



Welcome back to the Third Issue of the Source to Tap Newsletter

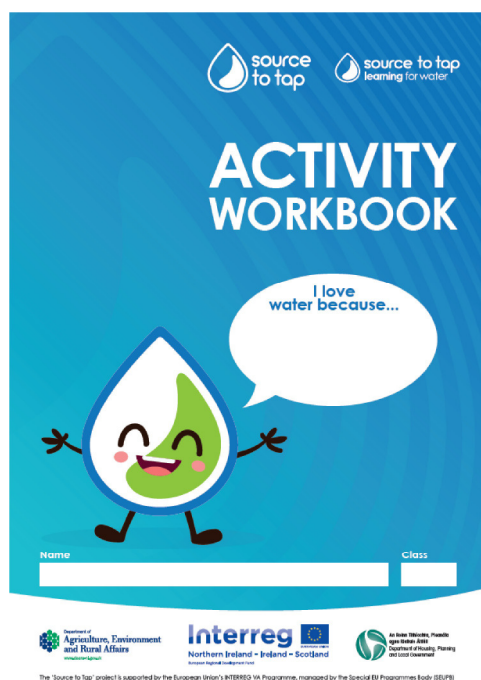
In this issue

- Education Programme Update
- Community Engagement during 2018
- Water Quality Monitoring Stations
- Pilot Land Incentive Scheme Update
- Focus on: MCPA
- Catchment Snapshot: The Derg
- Source to Tap - Riverfly Monitoring Group Update
- Outcomes of NI Water's Seagahan Catchment Trial
- Upcoming events

Education Programme Update

The Source to Tap project has been very active with its schools education programme. During 2018, we delivered 19 school education events engaging with 611 pupils. The education programme works to highlight the importance of our precious drinking water resources and outlines how we can all work together to help protect water quality across our shared catchments.

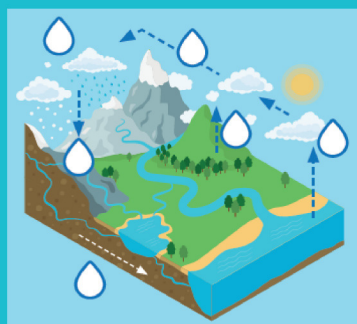
The education programme consists of five interactive learning units which schools can work through one by one or pick and choose to suit their learning needs. A mixture of Activity Workbook exercises supported by educational talks combined with experiment and design based learning activities bring the water environment to life for our young budding scientists.



UNIT 1: WHERE DOES WATER COME FROM?

ACTIVITY 1: DIAGRAM OF WATER CYCLE

Insert the number for the correct word into the water cycle diagram using the words below:



- 1 Precipitation
- 2 Condensation
- 3 Evaporation
- 4 Transpiration
- 5 Overland-flow
- 6 Groundwater-flow

ACTIVITY 2: CREATE YOUR OWN WATER CYCLE

Before you start: Draw your experiment on a separate sheet and label the equipment used.

Answer the following questions:

1. What does the water in the bowl represent?

2. What happens to the 'mist' on the plastic wrap?

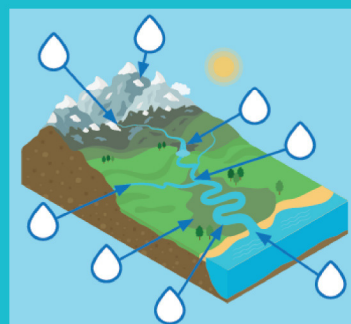
3. What happens to the water drops on the plastic wrap as they get bigger?



UNIT 2: HOW ARE RIVERS FORMED?

ACTIVITY 1: RIVER QUIZ

Insert the number for the correct word into the river catchment diagram using the words below:



- 1 Floodplain
- 2 Meander
- 3 Mountain
- 4 Mouth
- 5 Source
- 6 Tributary
- 7 Confluence
- 8 Waterfall

ACTIVITY 2: COMPLETE THE SENTENCES

Complete the sentences below

1. A river begins at its .

2. The river ends at its .

3. The area drained by a river is called the .

4. The process of removing material from the banks is called .

5. A smaller river that feeds the main river channel is called a .

6. Through a meander the fastest flow is on the of the bend, and the slowest flow is on the of the bend.

An educational activity booklet has been developed which includes five different units.

