



streamscapes | gullion

# The Catchments of Slieve Gullion

[www.streamscapes.ie](http://www.streamscapes.ie)



streamscapes  
the waters & the wilds



**THE  
CHALLENGE  
FUND**  
Supporting People to Support Their Environment

**"To protect your rivers, protect your mountains."**  
– Emperor Yu (1600BC)

### **SAFETY FIRST!!!**

The 'StreamScapes' programme involves a hands-on survey of your local landscape and waterways...safety must always be the underlying concern. If you are undertaking aquatic survey, remember that all bodies of water are potentially dangerous places. Slippery stones and banks, broken glass and other rubbish, polluted water courses which may host disease, poisonous plants, barbed wire in riparian zones, fast moving currents, misjudging the depth of water, cold temperatures...all of these are hazards to be minded! If you and your group are planning a visit to a stream, river, canal, or lake for purposes of assessment, ensure that you have a good ratio of experienced and water-friendly adults to students, keep clear of danger, and insist on discipline and caution!

Welcome to StreamScapes, a dynamic environmental education programme for schools, community groups, and individual citizens. Undertaking a StreamScapes project will give you a deeper understanding of:

- How your local (rural or urban) catchment environment functions
- How human activities impact upon natural habitats
- How high quality freshwater environments reflect wise landscape management
- How to achieve best practice in pursuit of livelihood and recreation, and,
- How your informed and active participation in environmental stewardship can improve the quality of life now and for those who will follow

This book, 'StreamScapes Gullion,' provides information in support of theoretical and practical Environmental Studies. It is intended for the use of Primary & Secondary School Students, but may be relevant to Farmers, landowners, or anyone interested in conserving their local waters, such as Angling Clubs or Tidy Towns Committees. The website [www.streamscapes.ie](http://www.streamscapes.ie) offers further resources in support of your studies.



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Original Drawings by Jessie Winchester and Mary Moorkens

Thanks to all of the Students, Teachers, and Schools who have so enthusiastically participated in StreamScapes courses since 1989!

## **Foreword: What is a Catchment?**

When you think of it, we all live in valleys, no matter how steep or broad, and all of our valleys have streams and rivers. From the hills above us to the sea below, these watercourses make their way across our landscape and define the Catchment in which we live. Here a mountain stream runs swiftly and tumbles over waterfalls, there a wide river flows easily past green fields, through our communities and down to the sea.

In that river, along its banks and into the surrounding landscapes, may be found a wealth of biodiversity; fish, birds, insects, animals, trees, wild flowers, and people, but only if our waters run pure and clean. For our Catchment also contains our farms and factories, towns and toilets. We need all of these, but we must also come to understand how, as we work and play, or cook, and clean, and garden at home, we have a huge impact on water quality around us.

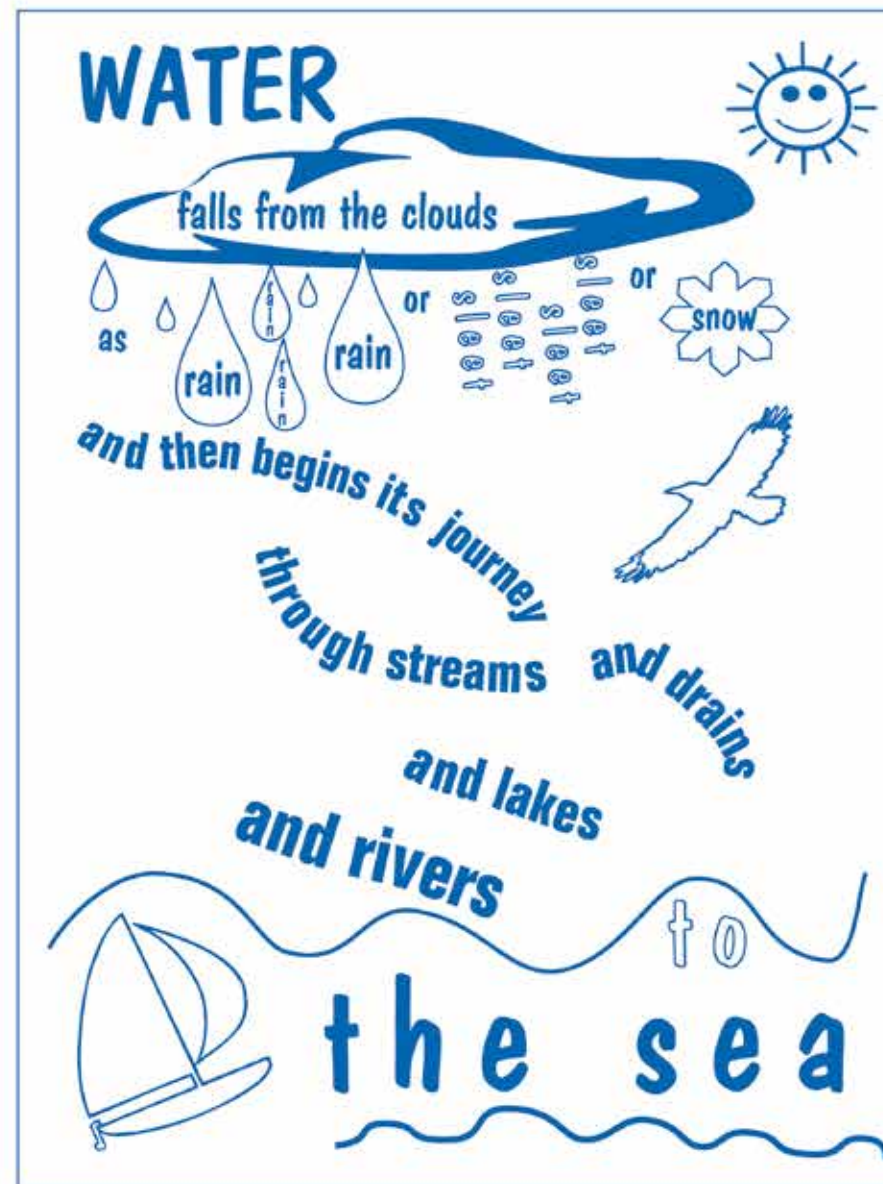
This book introduces us to our Catchment as well as moments in the Water Cycle and the basic elements of Biodiversity which clean waters support. It encourages us to be aware of how we may minimise our impacts and to be active participants in protecting the waters of our Catchment

Slieve Gullion is the *source* of multiple Catchments, with streams feeding into the Cully Water, Forkhill, Kilnasaggart, and Flurry Rivers. What benefits do these streams bring to our communities? How do they sustain various habitats and species? The StreamScapes Gullion Project is involving the community in learning about the journey, and the role, of these streams.



# Welcome to the Water-Cycle!

Our Catchment's journey from Source to Sea



Water begins its life perfectly clean but on its way it collects things

The text is accompanied by four icons: a duck, a soccer ball, a pig, and a leaf, representing the various things water collects on its journey.

**But** that's only half the story - how does it get up there in the first place?

(clue)

**And** what about people????

The water that's on the earth today is exactly the same water that was always here - no more and no less!

All these things need water -



(well ok, maybe not ginger bread people) (or dinosaurs) (but everything else)



Most animals need to drink every day (adult humans 2-3 litres) and die within a few days if they don't.

