

Fish in Rivers Factsheet

ERBD

Vartry River Catchment

Factsheet: 2022/01

The Vartry River catchment is located within the Eastern River Basin District and covers an area of approximately 122km². The Vartry River flows in a south-easterly direction from the Wicklow mountains, towards the sea, just north of Wicklow Town. The geology of this catchment is mixed between greywacke, shale and schist, with blanket bog and agriculture the dominant land use types. Large pockets of forestry are also distributed throughout, particularly higher up the system. Small portions of this catchment are situated within the Wicklow Mountains Special Area of Conservation (SAC). Additionally, the Carriggower Bog SAC lies just north of the Vartry Reservoir, with the mouth of the catchment forming part of the Murrrough Wetlands SAC.

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 survey of the Vartry River catchment in 2022.

Nine sites were surveyed by electrofishing (CEN 2003) on the Vartry River catchment from the 12th of September to the 14th of September 2022.

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



The Vartry River at Newrath Bridge, Co. Wicklow (Site 1)



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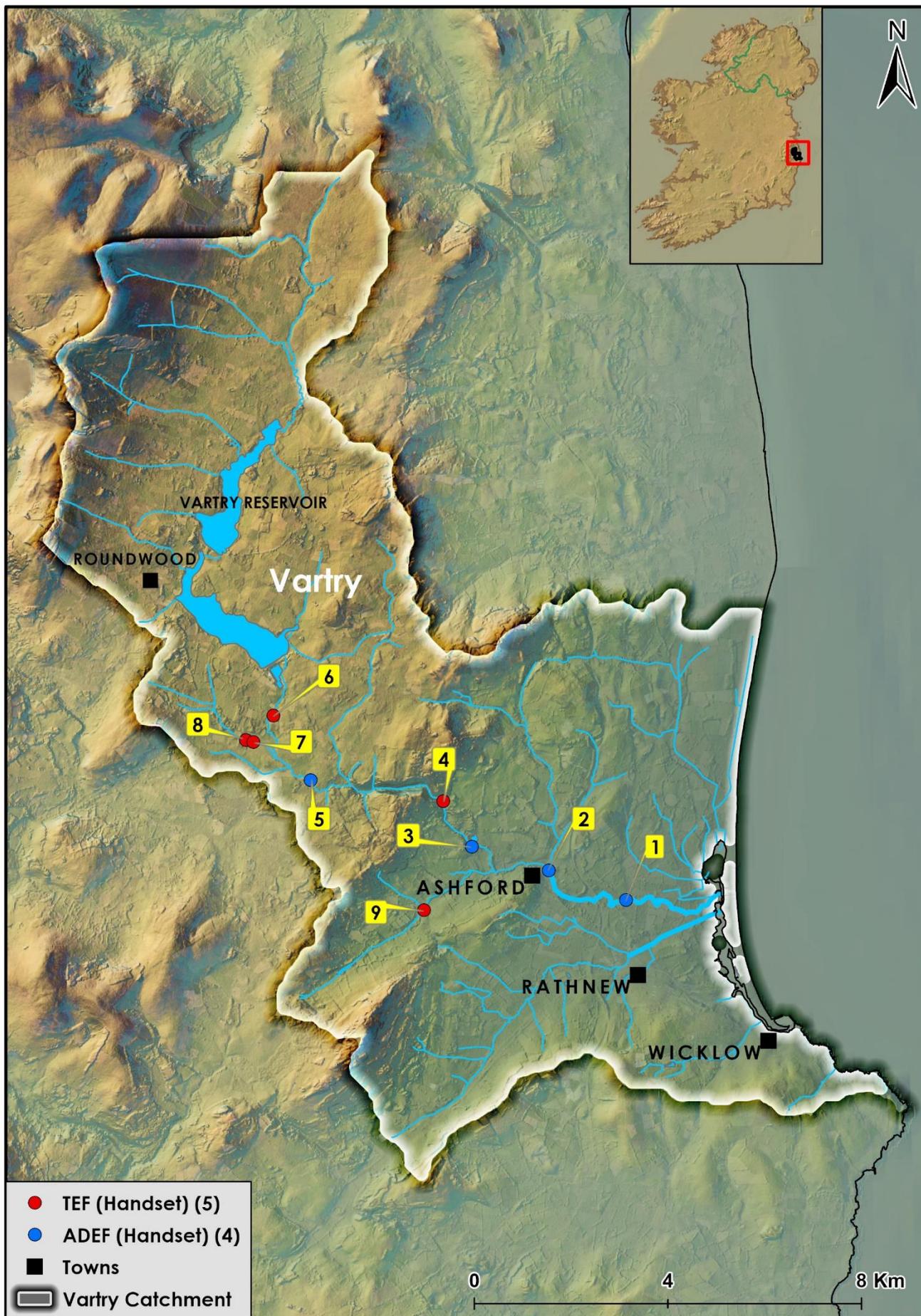


