CRiBZ
Culdaff Riparian Buffer Zones

Culdaff Riparian Buffer Zone Scheme

About the Culdaff River

The Culdaff River rises in the area of Leitrim at Lough Nastacken and is joined along its journey by many tributaries descending from the hills around Crockroosky, Crockatlishna and Crocknanoneen. There are 5 lakes connected to the system – Lough Nastacken, Drumlee, Black, Effish, and Callybear. The channel and tributaries together total 96km in length and cover a catchment area of approximately 65km^2. There are many small tributaries joining the main channel such as the Baskill, Binglas, Carrowmore. Dristernan, and Drumlee. The primary soil type is peat with sandy, alluvial soils found along the channel from Gleneely to the estuary at Culdaff village. The predominant land use is agriculture, in particular sheep farming, with pockets of forestry mostly concentrated at Moneydarragh and Falmore.

Thank you – Go raibh míle maith agaibh

We would like to sincerely thank all of the farmers, volunteers, suppliers and community members who contributed in any way to this project and to our project partners - Inish Forestry, Culdaff Community Angling Association, Trees on the Land and Inishowen Uplands EIP. Thanks also to the agencies who provided data on the Culdaff River and to contributing consultants Jessica Devlin, Mark Donnelly, Abdul Ahmed, MacRuarí Audio & Film Services and KPM Soils.

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Inishowen Rivers Trust

CRiBZ creating healthy buffer zones

Rivers are the life blood of our land and a healthy riparian margin is key to good water quality and thriving biodiversity. As much as 25% of Irish wildlife lives or depends on riparian zones as a place to forage, travel and live. The CRiBZ project has worked with 9 farmers in the Culdaff area installing buffer zones that will:

- Provide food and nesting areas for beneficial insects, birds and mammals. They eat the pests that damage crops and affect livestock.
- Capture run-off from fields reduce the amount of sediment or fertiliser lost to the river. Wider buffers are more effective at capturing run off.
- Protect the river with trees and shrubs that provide shade and food for aquatic species
- Improve water quality for watering livestock and improve drinking water sources for the local population.

Project Results	
Number Participants	9
Distance fenced	4.209km
Number Solar pumps installed	7
Number pasture pumps installed	4
Number Trees	6,000
Number Volunteer planting events	8
Number of Volunteers	32
Number Beehives	10
Coverage of Wildflower seeds	125m^2
Number gates installed	20
Length of piping	1000m
Length 3m buffer	1347m
Length 6m buffer	1122m
Number of unique species of animals & plants recorded	135
Total Buffer Area created	10,773 sq m
Total length of river bank and drain protected	4.536km
Total payments to farmers	€39,258

Farmland biodiversity is a cornerstone of productive farming

Riparian planting

The trees and hedging planted as part of the project are all native species. These were planted to:

- capture run off from fields (soak up the excess water, stop sediment from reaching the river or absorbing fertiliser or pesticides)
- Increase the diversity of the species that were already there
- Create areas of shade where none may have existed
- Stabilise banks and prevent erosion
- Replace ash trees which will die off in the coming years

It was noted that ash is common on the river but many are affected by the disease ash dieback caused by the fungus *Hymenoscyphus fraxineus*. Many of these trees will die off gradually in the coming years. Ash is a large tree with a wide trunk. A similar replacement is Sycamore which thrives in Inishowen although this is not a native species.

Checking your buffer

About once a year check the trees in your buffer zone. Hawthorn or blackthorn planted as hedging may need some pruning to encourage it to become bushy. Prevent tall grasses from smothering young trees.

Keep an eye out for salmonberry. This is a highly invasive species related to raspberry. This should be kept under control or it will form a dense thicket on the river bank and outcompete many native plants.

Species
Oak
Alder
Downy birch
Scot's pine
Hawthorn
Hazel
Blackthorn
Crab apple
Spindle
Guelder rose

PIP map for phosphorus available through the EPA Map Portal. The dark colour indicates areas which may pose a potential risk for water.

Working on drains

For many years we have drained the land to improve it for grazing and the Inishowen landscape is crossed with drains of all types and sizes. But our knowledge of how drainage is effecting our land productivity and watercourses has changed and we now understand more about how the best balance can be achieved for the land and water.

When creating or cleaning drains:

- Prevent sediment from entering the river.
- Put in permanent sediment traps 20m from the watercourse but make sure you can get access to clean them out periodically.
- Use plants to slow water down in the drain. These will filter the water as well. (See instructional video listed at the end of this document on Nature Based Solutions on farm drains)

Salmonberry

Where will the water run to?

Biodiversity audit

As part of the project, our ecologist visited each site and recorded as many species as possible. A total of 135 unique species were recorded. The range of species on each farm varied from 23-54 species i.e. 17% to 40% of the total number recorded. Not every species will be observed in a single visit so we would expect this to be higher. With riparian buffers in place this will allow more species to flourish in this area.

Some invasive plant species were detected such as Japanese knotweed and salmonberry. The site of the Japanese knotweed is being treated by the Rivers Trust using a non-chemical approach. Any farmer with salmonberry should aim to keep this under control by cutting back to the ground in January.

Water Chemistry

Water chemistry samples were taken at each of the riparian sites plus further samples around the remainder of the catchment, including 12 of the tributaries. Individual test results will be provided to each farmer.

The water chemistry looked at general parameters such as pH, dissolved oxygen and total dissolved solids as well as nitrate and phosphate levels, ammonia, glyphosate and a range of other pesticides. The EU Commission (Directive 2008/105/EC) sets Environmental Quality Standards (EQS) for the presence in surface water of certain substances or groups of substances identified as priority pollutants because of the significant risk they pose to or via the aquatic environment. The directive sets thresholds which must not be exceeded if a good chemical status is to be met.

The EQS for phosphorus is 0.035mg/l. In the 23 samples collected, the EQS for phosphate was exceeded 20 times. There was one exceedance for nitrate and 3 for ammonia.. Phosphorus is relatively immobile in heavy soils and therefore will runoff more easily. Buffers can capture this runoff but care should always be taken when spreading, in particular to avoid spreading before heavy rain is forecast.

Four pesticides were detected in the samples. These products are toxic to aquatic life and can also cause serious harm to humans. MCPA, commonly used to treat rushes, is found extensively in our drinking water. MCPA was not detected in the CRiBZ samples.

If using pesticides follow the instructions carefully and ensure spray drift does not get into drains or watercourses. Always wear the correct Personal Protective Equipment and triple rinse containers when finished and take to appropriate disposal areas (such as co-op collection days).

Pesticides detected	
Glyphosate	9
Metamitron	2
Pendimethalin	2
Fluoroxypyr	1

Video of CRiBZ project https://youtu.be/pnKImHhrBDw

Nature Based Solutions on Farm Drains https://youtu.be/a3U7uouNZ4g

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