Some animals don't usually drink but get the water they need in their food



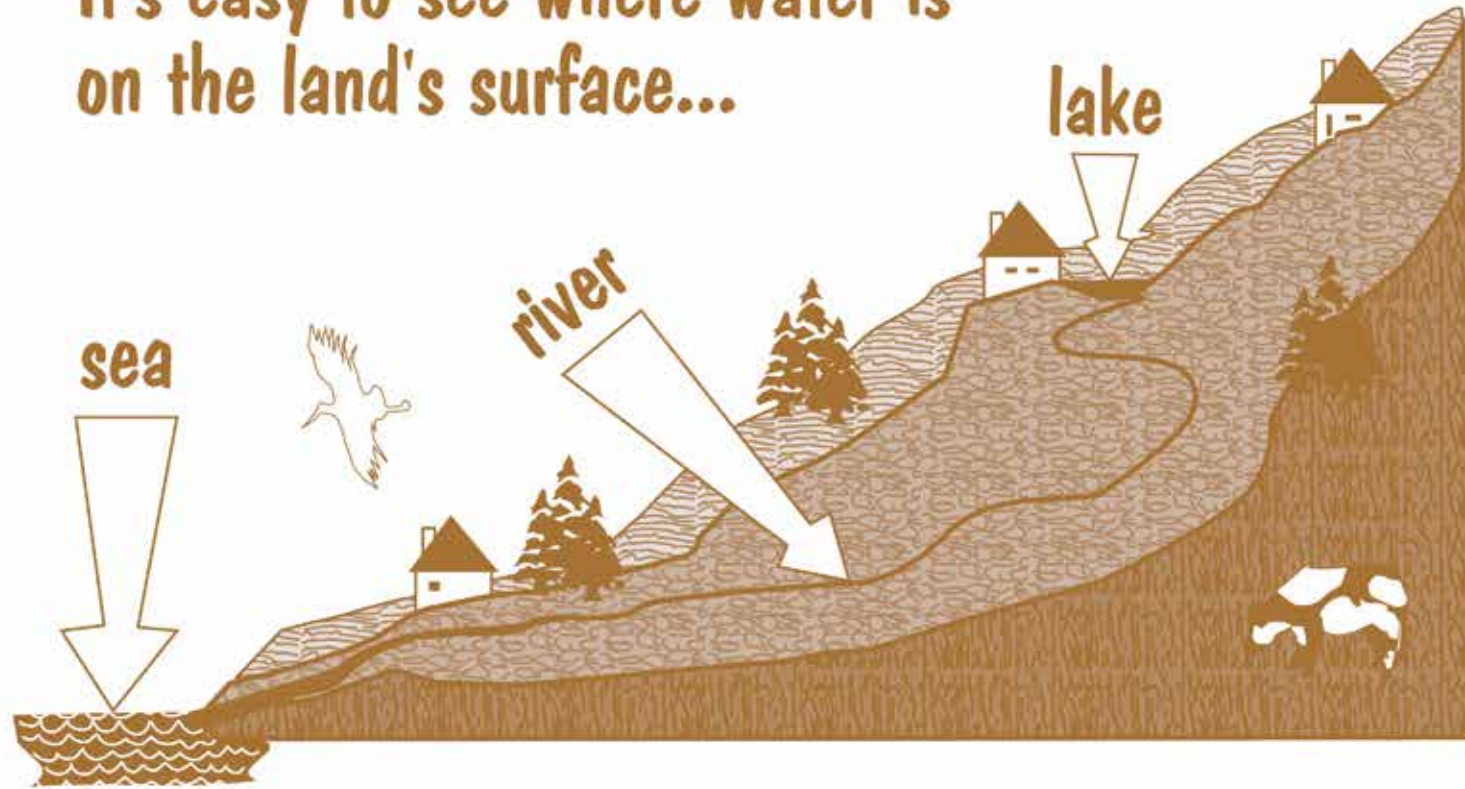
In the summer a big tree needs about 200 buckets-full of water EVERY DAY!



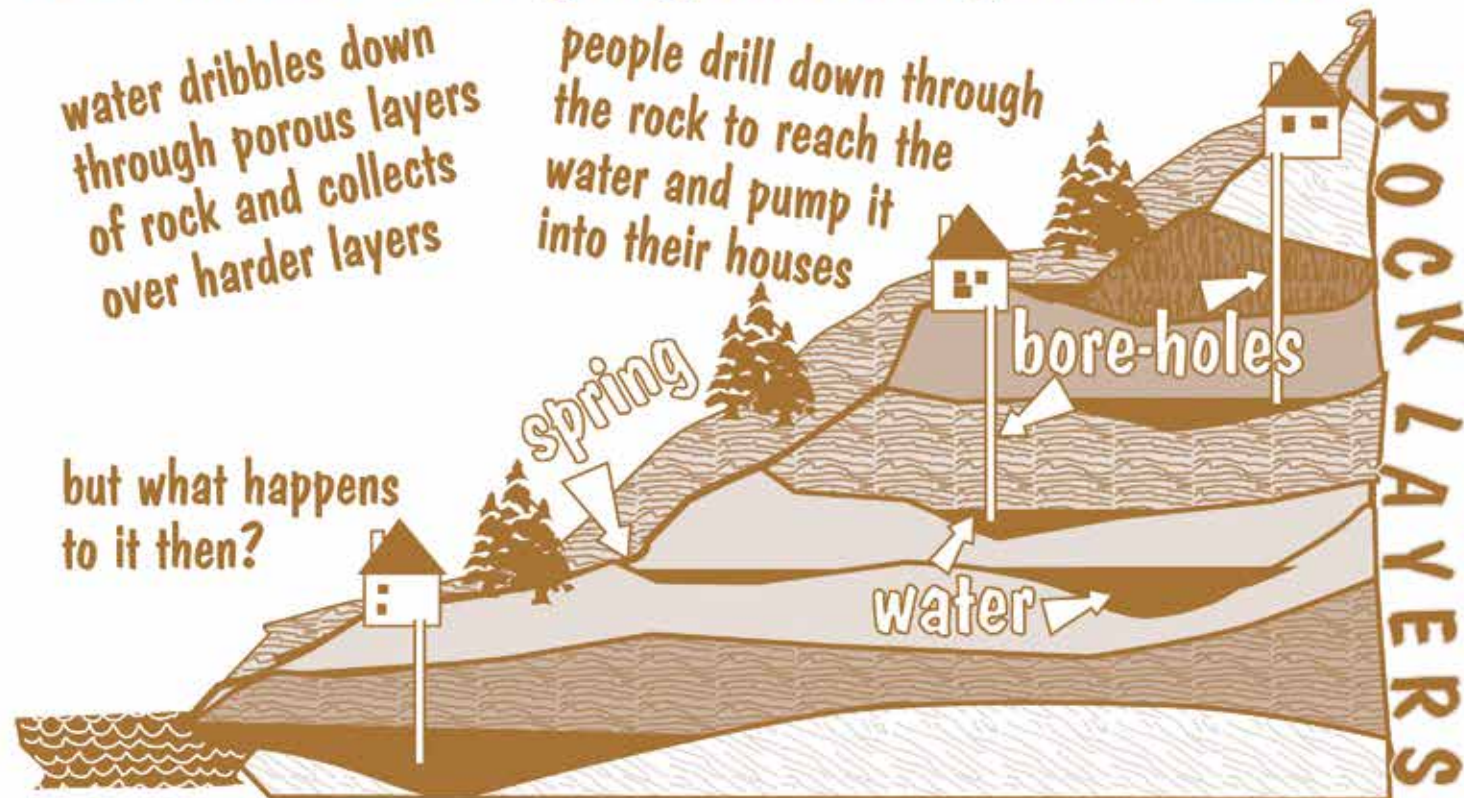


## 3D Catchments

It's easy to see where water is on the land's surface...

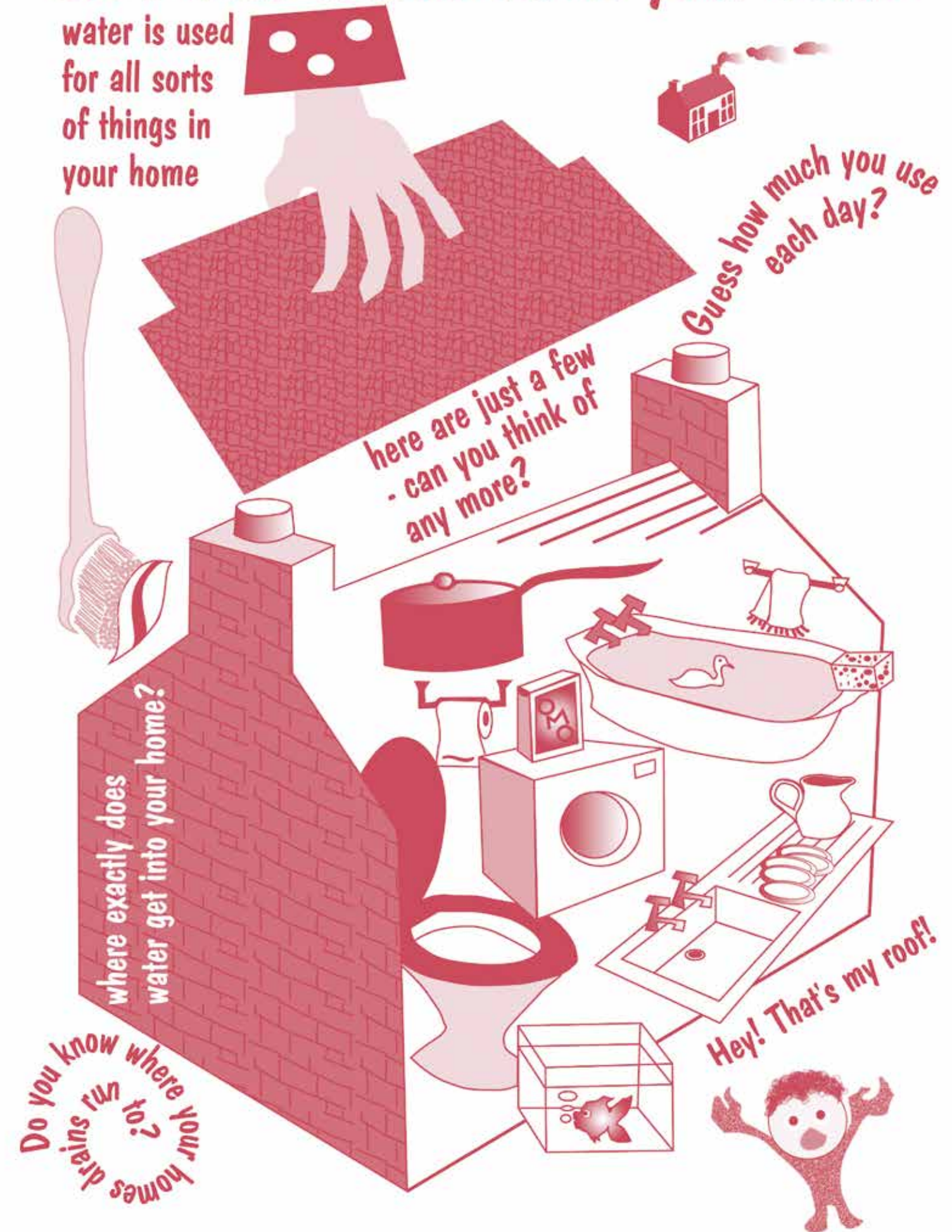


But there's a lot going on underground too...



