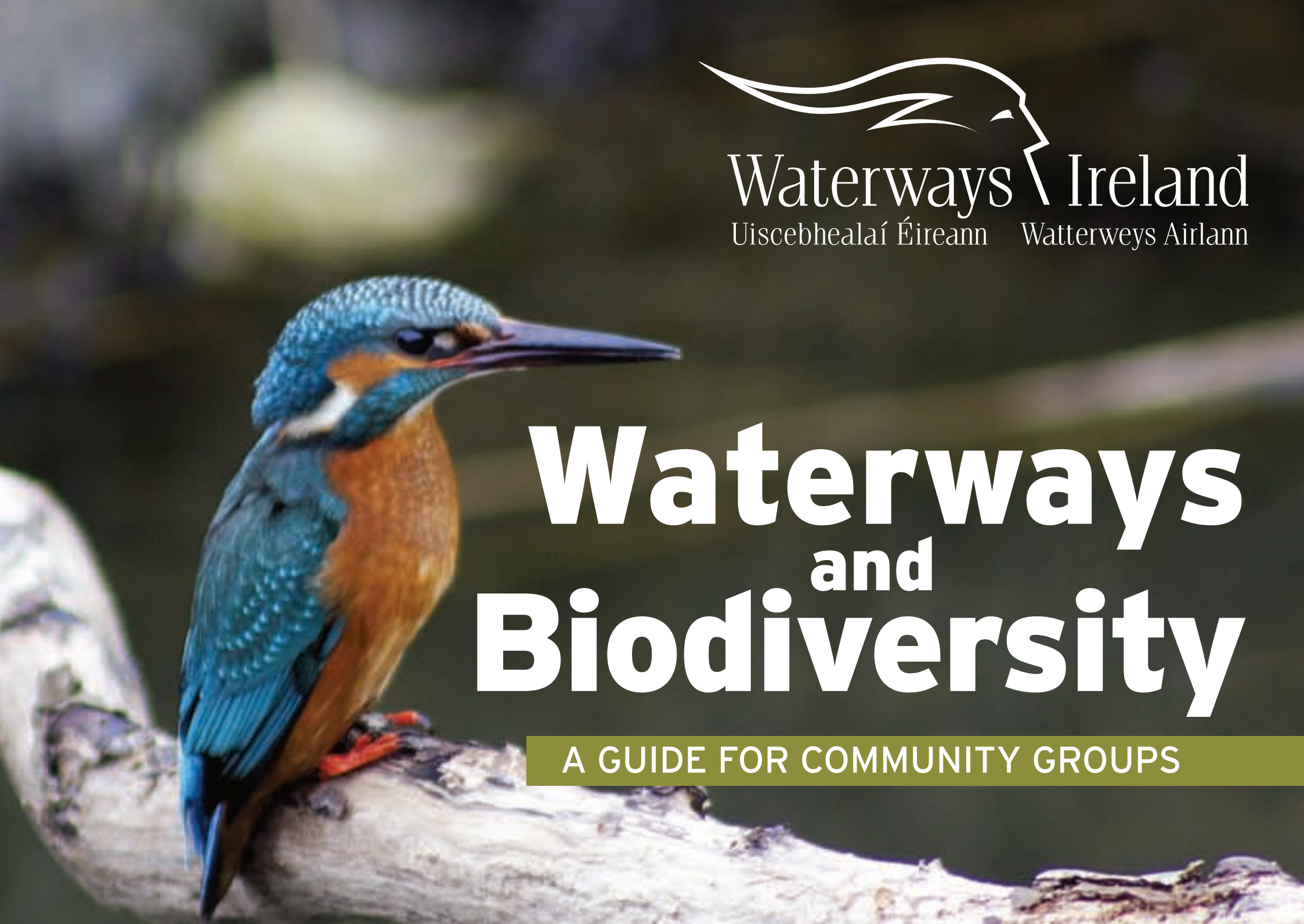




Waterways and Biodiversity

A GUIDE FOR COMMUNITY GROUPS

This document is a guide to the rich biodiversity of Ireland's inland navigable waterways for communities, voluntary groups and other interested parties. This has been produced by Waterways Ireland, under its Heritage Plan 2016–2020, to enhance education and awareness about what makes Ireland's inland waterways so important for wildlife. The guide has also been developed for groups that might be taking on practical work on, around or near, a waterway. This guide takes the reader through the key

aspects of waterway biodiversity. For instance, what makes our inland waterways so important for wildlife? Are they protected? Can we help protect and improve biodiversity, and are there guidelines or even laws on how we should do this? Key species and habitats are described



as well as some of the plants and animals we certainly don't want in our waterways – these are the non-native invasive species.

