

Fish in Rivers Factsheet

The Inny River catchment is a large sub-catchment of the River Shannon and covers an area of approximately 1,278km². The Inny River rises upstream of Lough Sheelin, Co. Cavan and flows in a south-westerly direction, entering Lough Ree near Ballymahon, Co. Longford. The geology of this catchment is predominantly limestone, with agriculture the main land use type. Pockets of cutaway bog also exist throughout the catchment. This large catchment includes the Moneybeg and Clareland Bogs Special Area of Conservation (SAC), Garriskil Bog SAC in the upper catchment and Lough Ree SAC at the lower end.

Inland Fisheries Ireland conducts annual nationwide fish sampling surveys to assess and report stocks in Ireland's rivers, lakes and transitional waters. This report presents the results of a catchment-wide survey of the Upper Inny catchment in 2022.

Seventeen sites were surveyed by electro-fishing (CEN 2003) from the 19th to the 22nd of September 2022 on the Upper Inny catchment upstream of Lough Sheelin.

The survey methods included 10-minute timed Electro-Fishing (TEF₁₀) and Area Delineated Electro-Fishing (ADEF handset). All TEF₁₀ fish count results were converted to minimum population estimates according to Matson *et al.* (2018).

Six sites (sites 1-6) were surveyed in the Mountnugent sub-catchment in 2022 (Figure 2 and Table 1). Six sites were also surveyed on the Upper Inny River and its tributaries (sites 12-17), two sites were surveyed on the Crover stream, one each on the Bellsgrove, Maghera and Williamstown streams (Figure 3 and Table 1). Two Water Framework Directive (WFD) long-term surveillance monitoring site (Sites 3 and 16) were included.



The Mountnugent River at Mountnugent Bridge, Co. Meath (Site 3)