## Let's have a look inside your house

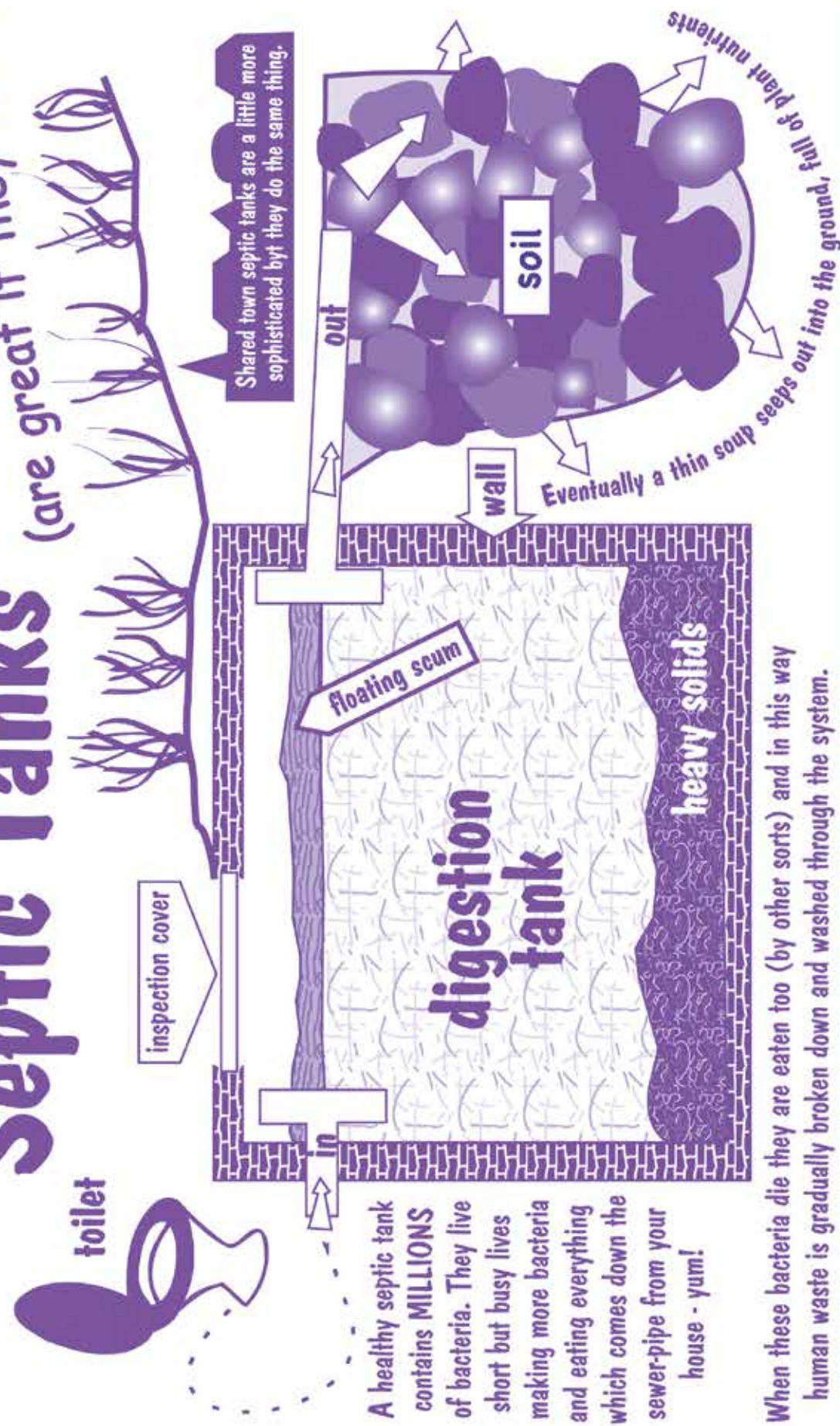
water is used for all sorts of things in your home





# Septic Tanks

(are great if they work!)



A healthy septic tank contains **MILLIONS** of bacteria. They live short but busy lives making more bacteria and eating everything which comes down the sewer-pipe from your house - yum!

When these bacteria die they are eaten too (by other sorts) and in this way human waste is gradually broken down and washed through the system.

**BUT** - the bacteria in your septic tank are sensitive little things and are killed by Bleaches, Toilet cleaners, Disinfectants etc.

# POLLUTION

In the past, people have used rivers and streams to dump their rubbish in.

They have cut down the trees on the river banks,

taken gravel from the river-bed,

piped streams through long, dark tunnels,

allowed fertilisers to wash in from the fields,

poured poisonous chemicals into the water

and taken out too many fish.

Not surprisingly, this has left lots of miserable smelly horrible-looking rivers!

**BUT** these days

everybody realises how important water is to all of us. If we respect our water systems then we can all have a happy healthy life in an interesting and exciting environment.



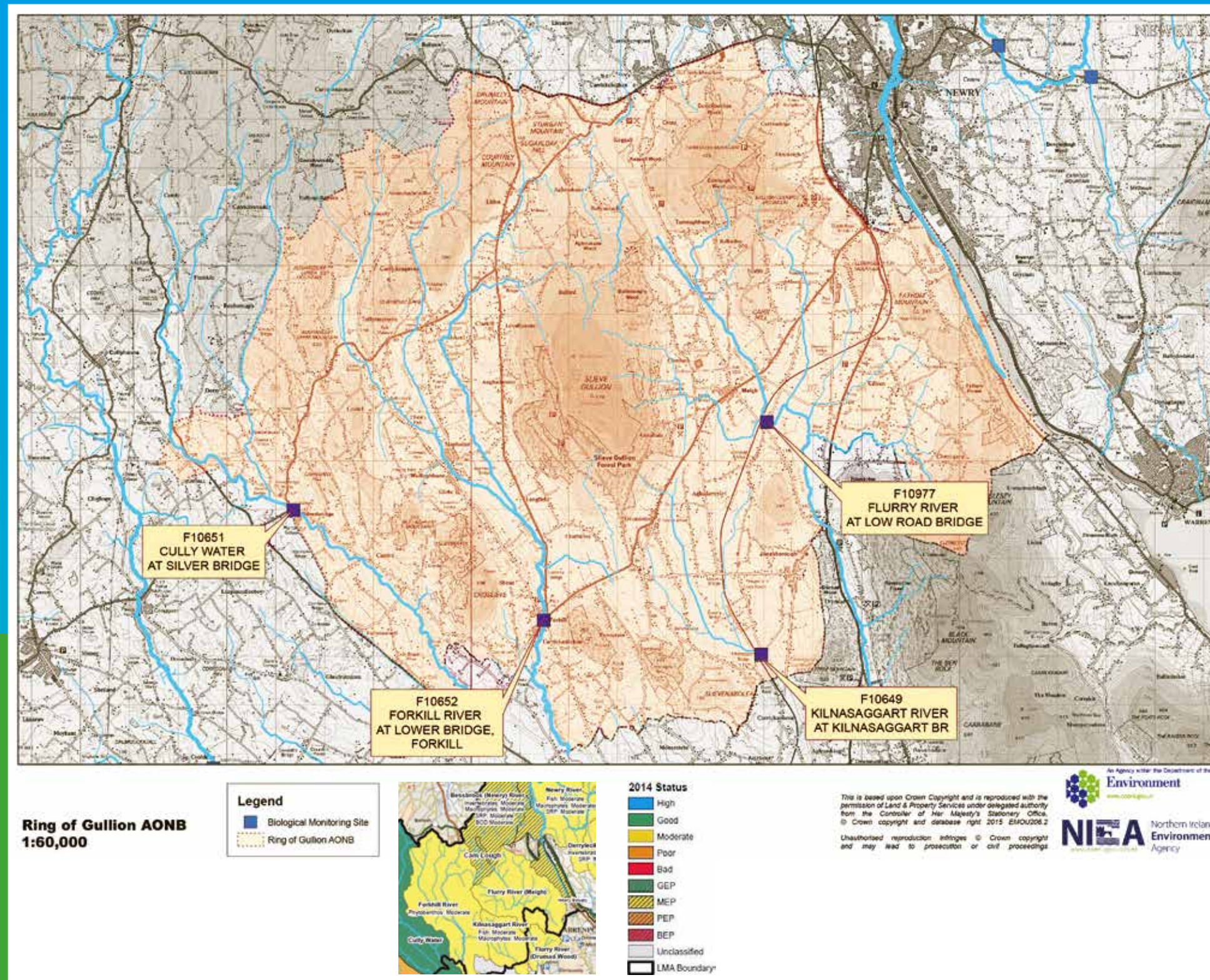
# Slieve Gullion Catchments

*A Catchment is a Community related by Water!*

Managing our catchments requires us to understand and integrate a huge range of information – how people are using the water, including drinking, agriculture, industrial, use for bathing; the geography and geology of an area, looking at how all the water bodies are connected both above and below ground, how the water flows from where it falls as rain to the sea: how people use the land and water bodies and what livelihoods are supported; and possible sources of pollution, including urban waste water treatment plants, septic tanks and runoff from farming, forestry, hard surfaces, construction and landfills.

