



Supporting the wetland food web

Water for the environment

The role of water in the ecosystem

Rivers and wetlands are a haven for native wildlife. Where there's water, there's food and a long list of wetland animals waiting to dine on a menu of plants, insects, fish, frogs and more.

The wetland food web describes the movement of energy from the simplest of plant-based nutrients through to the birds, fish and other animals at the top of the food chain.

The process begins at a microscopic level. The arrival of water triggers the release of vital nutrients, such as carbon and essential elements, from wetland soils and leaf litter. These essential elements and nutrients dissolve into the water and become available to the growing food web.

Water transports these nutrients back and forth between wetlands, floodplains and the river channel, providing food for plants and animals throughout the river system, and periodically bringing the basic building blocks of new life back from the river.

From little things, big things grow

When water arrives in the wetland it triggers the release of organic carbon and other nutrients from the floodplain floor. Fungi (such as mould) and bacteria in the water begin to feed on these nutrients. As their numbers increase, they clump together to form a slimy substance known as a biofilm, which is a major food source for tiny organisms.

As their numbers rise, tadpoles, insects, crustaceans and juvenile fish begin to feast. They, in turn, become food for larger predators including waterbirds, turtles, frogs, bats and larger fish.

Meanwhile, wetland plants are taking up dissolved nutrients from the soil and water and using them to grow, flower and set seed. In doing so, these plants are capturing carbon and building a new source of food for wetland and woodland animals, as well as providing shelter and nesting materials.

Some waterbirds dine on fish and frogs, while others prefer a diet of insects, crustaceans and animal larvae. While the food chain may begin simply, the various pathways from prey to predator form a complex web – the wetland food web. At the top of the web sit the large predators, including Murray cod, along with owls, hawks and eagles.



At the top of the food web sit large predators such as the Murray cod. Photo: Gunther Schmida

How water for the environment helps

In their natural state, rivers would traditionally run high through late winter into spring and low during the hot months of summer, with natural pulses and seasonal variations providing cues to move, breed, feed or set seed. Native plants and animals evolved over thousands of years to survive and thrive in these variable conditions.

Now that most rivers are regulated by dams and weirs, these seasonal patterns have been significantly altered. Many of the natural cues provided by seasonal flows are absent or significantly reduced.

Water for the environment allows environmental managers to restore some of the natural cues and conditions for native plants and animals to trigger movement, and to support them to feed, breed and survive within a regulated river system.

Water has several important roles in rivers and wetlands:

- in rivers, carries carbon and other nutrients that help to feed water-dependent plants and animals and enrich floodplain soils
- triggers the release of nutrients within wetlands, making essential elements available to plants and animals
- connects the landscape, carrying vital nutrients from one part of the river system to another
- is a form of animal transport, triggering mass movement and breeding of fish. It also carries juvenile fish into the relatively calm waters of wetlands where they eat and grow before returning to the river to repopulate other areas of the system.

Learn more on the [water for the environment](#) webpage.

Cover photo: Straw-necked ibis nesting in the Macquarie Marshes. (Nicola Brookhouse/DCCEEW)

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