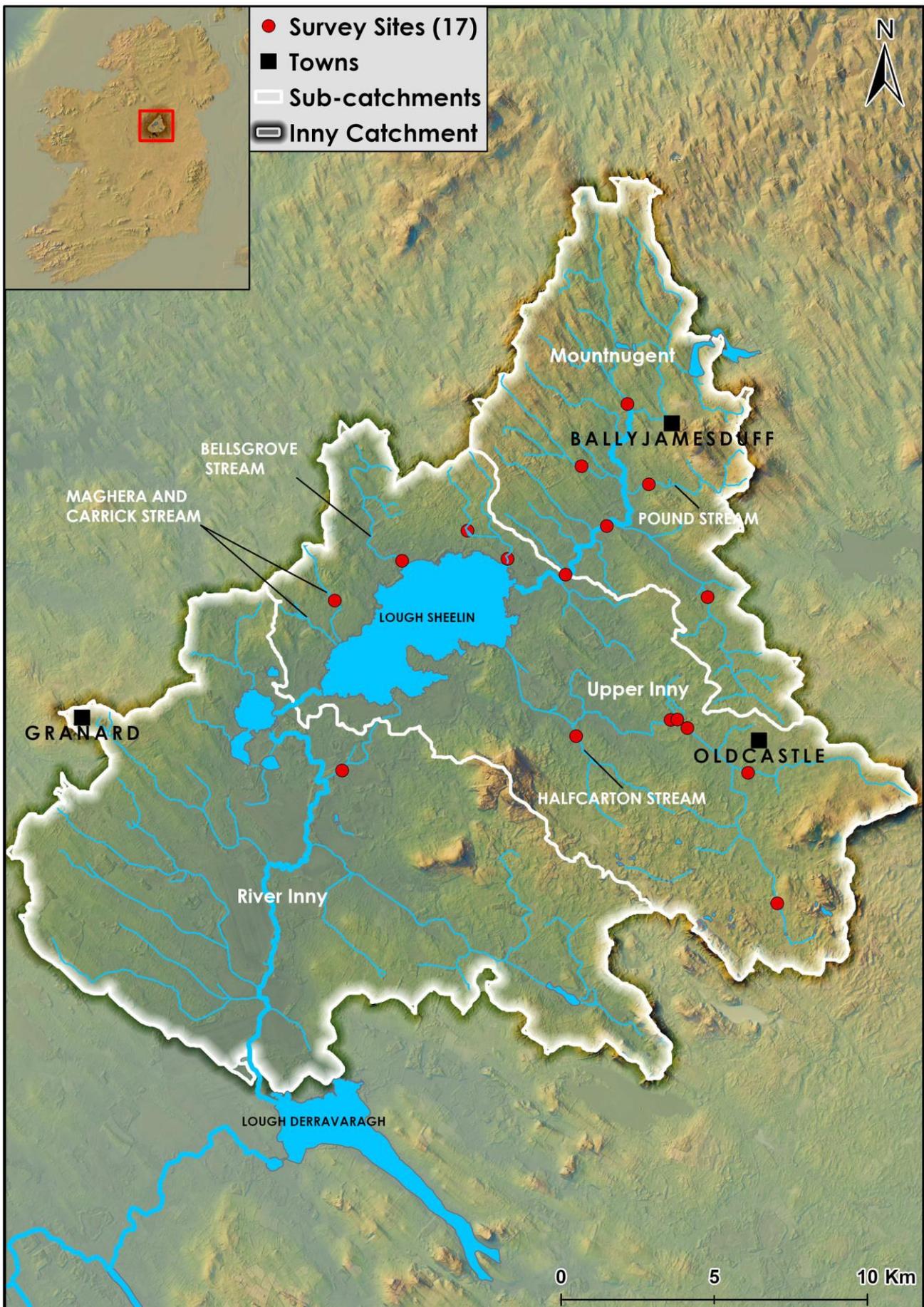


Fig 1. Location of electrofishing survey sites on the Upper River Inny catchment, September 2022.

Table 1. Site survey details for the Upper River Inny catchment, September 2022

No.	River	Site	Method	WFD	Date
Mountnugent River sub-catchment					
1	Rassan	Rassan	TEF (handset)	No	20/09/2022
2	Mountnugent	Kilnacrott	TEF (handset)	No	21/09/2022
3	Mountnugent	Mountnugent Bridge	ADEF (Handset)	Yes	20/09/2022
4	Kildorough	Drumroragh East	TEF (handset)	No	21/09/2022
5	Kildorough (Pound)	Kildorough	TEF (handset)	No	20/09/2022
6	Oldtully	Barconny	TEF (handset)	No	21/09/2022
7	Crover	Crover	TEF (handset)	No	20/09/2022
8	Crover	Four Half Moons	TEF (handset)	No	22/09/2022
9	Bellsgrove	Kilnahard	TEF (handset)	No	20/09/2022
10	Maghera	Magheraboy Lower	TEF (handset)	No	21/09/2022
11	Williamstown	Williamstown South	TEF (handset)	No	21/09/2022
12	Halfcarton	Ballinrink	TEF (handset)	No	21/09/2022
13	Inny (Upper)	Dairy Farm	TEF (handset)	No	19/09/2022
14	Inny (Upper)	Glebe	TEF (handset)	No	22/09/2022
15	Inny (Upper)	Jobson's Bridge	TEF (handset)	No	21/09/2022
16	Inny (Upper)	Bridge 1km South of Oldcastle	ADEF (Handset)	Yes	19/09/2022
17	Millbrook	Drumone	TEF (handset)	No	19/09/2022



The Rassan River at Rassan (Site 1)



The Crover River at Crover (Site 7)



The Old Tully stream at Barconny (Site 6)



Bellsgrove stream at Kilnahard (Site 9)