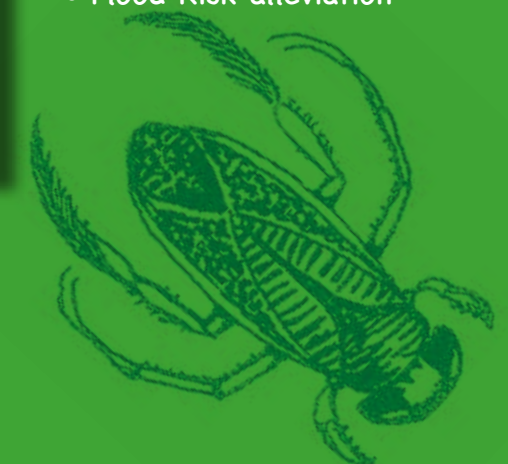
In recent years there has been good progress in tackling serious pollution but small point and diffuse sources of pollution and physical damage to river corridors remain an issue.

This booklet is designed to inform people of the part they play in nature's water cycle and provide us with lots of information on how we can reduce our impact on waters. Hopefully, it will also encourage better informed individuals and communities to reconnect with their local river and work together to restore habitat and water quality.



Clean Wild Waters +  
Wetland protection +  
Habitat conservation =

- Human Health (strong link between water & health!)
- Rich Biodiversity; birds, fish, mammals, amphibians & reptiles, trees, plants, invertebrates...
- Lower water treatment costs
- Higher value farm produce
- Amenity & aesthetics
- Commercial Fishing
- Angling & other tourism
- Carbon dynamics
- Climate amelioration
- Culture & Heritage
- Education & Learning
- Grassland habitats
- Erosion control
- Flood Risk alleviation

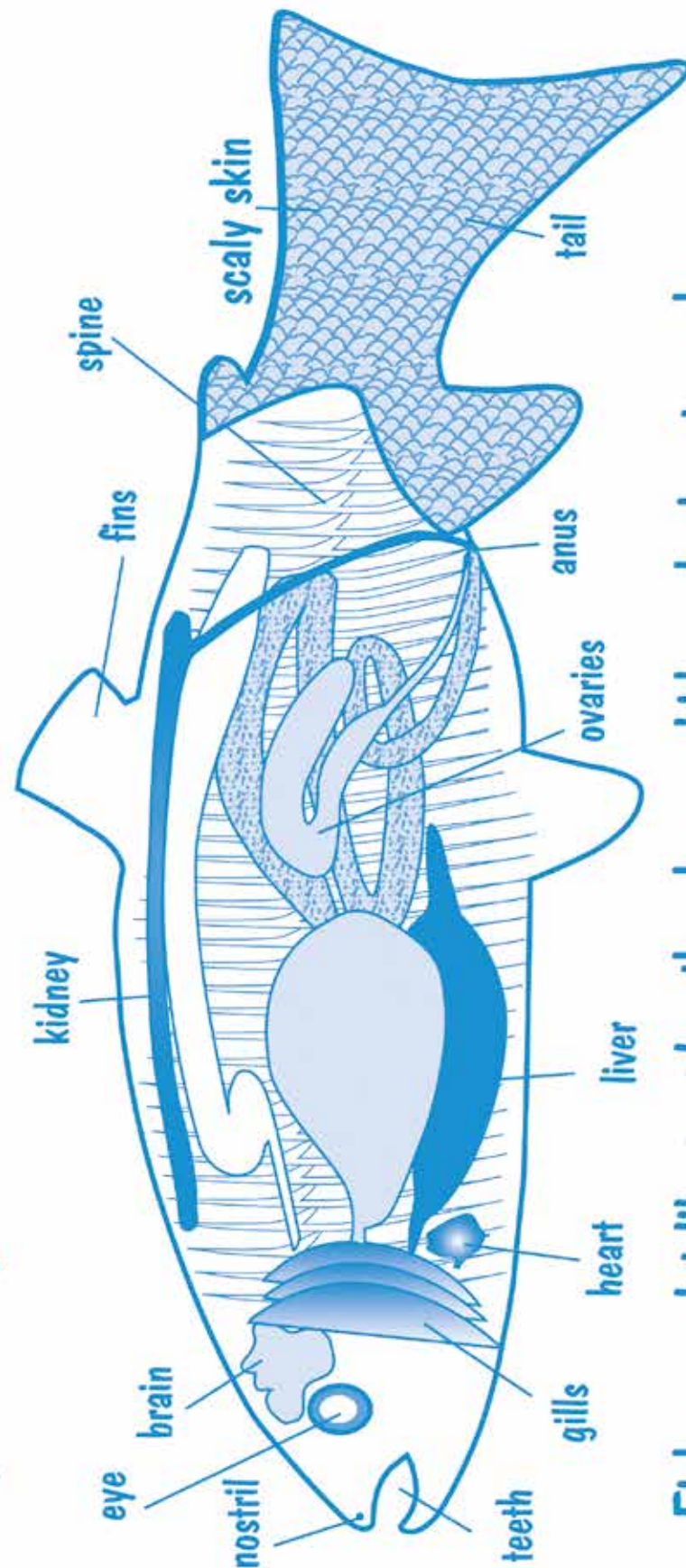


## River Basin / 'Catchment' Management

River Basin Management is a key element in implementing the Water Framework Directive (WFD), taking an integrated approach to the protection, improvement and sustainable use of the water environment. It applies to groundwater and to all surface water bodies, including rivers, lakes, transitional (estuarine) and coastal waters out to one nautical mile. To learn more about River Basin Districts see: <http://maps.ehnsi.gov.uk/wmuviewerplan2/>



# FISH ANATOMY

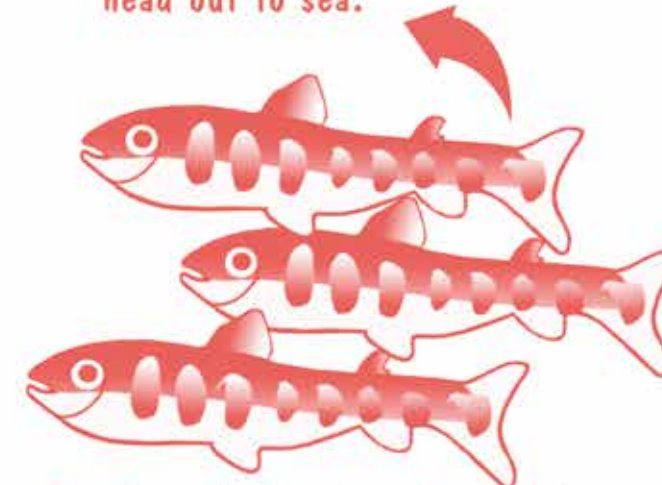


Fish are a lot like people - they have a kidney, brain, stomach, heart, liver, spine, intestines, ovaries (or testes), skin, teeth and eyes - even nostrils! Just like us!



Smolts turn silvery, leave the river and head out to sea.

Adult salmon swim thousands of miles to spawn in the river where they were born



Parr have dark stripes down their sides. They swim in shoals and live in deep pools.



Fry have to find their own food. They have camouflaged, scaled bodies and large eyes.

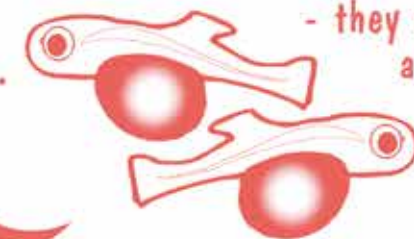
The eggs are orange and the size of a small pea



If they are fertilised with sperm from the male, then the embryo inside develops.