Figure 1. Location of electrofishing survey sites on the Vartry River catchment, September 2022 (Sites 1-9)

Table 1. Site survey details, Vartry River catchment, September 2022

No.	River	Site	Method	WFD SM	Date
1	Vartry	Newrath Bridge	ADEF (Handset)	Yes	14/09/2022
2	Vartry	Ashford Bridge	ADEF (Handset)	No	14/09/2022
3	Vartry	Nun's Cross Bridge	ADEF (Handset)	No	13/09/2022
4	Vartry	Clöre	TEF (handset)	No	13/09/2022
5	Vartry	Annagolan Bridge	ADEF (Handset)	No	13/09/2022
6	Vartry	Knockadreet	TEF (handset)	No	12/09/2022
7	Tomdarragh	Tomdarragh	TEF (handset)	No	14/09/2022
8	Tomdarragh	Tomdarragh Woods	TEF (handset)	No	13/09/2022
9	Carrick	Monduff	TEF (handset)	No	13/09/2022

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

Site no.	1			2			3			4			
Species	2018	2019	2022	2017	2018	2022	2017	2018	2022	2017	2018	2022	
Brown trout	0.146	0.078	0.130	0.415	0.277	0.217	0.201	0.245	0.052	0.172	0.037	0.087	
0+ brown trout	0.073	0.067	0.065	0.276	0.149	0.115	0.040	0.074	0.018	0.089	0.010	0.016	
1+ & older brown trout	0.073	0.011	0.065	0.139	0.128	0.102	0.161	0.171	0.034	0.083	0.027	0.071	
Salmon	0.008	0.030	0.062	0.010	0.014	0.019	-	-	0.003	-	-	0.016	
0+ salmon	0.003	0.027	0.057	0.005	-	0.003	-	-	-	-	-	-	
1+ & older salmon	0.005	0.003	0.005	0.005	0.014	0.016	-	-	0.003	-	-	0.016	
European eel	0.008	0.022	0.014	0.016	0.009	0.018	0.011	0.015	0.010	0.036	-	0.026	
Flounder	0.003	-	-	-	-	-	-	-	-	-	-	-	
Lamprey sp.	0.003	-	0.003	0.003	0.002	-	0.003	-	0.003	-	-	-	
Minnow	0.059	0.024	0.084	-	-	-	0.003	-	-	-	-	0.005	
Sea trout	0.011	0.011	0.025	0.013	0.002	-	-	-	-	-	-	-	
Three-spined stickleback	0.003	-	0.005	0.003	0.007	0.003	-	-	-	-	-	-	
All fish	0.241	0.165	0.323	0.460	0.311	0.257	0.218	0.260	0.068	0.208	0.037	0.134	
Site no.	5			6			7			8	9		
Species	2018	2019	2022	2018	2019	2022	2018	2019	2022	2022	2018	2019	2022
Brown trout	0.050	0.057	0.068	0.092	0.080	0.082	0.058	0.280	0.066	0.023	0.536	0.924	0.507
0+ brown trout	0.004	0.023	0.010	-	0.055	-	0.058	0.280	0.040	-	0.480	0.743	0.484
1+ & older brown trout	0.046	0.034	0.058	0.092	0.025	0.082	-	-	0.026	0.023	0.056	0.181	0.023
European eel	-	-	-	-	-	-	-	-	-	-	-	0.026	0.034
Minnow	0.192	0.201	0.198	0.662	0.118	0.384	0.263	0.065	0.317	-	-	-	-
Stone loach	-	-	0.006	-	-	0.010	-	-	-	-	-	-	-
Three-spined stickleback	0.004	-	0.084	0.134	0.025	0.149	0.731	-	0.212	-	-	-	-
All fish	0.246	0.258	0.356	0.888	0.223	0.625	1.052	0.345	0.595	0.023	0.536	0.950	0.541