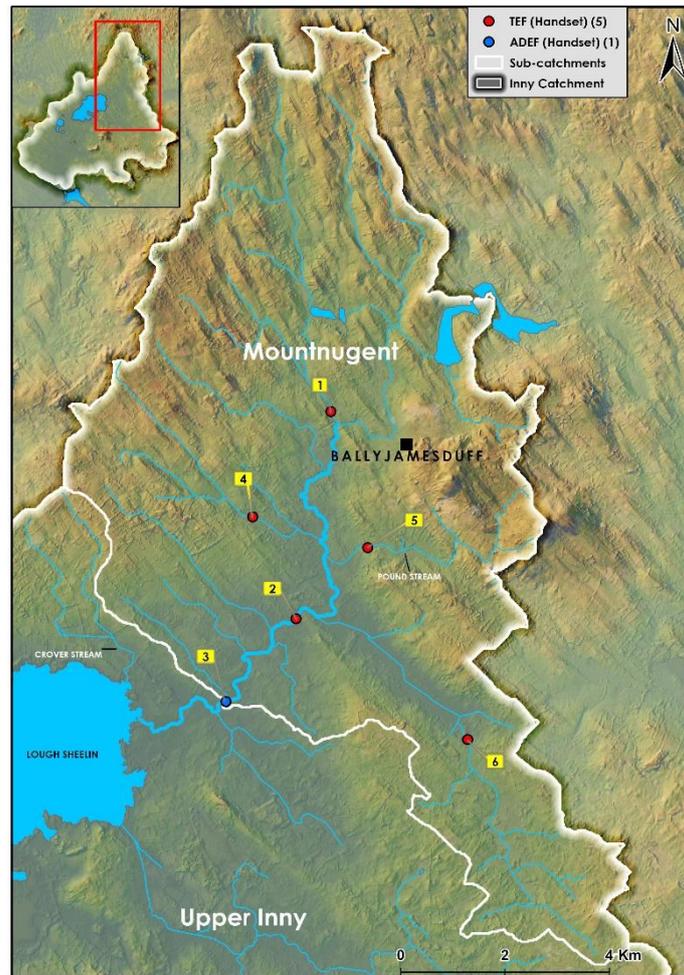


Figure 2. Location of electrofishing survey sites on the Mounnugent River sub-catchment, September 2022

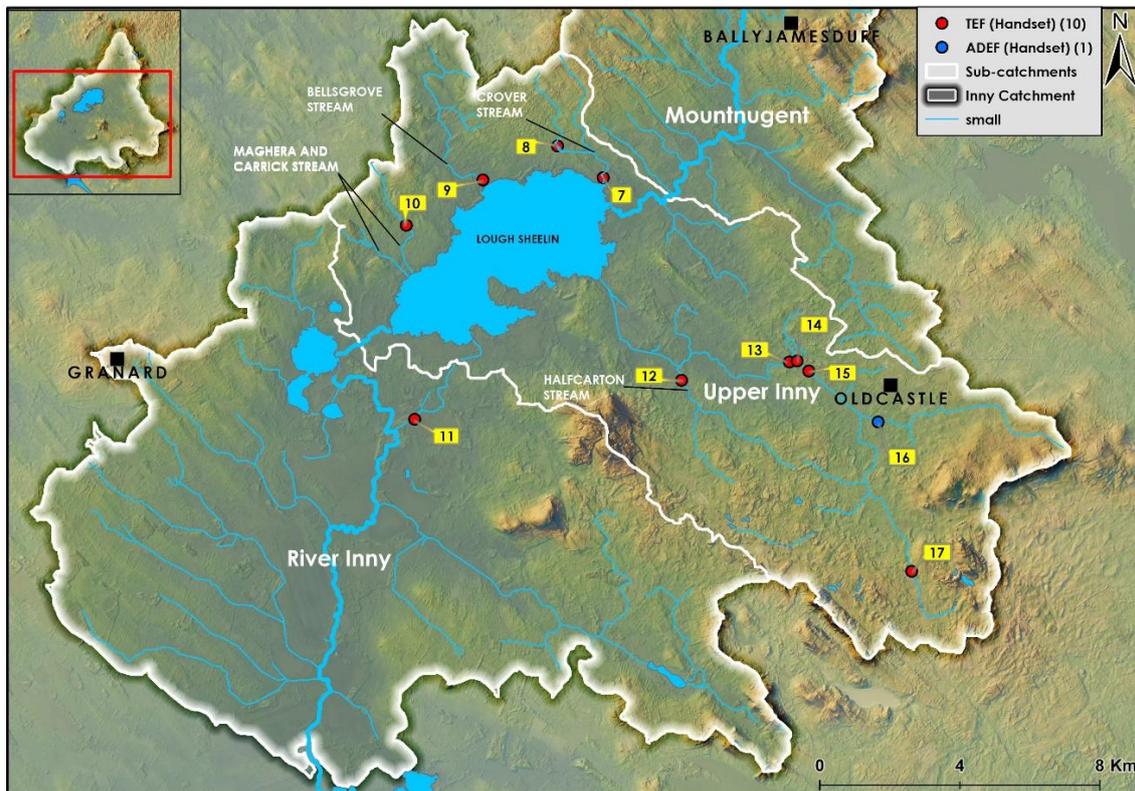


Figure 3. Location of electrofishing survey sites on the Upper River Inny sub-catchment and other tributaries, September 2022