Another section of the guide will be helpful to those undertaking practical conservation projects. These are projects that many groups carry out during the year that are designed to create or enhance habitat areas for wild species. There are project ideas here as well as guidelines for some tried and tested techniques for community volunteers.

Introduction



It's good to know that many of our wild creatures – including all of our birds – have protection under law. There are two 'layers' of law protecting our wildlife. These are national and European laws. Our national laws date from 1976 in the Irish Republic and 1985 in Northern Ireland and give protection to almost all species of wildlife including many plants. These laws also allow for protection of their habitats. Laws have also created our Nature Reserves and many protected sites called Natural Heritage Areas and Areas of Special Scientific Interest, in the south and north respectively. All of the Grand and Royal Canals, for example, are proposed Natural Heritage Areas. European Laws were introduced in the 1990s and these provide protection for many of our most important habitats. They also provide protection for rare, threatened and endangered species right across Europe, including the island of Ireland. One of the European laws provides protection for the most important sites across all of the member states. These are the Special Areas of Conservation.



Biodiversity & the law

Trees and Plants

Under law, it is not permitted to cut, burn or remove trees, shrubs or other woody vegetation between March and August, inclusive. The purpose of this is to protect breeding birds and their nesting places.

A number of non-woody plants are protected by law because they are rare or endangered. These include a variety of plants from ferns to mosses to flowering plants. A good rule of thumb is not to pick wildflowers. They never last after picking and they are best left for our bees and butterflies.

'Leave no Trace' is an Irish organisation which encourages and educates on responsible use of our outdoors. It provides a framework of ethics and good practice that allows all users to enjoy our natural environment without diminishing it for native species or other users. Waterways Ireland is a key partner in Leave no Trace.

Birds

All of our birds and their nesting places are protected although some are permitted to be shot as game at certain times of year.

Fish

While it is legal to catch most of our fish for food or recreation, almost all species are protected to some degree. Of highest protection are salmon (*Salmo salar*) and all lamprey (*Lampetra spp.*) and again, their habitats are also protected.

Fishing on Ireland's canals is allowed on a 'catch and release' basis where fish must be returned alive to the water. Angling outside the canals is governed by Inland Fisheries Ireland in the Republic of Ireland and by The Department of Agriculture, Environment and Rural Affairs (DAERA) in Northern Ireland.

The permit requirements for rods and different fish species vary so all anglers must make themselves aware of their particular responsibilities in any fishery area. Good information is to be found at: www.fisheriesireland.ie and www.nidirect.gov.uk/articles/angling-regulations (Northern Ireland).

Mammals

Only a few of Ireland's mammals are not protected. These are troublesome pest species including rats (*Rattus norvegicus*), mice (*Mus spp.*) and rabbits (*Oryctolagus cuniculus*).