Additional details of the education programme are available on our project website at:

<https://www.sourcetotap.eu/learn/>

Community Engagement during 2018

The community engagement aspect of the Source to Tap project has also been busy during 2018. The project has attended 4 agricultural shows, including the Balmoral Show, held 8 roadshow events, completed 8 'Get to Know' your catchment events and organised 3 Riverfly training days.



Project Officer's Patrick, Lyndsey and Lisa at the Finn Valley Agricultural Show in 2018.

Again the purpose of these roadshows and events was to increase awareness of the connection between our rivers and lakes and the water that comes out of our taps. Water is abstracted from both the Derg and Erne catchments and treated to supply quality drinking water to the communities in these catchments.

Water Quality Monitoring Stations

As part of the Source to Tap project, we are measuring different parameters of water quality in two rivers, the Derg (Co. Tyrone) and the Finn (Co. Donegal). The monitoring is to enable us to see how various measures we are implementing through the pilot Land Incentive Scheme (see the next article for details) affect the raw water quality.

We have a water quality sensor installed near Spamount on the River Derg and another near Killygordon on the River Finn, which measure the turbidity and colour of the river water. These measurements indicate the amount of sediment in the water, which can be caused by soil erosion. Large amounts of sediment can block filters in the water treatment works and elevated colour can be difficult and expensive to remove.

We are also taking water samples automatically every 7 hours and analysing these in the laboratory for herbicides, as well as recording the rainfall higher up in the catchments and the height of the rivers at the monitoring locations.

Before it is used for water supply, the raw water abstracted from our rivers and lakes is treated to remove contaminants such as herbicides and colour and turbidity. The more contaminants in the water, the more challenging and costly the water treatment process can be to produce the high quality drinking water we all expect. Our monitoring will help us to determine the impact of reducing these contaminants at source and support our learning on the pilot Land Incentive Scheme.



Rain gauge



Automatic water sampler



Installing the water quality sensor

Pilot Land Incentive Scheme Update

Our pilot Land Incentive Scheme was successfully launched in Castledearg Leisure Centre on 25th July 2018. We were grateful to the Ulster Farmer's Union, Irish Farmers' Association, CAFRE and DEARA for their support with the event and to all the farmers who attended.



Our Project Officers are now working with over 100 farmers to explore potential mitigation measures on their farms. Each farm engaging in the Scheme will receive a bespoke Water and Environment Management Plan (WEMP) and, if required, a Rush Management Plan which will identify potential measures to help them reduce herbicide (e.g. MCPA) and sediment loss from their farm. These materials can run-off into our rivers and lakes and make the water treatment process more challenging. The pilot Scheme aims to reduce the quantities of them getting into the raw water in the first place with measures to achieve this being funded through the €1.2 million Land Incentive Scheme.

Farmers will be able to apply for 100% funding for items such as: a contractor to weed-wipe rushes; installation of a sprayer loading and wash down area; stock fencing on watercourses; alternative stock drinking points such as cattle operated pasture pumps and improvements to farmyard drainage to separate clean and dirty water run-off.

Work to install the recommended measures on farms will start during Spring 2019 and we hope to be able to bring additional detail on progress in future newsletters. For details of the pilot Land Incentive Scheme and the available measures to be funded please see our project website which is available at the following link:

<https://www.sourcetotap.eu/farm-grants/>

Focus on: MCPA

Why Focus on MCPA?

The monitoring results for both Ireland and Northern Ireland have shown that a number of herbicides such as MCPA are being detected more frequently in recent years in raw water abstracted from rivers and lakes for treatment for drinking water supply. This is the case for the Erne and Derg catchments. The tap water supplied is of a high quality, but, in order to achieve this standard, the removal of MCPA in the water treatment process requires significant additional resources, which result in increased capital and operating costs for treatment.