Table 2. Minimum density estimates of fish (no. fish/m²), Upper River Inny catchment, 2022 (previous results are shown where applicable)

Site	1	2	3			4	5	6
Species	2022	2022	2013	2021	2022	2022	2022	2022
Brown trout	0.466	0.083	0.336	0.083	0.183	1.138	0.676	0.315
0+ brown trout	0.466	0.026	0.027	0.013	0.028	0.963	0.676	0.282
1+ & older brown trout	-	0.057	0.309	0.070	0.155	0.175	-	0.033
Gudgeon	-	-	-	0.010	-	-	-	-
Lamprey sp.	-	-	0.010	-	-	-	-	-
Minnow	-	0.026	0.003	0.067	0.014	-	-	-
Perch	-	0.004	0.020	0.003	0.010	-	-	-
Roach	-	-	0.007	0.010	0.003	-	-	-
Stone loach	-	-	0.007	0.003	-	-	-	-
Three-spined stickleback	-	-	0.020	-	-	0.066	-	-
All fish	0.466	0.113	0.403	0.176	0.210	1.204	0.676	0.315
Site	7	8	9	10	11	12	13	
Species	2022	2022	2022	2022	2022	2022	2011	2022
Brown trout	0.338	0.319	0.073	0.240	0.057	0.307	0.764	0.435
0+ brown trout	-	0.319	0.044	0.176	0.024	0.276	0.555	0.234
1+ & older brown trout	0.338	-	0.029	0.064	0.033	0.031	0.209	0.201
Gudgeon	0.038	-	-	-	-	-	-	-
Lamprey sp.	-	-	-	0.080	-	-	0.009	-
Perch	-	-	0.015	-	-	-	-	-
Roach	-	-	0.007	-	-	-	-	-
Stone loach	-	-	0.015	-	-	-	-	-
Three-spined stickleback	-	-	-	0.657	0.073	0.069	0.009	-
All fish	0.376	0.319	0.11	0.977	0.13	0.376	0.782	0.435
Site	14		15	16			17	
Species	2020	2022	2022	2014	2020	2022	2022	
Brown trout	0.068	0.395	0.388	0.468	0.388	0.264	0.186	
0+ brown trout	0.01	-	-	0.19	0.088	0.218	-	
1+ & older brown trout	0.058	0.395	0.388	0.278	0.3	0.047	0.186	
Lamprey sp.	-	-	-	-	-	0.008	-	
Stone loach	0.068	-	0.01	-	-	-	-	
Three-spined stickleback	-	-	-	0.008	-	-	-	
All fish	0.136	0.395	0.398	0.476	0.388	0.272	0.186	



Halfcarton stream at Ballinrink (Site 12)



Upper Inny River at Glebe (Site 14)

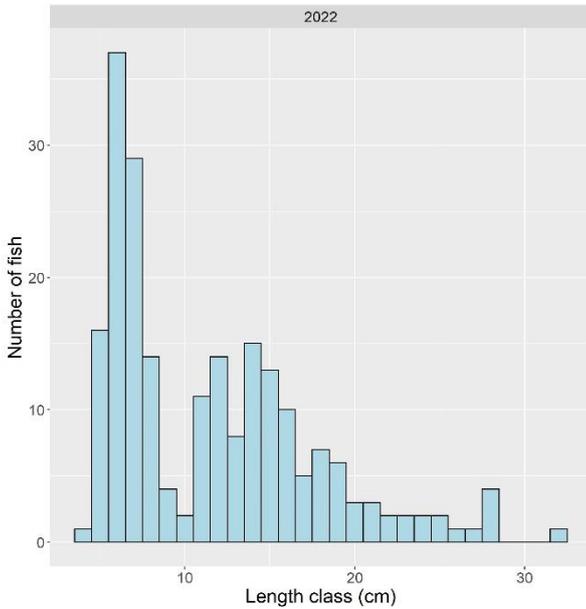


Figure 4. Length frequency for brown trout (n=220) in the Upper River Inny sub-catchment, 2022 (n-sites=11)