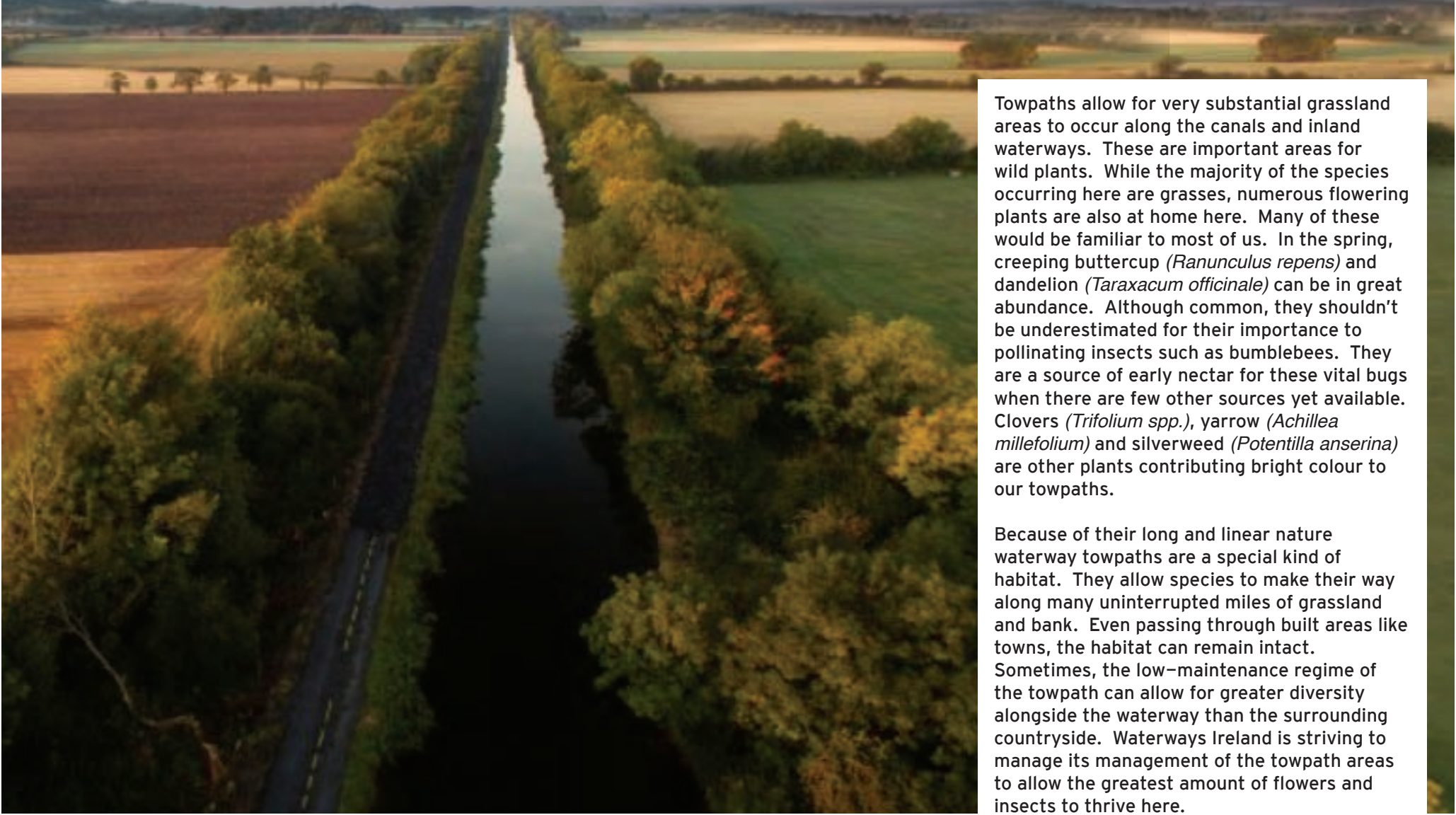
Badgers (*Meles meles*) and otters (*Lutra lutra*) are species that occur widely along Ireland's waterway network and these and their habitats are highly protected by a combination of domestic and European law.

Creepy-Crawlies and Little Creatures

Very few invertebrates are protected by Irish law but there are exceptions. These include some tiny water snails and the Marsh Fritillary butterfly (*Eurodryas aurinia*). This butterfly is now a rare species in Ireland that depends on one plant – devil's-bit scabious (*Succisa pratensis*) – for food. It has been recorded along a number of our waterways.

Because removing habitat can have great impact on bug populations, the least damage we do, the better.

Along the towpath

An aerial photograph of a canal stretching into the distance. The canal is flanked by a dense line of trees and shrubs, which form the towpath. The surrounding landscape consists of open fields in various shades of green and brown, under a clear sky. The perspective is from a high angle, looking down the length of the canal.

