Diversity in a small watercourse

Animal community

Many animals living in a stream are dependent on plant fragments from the surrounding area. The first animals to handle a leaf that falls into the water may be called "dividers". They could, for instance, be fresh water isopods or caddis fly larvae. They cut up the leaf and eat it. Some smaller portions or particles fall down to the bottom where other species are waiting to take over – bacteria, worms, mosquito larvae, etc. These "detritus" eaters, that live entirely on small particles of dead organic material, finally break up the leaf into the smallest molecules.

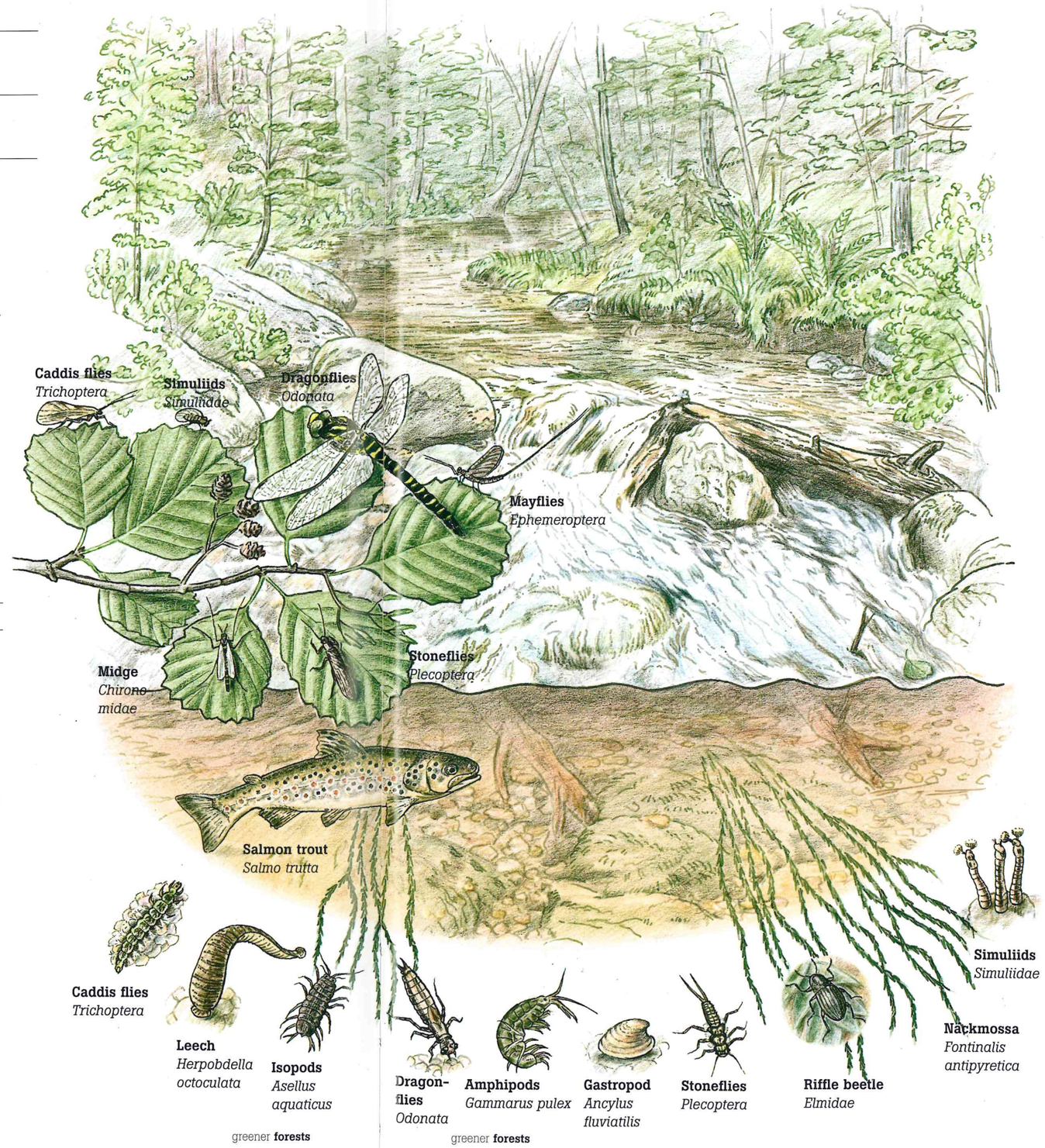
Some leaf parts do not sink to the bottom, but instead are caught by the current. Here other insects are waiting to take over. These animals are called "filtrators", since they filter out organic material from the water. Some species of caddis fly construct nets that catch plant parts. Others species have specialised in catching small animals that drift along with the current. Even mussels catch small particles in moving water.

All these small animals make up the basic food for the predators in the brook. Smaller predators are dragonfly larvae, larvae of diving beetles and water spider. These, in turn, become food for bigger species. Pike and burbot are examples of voracious predators. Finally, there are parasites, many with complicated intermediate hosts. One such parasite is the stickleback´s tapeworm which is a larval stage of a tapeworm that lives in the intestines of different bird species.

Water environments are not only rich in species, they also produce a large number of individuals of certain species. On the bottom of a shallow pond, there can be found more than 1 000 individuals of fresh water woodlice and up to 10 000 midges *(Chironomidae)* per square meter. The midges and other insects that hatch in water are important food items for birds and mammals.

Fishes with different niches

There is a clear ecological niche separation between the most common Swedish fish species. Salmon trout and char belong to those that prefer to swim close to the surface in small brooks and flowing water. The salmon trout is very sensitive to competition and predation and is therefore forced into extreme environments, often high up near the origin of the watercourse. Slightly further down you find grayling and bullhead. The bullhead with its flat body is well-adapted to running water. Both the salmon trout and the alpine char can remain motionless in the stream and live primarily on animal species floating by. In calmer water, we can find predators such as pike, perch, and burbot.



The brook as a plant community

Small brooks are often shaded by trees and bushes and therefore have only a moderate production of other plants. The moist environment along the brook is, nonetheless, very valuable for many species. Here, there is a wide variation of microclimate, substrates (e.g., rocks and dead wood) and disturbances.

As the brook gets wider and receives more light, the possibilities for different plants to establish themselves increases. Primarily certain mosses, diatoms and other species that grow on rocks and other items. Among the vascular plants we can find different species that grow on rocks and other items. In calm waters production of phytoplankton increases.

Valuable dead wood

Dead wood is used by different organisms not only in the forest but also in the watercourses. Many species of caddis fly and small wood fungi are totally dependent on dead wood in water. Fishes can also utilise branches and trees for protection against predators. Large dimension dead wood ending up in water or above water is particularly important. Dead wood that falls into water in reasonable quantities should not, therefore, be cleaned out.

Even living branches that hang down into the water, or trees and bushes that grow in the water create conditions for increased biological diversity. The branches have an effect on the water velocity and create living environments for plants and animals.

Source: Greener Forests, Swedish Forest Agency