Table 3. Brown trout class structure Upper River Inny Catchment 2022

Site no.	% Catch			
	0+	1+	2+	3+
1	100	-	-	-
2	33	56	11	-
3	10	87	2	1
4	87	13	-	-
5	100	-	-	-
6	91	9	-	-
7	-	100	-	-
8	100	-	-	-
9	67	33	-	-
10	75	25	-	-
11	50	50	-	-
12	90	10	-	-
13	56	42	2	-
14	-	56	33	11
15	-	68	16	16
16	83	17	-	-
17	-	100	-	-

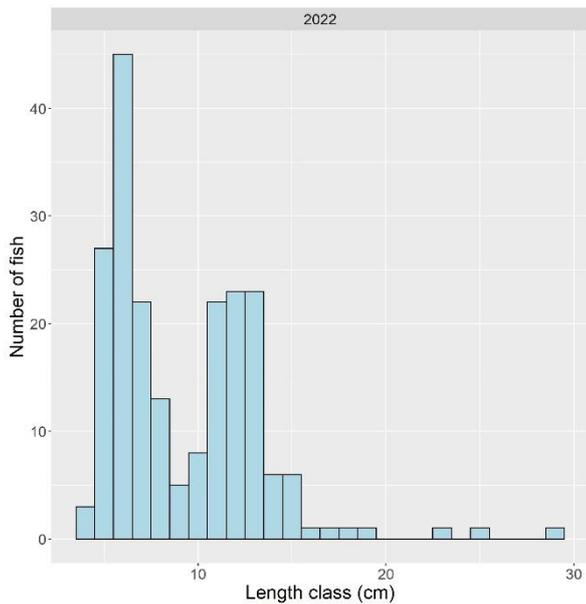


Figure 5. Length frequency for brown trout (n=210) in the Mountnugent sub-catchment, 2022 (n-sites=6)