Towpaths allow for very substantial grassland areas to occur along the canals and inland waterways. These are important areas for wild plants. While the majority of the species occurring here are grasses, numerous flowering plants are also at home here. Many of these would be familiar to most of us. In the spring, creeping buttercup (*Ranunculus repens*) and dandelion (*Taraxacum officinale*) can be in great abundance. Although common, they shouldn't be underestimated for their importance to pollinating insects such as bumblebees. They are a source of early nectar for these vital bugs when there are few other sources yet available. Clovers (*Trifolium spp.*), yarrow (*Achillea millefolium*) and silverweed (*Potentilla anserina*) are other plants contributing bright colour to our towpaths.

Because of their long and linear nature waterway towpaths are a special kind of habitat. They allow species to make their way along many uninterrupted miles of grassland and bank. Even passing through built areas like towns, the habitat can remain intact. Sometimes, the low-maintenance regime of the towpath can allow for greater diversity alongside the waterway than the surrounding countryside. Waterways Ireland is striving to manage its management of the towpath areas to allow the greatest amount of flowers and insects to thrive here.

The waterways offer hundreds of kilometres of habitat for aquatic and amphibian species. The slow flow and gentle gradient of the waterways have allowed for a diverse and rich fishery to develop over the couple of centuries since they were created. Just about all of the coarse fish (i.e. not Salmon or Trout) found in Irish lakes occur within our canals. These include voracious predators such as perch (*Perca fluviatilis*) and pike (*Esox lucius*) – the latter often growing to 10kg or more in weight.

You are also likely to encounter roach (*Rutilus rutilus*), rudd (*Scardinius erythrophthalmus*),

bream (*Abramis brama*) and tench (*Tinca tinca*). Many of these you can see on sunny days without leaving the towpath or even casting a line. Eels (*Anguilla anguilla*) are also found within the waterways as well as lamprey – an unusual and highly protected species.

The range of fish speaks well for the overall diversity of the watercourses as well as indicating good water quality. Hundreds of European anglers visit Ireland to fish in our waterways which are among the most diverse in Europe.

The presence of drains, wet ditches and backwaters make good habitat for some amphibians – animals that utilise both land and water within their lifecycles. The common frog (*Rana temporaria*) would be familiar to most of us although their numbers have declined in recent years. Frogs depend on suitable areas of still water for their tadpoles to develop. These habitats have become rarer as farmland is drained and made more productive. We have only one species of newt in Ireland – the smooth newt (*Lissotriton vulgaris*) – and this also depends on stable undisturbed pools or ponds. These can occur right alongside the waterways.

Fish and Amphibians



The long stretches of inland waterways offer wonderful habitat for some of our shy and reclusive mammals. Foxes (*Vulpes vulpes*) could probably be found along just about every section of our waterways, using the towpath and verges as ideal commuting routes to and from their hunting grounds and homes. Fringing waterway habitats themselves offer ample prey in the form of mice, rabbits and small birds. Fox droppings – called scats – are deposited in prominent locations (e.g. on banks and tree-stumps and are easily found). They often contain undigested fur and bones. Foxes themselves may often be spotted early in the morning or on late evenings.

Otters (*Lutra lutra*) are much harder to spot! They are mostly nocturnal but will sometimes be seen during the day. They are quite sizeable animals and formidable predators of a variety of fish species but will also take other creatures including crayfish. Their droppings, called spraints, are a tarry black with fish scales and bones often clearly visible and are sweet-smelling (if you get that close).

Mink (*Neovison vison*) are an introduced American species and an unwanted resident of our waterways. They prey on waterbirds as well as fish and rodents and can have serious impacts on bird populations. Their droppings are also black but foul-smelling and slimy.

Badgers (*Meles meles*) are common users of the waterways, particularly embanked areas (sections of waterway above the level of the surrounding land) where they often make their homes (setts). They are omnivores that will happily eat everything from blackberries and bugs to small mammals such as mice. Earthworms (*Lumbricidae*) are a real favourite food though.

Mammals



Birds

The long open stretches of water are invaluable for thousands of birds of many species. However, a number of birds that you are almost certain to see are some of the waterbirds that take advantage of the undisturbed reed-fringe. Moorhens (*Gallinula chloropus*) and Coots (*Fulica atra*) can be heard as well as seen and mallard ducks (*Anas platyrhynchos*) are also frequent residents.

