Fish in Rivers Factsheet

The Big River rises at Slievetrasna in the Cooley Mountains, Co. Louth. It flows in a south-easterly direction to enter Dundalk Bay 1.5 km east of Gyle's Quay. The total length of the river is 10.5km and it drains a catchment of approximately 28 km^2.

Inland Fisheries Ireland conducts annual nationwide fish sampling surveys to assess the status of stocks in Ireland's rivers, lakes and transitional waters. This report presents the results of a catchment-wide electrofishing survey of the Big River catchment in 2023.

Eight sites were surveyed by electro-fishing (CEN 2003) on the Big River catchment on the 17th and 18th July of 2023.

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

Big River tributary at Moneycrockroe Northeast, Co. Louth (Site 1).

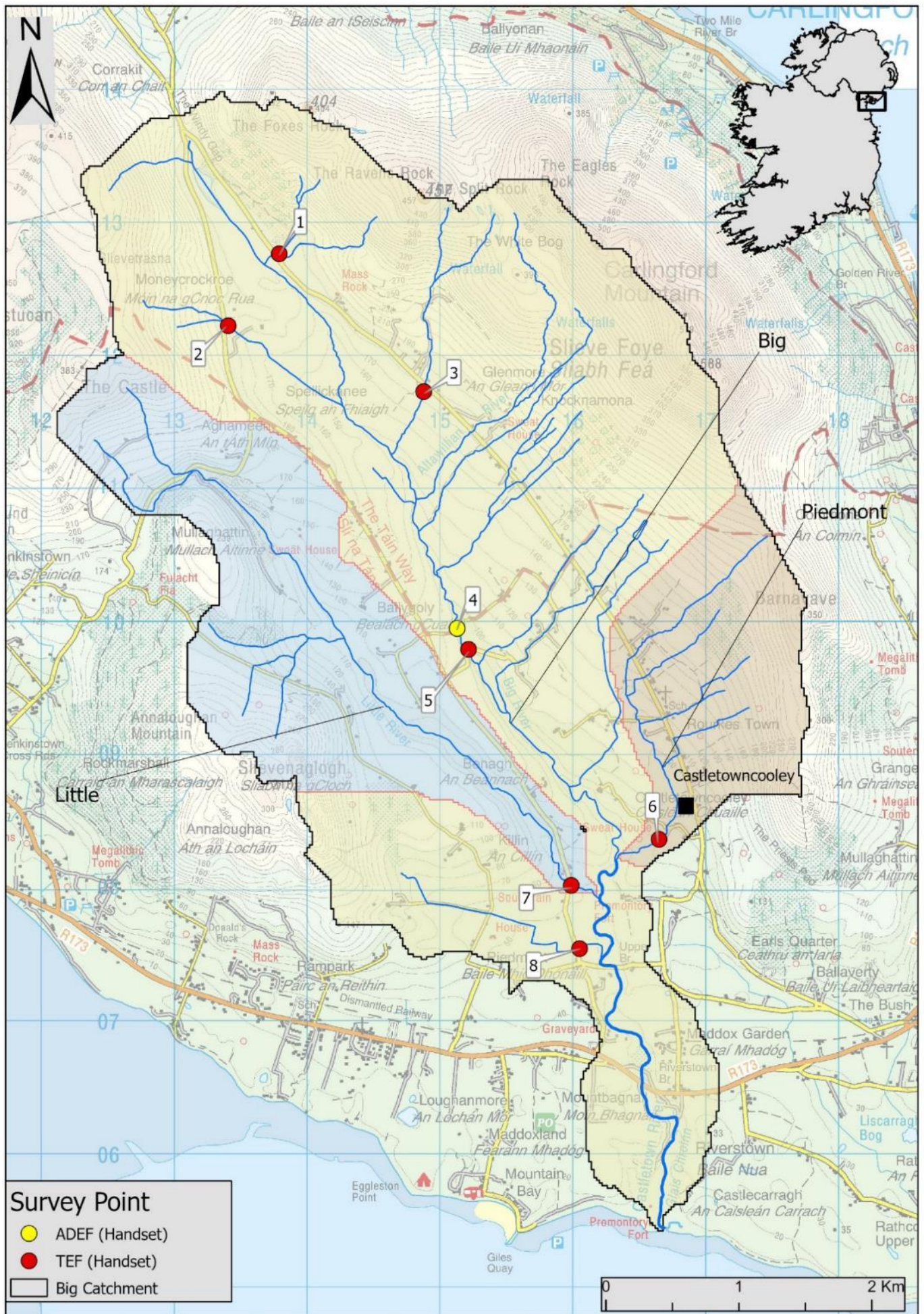Iascach Intíre Éireann
Inland Fisheries Ireland

Figure 1. Location of electrofishing survey sites on the Big River catchment, July 2023.

