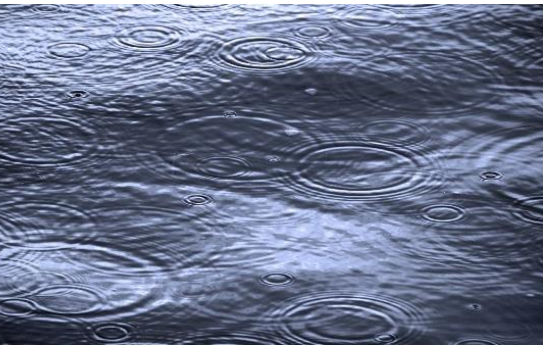


New Forest Wilder for Water

Water Quality Activity Student Sheet

On this sheet, you will discover different freshwater habitats and why they are important for freshwater wildlife. You will also learn what it means for them to be impacted by nutrient pollution. The key things to remember are that freshwaters surrounded by semi-natural habitats (e.g. woodland, heathland, grasslands and meadows) and only filled by rainwater will be the best freshwaters for wildlife.



Rainwater is naturally free from nutrient pollution. **Habitats fed only by rainwater, will usually be pollution free.** Industrial pollution has changed the chemistry of rainwater and in some areas this is a problem, but the biggest source of nutrient pollution in freshwater is added to rainwater after it falls on the ground – from wastewater pipes in urban areas and agricultural runoff. What impact does this have on wildlife that has evolved for millions of years to live in naturally low nutrient habitats?



Ponds are important freshwater habitats and home to over 2/3rds of all the wetland plants and animals. There are over 500,000 ponds in the UK. Some ponds are connected to rivers or streams, some ponds are only filled by rainwater. Many ponds are found in semi-natural habitats e.g. woodlands, heathlands, grasslands, and some are found in man-made landscapes like urban areas and farmland. What sort of ponds do you think will be free from nutrient pollution?



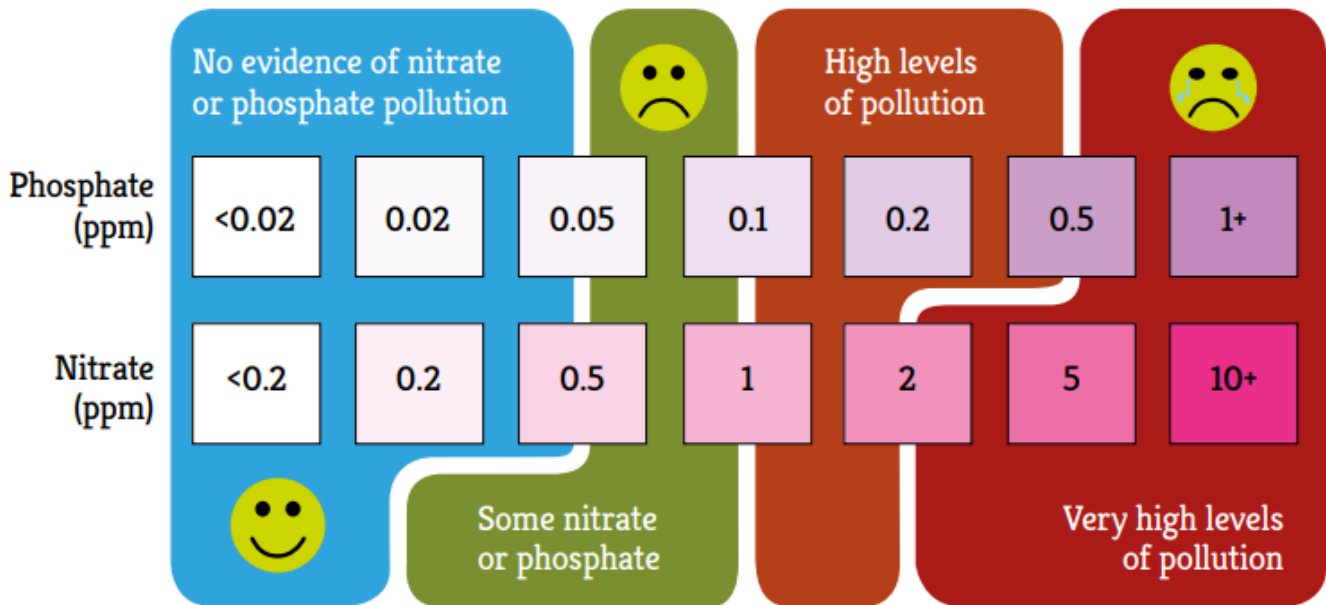
Rivers and streams are a critical part of the water cycle. They form a network of running waters that are home to wildlife and an important resource for people. Rivers flow through a mixture of habitat types on their way to the sea. Very few rivers and streams are only surrounded by semi-natural habitats (woodlands, heathlands, grasslands and meadows). Most rivers flow through a mixture of semi-natural habitats, and intensive landscapes like farmland or urban areas. When a river flows through an intensive landscape, do you think it will suffer from nutrient pollution?



Tap water comes from many sources including aquifers (water deep underground) and reservoirs. The water we drink undergoes a series of complex treatments before it comes out of our tap, to make it safe to drink. Tap water is regulated by law and there are strict limits for nutrient levels in tap water to make it safe for us to drink. Nevertheless, the limits may still be too high for many freshwater species. Some human activities can introduce tap water and other pollutants into ponds, river and streams. How do you think tap water could get into the environment?

Clean water results

Clean water means water free from nutrient pollution. Without clean water, freshwater habitats like ponds, lakes, rivers, streams and ditches, can't support healthy plant and animal communities.



No nutrient pollution. This is great news as many animals and plants, especially rare and endangered species, need to live in water that is naturally very low in nutrients. In clean freshwater, you'll find many different types of wetland plant including underwater, marginal and floating-leaved plants.

Small amounts of nutrient pollution will still have some wildlife – but they won't have the wonderful richness of life, or rare species that live in clean water. At even these moderate levels of nutrient pollution, more than half the animals and plants that should be present can be lost.

In polluted freshwater habitats, plants and animals start to decline and disappear. A few pollution tolerant plant and animal species take over – underwater plants and uncommon species can't survive. When the pollution is very high the can become green as algae blooms covers the surface and remove oxygen from the water.

The New Forest is one of the few places in southern England where lots of the ponds, streams and rivers are still unpolluted. This is because the land is dominated by semi-natural habitats and is traditional managed with low density grazing.



Nitrate Pollution

The single largest source of nitrate pollution is fertilizer. Fertilizer is commonly used to improve crop growth in most arable fields and is added to some parks, golf courses and gardens. This seeps into freshwater through the ground and via runoff.



Phosphate Pollution

The main sources are detergents (soap) and sewage. Other sources are from agriculture and high density livestock farming.



Nutrients from the home

Waste water from sinks and toilets goes to treatment works to be filtered before it's released into the environment. Even this treated water is much higher in nutrients than the naturally low background levels that plants and animals need.