The unmistakable mute swans (*Cygnus olor*) are the largest birds you're likely to see and grey herons (*Ardea cinerea*) the tallest. A

much smaller and more colourful resident is the kingfisher (*Alcedo atthis*). They can be hard to spot but once you do see one, they are unmistakable. They patrol stretches of waterway – their territories – and catch small fish such as sticklebacks (*Gasterosteus aculeatus*) with great precision.

Smaller birds that you are likely to see and hear in the trees and hedgerows along the canal are the very busy blue tits (*Parus caeruleus*) and great tits (*Parus major*). Among our very smallest birds are wrens (*Troglodytes trog-*

lodytes). They may be small but are very easy to hear with a surprisingly loud call. They are very common and several nests may be held within only a few hundred meters.

Never far away are members of the crow family. Rooks (*Corvus frugilegus*) are noisy sociable birds that often congregate in large roosts in large mature trees along the waterways. They will often be associated with jackdaws (*Corvus monedula*), another smaller crow which is equally at home on rural and urban navigations.

The inland waterways are some of the best places in Ireland to see dragonflies (*Odonata: Anisoptera*) and damselflies (*Odonata: Zygoptera*) – perhaps our most spectacular flying insects. They are instantly recognisable from their vivid colours and fast whirring flight. Dragonflies tend to be bigger, more substantial insects than the more slender damselflies that fold their wings when resting. Adults of both may be seen performing feats of aerial hunting – they eat many flying insects – with amazing accuracy. Dragonfly and Damselfly larvae are aquatic and

underwater they are equally spectacular predators. Some species will even devour small fish.

One of the most common creepy-crawlies is the freshwater hoglouse (*Asselus aquaticus*), a distant relative of the woodlouse that cannot swim but crawls along the bottom amid the plant debris. Another, much larger crustacean is the white-clawed crayfish (*Austropotamobius pallipes*). This resembles a small lobster that feeds along the bottom of waterways,

eating a variety of prey including crustaceans as well as underwater plants.

But probably the most common – and sometimes annoying – bugs you'll encounter will be flies. Most of these will be flies like midges (*Diptera: Nematocera*) and mosquitoes (*Diptera: Nematocera*) that hatch from eggs laid in the water emerging in large swarms in the evening. They may be a nuisance to us but they are a very important food-source for birds like swallows (*Hirundo rustica*) and for bats.



Insects

Bats

Bats are fascinating and somewhat mysterious animals. The only mammals that can truly fly, they aren't flying mice but belong to their own group of animals. There are nine bat species currently known in Ireland. Most of these are tiny and all are harmless creatures that do us much good by feeding on countless flying insects including biting midges and mosquitoes. Because so many insects hatch from still water, waterways are rich feeding grounds for our bats. Some, like Daubenton's bat (*Myotis daubentonii*) have become specialists in snatching insects from the surface of the water during seemingly tireless night-time flights.

Bats aren't blind but find their way in the dark using a kind of sonar called echolocation. This is incredibly accurate and allows pin-point accuracy of tiny prey items in pitch darkness.

Bats will make their homes in a great variety of places. They seek out warm and dry sheltered locations called roosts in which to sleep, mate, rear young or in the winter to hibernate. Most bats will take up residence in mature trees and even the tiniest of crevices can hold dozens of adult bats. The extensive treelines along our canals and waterways may therefore be very important for a great numbers of bats. Some species avail of the old stonework in our bridges for summer roosts. Others will occupy lock-houses and old canal stores. Early summer and autumn evenings are the best times to see bats performing their spectacular hunts.



PHOTOGRAPH: PAUL VAN HOOFF

Here are a few of the plants that you are likely to see in and along our canals.

Common Reed (*Phragmites australis*)

At up to 3.5 metres in height, this is the tallest grass in Ireland and is important habitat for many creatures from bug larvae to sedge warblers, robin-sized visitors from Africa that breed here in the summer.

White Water-Lily (*Nymphaea alba*)

This is one of the most beautiful of Irish wildflowers but because of where it grows, rarely seen close up. Its leaves and flower floating and anchored by roots to the bottom, this flower opens fully only in bright sunshine.