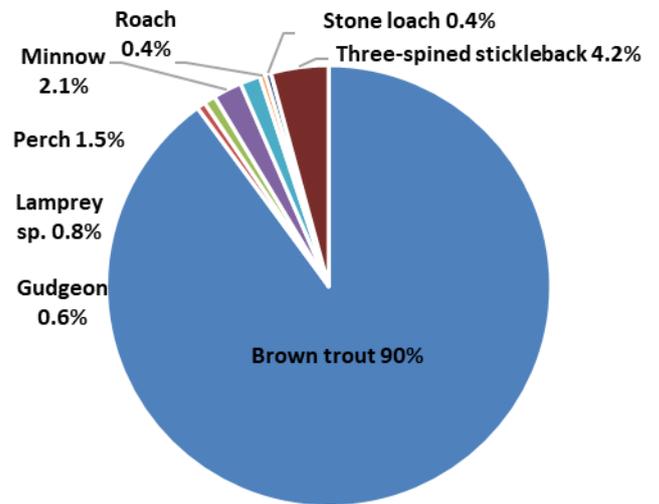


Figure 6. Fish species composition (%), Upper River Inny Catchment, 2022

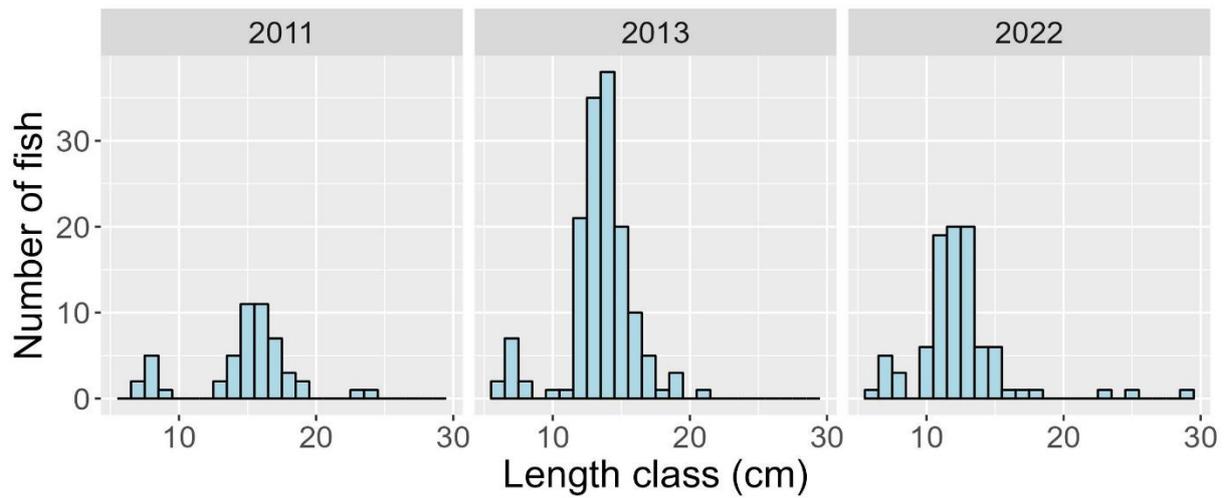


Figure 7. Length frequency distribution of brown trout (2011 n=51, 2013 n=147, 2022 n=92) in the Upper River Inny sub-catchment at Site 3 (Mountnugent Bridge)

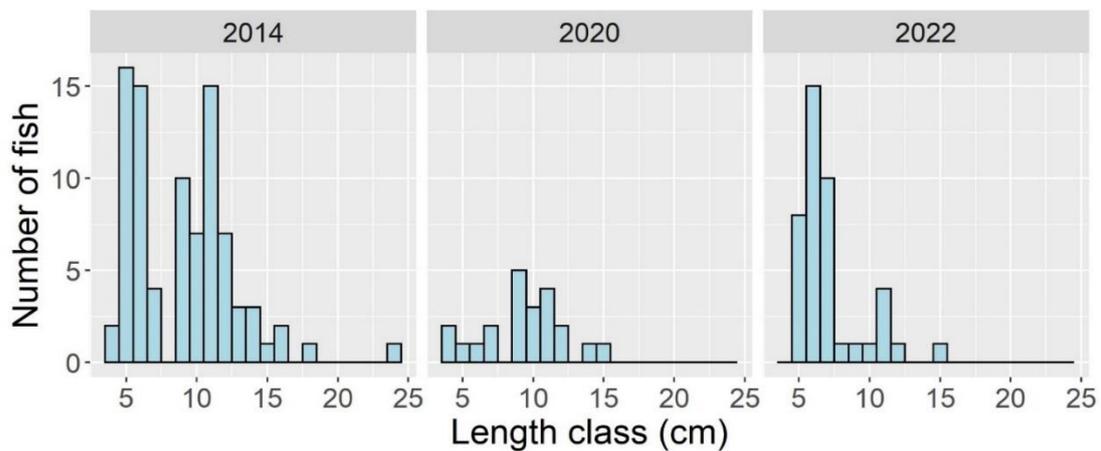
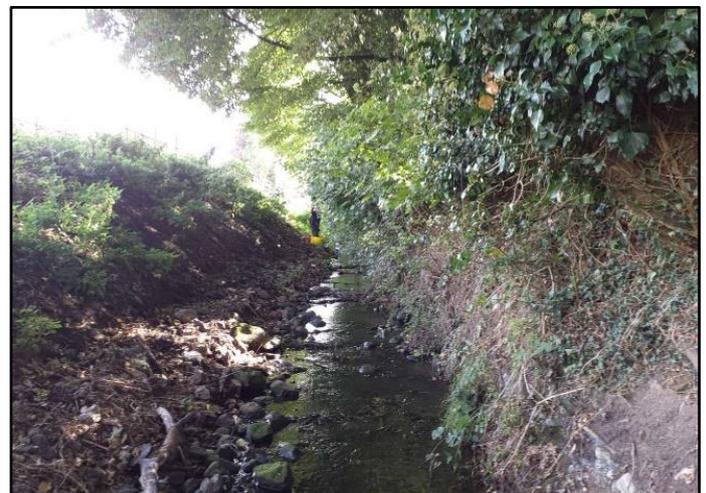


