

# Fish in Rivers Factsheet

NWIRBD

Annalee Catchment

Factsheet: 2022/05

The Annalee River drains the south-eastern part of the Erne catchment, and is fed by the Bunnoe, Dromore, Knappagh, Madabawn, Laragh and Cavan Rivers. The Annalee River joins the River Erne and Lough Oughter lake system near Butlersbridge, a few kilometres northeast of Cavan Town.

Inland Fisheries Ireland conducts annual nation-wide 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 Annalee River catchment in 2022.

A total of 46 sites were surveyed by electro-fishing (CEN 2003) on the catchment from the 16<sup>th</sup> of August to the 29<sup>th</sup> of September 2022.

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



**Annalee River 0.2km downstream of the Cavan River confluence (Site 1)**

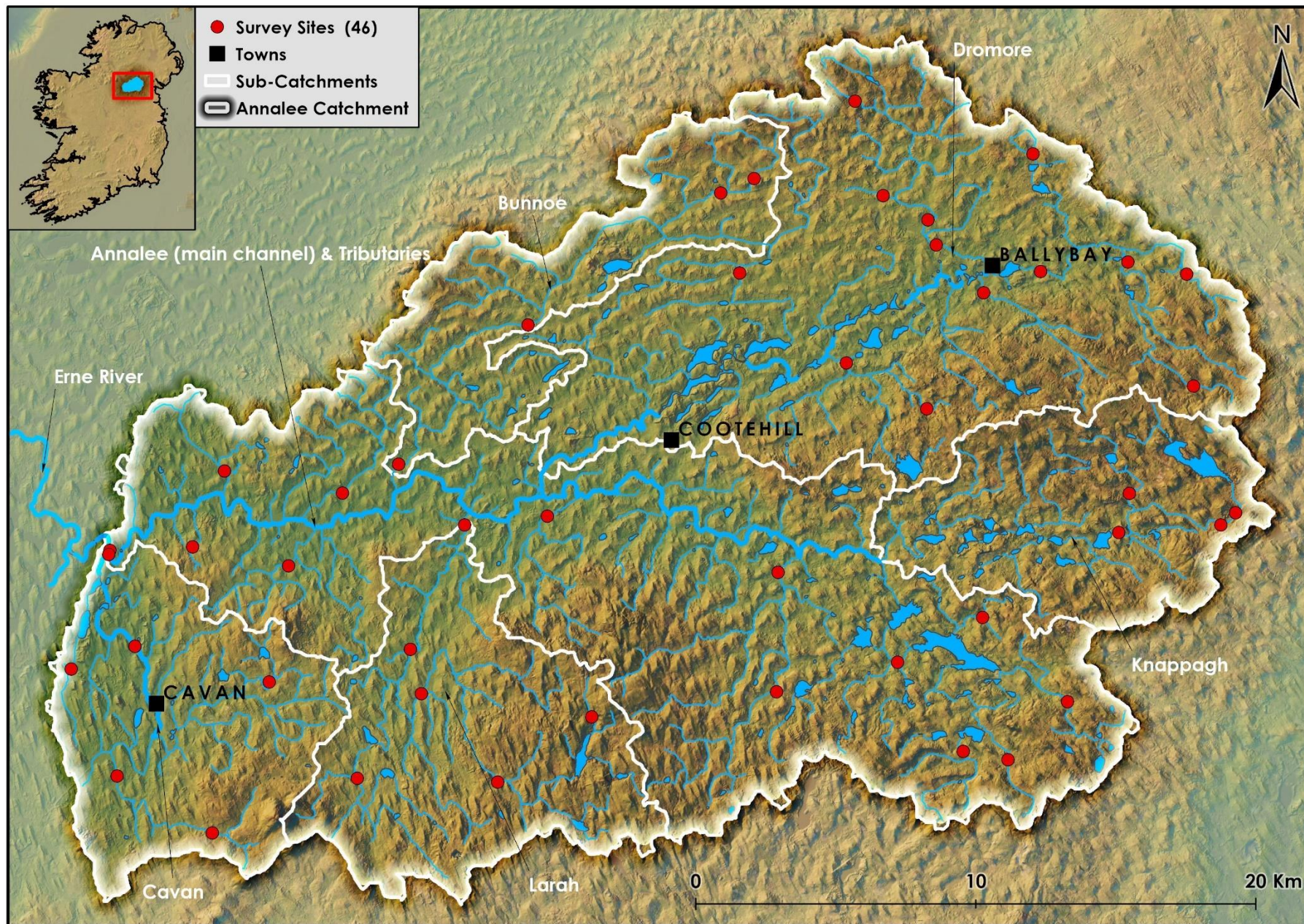
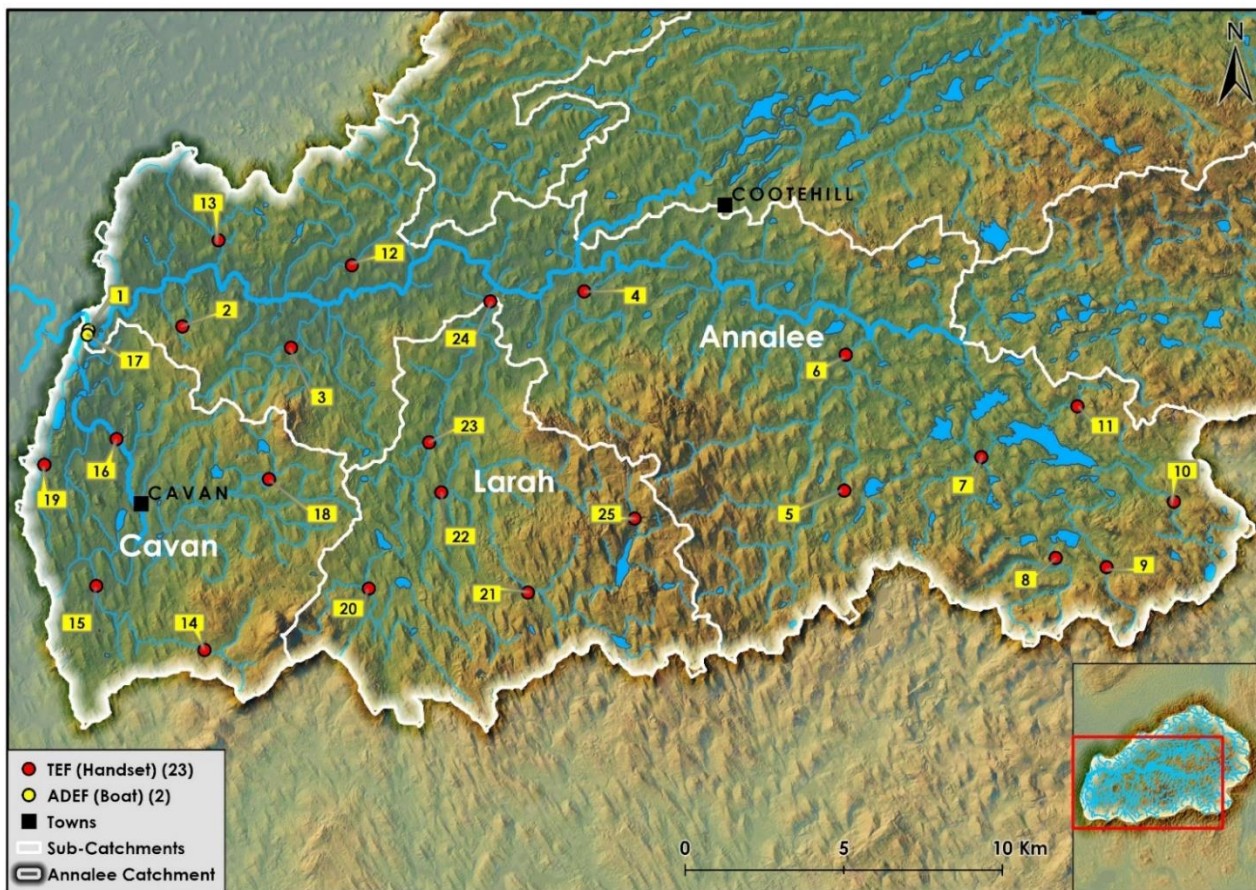


Figure 1. Annalee sub-catchments and location of electrofishing survey sites, 2022

**Annalee main channel and tributaries, Cavan and Larah sub-catchments**

Thirteen sites (site no. 1-13) were surveyed on the Annalee main channel and tributaries, as well as six sites on the Cavan River (sites no. 14-19) and six on the Larah River (site no. 20-25) sub-catchments in 2022. One long-term Water Framework Directive (WFD) surveillance monitoring (SM) site was surveyed on the Annalee River (Site 1) (Figure 2 and Table 1).