Water Forget-me not (*Myosotis scorpiodes*)

Watch out for the small but beautiful sky-blue flower of this little waterside plant. Looking very similar to the flower we see in our gardens, this forget-me not flowers in the fringes from May to October.

Yellow Iris (*Iris pseudacorus*)

This beautiful flower has a variety of names – Yellow Flag or Flag Iris among them. Whatever you call it, you won't mistake the yellow flower – one of the largest of Ireland's wildflowers – which brightens the waterside throughout the warmest months.

Pondweed (*Potamogetons*)

We've all seen these plants. Take a walk beside any of our navigations and you'll see plenty more. These

are the pondweeds and there are about 15 different species in Ireland. They have very varied leaf patterns from grass-like to oval or almost round floating leaves and make up a very large part of the living matter (biomass) of our waterways. They do flower, making pink, red or white spikes though these can be hard to see.

Milfoil (*Myriophyllum spp.*)

Spiked milfoil is a true water-plant living submerged in the waterways. It looks delicate and feathery but its name gives away its toughness. It has tiny red or pink flowers that emerge above the surface in June and July. It provides food and habitat for lots of small creatures – including snails. Damselflies and dragonflies will also use the plant to deposit their eggs.

Reeds & aquatic plants

Invasive or Alien species are plants or animals that have been introduced, usually by people, outside the areas where they would naturally occur. Alien species can sometimes become 'invasive' when they spread rapidly and out-compete the native flora and fauna, pushing out native species and this can lead to serious consequences for native habitats. Invasive species present one of the greatest threats to biodiversity worldwide.

Invasive species can be particularly problematic in aquatic systems. They can have a negative impact on recreational and amenity use of waterways, as well as threatening native ecosystems. Curly waterweed (*Lagarosiphon major*) is a species from Africa that has taken over large stretches of still-water habitats (luckily not yet found in our inland navigable waterways), displacing native waterweed and preventing other plants from developing. Parrot's Feather (*Myriophyllum aquaticum*), a South American Plant, can also take over a waterway or lake and choke it entirely.

Invasive knotweeds (*Fallopia spp*) can sometimes be found away from the bankside, usually spread through the dumping of contaminated soils. Himalayan balsam (*Impatiens glandulifera*) although having a very pretty flower is a serious problem along many of our waterways. Giant hogweed (*Heracleum mantegazzianum*) can grow to a massive 4m in height and can be harmful to the touch.

Many of our invasive species were deliberately introduced as garden or ornamental plants. Several of the harmful non-native water weeds in our waterways came from ponds or aquariums that were emptied out into streams or lakes. Other species arrive as unwanted 'passengers' in ballast water or on the outside of boats. These include alien shellfish like the Asian clam (*Corbicula fluminea*) and Zebra mussel (*Dreissena polymorpha*). These multiply in huge numbers and can destroy aquatic ecosystems in a very short time.

Invasive species

We can all do our bit to prevent the spread of invasive species by following common-sense measures including cleaning boats, paddles and oars after they are taken from the water, never transferring water or living things from one body of water to another and using disinfectants on anything that has been in the water.



Our waterways are either manmade (e.g. canals) or have been modified to allow for navigation and recreational use. An integral part of our waterways are the substantial built elements such as bridges, locks and weirs. However, these too have become important habitats for living things, even in the most built-up of areas. An old wall can be densely populated by ferns such as wall-rue (*Asplenium ruta-muraria*) and maidenhair spleenwort (*Asplenium trichomanes*). Flowering plants can be delicate – like wall speedwell (*Veronica arvensis*) or dramatic, like wall pennywort (*Umbilicus rupestris*).

The base of quay walls below the waterline can offer habitat for lamprey, an unusual and protected group of fish species. Crayfish may often be found in abundance under bridges and otters will feed and rest at the base of the bridge. Birds like dippers (*Cinclus cinclus*) and grey wagtails (*Motacilla cinerea*) use bridges and locks as nest sites and bats will use the tiniest crevices in walls to find a roost site. Swallows and house martins (*Delichon urbicum*) find nesting sites in old lock-keeper's cottages and feed on the insects over the water.