Figure 8. Length frequency distribution of brown trout (2014 n=87, 2020 n=22, 2022 n=42) in the Upper River Inny sub-catchment at Site 16 (Bridge 1km South of Oldcastle)



Upper Inny River at Jobsons Bridge (site 15)



Millbrook stream at Drumone (site 17)

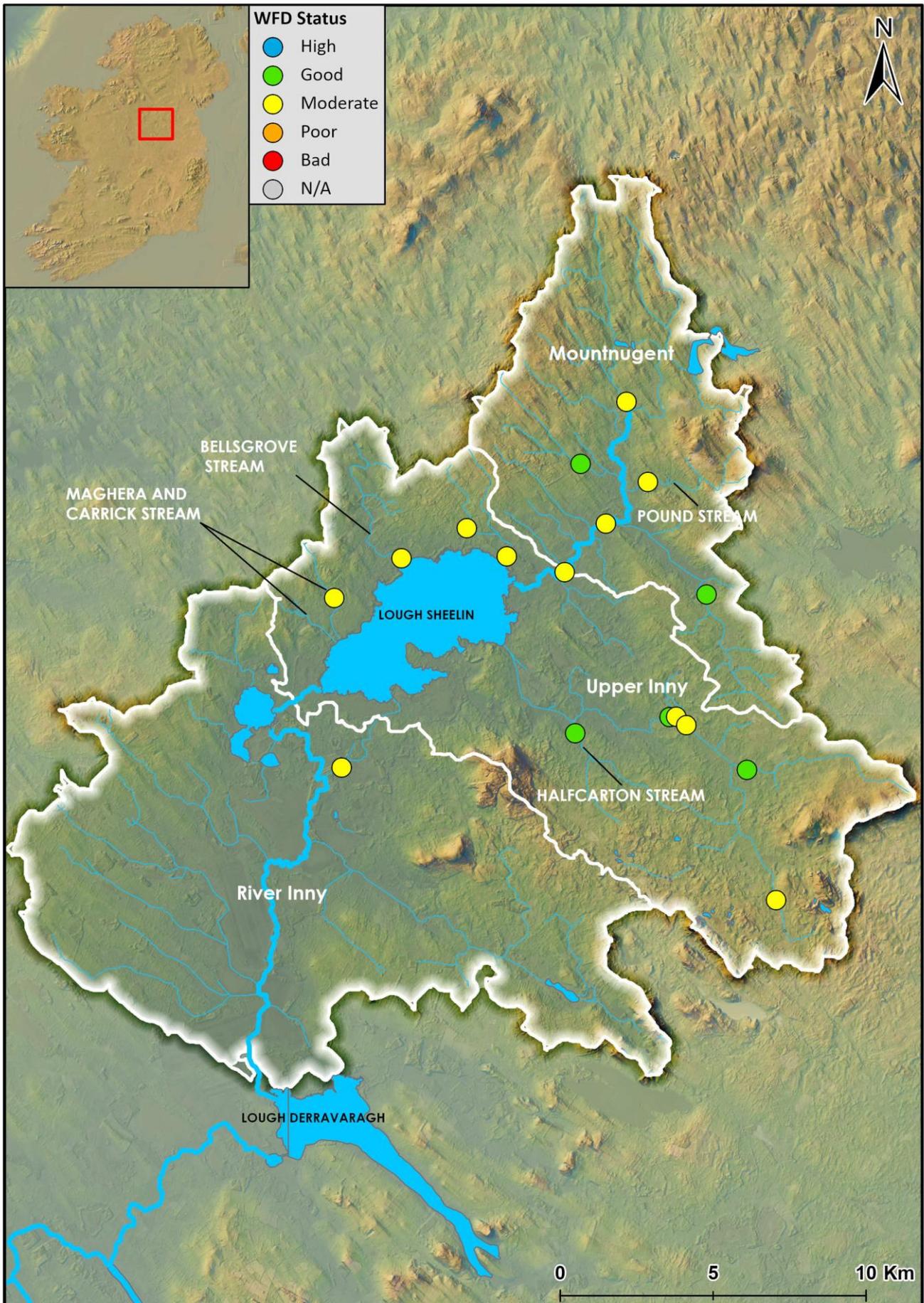


Figure 9. Fish ecological status in the Upper Inny catchment in 2022

Table 4. Fish ecological status, Upper River Inny catchment, 2022

Site No.	2013	2014	2020	2021	2022
1			-		M
2			-		M
3	G	-	M	M	M
4			-		G
5			-		M
6			-		G
7			-		M
8			-		M
9			-		M
10			-		M
11			-		M
12			-		G
13			-		G
14			M		M
15			-		M
16	G	G	G		G
17			-		M

Summary

A total of eight fish species were recorded at 17 sites electrofished across the Upper Inny catchment in September 2022.

Brown trout was the most common species present (100% sites), followed by three-spined stickleback (24%), perch (18%), stone loach, lamprey sp., minnow and roach (12%) and gudgeon (6%).

Brown trout was also the most abundant species recorded, followed by three-spined stickleback, minnow, perch, lamprey sp., gudgeon, stone loach and roach.

Brown trout ranged in length from 4.6 to 32cm. Four age classes were present (0+, 1+, 2+ and 3+), with 0+ being the most abundant cohort. The highest density (0.963 fish/m²) of 0+ brown trout was recorded at Site 4 on the Kildorough River at Drumroragh East. The greatest density of 1+ and older brown trout (0.395 fish/m²) was observed at Site 4 and Site 14 (Upper Inny River at Glebe).

Tolerant fish species (e.g. three-spined stickleback, minnow and stone loach) often proliferate at river sites experiencing poor water quality or other pressures (Kelly *et al.*, 2007). Three-spined stickleback were recorded at seven sites. The highest density (0.657

fish/m²) of three-spined stickleback observed across the 17 sites was at site 10 (Maghera River at Magheraboy).

