

My River Study



The Callan River
Co. Armagh

By: Meadhbh Monaghan

Facts about the Callan



- The Callan River takes its name from Niall Caille, High King of Ireland, who drowned in the river in 846 AD.
- It is 26 miles long.
- The River rises from Tullynowood Lough, near Darkley, and joins the River Blackwater near Charlemont.
- It flows through Tassagh, Milford and Armagh City.
- It was used to power many linen mills throughout the 1800s.
- The Callan Valley has an abundance of different types of trees, flowers and wildlife.

Tullynawood Lough



The source

Tullynawood Lough is the source of the Callan River.

Legends

Tullynawood Lough is associated with many legends

Including: The Children of Lir, St. Patrick and Brian Boru.

My River Study



As part of my River Study, I decided to study a local river. It is my favourite river because it has a lot of history and loads of wildlife live in and along it.

I borrowed equipment from my Daddy's school and, on 7th May, I carried out a study of the river.

We had great fun and it was nice to get out during lockdown. It was also great to learn all about the Callan River and to learn skills that will help me when I study Geography in high school.

In this booklet, I have included photographs of the different features of the Callan River as well as the results of my study.

Erosion

Erosion



Tree roots exposed due to erosion

Deposition



Meanders



Direction of the river

Width of the meander



Meander

Erosion

Deposition

Tributary & Confluence

Tributary



Confluence

Waterfall



Velocity of the River Callan

Equipment Required:

Measuring Tape / Corks / Stopwatch

Method:

Drop corks into water and time how long it takes to travel 5 metres

Velocity is the speed at which the river flows

Velocity = Distance / Time

Upper Course: Darkley

	Drop 1	Drop 2	Drop 3	Drop 4	Drop 5
Time (Secs)	9.61	9.86	11.36	9.65	9.57

Mean = 10.01

Total velocity at upper course = 0.49

Middle Course: Tassagh

	Drop 1	Drop 2	Drop 3	Drop 4	Drop 5
Time (Secs)	7.1	7.8	6.4	7.4	7.3

Mean = 7.2

Total velocity at middle course = 0.69

Cross Section of the River Callan

To calculate the cross-sectional area of a river, you must find the width and mean depth.

Equipment:

30 metre tape (Width) and 5 metre tape (Depth)

Cross-Sectional Area = Width x Mean Depth

Upper Course: Darkley

<u>Width of the River</u>					1.9m				
	1	2	3	4	5	6	7	8	9
Depth (cm)	4.5	6.5	9	7.5	9.5	10.5	10	9.5	8