What is MCPA.

MCPA is a selective herbicide which is used as the active ingredient in many agricultural and domestic herbicide products. MCPA containing products are widely used for controlling the growth of weeds such as the Common Soft Rush. In many areas Rush has flourished in grassland following the increased wet weather periods over recent years.

MCPA is water soluble and does not bind well to soil particles which makes it prone to leaching from land into watercourses. Once in water it can take several weeks to break down. Rushes also thrive best in poorly drained areas where the water table is near to the surface, which further increases the risk of run off to watercourses from use in these areas.

Why use weed-wipers to Apply Herbicides?

Rushes have been traditionally managed by using target-species specific herbicides such as MCPA applied broadly across the land with a boom sprayer. Weed-wipers can manage rushes more efficiently than conventional boom sprayers, using less chemical and eliminating the risk of spray drift. Glyphosate can break down quicker in around 3-7 days providing less of an opportunity for it to reach a watercourse compared with MCPA, which breaks down in 3-4 weeks and is more readily available for transport to nearby rivers, lakes and groundwaters.

CAFRE held rush treatment trials at Glenwherry Hill Farm in 2014-2018. The plots of rushes were controlled using a number of different treatment methods:

- Mechanical cutting
- Weed-wiping with glyphosate
- Cutting and weed-wiping the regrowth with glyphosate
- Boom spraying with MCPA

This trial demonstrated that the area cut and later weed-wiped with glyphosate showed the most effective rush control with minimal water pollution. This method uses a glyphosate product specifically approved for use in a weed-wiper. The percentage of rush cover reduced from 81 per cent in 2014 to 20 per cent in 2015.

Catchment Snapshot: The Derg



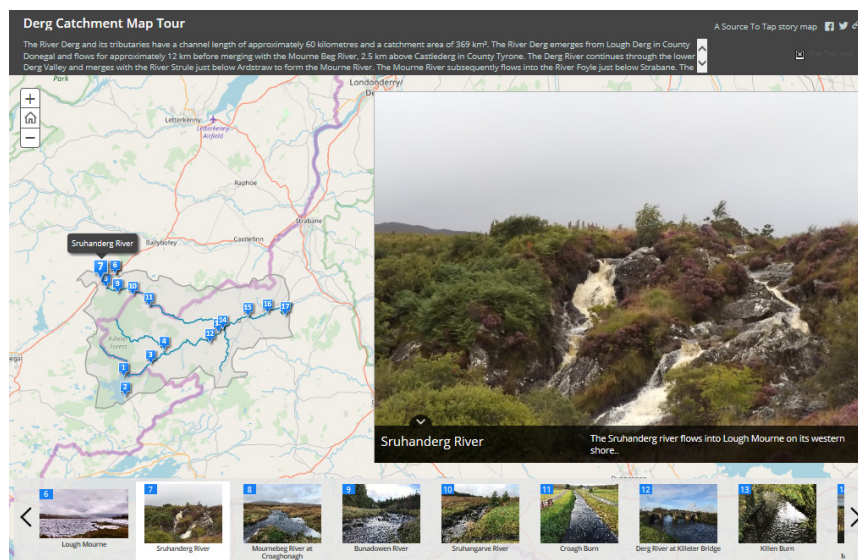
Derg River at Tievenny, Co Tyrone.

