**World Habitat Day**

River systems as a habitat for fauna and flora

River and stream systems play an important role in the hydrogeological cycle and transportation of water to estuaries and eventually the ocean. The role of rivers however is far greater as it provides habitat for many aquatic flora and fauna (Water and Rivers Commission, 2000). Rivers provide fauna and flora with corridors to move between fragmented habitats (The Wildlife Trust, n/d).

A habitat is an environment which can be large or small in which a living organism ranging from a species or a group of species occurs (The Free Dictionary, 2017 and Water and Rivers Commission, 2000). A habitat can range from a river or stream through to the area under a river stone or log (Water and Rivers Commission, 2000).

Rivers meander naturally through the landscape, creating a variety of fast and slow flow areas. The speed at which water moves through a section of a river and the amount of turbulence that is created will influence the type of animals and plants that occur at specific areas of a river (Water and Rivers Commission, 2000). Fauna and flora that live in rivers have adapted in order to avoid being washed downstream (Nature Wildlife, 2014). Where swift flowing water is rippled or broken and flows over rocks or logs it is better known as riffle zones. Due to the turbulent nature of riffle zones, it is well aerated areas and favoured by filter feeding macroinvertebrates which exploits the current for gathering food. These macroinvertebrates are benthic species (living on the bottom) and often have flattened or streamlined shapes. Others have suckers, hooks or use silk threads to withstand the flow of water. Some have behavioural adaptations to hide from the current in crevices, cracks, under rocks or gravel (Water and Rivers Commission, 2000).

As the water flows downstream, rivers’ width increase and the water flow reduces speed (Foss Web, 2003). Slower flowing areas in rivers such as channels, pools or runs accommodate species that are unable to cope with the fast flowing waters. Due to the increase in river width, species diversity increases and many native fish species occur in these areas (Foss Web 2003 and Water and Rivers Commission, 2000). Suspended sediment usually settle out in these slower flowing waters which provides suitable growing medium for rooted plants, in the event that abundant light penetration occurs. Benthic macroinvertebrates that occur in slower flowing waters are adapted to tolerate these sandy environments, and lower oxygen levels (Water and Rivers Commission, 2000). At the river mouth water becomes murky with less light penetration and oxygen content. Fish that live here, e.g. carp and catfish, are able to tolerate low levels of oxygen (Foss Web 2003).

The material comprising the bed of a stream is a major factor contributing to the distribution of benthic macroinvertebrates. Rocks and boulders that are not easily moved offer a preferred habitat for macroinvertebrates (Water and Rivers Commission, 2000). Many life forms such as water insects and crustaceans move into the hyporheic zone of a river to hide

between rocks and to feed on nutrients (Foss Web, 2003). Sand however is a poor habitat for macroinvertebrates because of its unstable nature, as well as its capacity to be moved by the current. Invertebrates that inhabit sand are mostly burrowers with specially adapted bodies (Water and Rivers Commission, 2000).

In sandy rivers containing woody debris, macroinvertebrate fauna use the submerged or semi-submerged woody debris as a substratum. These macroinvertebrates are specifically adapted for inhabiting wood, as they contain specialised mouthparts with which to tunnel into the wood (Water and Rivers Commission, 2000).

Submerged or larger rooted plants as well as floating vegetation provide a habitat for many species of aquatic fauna. The vegetation provides shelter for native fish, water birds and frogs. Food resources are also abundant for fish amongst the vegetation due to the vast amount of macroinvertebrates occupying this vegetation. Other macroinvertebrates, such as freshwater mussels attach or cling to the vegetation and use it as a substratum (Water and Rivers Commission, 2000).

Preserving these freshwater habitats has never been more important in the history of humanity. Habitat loss threatens species diversity and an eventual ecological collapse. Protecting natural habitats runs parallel with the protection of the future of humanity. Everything is connected and we depend directly on natural habitats for irreplaceable ecosystem services without which we as humankind cannot survive.