Mean Depth = 8.3

Cross-sectional area at upper course = 15.77

Middle Course: Tassagh

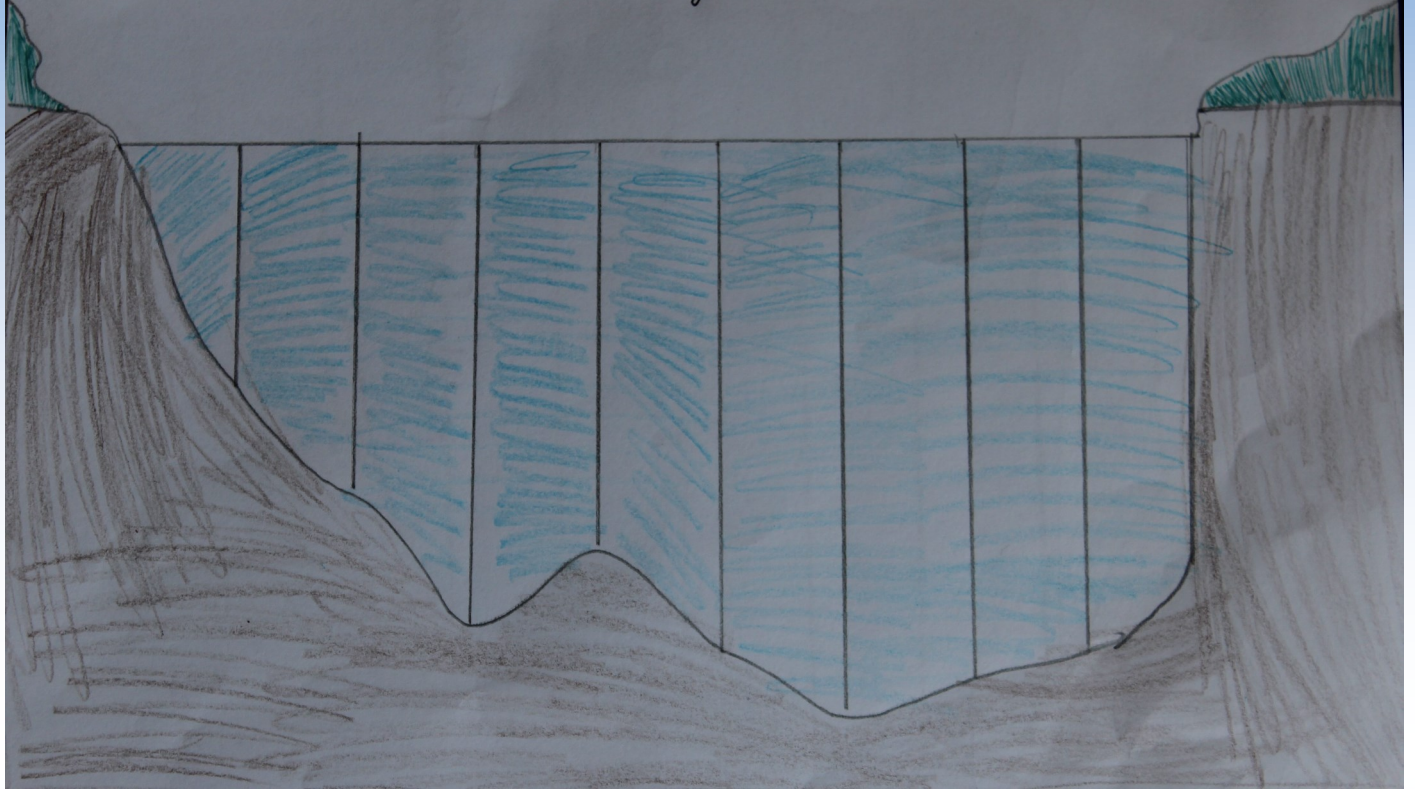
<u>Width of the River</u>					6.8m					
	1	2	3	4	5	6	7	8	9	10
Depth (cm)	3	4.5	11.5	12	14	16.5	16	13	9	4