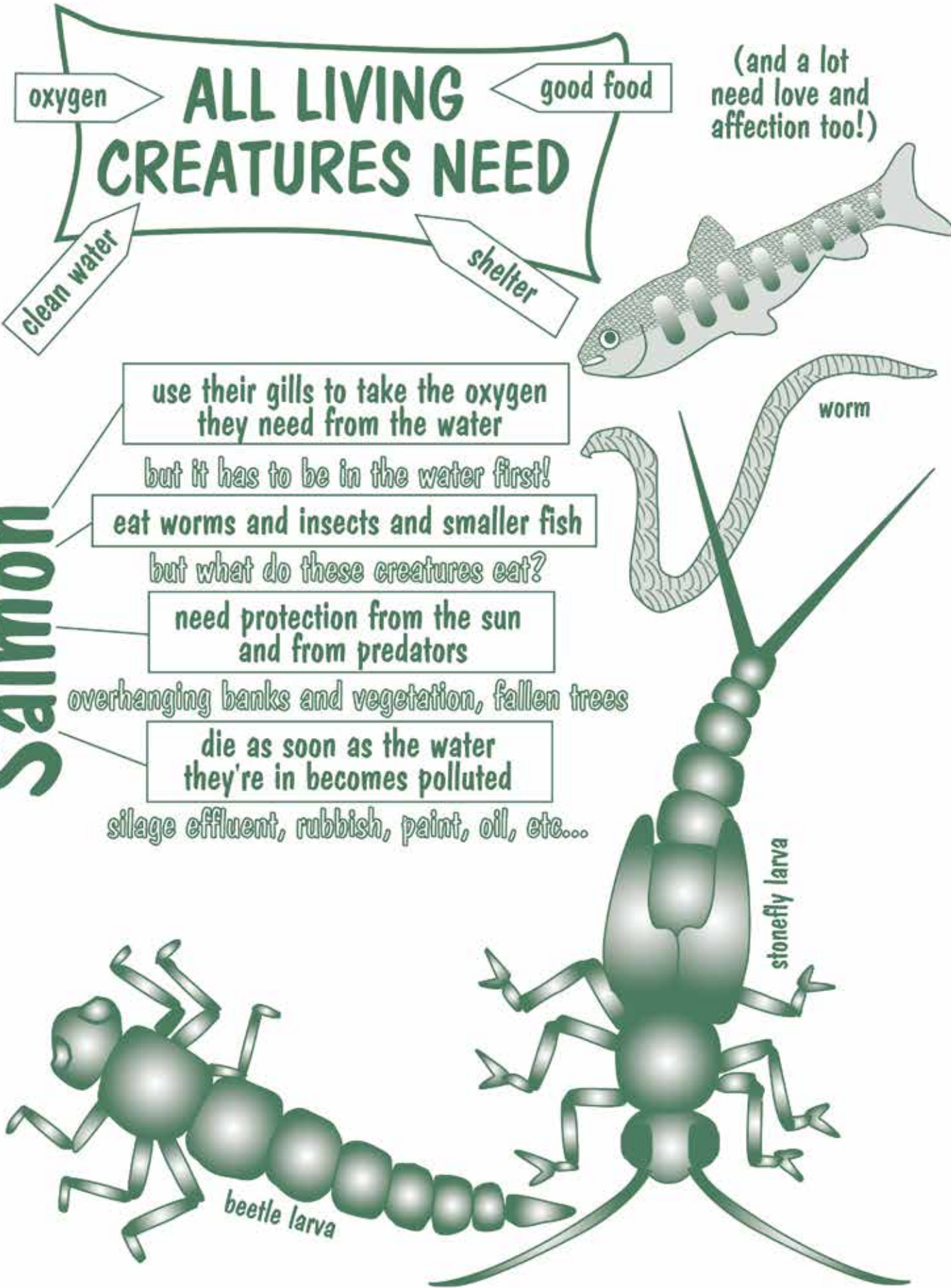
Alevins have a yolk-sac - they are transparent

and live amongst the pebbles on the stream-bed.



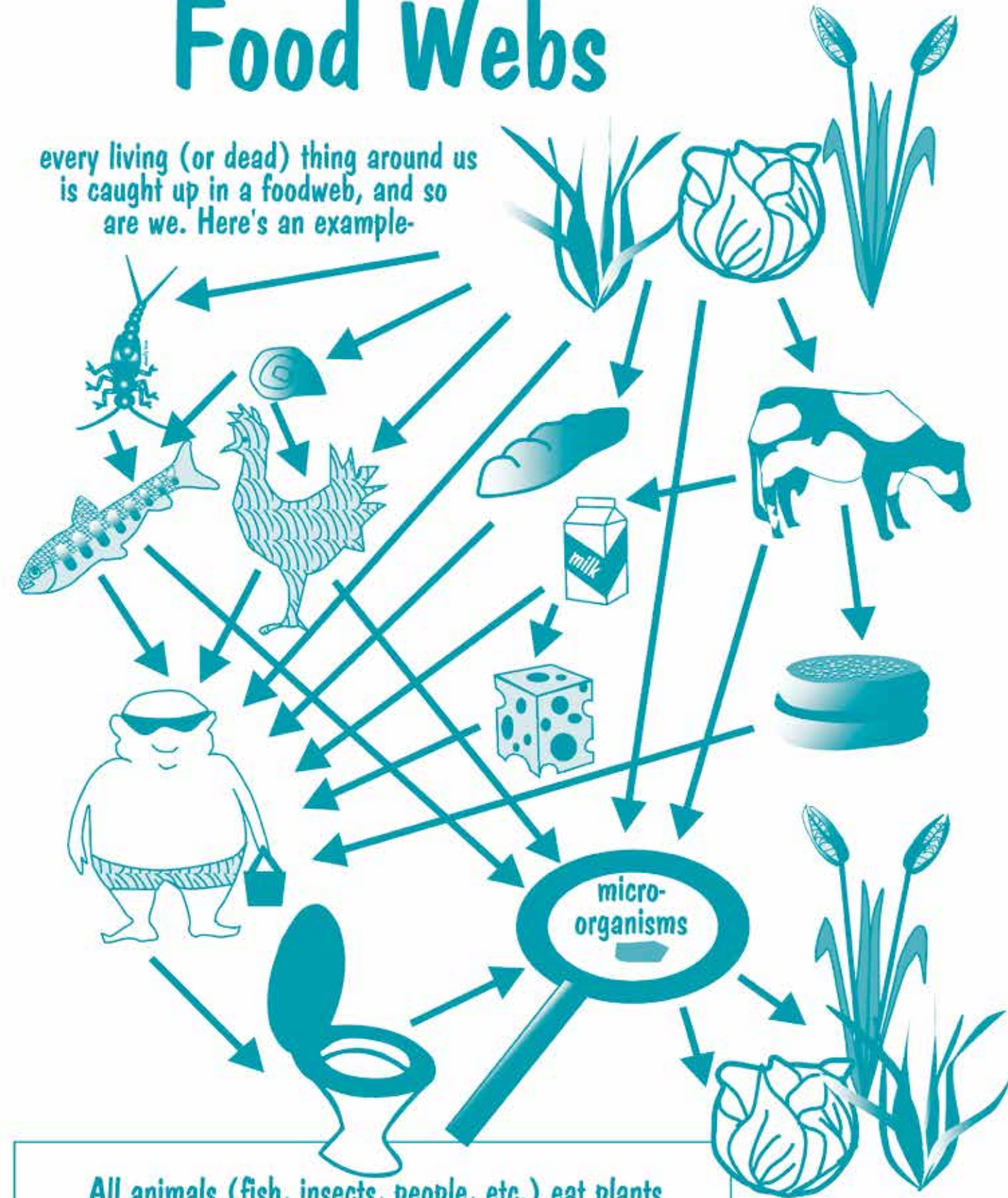
We are interested in Salmon and Trout (the salmonids) because they are the proof of clean water and a healthy habitat (- and they taste delicious too!).





## Food Webs

every living (or dead) thing around us is caught up in a foodweb, and so are we. Here's an example-



All animals (fish, insects, people, etc.) eat plants - either directly (like cows, who eat grass), or indirectly (like lions, who eat antelopes who eat grass), or both (like people, who eat just about anything!).



# Healthy STREAMS and RIVERS have a huge range of plants and animals living in and around them.

They need deep sheltered pools for fish to hide in, but they also need shallow fast-flowing areas where air can mix with water.

Overhanging plants provide shelter and food for insects and birds.