A Water Framework Directive fish classification tool (FCS2) was developed for Irish rivers in 2011 (SNIFFER 2011). The tool works by comparing various fish community metric values within a site to those predicted for a site under un-impacted conditions. In general, a site will achieve High status if indicator species (e.g., both salmonid cohorts 0+ and 1+ and older) are present and in expected numbers. Status will decline if such cohorts are missing, are in poor abundance, or if more tolerant species proliferate.

Fish ecological status was assigned to 17 sites surveyed in the Upper Inny catchment during 2022 (Table 6 and Figure 9). Five sites achieved Good status, with 12 sites assigned Moderate. Three sites were surveyed previously and assigned fish ecological status. When compared with their most recent previous surveys, all three sites remained unchanged (Table 6 and figure 9).

The reasons for the failures in fish ecological status (i.e., Moderate or worse) were due to lower-than-expected abundance of type specific indicator species (e.g., salmon and trout) or the absence of certain age cohorts indicating recruitment failures. Failures and deteriorations in fish ecological status were likely caused by nutrient enrichment, hydromorphological (e.g. habitat modification and fish passage obstruction due to artificial barriers) and other pressures.

References

- CEN 2003 Water Quality Sampling of Fish with Electricity. CEN EN 14011:2000. Brussels. European Committee for Standardization.
- Kelly, F.L., Champ, W.S.T., McDonnell, N., Kelly-Quinn, M., Harrison, S., Arbuthnott, A., Giller, P., Joy, M., McCarthy, K., Cullen, P., Harrod, C., Jordan, P., Griffiths, D. and Rosell, R. (2007) *Investigation of the Relationship Between Fish Stocks, Ecological Quality ratings (Q-values), Environmental Factors and Degree of Eutrophication*. EPA Environmental RTDI Programme 200-2006. Project 2000-MS-4-M1. Synthesis report.

Matson, R., Delanty, K., Shephard, S., Coghlan, B. and Kelly, F. (2018). *Moving from multiple pass depletion to single pass timed electrofishing for fish community assessment in wadeable streams*. Fisheries Research, 198, 99-108.

SNIFFER River Fish Classification Tool: Science Work. WFD68c, Phase 2. Final Report. Version 6. Edinburgh. Scotland and Northern Ireland Forum for Environmental Research.

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