

1 Interaction between Living Things

Acorns and the Jaybird

Acorns from Japanese oak trees contain a wealth of nutrients and serve as an important food source for various wildfowl and mammals. The jaybird and Japanese field mouse carry and store these acorns. They bury the acorns under fallen leaves and retrieve them in the winter to eat, but some are not eaten and left buried. An acorn will die in the space of several days if left in a dry place, but when buried in a moist environment they are able to grow and sprout in the spring. This process makes it possible for the Japanese oak to propagate its species in new locations.

No living thing can live completely independently. Each living thing always has a close connection with another, creating various forms of interactions in life. Hokkaido's vibrant nature is also supported by the interconnectedness of the fauna and flora that live here.

For example, the Japanese field mouse eats insects and tree nuts, but it is also eaten by the fox and sable. This relationship of eating and being eaten is known as the food web. Each living thing occupies its own unique position within the food web. The deceased body of an animal forms the start of a new food web. Soon after a deer dies, flies quickly arrive and lay eggs. The hatched fly larva (maggots) and beetles like the sexton beetle slowly consume the deer's carcass. Hister beetles, which eat fly larva, also gather. Finally, fungi decompose the body and return it to the earth. The same process holds true for fallen leaves and branches, which could be considered the deceased bodies of plants. The feces of animals are also eaten by insects such as the earth-boring dung beetle and decomposed by fungi.

Forms of interactions are found outside of the food web as well. One such form is competition, where animals vie with one another for the same food, or where plants rob sunlight or nutrients in the soil from one another. As illustrated by the example where various forms of life can be found living on the same tree, from moth larvae on branches to owls nesting in the trunk, there is also a form of interactions where a single tree can provide a dwelling for various forms of life. The trees of a forest together block out direct sunlight from the coverage of their foliage, which protects the soil from extreme dryness and keeps the temperature from rising. This produces a stable environment that is conducive to other forms of life. There are also plants that give pollen and nectar to insects in exchange for carrying pollen. Many tree roots are connected with fungi found in the soil, receiving nutrients from the earth while giving nutrients produced through photosynthesis to the fungi. Interconnectedness in this manner where both parties benefit is referred to as mutualism.



Salmon Interact with the Forest and Sea

Salmon fry hatched from eggs laid on the riverbed head downriver toward the sea in the spring, traveling great distances and increasing in size before returning several years later to the same river where they spawn and perish. The salmon that make it upriver are a treat for brown bears and foxes. Even after they die, salmon are eaten by many animals, decomposed by microorganisms, and ultimately become a nutrients for the surrounding trees. Salmon deliver a wealth of nutrients from the sea to the forest. Today, in many rivers most of salmon returning to spawn are caught by people, which has broken such interconnectedness between the sea and forest.



Interaction between Marine Life and Inland Life

Fallen leaves flow down rivers and accumulate at the mouth, serving as a food source for tiny organisms, such as gammaridean amphipods and others. There are fish that mainly feed on amphipods. This illustrates how the interactions of marine life is partially supported by forests. Meanwhile, an assortment of things wash ashore along the coast. Seaweed brought ashore is a food source for tiny organisms that live in the sand such as pill bugs. When fish, dolphins, and occasionally whales wash ashore, wildfowl living along the coast, foxes and brown bears, among other wildlife, are treated to a special meal. Biomass washed ashore transports nutrients from the sea to the coast, connecting marine life and inland life.