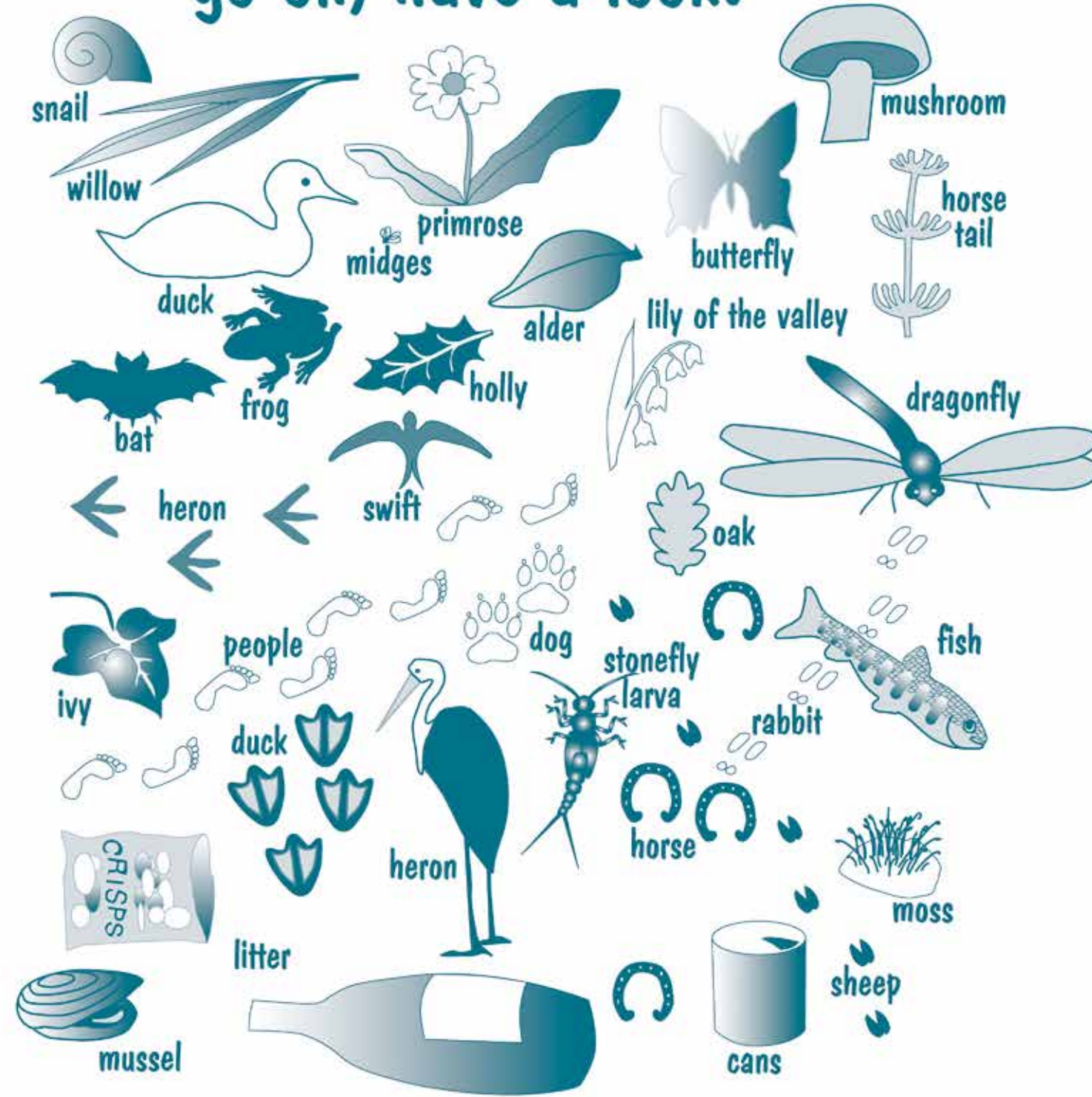
The stream-bed will be scattered with stones of different sizes, as well as dead leaves - food for micro-organisms and bigger animals.

Algae and mosses grow on the stones - food for snails and insects.

Large destructive animals like cows will be kept away.

It's ok to go fishing in a healthy river - as long as plenty of fish are left to breed.

## So, how's your stream? go on, have a look!



here are a few things you might find  
- what else can you see?

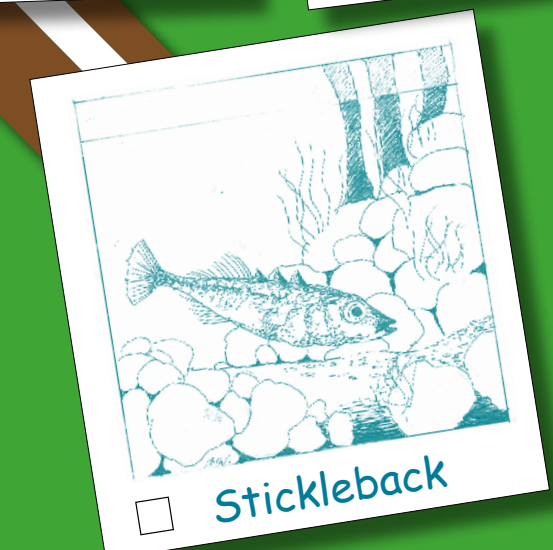
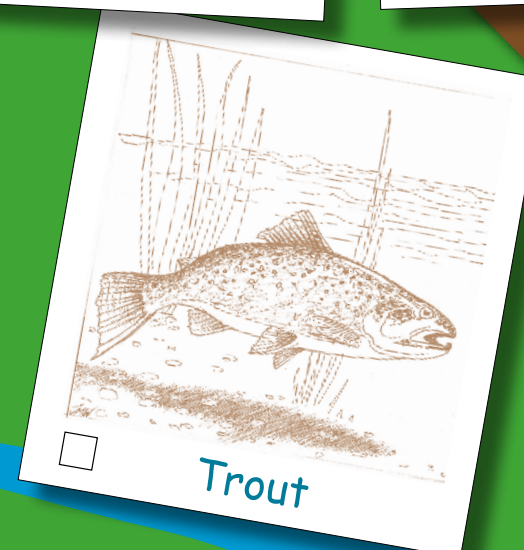
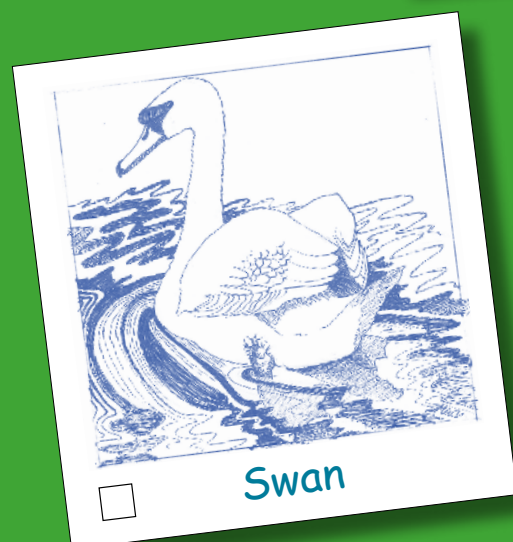
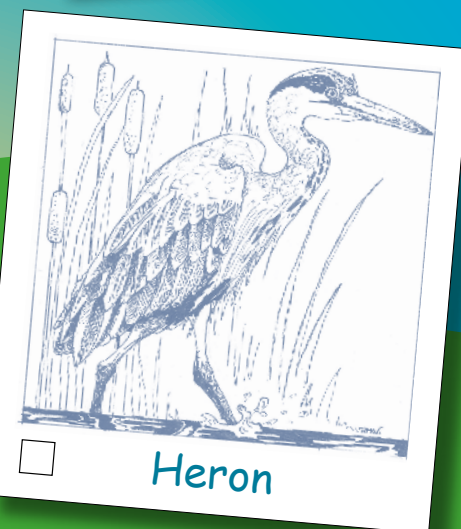
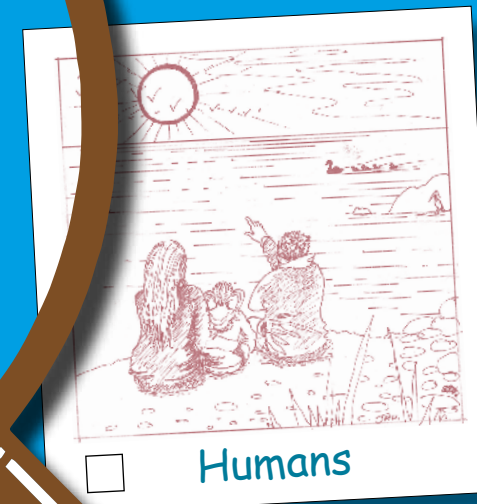
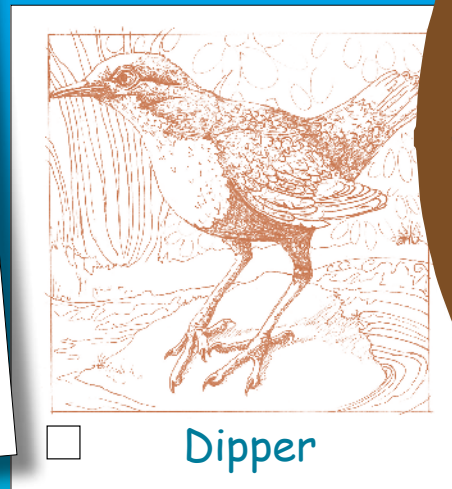
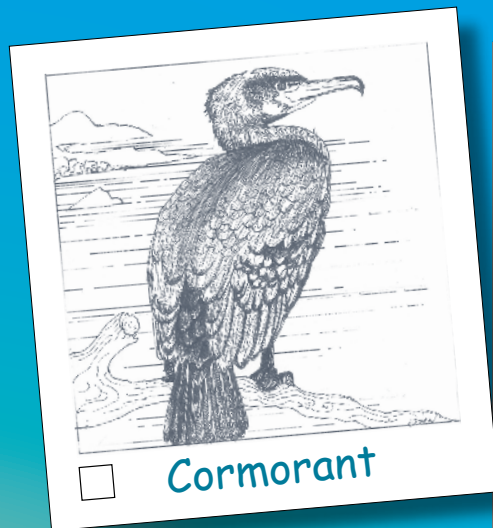


# Our Wildlife

If we can achieve high-quality waters in our Catchment, lots of benefits follow. Following are drawings of a few examples of the variety of species which we might see in our River and along its banks.

