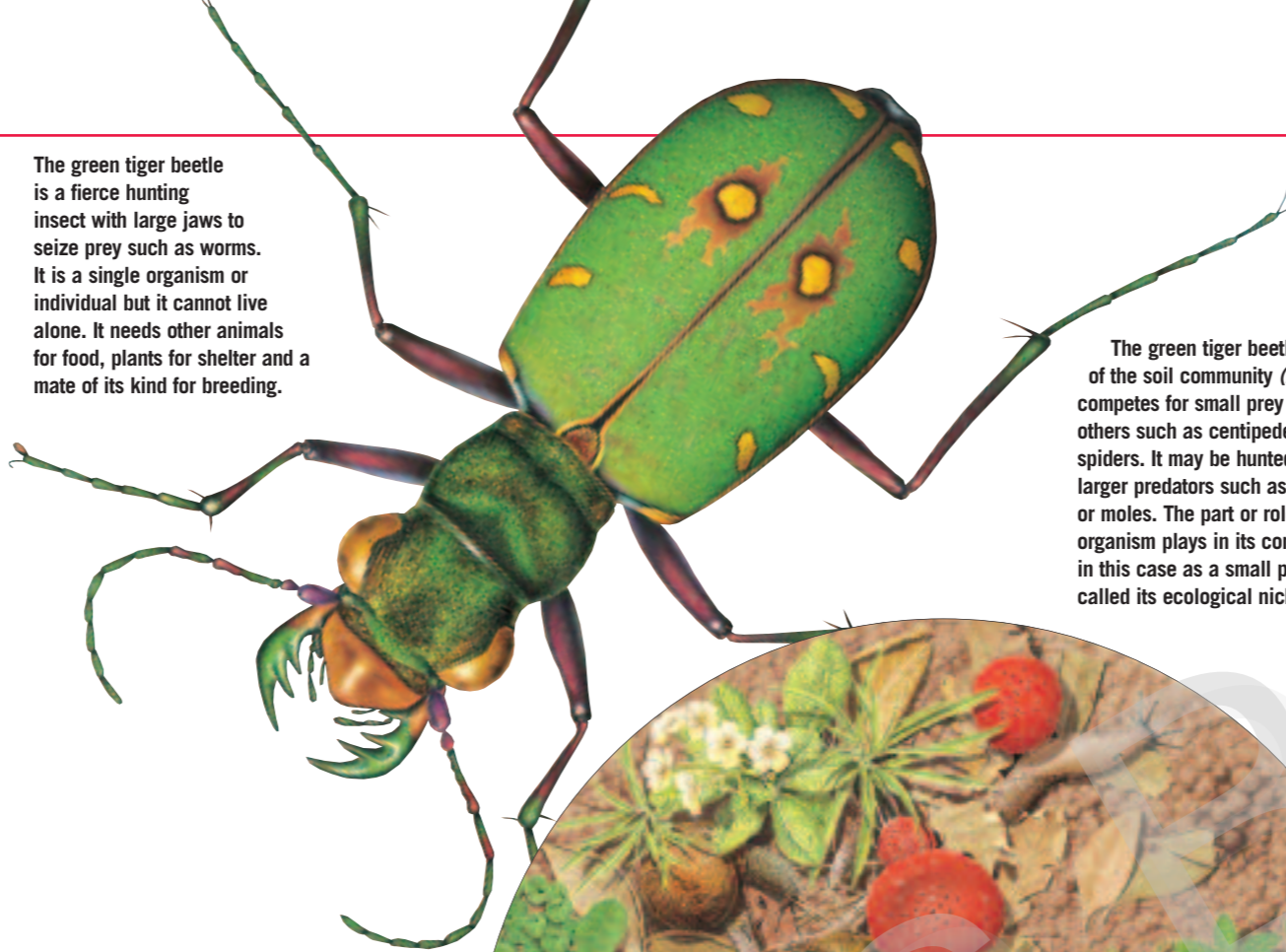
Ecology is a “new” part of the life sciences. Compared to zoology and botany (the studies of animals and plants), which are thousands of years old, ecology has been carried out in a detailed and serious way for less than one hundred years. It is also a very complex and wide-ranging science, relying on topics such as meteorology (the study of weather and climate) and oceanography. In turn, the basic ideas of ecology are used in related subjects such as farming, pollution control, conservation and countryside care.

Ecology is divided into various specialist areas such as the freshwater ecology of ponds, rivers, lakes and marshes, marine ecology of estuaries, seas and oceans, and terrestrial ecology of the land. Ecologists are interested mainly in what living things—called organisms—do in their surroundings. They think of the natural world as being divided up into ecosystems, distinct areas in which living things interact with their environment. All ecosystems taken together form the biosphere, the living world.

COMMUNITY AND HABITAT

The basic part or unit of ecology is an individual organism, such as an animal or plant. Individual organisms hardly ever live on their own. They exist and interact with others, satisfying their needs such as shelter and nourishment. For example, an animal eats part of a plant, then the plant grows using that animal’s droppings as fertilizer.

Living things in an ecosystem that interact and rely on each other for survival, form a community. Their natural homes may be small like a garden pond or a rotting log, or extensive, like a lake or forest. These homes are all different types of habitat, places based on similar kinds of plants or physical features such as soil type. Examples are oak woods, salt marshes, coral reefs, sand dunes or the deep ocean floor. The largest habitats are vast areas known as biomes (*see page 6*).



Human activities have replaced vast areas of countryside with a mosaic of artificial habitats (*right*). A hedge is like a strip of woodland, while a river has vegetation along its banks. The rest is fields. Left alone, they would slowly change back to the natural habitat of the region. In the case of the soil community (*above*), this is broadleaf woodland.



WORLD BIOMES

THERE ARE several large-scale types of biome on Earth, nine of which are featured here. Each is made up of smaller-scale habitats that are generally similar to each other. For example, woodlands of oak, beech, maple and other broadleaved trees make up the temperate woodland biome.

Each biome is the product of the climate, rocks and soil of the region. The far north and far south of the Earth, covered with snow and ice for most of the year, are polar biomes. Just south of the northern polar lands is the tundra biome. It is too cold for trees, but the upper soil thaws during the brief summer and small plants like mosses and sedges grow. The boreal forest is slightly less cold. Conifer trees can grow in summer and also withstand the heavy snows of winter. Around the world cold, highland regions form the similar mountain biome.

In temperate woodland, the summer is longer and warmer. Broadleaved trees thrive, although they lose their leaves in winter. Tropical forests grow near the Equator where the climate is hot and wet through the year. Where it is drier, savanna grasslands grow, and even less rain produces the desert biome.

Streams, rivers and lakes make up local freshwater biomes, while swamps and marshes form wetlands. The coastal biome is the narrow strip between land and sea. By far the largest biome is the oceans.