Buildings, locks, & walls

Trees and treelines



Trees and treelines along waterways are very important wildlife corridors, allowing dozens of unbroken kilometres of shelter and refuge. The most mature woody plants – the trees – play a huge role in this. From spring to autumn, the trees offer foraging opportunities for many bird species that find bugs like caterpillars and spiders in uncountable numbers. The trees provide secure nest sites among the branches and inside hollows. Crevices offer space for bat roosts and the foliage plentiful insects and other bugs like spiders for the bats to feed on.

The long uninterrupted treelines have great value as commuting corridors for birds and bats who often prefer to avoid open countryside. The treelines and hedgerows give cover and safety from predators. They also provide shelter from wind and rain. The base of the treelines and hedgerows are like mini-woodlands and flowers like primrose (*Primula vulgaris*) and lesser celandine (*Ficaria verna*) thrive here in the spring. Hedgerow plants like hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), spindle (*Euonymus europaeus*) and bramble (*Rubus fruticosus*) produce abundant fruit for birds and mammals alike. The dense vegetation here can conceal many bird nest sites as well as burrows for small mammals.

Help and Supports

Groups such as the Irish & Ulster Wildlife Trust (www.iwt.ie / www.ulsterwildlife.org) and Birdwatch Ireland / RSPB (www.birdwatch.ie / www.rspb.org.uk) will be happy to help you find out more.

Your local Council will be able to tell you about getting support for local environmental projects through the Environmental Partnership Fund, an annual grant as well as other grant aid opportunities. One of the initiatives that would attract funding is engaging an expert for help. The LEADER programme provides funding for biodiversity projects, including environmental awareness initiatives at local level. If you are planning a project on a waterway please contact Waterways Ireland at: heritageplan@waterwaysireland.org or on +353(0)61-922141. Grant aid may be available.

Map your area

A really useful task that a local group can undertake is to draw up a detailed habitat map. While you might need some help from a local expert, much of this task can be carried out by any group with a little expertise. The map will help you to understand the habitat areas better and also keep track of any changes to them. Remember Waterways Ireland may have information relating to your local waterway so make sure to contact them first for assistance.

Citizen Science

There are now many ways for community groups and volunteers to gather data and share this with professionals working in conservation. One of the simplest of these is the Spring Alive project which asks participants to record their first sightings of swallows or the first cuckoo they hear. Go to www.springalive.net to join this really simple but useful



Community Biodiversity projects

Having a stretch of waterway in your area means that you have a great biodiversity amenity on your doorstep. There are many projects that community groups such as Tidy Towns and Best Kept can undertake.

Perhaps the best way to learn more about biodiversity is to get an expert to visit and help you to get informed on the wildlife and habitats in your area or contact Waterways Ireland, who have undertaken extensive surveys along many of the their navigations.

project. More experienced birders can help with Birdwatch Ireland's Countryside Bird Survey, providing invaluable information on native bird populations and trends using line-transect surveys. In winter, Birdwatch seek information on sightings of waterfowl, including our swan and duck species. In Northern Ireland, the RSPB seeks volunteers to submit survey sightings as part of the 'BirdTrack' project. They also organise the Big Garden Bird survey which needs amateur birders every year.

Community groups all over Ireland help with unravelling the mysteries of our bats with the annual Daubenton's Bat Surveys. Training in using a bat detector is provided and the inland waterways offer excellent opportunities to take part in this essential work.

Did you know that frog and newt numbers in Ireland really aren't understood? Your group can help though. The IWT has joined forces with biodiversity.ie on its own surveys including our often-overlooked amphibians. Recording your sightings here couldn't be easier. The National Biodiversity Data Centre (NBDC) and the Centre for Environmental Data and Recording (CeDAR) manage the two biggest databases for public participation. Hundreds of species from the commonplace to the downright exotic may be logged and submitted at: www.biodiversityireland.ie and <http://www2.habitas.org.uk/records>.

Even a record of the most common and familiar species can be helpful.

Plantlife International looks for wildflower findings from Northern Ireland and The British Dragonfly Society is gathering information on these fascinating flying hunters for a long-term study. See: www.british-dragonflies.org.uk



Boxing Clever

Bird nesting boxes can add great value to an area for several species. Putting up well-planned nesting boxes and maintaining them is a great service that groups carry out every year. However, this must be done carefully and correctly and you should definitely seek some expert advice before you take this on. Bat roosting boxes are another way to enhance a habitat for wild species. Again, though, get some expert advice from Bat Conservation Ireland or an ecologist before you approach this job.