Table 1. Site survey details, Big River (Louth) Catchment, July 2023.

No.	River	Site	Method	WFD	Date
Big River (Louth) Catchment				
1	Big (Louth) tributary	Moneycrockroe_Northeast	TEF (handset)	No	17/07/2023
2	Moneycrockroe	Moneycrockroe	TEF (handset)	No	17/07/2023
3	Big (Louth) tributary	Spellickanee	TEF (handset)	No	17/07/2023
4	Big (Louth)	Ballygoly Bridge	ADEF (Handset)	Yes	18/07/2023
5	Big (Louth)	Ballygoly Southeast	TEF (handset)	No	17/07/2023
6	Piedmont	Castletowncooley	TEF (handset)	No	17/07/2023
7	Little	Killin	TEF (handset)	No	18/07/2023
8	Garden	Piedmont	TEF (handset)	No	18/07/2023

Table 2. Minimum density estimates of fish (no. fish/m^2), Big River (Louth) Catchment, July 2023 (previous results are shown where applicable).

Site no.	1	2	3	4			
Species	**2023**	**2023**	**2023**	**2009**	**2012**	**2020**	**2023**
Brown trout	0.513	0.117	0.282	0.396	0.460	0.707	0.115
0+ brown trout	0.424	0.039	0.132	0.092	0.177	0.057	0.088
1+ & older brown trout	0.089	0.078	0.150	0.304	0.283	0.650	0.027
Salmon	–	–	–	–	–	–	–
0+ salmon	–	–	–	–	–	–	–
1+ & older salmon	–	–	–	–	–	–	–
European eel	–	–	0.056	0.005	0.005	–	0.014
All fish	**0.513**	**0.117**	**0.338**	**0.402**	**0.465**	**0.707**	**0.129**

Site no.	5		6	7	8
Species	**2020**	**2023**	**2023**	**2023**	**2023**
Brown trout	0.363	0.074	0.064	0.348	–
0+ brown trout	0.020	0.035	–	0.273	–
1+ & older brown trout	0.343	0.040	0.064	0.075	–
Salmon	–	–	–	–	–
0+ salmon	–	–	–	–	–
1+ & older salmon	–	–	–	–	–
European eel	0.047	–	0.024	–	0.086
All fish	**0.410**	**0.074**	**0.088**	**0.348**	**0.086**

Table 3. Brown trout % age class structure (where recorded), Big River (Louth) Catchment, July 2023.

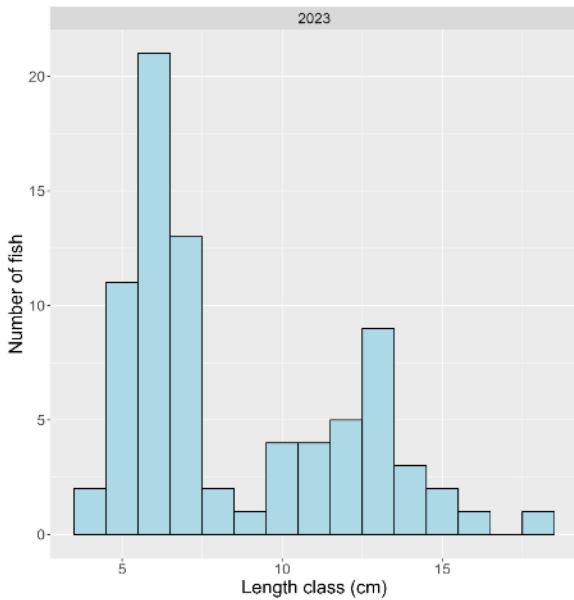| Species	Site No.	% of catch		
		0+	**1+**	**2+**
Brown trout	1	86	14	-
	2	33	67	-
	3	50	50	-
	4	56	40	4
	5	50	50	-
	6	-	100	-
	7	82	18	-
	8	-	-	-

Figure 3. Length frequency distribution for brown trout (n =79), Big River (Louth) Catchment, 2023 (n-sites = 7).

Table 4. Fish ecological status, Big River (Louth) Catchment, July 2023.