Table 3. Salmonid age class structure Vartry River catchment, September 2022

Species	Site No.	% of catch			
		0+	1+	2+	3+
Brown trout	1	58	38	4	-
	2	53	47	-	-
	3	27	68	5	-
	4	19	75	6	-
	5	16	78	3	3
	6	-	100	-	-
	7	67	33	-	-
	8	-	100	-	-
	9	96	4	-	-
Salmon	1	94	6	-	-
	2	9	91	-	-
	3	-	100	-	-
	4	-	100	-	-

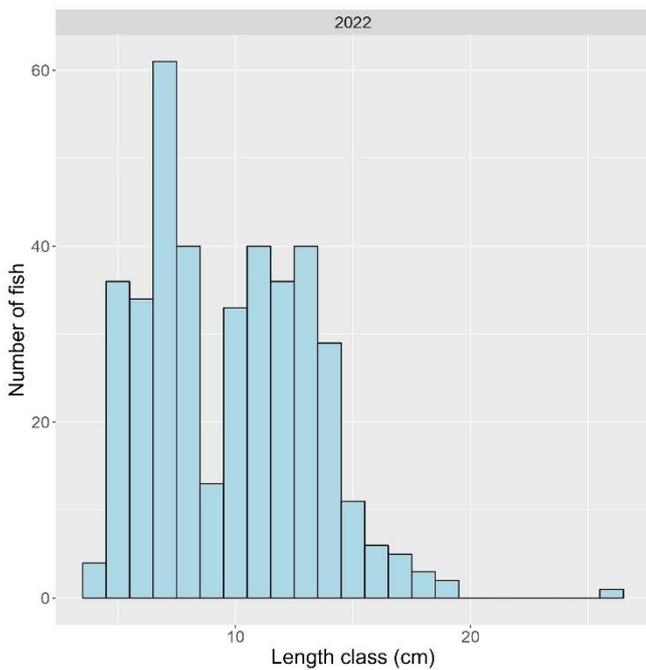


Figure 2. Length frequency distribution for brown trout (n=394) in the Vartry River catchment, 2022 (n=9 sites)

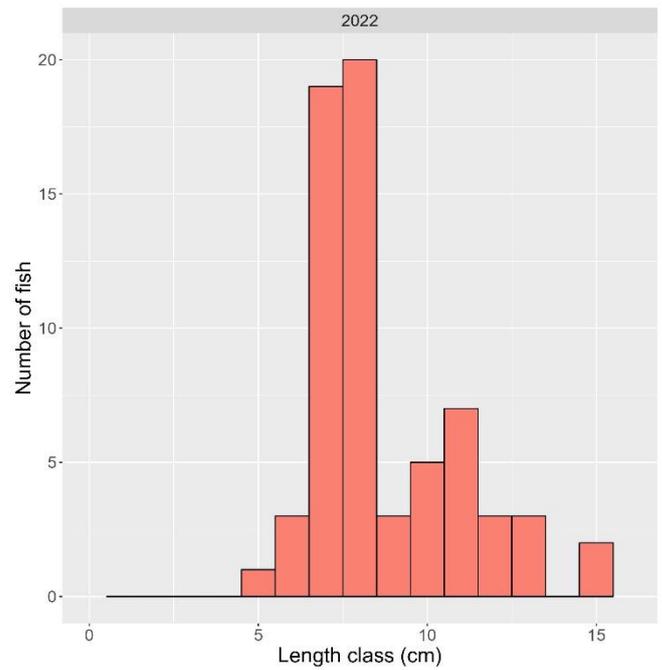


Figure 3. Length frequency distribution for salmon (n=66) in the Vartry River catchment, 2022 (n= 9 sites)