Walk on the Wild Side

Organising outings for the public is a great way to stimulate interest and share knowledge and canals are ideal venues. Many of our inland waterways offer

easy walking and there is often good access at bridges and locks. Springtime probably offers most diversity of species but there is interest all year round. Check with your local Waterways Ireland office before planning such events.

Add some Wildflowers

Some of the amenity areas at canal locks and bridges can be ideal for wildflowers and could be enhanced by some wildflower gardening. Some of these might already be useful places for wild plants so some good advice is needed at the planning stage. Get in touch with Waterways Ireland if you think that you might have a suitable spot that you could make wilder. To see some examples of what might be done, visit www.irishwildflowers.ie.

Easy Ways to Manage for Wildlife

It can be easy to make even the most ordinary looking grassy area better for wildlife. By altering when and how you mow a grassland site can make all the difference for wildflowers and the insects that depend on them. Try to time your first grass mowing a little later to allow the first dandelions to flower – they are an important early food source for bumblebees. If possible, limit your mowing to once or twice a year: late spring and early autumn and remove the cuttings – ideally raking and shaking any seed loose as it's picked up. Leaving a strip of the grassy area uncut throughout the year will allow different species to develop than in a closely cut lawn. Long strips along waterways with varied plants will provide food, shelter and even nesting areas.

Plan for Pollinators

Our waterways represent some of the best potential for allowing places for pollinating insects. Some of the grassland management techniques described above will improve grassy areas for pollinators. If you can leave some areas of earth bank (ideally an east-facing one) bare, unvegetated or really tightly mown, this will provide habitat for solitary bees to make tunnels.

Hedgerows of native species like hawthorn provide food and shelter. You could also plant flowering trees (fruit trees, rowan – *Sorbus aucuparia*, or thorny bushes) and allow bramble to develop in some areas. Stone walls, especially older ones offer much space for insects to nest and shelter. Dead trees will too.

If there's no buildings or older trees, you can buy or make insect boxes especially designed for bees, ladybirds (*Coleoptera: Coccinellidae*) or lacewings (*Neuroptera: Chrysopidae*). Ivy (*Hedera helix*) on stonework and trees or hedgerows can offer food for pollinators in winter when no other plants can. Lots of detail of why we are looking after pollinators and how to go about it are in the **All-Ireland Pollinator Plan** (www.biodiversityireland.ie/pollinator-plan).

More info:

ORGANISATIONS:

Waterways Ireland

Tel: +353 (0)61 922141

Email: heritageplan@waterwaysireland.org Web: www.waterwaysireland.org

National Parks and Wildlife Service (ROI)

Tel: +353 (0)1 888 3242

Email: nature.conservations@ahg.gov.ie Web: www.npws.ie

Northern Ireland Environment Agency

Tel: +44 (0) 300 200 7856

Email: nieainfo@daera-ni.gov.uk Web: www.daera-ni.gov.uk

Birdwatch Ireland:

Tel: +353 (0)1 2819878

Email: info@birdwatchireland.ie Web: www.birdwatchireland.ie

Irish Wildlife Trust

Tel: +353 (0)1 8602839

Email: enquiries@iwt.ie Web: www.iwt.ie

Crann

Tel: +353 (0)1 627 5075

Email: info@crann.ie Web: www.crann.ie

An Taisce

Tel: +353 (0)1 454 1786

Email: info@antaisce.org Web: www.antaisce.org

Royal Society for the Protection of Birds (N.I)

Tel: +44 (0)2890 461458

Email: belfast.lough@rspb.org.uk

Web: www.rspb.org.uk

USEFUL WEBSITES:

Butterflies: www.irishbutterflies.com Wildflowers: www.wildflowersofireland.net

Bats: www.batconservationireland.org Invasive species: <http://invasivespeciesireland.com>

Irish Species: www.biology.ie Dragonflies & Damselflies: www.habitas.org.uk/dragonflyireland

Wildlife Records: www.biodiversityireland.ie www2.habitas.org.uk/records