Site No.	2009	2012	2020	2023
1	-	-	-	Good
2	-	-	-	Moderate
3	-	-	-	Good
4	Good	Good	Moderate	Moderate
5	-	-	Moderate	Moderate
6	-	-	-	Moderate
7	-	-	-	Moderate
8	-	-	-	Poor
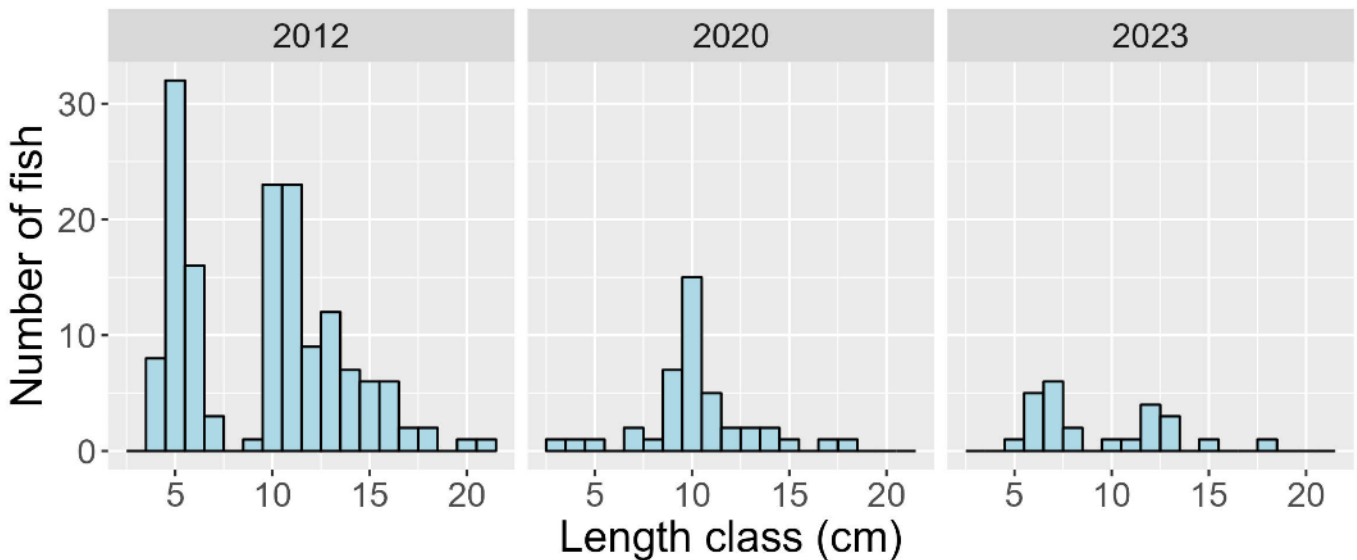
Figure 6. Length frequency distribution of brown trout (2012 n= 152, 2020 n=42, 2023 n=25) in the Big River (Louth) Catchment at Site 4 (Ballygoly Bridge).
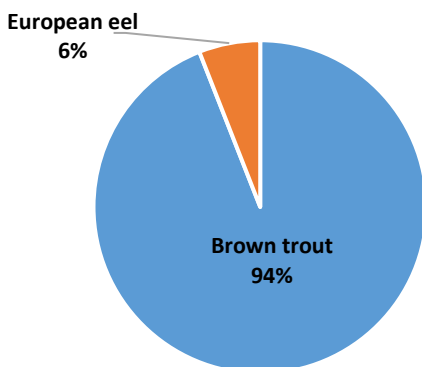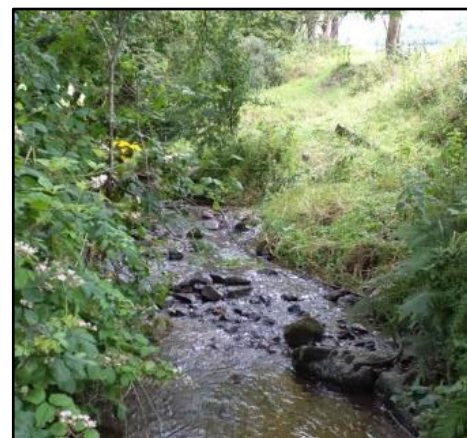

Figure 7. Fish species composition (%), Big River (Louth) Catchment, 2023.