# How many species can you find?

Tick the boxes of any of the species below that you are lucky to see...  
tell your friends and family!





## Bio-Monitors: Our Bugs!

### Instream Insects

The insects that live in a stream provide indication of water quality in what is known as the 'Q' Scale:

Q1=Very Poor Q2=Poor Q3=Moderate Q4=Good Q5 = Very Good

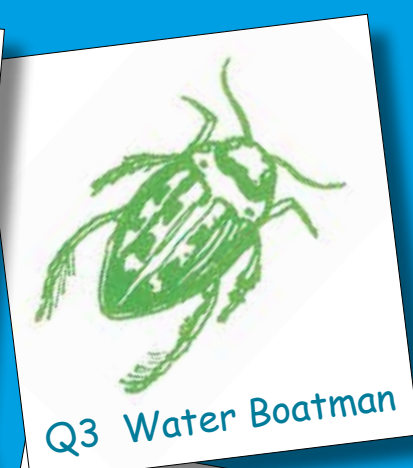
- Q1 True Worm** – Fíor - Phylum Annelida – normally live in silt and mud and can tolerate pollution
- Q2 Whirlygig Beetle** – Ciaróg Whirlygig – Gyrinidae - Oval, black-bronze sheen; predators/scavengers
- Q3 Water Boatman** – Bhádóra Uisce – Notonecta glauca: Carry bubbles of air under their wings
- Q3 Cased Caddis Fly** – Nimfeach Caddis Eitilt – Hydropsychidae: Builds home of twigs or pebbles
- Q4 Mayfly nymph** – Nimfeach Mayfly - Ephemeroptera Baetis: Very sensitive to pollution
- Q5 Stone Fly nymph** – Nimfeach Eitilt Cloch - Dinocras cephalotes: Indicator of the highest water quality



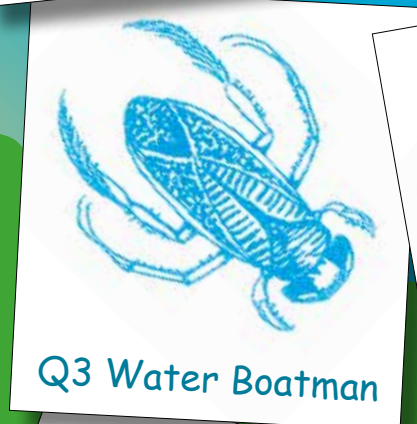
Q1 Worm



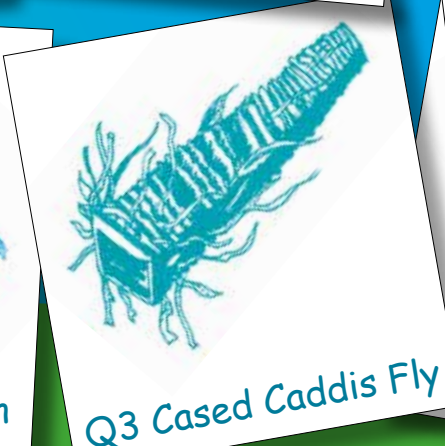
Q2 Whirlygig Beetle



Q3 Water Boatman



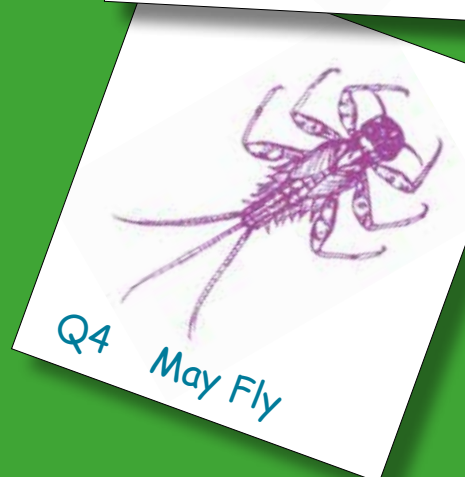
Q3 Water Boatman



Q3 Cased Caddis Fly



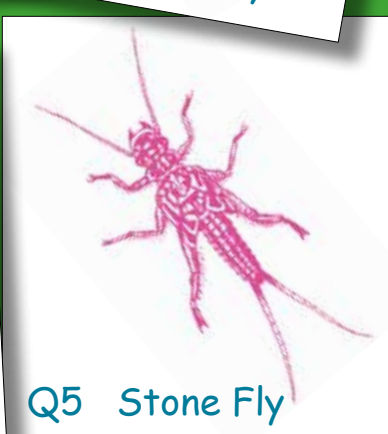
Q4 May Fly



Q4 May Fly



Q5 Stone Fly



Q5 Stone Fly

What bugs will we find in Our Stream?

## Welcome to the Ring of Gullion Area of Outstanding Natural Beauty

The Ring of Gullion Area of Outstanding Natural Beauty (AONB) is a unique geological landform, unparalleled elsewhere in Ireland or the UK and was the first 'Ring Dyke' in the world to be geologically mapped. This ring of low, rugged hills forms a 'rampart' around the heather-clad Slieve Gullion mountain, where rich semi-wild habitats of heath, bog and woodland contrast with the neatly patterned fields and ladder farms. The AONB straddles the Northern Ireland border with the Republic of Ireland in south Armagh. The AONB shares many landscape characteristics with the adjacent Cooley peninsula in County Louth.

Covering an area of 15,353ha, parts of the AONB are considered to be of national importance for nature conservation and these are called Areas of Special Scientific Interest and include Cashel Loughs, Leavallymore, Carrickasticken, Slieve Gullion, Camlough and Fathom Upper. In each case these sites represent the best of the habitats in the area and are very important in Northern Ireland. Six hundred and twelve hectares of Slieve Gullion have also been designated as a Special Area of Conservation under the EU Habitats Directive as this is one of the largest expanses of European Dry Heath in Northern Ireland.

Slieve Gullion's mysterious reputation arises from its associations with legends and the wider area's rich archaeological heritage. It was along these roads and fields, and over these hills and mountains, that Fionn Mac Cumhaill, Cúchulainn and the Red Branch Knights, the O'Neills and the O'Hanlons roamed, battled and died.

You can Experience Gullion's rich geology, biodiversity, archaeology, and mythology by browsing the Ring of Gullion website at [www.ringofgullion.org](http://www.ringofgullion.org). You can also use this website to learn about the many and diverse amenities which the region offers and to plan a trip to explore this fascinating area.

### Ring of Gullion Townlands

The townland is a unique feature of the Irish landscape and is one of the most ancient divisions in the country. Townlands predate the Norman invasion of the 12th century and the source of many of our place names lies in our Gaelic past. The townlands are a historical source that encompass the mythology of Ireland – the Cattle raid of Cooley, Cú Chulainn, Fionn Mac Cumhail – as well as the early Christian period. They also act as a repository of the Irish language which was spoken widely in Dromintee, Killeavy and Mullaghbane up until the 1920s. There are over 60,000 townlands in Ireland, South Armagh has about 200, and these are grouped together to form parishes.

### Farm Landscape

The Ring of Gullion is a living landscape with farming a major activity and an important source of livelihood. The best soils in the area are those of the glacial deposits which run in rounded ridges through the lowlands between Slieve Gullion and the ring dyke hills. In these areas farmland is divided in to strips of rectangular fields, each strip originally worked as one farm. The boundaries are associated with earth banks, hedges and stone walls which provided a haven for wild flowers and wildlife.