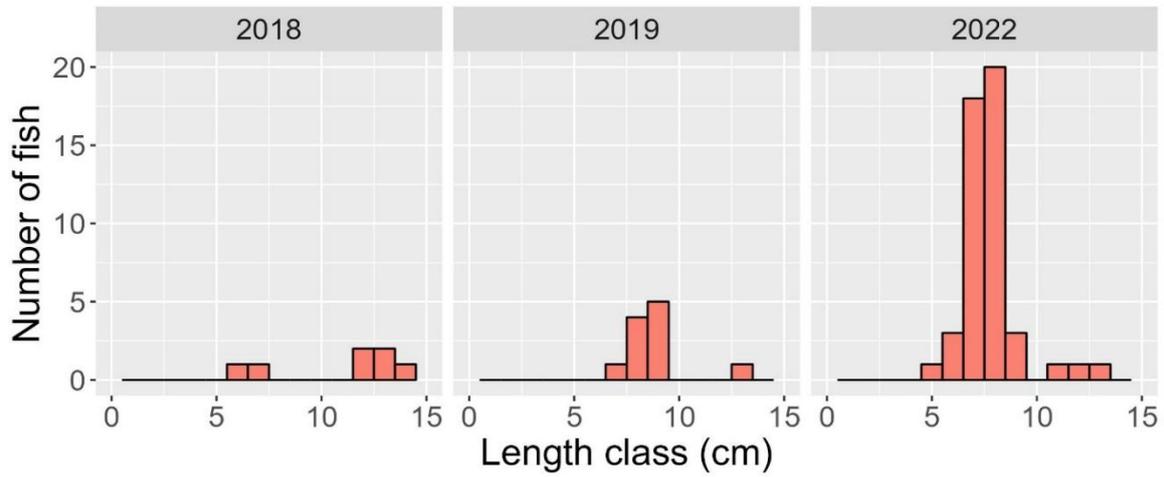


Figure 4. Length frequency distribution for salmon (2018 n=7; 2019 n=11; 2022 n=48) in the Vartry River catchment at Site 1 (Newrath Br.)

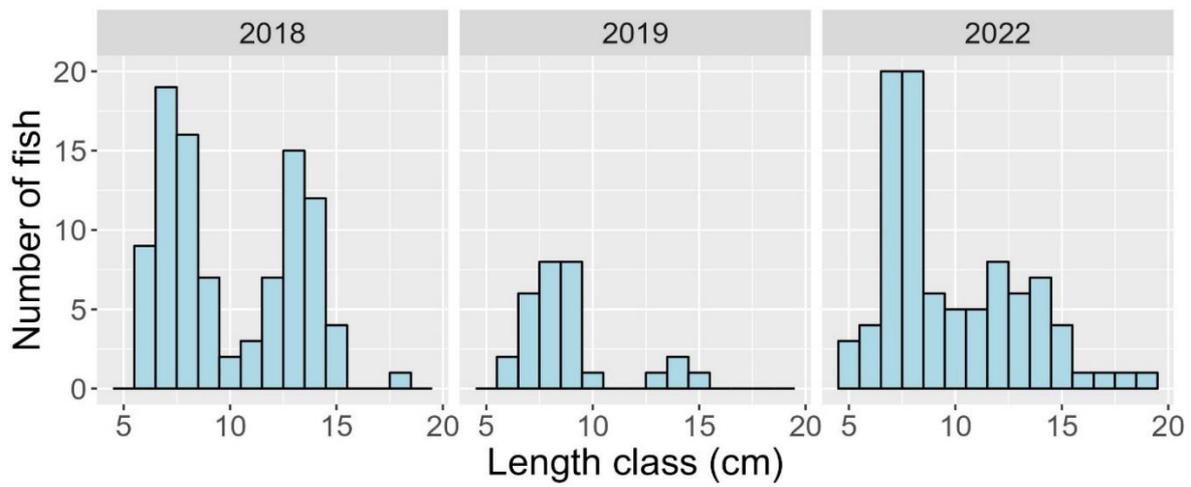


Figure 5. Length frequency distribution for brown trout (2018 n=95; 2019 n=29; 2022 n=92) in the Vartry River catchment at Site 1 (Newrath Br.)



