

River Restoration with Paul Powlesland

Alders Deciduous trees, the flowers of which are catkins, and with dark, fissured bark that is often covered in lichen. Mature trees can reach a height of about 28m and live to around 60 years. Alder tree roots lock nitrogen into the soil, and so are ideal for planting in poor quality soil, even improving it. ([Gardeners' World](#))

Ammonia In gardening and agriculture, ammonia (NH₃) is a vital macronutrient and bioavailable chemical compound derived from atmospheric nitrogen. Ammonia enhances overall plant health when used as a fertiliser, improving plant nutrition, enhancing plant crops and quality, and improving soil health.

Backfill Refilling an excavated hole.

Bare root Dormant perennial plants, shrubs, or trees which are grown in nurseries and then dug up during dormancy, exposing their bare roots, and transported for sale to be planted elsewhere.

Birch A deciduous hardwood tree found in the Northern Hemisphere and belonging to the Betulaceae family, which also includes alders, hazels, and hornbeams. Notable for their smooth, coloured or often papery white bark, marked by horizontal pores.

Brush bashing Cutting back brush or brambles, which are quick to claim territory and reproduce easily. 'Bashing' the brambles frees up space for smaller plants beneath and allows sunlight to reach them, encouraging diversity.

Combined Sewer Overflows (CSOs) In a combined system, sewage water and surface water flow into the same pipeline before travelling to a treatment plant. When the sewerage system is overloaded due to factors such as heavy rainfall, water companies use overflows to offload untreated sewage and waste water into the environment. CSOs are meant to only be used for emergencies, but such diversions have become increasingly more frequent over recent years. ([Surfers Against Sewage](#))

Combined System In a combined system, sewage water and surface water flow into the same pipeline before travelling to a treatment plant.

Compost The product from recycling organic kitchen and garden waste for use in domestic gardening. Waste is collected in composting bins, which are designed to speed up decomposition, turning it into a rich, dark and crumbly product that will be rich in plant nutrients and can be applied to soil beds as a natural fertiliser. ([Garden Organic](#))

Conductivity Electrical conductivity represents a material's ability to conduct electric currents and is an essential measure for managing wastewater systems, as the level of conductivity directly correlates with the level of contamination. More impurities are represented by higher conductivity.

Corporate personhood The legal recognition of a for-profit organisation as an individual with many of the same rights and responsibilities enjoyed by human beings, such as the right to own property and be held accountable for their actions. The US Supreme Court, for example, ruled that corporations have the right to give money to election candidates and refuse to include birth control in employee health policies on religious grounds. ([NPR](#))

Culverts Large subterranean tunnels constructed to run under obstacles such as roads or railway lines and into waterways, providing drainage systems.

Dissolved oxygen (DO) A measure of the levels of free, non-compound oxygen in water, used to assess water quality due to the influence of oxygen on living organisms. ([Fondriest](#))

Dry trees Wet trees Most (dry) trees have roots that need air as much as they need water. Some trees have evolved to thrive without their roots getting oxygen, allowing them to grow in standing water or marshland. These wet trees can also act as natural drainage systems in poorly drained areas. ([Gardening Know How](#))

Environment Agency A UK government agency whose responsibilities pertain to the protection and enhancement of the environment in England, including flood management and land and water pollution, through wildlife protection and sustainable development policies. Fly-tipping The illegal dumping of waste and litter onto land rather than in designated areas or through authorised means.

Guardians Activists for political ecology, with advocacy based on ancient—often Indigenous—practices for protecting the land and the land rights of all living inhabitants in the face of threat.

Hanna Hanna Checkers are small, handheld photometers that can be bought online and are used to test for water purity, including factors such as alkalinity, chloride, hardness, iron, pH and sulphite. They provide higher result accuracy than typical chemical test kits.

Indigenous People descended from the original inhabitants of a geographical area when it was colonised by invading cultures and ethnicities, who then became dominant through conquest. Indigeneity includes over 370 million people across 70 countries, each retaining their own unique cultural traditions and socio-political identities separate from the now dominant societies where they live. ([United Nations](#))

Litmus papers Paper test strips which measure the pH level of a liquid. Litmus papers are treated with natural dyes to provide a highly specific indicator, which turns red in the presence of acidic conditions, purple when they are neutral, and remains blue if alkaline.

Manure An organic fertiliser made from animal dung, typically derived from livestock. Manure promotes growth by providing essential nutrients such as nitrogen, phosphorus and potassium, as well as organic matter to soil, improving its bioavailability.

Misconnections There are two kinds of domestic drainage systems – wastewater sewers and surface water sewers. The first is from appliances and bathrooms and should go to wastewater treatment works before being recycled into the environment. The second is where rain water and ground runoffs travel into rivers and streams. However, when these two become misconnected, untreated, toxic wastewater is released back into rivers and streams. ([The Rivers Trust](#))

Nitrate A natural compound made up of nitrogen and oxygen, which is present in all surface and groundwater. It occurs as a result of organic matter in the soil and is then washed by rainfall into bodies of water, but use of agricultural fertilisers can cause higher levels of nitrates to reach the water systems through runoff. High levels of nitrate in water systems can cause illness in humans, and so must be managed. ([DWI](#))

Oak A tree or shrub in the genus *Quercus* of the beech family, Fagaceae with lobed ears in spiral formations. Their fruit is a nut known as an acorn. There are approximately 500 species of oaks and they proliferate in the Northern Hemisphere.