## Ring of Gullion - Useful Contacts

Ring of Gullion (AONB), Crossmaglen Community Centre, O’Fiaich Square, Crossmaglen BT35 9AA  
[www.ringofgullion.org](http://www.ringofgullion.org)  
[info@ringofgullion.org](mailto:info@ringofgullion.org)  
(028) 3082 8590

Strangford & Lecale River Basin Districts  
Aideen Kelly, Catchment Management Officer  
Tel: 02892 633438  
<http://www.doeni.gov.uk/niea>  
[Aideen.Kelly@doeni.gov.uk](mailto:Aideen.Kelly@doeni.gov.uk)

Northern Ireland Water  
Education Officer: Jane Jackson [Jane.Jackson@niwater.com](mailto:Jane.Jackson@niwater.com)  
Education & Community: <https://www.niwater.com/working-in-our-communities/>

Ulster Farmers Union, Elliott Bell, Policy Officer (Beef & Lamb / Hill Farming), 475 Antrim Road, Belfast  
BT15 3DA  
028 90 370 222  
[ebell@ufuhq.com](mailto:ebell@ufuhq.com)

Loughs Agency  
[www.loughs-agency.org/](http://www.loughs-agency.org/)  
00353429383888

Inland Waterways Association of Ireland, Newry & Portadown Branch  
Phone +44(0)7981193480  
<http://www.facebook.com/Newry.Portadown.Canal>  
[newrychairwai@yahoo.co.uk](mailto:newrychairwai@yahoo.co.uk)

The Woodland Trust, 1 Dufferin Court, Bangor, County Down, BT20 3BX  
028 9127 5787  
[woodlandtrust.org.uk](http://www.woodlandtrust.org.uk)

Butterfly Conservation  
Catherine Bertrand, Senior Regional Officer, Northern Ireland  
<http://butterfly-conservation.org/2343/northern-ireland.html>  
[cbertrand@butterfly-conservation.org](mailto:cbertrand@butterfly-conservation.org)  
Quercus, Queen’s University Belfast, MBC, 97 Lisburn Road, Belfast, BT9 7BL  
[www.qub.ac.uk/sites/Quercus/](http://www.qub.ac.uk/sites/Quercus/)

Ulster Wildlife McClelland House, 10 Heron Road, Belfast, BT3 9LE  
028 9045 4094  
<http://www.ulsterwildlife.org>

### Further Tourist Information:

Newry Visitor Information Centre, Bagenal’s Castle, Castle Street, Newry, BT34 2BY  
Phone: 028 3031 3170  
Email: [info@visitmournemountains.co.uk](mailto:info@visitmournemountains.co.uk)  
Web: [www.visitmournemountains.co.uk](http://www.visitmournemountains.co.uk)

### Fishing contacts:

<http://www.newryandmourne.gov.uk/leisure/Activities/Fishing.aspx>  
Cedar Valley Trout Fishery, 10 Lough Rd, Mullaghbawn, Newry BT35 9XP  
028 3088 9716  
[https://www.facebook.com/newrycoarsefishanglingclub/?fref=pb&hc\\_location=profile\\_browser](https://www.facebook.com/newrycoarsefishanglingclub/?fref=pb&hc_location=profile_browser)  
[https://www.facebook.com/Newry-Maritime-Association-256982324405419/?fref=pb&hc\\_location=profile\\_browser](https://www.facebook.com/Newry-Maritime-Association-256982324405419/?fref=pb&hc_location=profile_browser)

## Slieve Gullion Habitats

Slieve Gullion is one of the largest heathlands in Northern Ireland, with the variety of heathland types reflecting the different environmental conditions on the site, the most extensive community dominated by heather. On the lower slopes there is a natural transition from upland communities, to lowland heaths and acid grasslands down into a series of small wetlands. These ‘basin fens’ are very diverse and of high conservation value. A number of notable species have been recorded. These include cowberry on the higher slopes, western gorse and the moss *Sphagnum compactum* in the lowland heath, and Dioecious sedge and pale butterwort in the richer flushed areas. The Ring of Gullion is one of the best ring-dyke systems in these islands. Slieve Gullion itself is the finest example of a tertiary igneous centre in Ireland. The rock exposures on the mountain and surrounding areas are of international geological importance.

### Habitats include:

**Bogland:** Many of the bogs that would have characterised the lowland areas have been drained to allow for agricultural improvement, though important wetlands remain. These bogs were formed on water-logged sites where bog moss accumulated, building up to form thick peat deposits. Surviving bogs contain mixtures of mosses with drier banks of heather and bilberry often being colonized by willow or birch scrub. Some areas of abandoned cutover bog contain deep pools. The small fragments of remaining bog in Ring of Gullion are valuable wildlife habitats whose conservation is clearly dependent on continuing environmentally sensitive farm practices.

**Heathland:** Heath covers approximately 12% of the area making it one of the largest dry heaths in Northern Ireland, recognised by its designation as a Special Area of Conservation. The heaths form on thin acidic soils overlying granitic rocks and are home to colourful gorse and bracken in the autumn. Slieve Gullion is by far the largest area of heather moorland and consists of a fairly pure stand of ling, with scattered bilberry. Other areas around the lower hills of the ring-dyke, as at Mullach Bán Mountain, Ummeracam and Ballard, have a greater diversity of habitats and plants. Drier heaths are characterised by ling heather and western gorse. Cross-leaved heath is more typical of wetter areas, forming wet heath communities with deer grass, bog asphodel and cotton grass.

**Woodland:** Within the Ring of Gullion trees and small woods are significant landscape features, providing valuable wildlife habitats. In the farmed countryside small groups of trees in shelter belts or hedges provide beneficial shelter for stock and help to screen farm buildings. On steep slopes small semi-natural woodlands of hazel and ash with sycamore, oak, rowan and willow are notable features. Willow, birch and alder scrub is typical of cutover peatland in the valley bottoms. The most mature woods are those which have been planted in old estates notably at Killeavy Castle, Hawthorn Hill and Forkhill. Forestry covers about 6% of the area, is a major land use and is of mixed coniferous species – mainly sitka spruce, lodgepole pine, japanese larch and scots pine. The variety of species planted in irregular blocks with areas of unplanted hillside and pre-existing broad-leaved trees combine in many cases to produce an attractive mosaic of landscape features and pleasant areas for forest recreation. Ancient woodland sites include Aughanduff, Carrive Grove and parts of the lands of Slieve Gullion Forest, Killeavy Castle and Fathom Forest.

For further information see: <http://www.ringofgullion.org/biodiversity/>



## What is Biodiversity?

Biodiversity, or "Biological Diversity", refers to the sum total interdependent web of life, from bacteria, microscopic algae, fungi, through to plants, trees, amphibians, fish, birds and mammals – and people!!! If we achieve "best-practice" we can greatly assist our community's capacity for Biodiversity.



## Salmon

The status of Salmon in local rivers is a great indicator of local environmental quality. When they are present, they are proof that multiple terrestrial, instream, and marine habitats are in balance. This is because salmon depend upon an entire suite of other, similarly sensitive organisms to thrive...Biodiversity!



# HOME TRUTHS

The StreamScapes method views our toilets, sinks, baths and showers as Tributaries to our Rivers! What we put in them has a huge capacity to impact on local Water Quality and Biodiversity. Outside our homes in our gardens and yards we have an equal ability to create or destroy natural habitats. These tips will help restore water quality & biodiversity:

## Household Best Practice

- Avoid any Cleaning Products with Phosphates or Bleach – they spoil the good work of your sewage treatment plant / septic tank, leading to aquatic pollution – use "eco-friendly" products!
- Use the minimum of any cleaning product – enough is enough!
- Do not use in-sink food macerators (they put added strain on sewage treatment) – compost your vegetable wastes and use as fertiliser in your garden!
- Any common household product labelled Hazard or Poison or Irritant must be treated as toxic waste when disposing of – follow Local Authority guidelines and do not put in drains!!!
- Keep your garden low-maintenance and low water-dependent, but covered in established sod (and not hard-surfaced) to avoid contributing to peak urban rainfall run-off. Use native plants and trees to establish suitable local habitats.
- Avoid herbicides, pesticides, and application of fertilisers – find natural ways to garden.
- Remember that disturbed ground contributes silt to local water courses – silts are a major enemy of aquatic biodiversity.
- Finally, control your use of water at home and in the garden...treat it as the precious substance that it is!

## Don't let Nature go down the Drain!

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### A StreamScapes Publication

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## Instream Insects

Did you know that a survey or census of the bugs that live in your local river reveal the environmental quality of the water? Stone flies, mayflies, and cased caddis fly larvae are amongst the most pollution-sensitive aquatic bugs...if you find them in your river it is a good sign! And another good example of Biodiversity in action.



## Freshwater Mussels

The study of Biodiversity is full of wondrous stories... the Freshwater Pearl Mussel (FPM), which used to live in most of Ireland's rivers but is now considered extremely threatened, is the longest lived species, living over 100 years. The microscopic juveniles spend a winter attached to a trout's gill... this is how they migrate. They are very sensitive to nutrient & silt pollution.