The Vartry River at Ashford Bridge (Site 2)

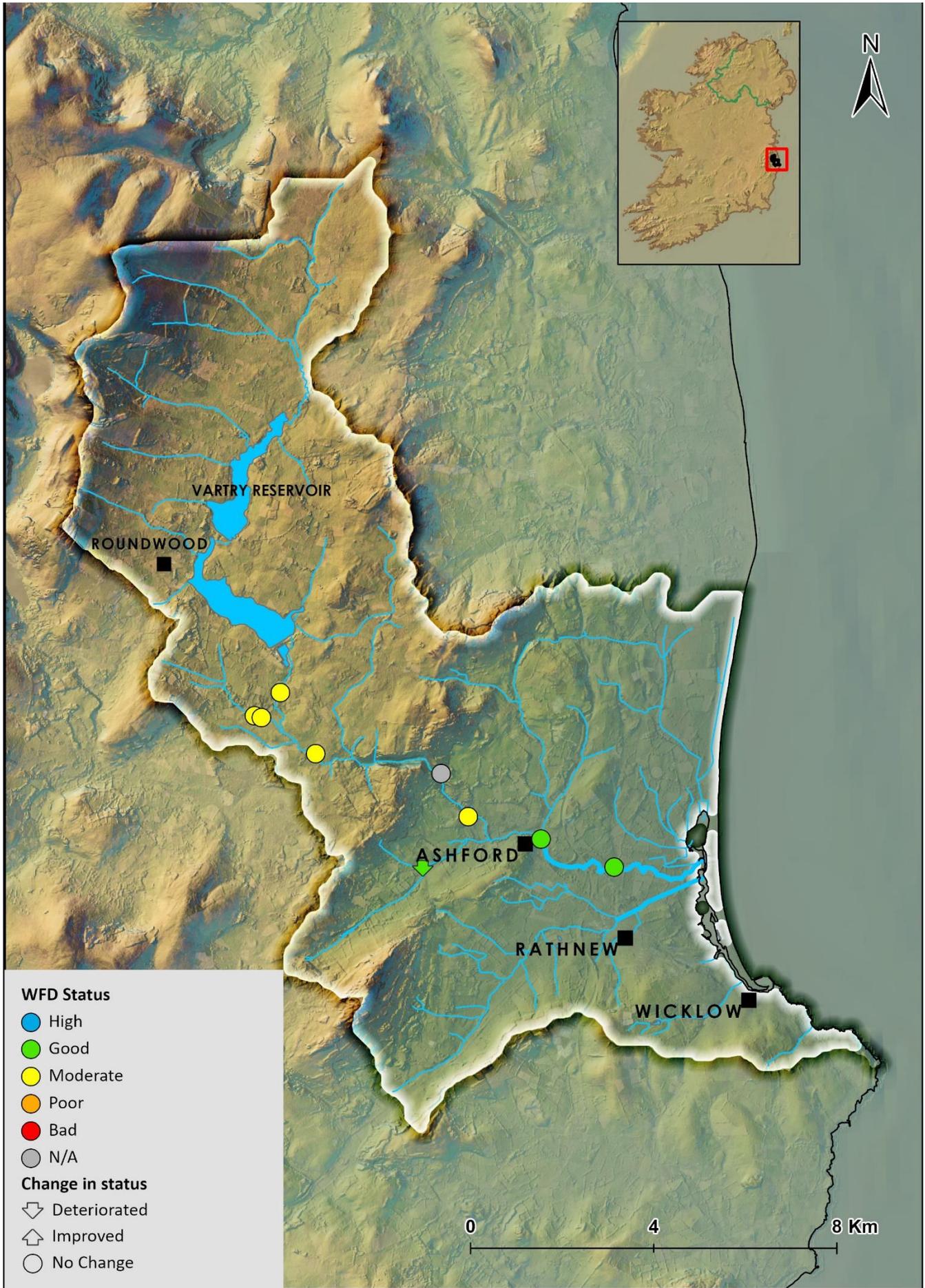


Figure 6. Fish ecological status in the Vartry River catchment in 2022. (Arrows indicate a change in status where relevant)