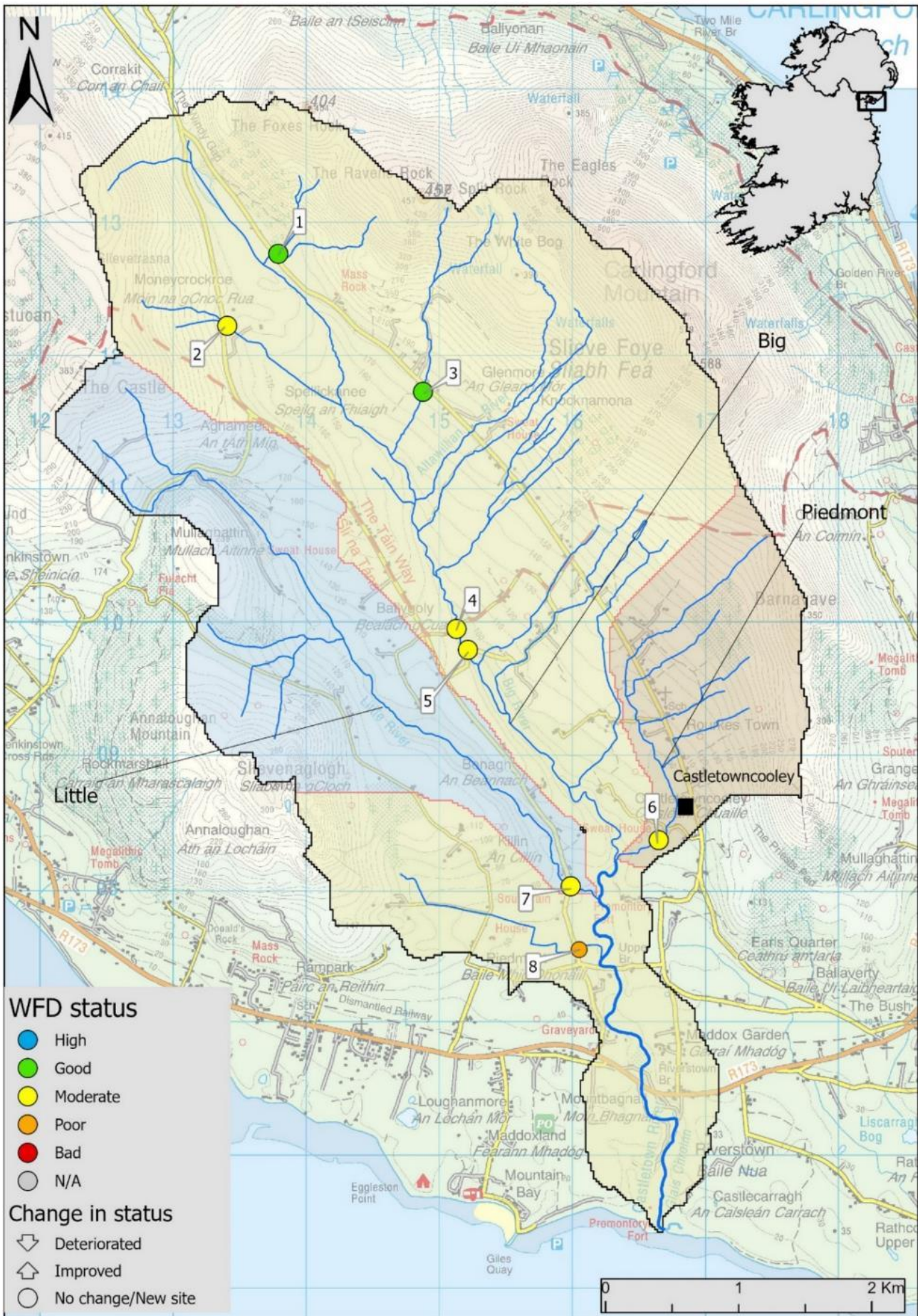**Big River tributary at Castletowncooley, Co. Louth (Site 6).**

Figure 8. Fish ecological status in the Big (Louth) River Catchment, July 2023. Arrows indicate a change in status since previous surveys (where applicable).

Summary

Two fish species were recorded at eight sites electrofished on the Big River (Louth) Catchment in July 2023.

Brown trout was the most common species present (seven sites, 88%), followed by European eel (four sites, 50%).

Brown trout was the most abundant species recorded (Figure 7 and Table 2).

Brown trout ranged in length from 3.6 to 17.5cm. Three age classes were present (0+, 1+ and 2+), with 0+ being the most abundant cohort. The highest density of brown trout (all ages combined)(0.513 fish/m^2) was recorded at Site 1 on the Big (Louth) tributary at Moneycrockroe Northeast. The highest density of 0+ brown trout (0.424 fish/m^2) was also recorded at Site 1. The highest density of 1+ and older brown trout (0.150 fish/m^2) was recorded at Site 3 on the Big (Louth) tributary at Speelickanee.

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 all 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 eight sites surveyed in the Big River (Louth) Catchment during 2023 (Table 4 and Figure 8). Two sites were assigned Good status, with five sites Moderate and one site Poor. Two sites were surveyed previously on this catchment and assigned fish ecological status. When compared with their most recent previous surveys, they were unchanged (Table 4).

The reasons for the failures (i.e. moderate status) in fish ecological status were due to lower-than-expected abundance of type specific indicator species (e.g., salmon and trout), absence of certain age cohorts indicating recruitment failures. Failures and deteriorations in fish ecological status can be caused by pressures such as nutrient enrichment, habitat modification and fish passage issues.

References

CEN 2003 Water Quality Sampling of Fish with Electricity. CEN EN 14011:2000. Brussels. European Committee for Standardization.

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.