Outfall safari A grass roots citizen science method that surveys the entire length of a river to identify and locate polluting outfalls or pipes, if necessary reporting findings to the local water company and the Environment Agency so that issues can be tackled. ([South East Rivers Trust](#))

Pallets A flat wooden structure designed for protecting transported goods, often repurposed for domestic use.

pH ('Potential of Hydrogen') A measure of the acidity or basicity of a liquid or aqueous solution. Acidic solutions (solutions with higher concentrations of hydrogen (H⁺) ions) are measured to have lower pH values than basic or alkaline solutions, which are at the higher end of the 0-14 scale.

Phosphate A naturally occurring form of phosphorus, present in many phosphate minerals. A highly sought after ecological resource owing to its vital role in biological systems. It acts as a limiting nutrient in organic environments, while the bioavailability of phosphate can enhance plant growth.

Poplars One of 35 trees in the willow family (Salicaceae), native to the Northern Hemisphere. Fast-growing but relatively short-lived trees. Poplars are dioecious, meaning the male and female flowers grow on separate plants, with the flowers blooming as catkins before the leaves emerge, spreading seeds by wind pollination. ([Encyclopedia Britannica](#))

Postcrete A durable, ready to use bagged product formulated for fixing wooden, concrete and metal fence posts.

Rights of nature The recognition that all life and ecosystems are endowed with natural rights, just as humans have rights. The Rights of Nature movement seeks to balance what is good for human beings against what benefits the planet as a world on the holistic basis that all life is essentially intertwined. ([GARN](#))

Root Balls All plants have a root ball, which is the main mass of roots found beneath the stem, often comprising several different types of roots, in gardening root balls typically mean the part of the root system which can be dug up for replanting. ([Gardening Know How](#))

Sand martins the smallest of the European hirundines (martins and swallows), with dark brown markings around the head and chest and dark under wings contrasting with a pale breast. Agile fliers which feed mainly over water, often found perching overhead wires or branches. Over the past 50 years the European population has crashed twice due to drought in their African wintering grounds. ([RSPB](#))

Sewage Wastewater contaminated by anthropogenic influence, usually faeces or urine, but is also used to describe other forms of liquid waste. ([UN](#))

Sewage fungus Colonies of filamentous bacteria (of the *Sphaerotilus* species) that grow in response to organic waste such as food and faeces. It grows on almost any surface where there is a flow of water and the necessary nutrients.

Silt A solid, dust-like sediment somewhere between sand and clay in size that is carried by water, ice and wind, building up in the area it is deposited.

Sit spot A place in nature chosen for regular visitation to cultivate greater awareness, expand the senses, study patterns of local flora and fauna, and practise mindfulness to achieve a deeper understanding of the symbiotic relationship that humans have with the natural world.

Surface water Any stretch of water located on the Earth's surface, such as oceans, rivers, streams, lakes, ponds and puddles.

Thames21 A British charity concerned with improvement projects for London's waterways, focused on the Thames and its tributaries. Thames21 works with communities to improve rivers and canals for people and wildlife.

Thames Water A private utility company with a considerable local monopoly and the UK's largest water and wastewater services. Responsible for public water supply and wastewater treatment in most of Greater London, Luton, the Thames Valley, Surrey, Gloucestershire, north Wiltshire, far west Kent, and some other parts of England.

Tidal range The difference in height between high and low tide levels.

Woodland Trust The largest woodland conservation charity in the United Kingdom, concerned with the creation, protection, and restoration of native woodland heritage.

Whanganui River New Zealand A major river in the North Island of New Zealand. It is the country's third-longest river, and has special status owing to its importance to the region's Māori people. The river was granted legal personhood in 2017 by an act of the New Zealand parliament, making it the first river to be recognised as an indivisible and living being. However, it remains under threat from farming, forestry, dams, and development projects. ([The Guardian](#))

Willow Deciduous trees and shrubs, also called willows and osiers from the genus *Salix* in the *Salicaceae* family. Comprising around 350 plant species and primarily growing on moist soils in cold and temperate regions.

Windrush against Sewage Pollution A UK registered charity working to end the sewage pollution of the River Windrush in Oxfordshire, collecting and analysing information on water quality and sewage discharges, using scientific data to campaign for improved environmental standards.

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Teacher Info

riverrodingtrust.org.uk

Further Resources

[The Rivers Trust \(UK\)](#)

[Restoring Europe's Rivers \(EU\)](#)

Learn more on the rights of nature:

[Lawyers for Nature](#)

[Global Alliance for the Rights of Nature](#)