The River Derg and its tributaries in our study area, have a channel length of approximately 60 kilometers and a catchment area of 369 km². The catchment extends across the border with 242 km² (66%) of the catchment located within Northern Ireland and 127 km² (34%) within Ireland. The River Derg emerges from Lough Derg in County Donegal and flows for approximately 12 km before merging with the Mourne Beg River, 2.5 km above Castledearg in County Tyrone. The Derg River continues through the lower Derg Valley and merges with the River Strule just below Ardstraw to form the Mourne River. The Mourne River subsequently flows into the River Foyle just below Strabane. The other notable tributaries of the Derg River in addition to the Mourne Beg include the Killen Burn, Leaghany River and Glendergan River. The Mourne Beg River flows from the southern point of Lough Mourne in Donegal into Tyrone marking the border for some of its journey. The Notable tributaries on the Mourne Beg include the Garvagh Burn,

Croagh Burn, Sruhangerve and the Bunadown River. The Killeter Forest which is one of the largest areas of coniferous woodland in Ireland is also located within the upper sections of the Derg Catchment.

We have prepared a story map showing the Derg Catchment and some of its notable tributaries, which is available on the Source to Tap website. For additional detail on the catchment and to view the story map showing the catchment and some of its tributaries. Check out the 'Explore' section of the Source to Tap website which is available at the following link;

<https://bit.ly/2QmX4Rb>



Source to Tap - Riverfly Monitoring Group Update

The Riverfly Partnership

Home - ARMI Data - User Menu - Submit Record

Submit Record

User: [] Record: Step One

Catchment: Derg

River: Derg

Site: Derg River at Croaghacunney

Date: [] (yyyy-mm-dd)

Event Time: (24hr e.g. 14:20)

Names of additional monitors present: []

Menu

- Home
- About
- Riverflies
- Monitoring
- Conservation
- Riverfly Plus
- Diary of Events
- News
- Photography Competition
- Contact us

ARMI Database

- ARMI Data
 - Coordinator Home Page
 - User Menu
 - Submit Record
 - Site Charts
 - Taxon Charts

Riverflies Monitoring Database

Riverfly fba

Legend: + Awaiting Response, - Confirmed by statutory body, - On or above threshold

Map of Ireland showing the location of the Derg River.

The Riverfly Monitoring Initiative has been running since 2007 and is coordinated by the Riverfly Partnership. Anglers and volunteers from more than 100 partner organisations carry out regular freshwater invertebrate monitoring to check for changes in water quality.

Following successful training for local Riverfly Monitoring Volunteers, the Source to Tap project have established two new monitoring groups in the Derg and Erne river catchments as part of our 'Love your Water' initiative. We hope our engagement with the Riverfly Partnership and establishment of local groups will help in the local understanding of riverfly populations and their importance as indicators of water quality.

The Riverfly Partnership has developed an online system for monitoring data which has been operational since 2014. The online system enables our monitors to submit their survey results online. Once survey data is verified it becomes available to view along with data from the wider catchment.

The online system also enables users to track survey results over time, from their own site(s) and from all other catchment sites, using data charts and GIS mapping facilities.

To view some of the current data for our catchments please feel free to check out the Riverfly Partnership website which is available at the following link, www.riverflies.org