Table 4. Fish ecological status, Vartry River catchment, 2015 to 2022

Site No.	2015	2017	2018	2019	2022
1	H	G	G	N/A	G
2	H	G	G	-	G
3	M	M	M	M	M
4	N/A	N/A	N/A	N/A	N/A
5	M	M	M	M	M
6	-	P	M	M	M
7	-	M	M	M	M
8	-	-	-	-	M
9	-	H	G	H	G

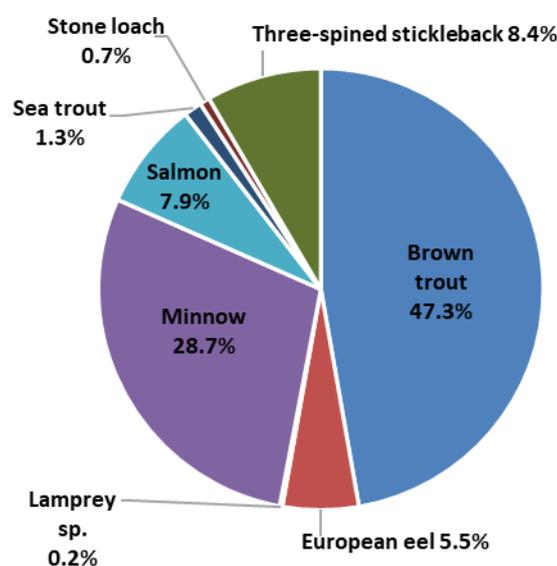


Figure 7. Fish species composition (%), Vartry River catchment, September 2022

Summary

A total of seven fish species and sea trout (a separate 'variety' of trout) were recorded at nine sites electrofished on the Vartry River catchment in 2022.

Brown trout was the most common species present (100% sites), followed by minnow, three-spined stickleback and European eel (56%), salmon (44%), stone loach and lamprey sp. (22%) and sea trout (11%).

Brown trout was the most abundant species recorded, captured at all 9 sites, followed by minnow, three-spined stickleback, salmon, European eel, sea trout, stone loach and lamprey sp. (Figure 7).

Salmon ranged in length from 5.8 to 15.5cm. Two age classes were present (0+ and 1+), with 0+ being the

most abundant cohort. The highest density (0.057 fish/m²) of 0+ salmon was recorded at Site 1 at Newrath Bridge. The highest density (0.016 fish/m²) of 1+ and older salmon was recorded at Site 2 at Ashford Bridge and Site 4 at Clore.

Brown trout ranged in length from 4.2 to 26cm. Four age classes were present (0+, 1+, 2+ and 3+), with 1+ being the most abundant cohort. The highest density of 0+ brown trout (0.484 fish/m²) was recorded at Site 9 on the Carrick stream at Monduff. While the highest density of 1+ and older brown trout (0.102 fish/m²) was observed at Site 9 and Site 2 respectively.

Tolerant fish species (i.e. three-spined stickleback and minnow) were dominant at two sites, sites 6 and 7 (Knockadreet and Tomdarragh). These species are more tolerant of poor water quality and habitat than type specific indicator species (e.g. brown trout and salmon). When dominant at a site or present in relatively high abundances can be an indicator of poor water quality (Kelly *et al.*, 2007).

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 nine sites surveyed in the Vartry River catchment during 2022 (Table 4 and Figure 6). Three sites achieved Good status, with five sites Moderate and one site not assigned status. Eight sites were surveyed previously on this catchment. When compared with the most recent previous surveys, one site deteriorated in status (Site 9 Monduff), five sites remained unchanged, one site (site 1 Newrath Bridge) was assigned a status having previously been left unassigned and one site (site 4 Clore) was not assigned a status and has been the case in previous surveys (Table 4 and Figure 6).

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 can be caused by nutrient enrichment, hydromorphological (e.g. habitat modification and fish passage obstruction due to artificial barriers) and other pressures.

References

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