Mean Depth = 10.35

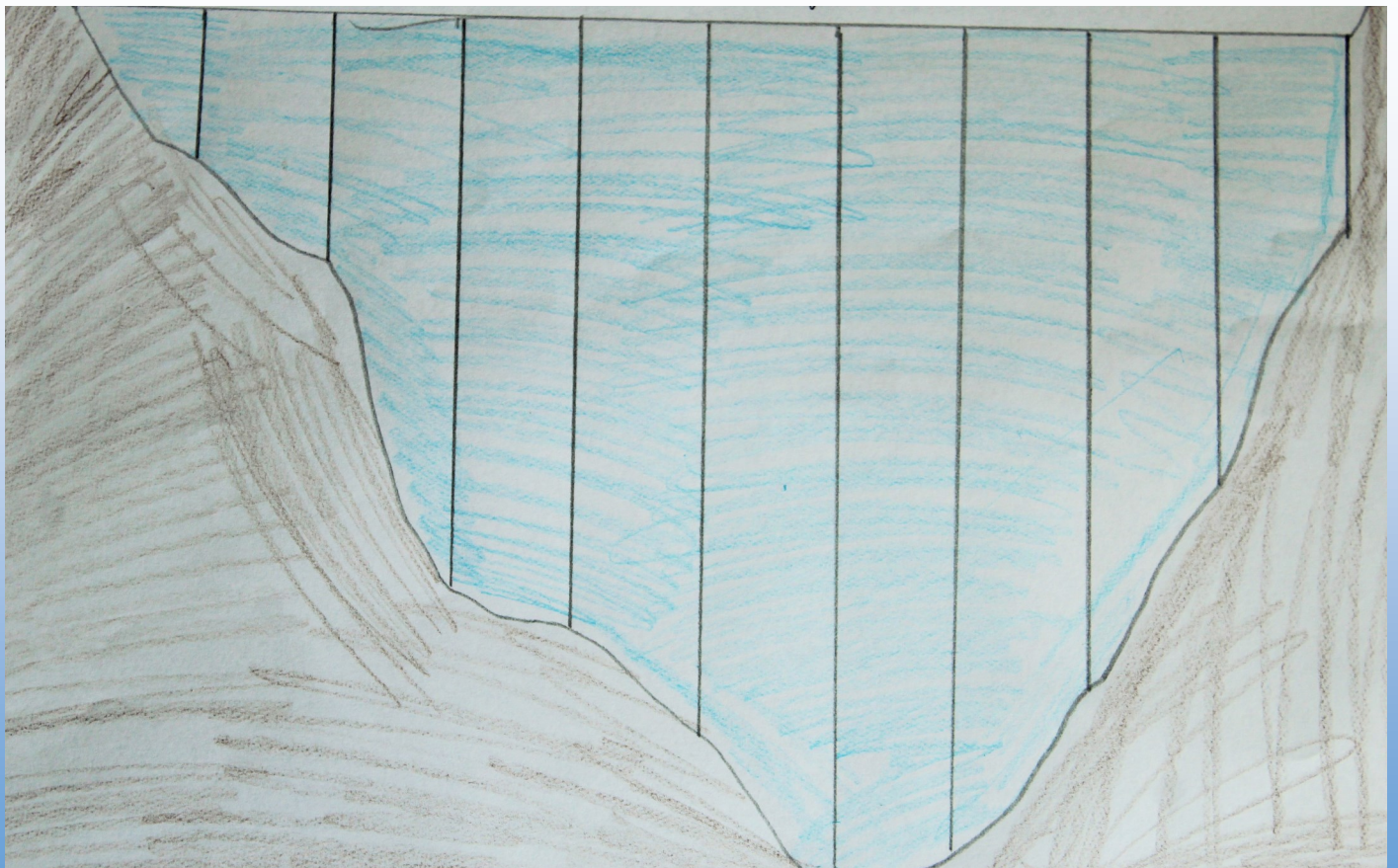
Cross-sectional area at middle course = 70.38

Cross-Sections

Upper Course—Darkley









Middle Course—Tassagh



Sediment Study

Equipment: Callipers and Power's Index of Roundness (Below)

Method: Measure the size and shape of random stones.

Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
Very angular	Angular	Sub-angular	Sub-rounded	Rounded	Well rounded
					

Upper Course - Darkley

	1	2	3	4	5	6	7	8	9	10
Size (cm)	15	10	7	9	12	6	4	7	7	12
Shape (Class)	1	2	1	3	1	2	1	3	2	1

Middle Course - Tassagh

	1	2	3	4	5	6	7	8	9	10
Size (cm)	6	7	6	5	4	11	10	12	8	7
Shape (Class)	5	3	4	5	5	6	3	6	6	6

Results

Upper Course

Darkley

Mean speed over 5m:	10.01 secs
Total Velocity:	0.49 m/s
River Width:	1.9 metres
Mean Depth of River:	8.3 cm
Cross-Sectional Area:	15.77 m ²
Total Discharge:	7.7 m³/s

Discharge (m³/s) = CS Area (m²) x Velocity (m/s)

Sediment

Average Size::	8.9 cm
Average Roundness:	Class 1 - Very Angular



Results

Middle Course

Tassagh

Mean speed over 5m:	7.02 secs
Total Velocity:	0.69 m/s
River Width:	6.8 metres
Mean Depth of River:	10.35 cm
Cross-Sectional Area:	70.38 m ²
Total Discharge:	48.5 m³/s

Discharge (m³/s) = CS Area (m²) x Velocity (m/s)

Sediment

Average Size:	7.6 cm
Average Roundness:	Class 6 - Well Rounded



My Findings

What I have found out:

I found out that the river gets wider, deeper and faster as more tributaries join it. Also, the stones rub off each other as they travel down the river and they get smaller and rounder.

What I have learned:

I've learned how to do a river study and how to measure the rivers width, depth and velocity.

What I enjoyed the most:

I enjoyed spending time with my sister and my Daddy, taking pictures, getting out of the house and enjoying the wonderful world around me.



**‘ As I went a-walking one evening in June.
For to view the green fields and the meadows in
bloom
I spied a wee lassie as the streams they ran down
On the banks of the Callan near sweet Keady town.’**

The Banks of the Callan - Sarah Makem