Outcomes of NI Water's Seaghan Catchment Trial

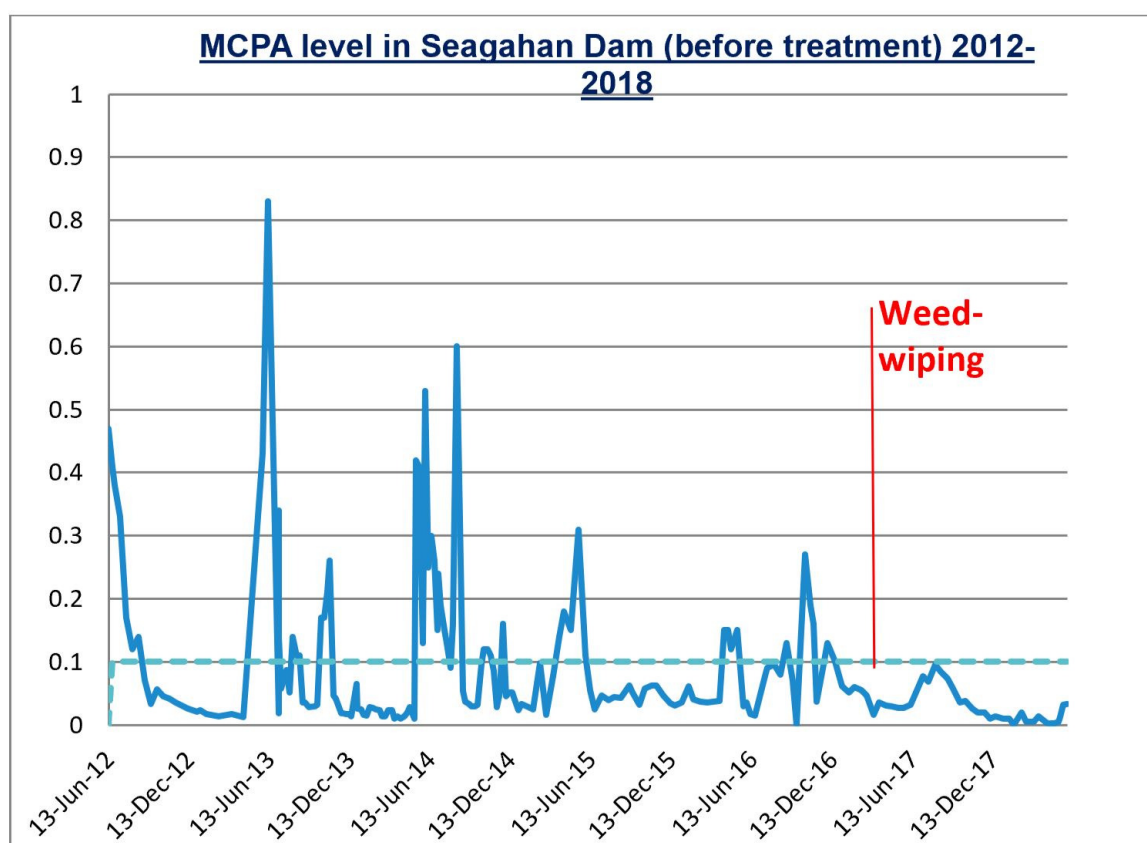
One approach to reduce MCPA use has been trialed by NI Water working with farmers and the local community in the Seagahan Catchment, County Armagh. In 2017 & 2018 NI Water delivered a free 'weed-wiping' trial, which provided support for use of weed-wipers as an alternative to conventional boom spraying for rush control.

The free weed-wiping service which was offered in the Seagahan Catchment and trialled the use of weed-wipers with the herbicide Glyphosate as an alternative to boom spraying with MCPA. The trial sought to demonstrate an alternative effective rush control method to reduce MCPA use in the Catchment. Glyphosate is removed more easily at water treatment stage and is not long-lived in the water environment, unlike MCPA.

The free weed-wiping service prevented boom spraying with MCPA across 630 acres of the catchment in 2017. Some 426 acres were treated effectively by the weed-wiper preventing 535 litres of MCPA from being sprayed on the catchment area during 2017.

On the areas weed-wiped there has been successful rush reduction of between 60% and 90%. MCPA detections also reduced dramatically as shown in the graph below.

MCPA levels were reduced in the reservoir by over 75 per cent in 2018 during the second year of the pilot.



Advice from CAFRE suggests cutting rush regrowth is more effective than treating mature rush. However the Seagahan project found that fully grown rush was easier treated than recently cut rush as the plant stood higher above the grass. A recommendation coming out of the Seagahan trial is that future projects should only cut rushes if the field has a very dense covering and cutting should be early in the season allowing adequate time for regrowth prior to treatment.

Upcoming Events

Source to Tap will be attending the 2019 North West Angling Fair which this year will be in Castlederg, Co Tyrone on April 6th and 7th.

We are also planning to hold a Rush Control demonstration event in the Derg catchment during spring 2019. Further details of this event and more will appear on our Events page at <https://www.sourcetotap.eu/event-type/upcoming/>

Our funders

A project supported by the European Union's INTERREG VA Programme, managed by the Special EU Programmes Body (SEUPB)



Our Partners



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