**Figure 2. Location of electrofishing sites on Annalee River and tributaries (Sites 1-13), Cavan River sub-catchment (Sites 14-19), and Larah sub-catchment (Sites 20-25), 2022**



**Cavan River at Shankill Substation (Site 18)**

Table 1. Site survey details for the Annalee River and tributaries, Cavan and Larah sub-catchments, 2022

No.	Sub-catchment	River	Site	Method	WFD	Date
1	Annalee	Annalee	0.2km D/S Cavan River Confluence	ADEF (Boat)	Yes	16/08/2022
2		Killyvann	Drumkeeran	TEF (Handset)	No	22/08/2022
3		Knockatee	Lisnacark	TEF (Handset)	No	26/09/2022
4		Gortin	Tullyvin Bridge	TEF (Handset)	No	26/09/2022
5		Madabawn	Corraneary Church	TEF (Handset)	No	24/08/2022
6		Madabawn	Madabawn Church	TEF (Handset)	No	23/08/2022
7		Annalee	Annafarney Bridge	TEF (Handset)	No	23/08/2022
8		Latteriff	Kilcrossbeg	TEF (Handset)	No	23/08/2022
9		Milltown	Tullybrick	TEF (Handset)	No	26/09/2022
10		Annalee	Lisataggart	TEF (Handset)	No	26/09/2022
11		Lough Dermot	Lisnadarragh	TEF (Handset)	No	26/09/2022
12		Tullaghaloyst	Coolcanadas	TEF (Handset)	No	29/09/2022
13		Plush	Drumliff East	TEF (Handset)	No	29/09/2022
14	Cavan	Cavan	Lisreagh South	TEF (Handset)	No	25/08/2022
15		Cavan	Clonagonnell	TEF (Handset)	No	25/08/2022
16		Cavan	Carrickane	TEF (Handset)	No	22/08/2022
17		Cavan	Deredis Lower	ADEF (Boat)	No	16/08/2022
18		Annagelliff	Shankill Substation	TEF (Handset)	No	29/09/2022
19		Ricehill	Drumlaunaght	TEF (Handset)	No	25/08/2022
20	Larah	Stradone	Corrawillin	TEF (Handset)	No	25/08/2022
21		Larah	Clifferna North	TEF (Handset)	No	24/08/2022
22		Larah	Larah Bridge	TEF (Handset)	No	22/08/2022
23		Larah	McShane's Bridge	TEF (Handset)	No	25/08/2022
24		Larah	Rathkenny Br	TEF (Handset)	No	22/08/2022
25		Ratrussan	Hardware Shop	TEF (Handset)	No	24/08/2022



The Larah River at McShane's Bridge (Site 23)

**Table 2. Minimum density estimates (no. fish/m<sup>2</sup>) for the Annalee River and tributaries, Cavan and Larah sub-catchments, 2022. Previous results are shown where applicable**

Annalee										
Site no.	1			2	3	4	5	6	7	8
Species	2013	2016	2022	2022	2022	2022	2022	2022	2022	2022
Brown trout	0.001	0.001	0.001	-	-	-	0.067	0.153	0.361	-
0+ brown trout	-	0.0003	-	-	-	-	0.067	0.054	-	-
1+ & older brown trout	0.001	0.0007	0.001	-	0.205	-	-	0.099	0.361	-
Bream	0.001	-	-	-	-	-	-	-	-	-
Bream x roach hybrid	0.0003	0.0004	-	-	-	-	-	-	-	-
European eel	0.001	-	-	-	-	-	-	-	-	-
Gudgeon	0.037	0.010	0.003	-	-	0.009	-	-	0.441	-
Minnow	0.001	-	0.0001	-	-	0.073	0.704	0.207	0.709	-
Perch	0.021	0.002	0.001	-	-	-	-	-	0.040	-
Pike	0.003	0.0004	0.0003	-	-	-	-	0.009	-	-
Roach	0.037	0.016	0.003	-	0.063	-	-	-	0.107	-
Stone loach	-	-	-	-	-	-	-	0.036	-	-
Three-spined stickleback	-	-	-	1.997	0.253	0.054	0.101	1.073	-	0.410
<b>All fish</b>	<b>0.102</b>	<b>0.030</b>	<b>0.008</b>	<b>1.997</b>	<b>0.521</b>	<b>0.136</b>	<b>0.872</b>	<b>1.478</b>	<b>1.658</b>	<b>0.410</b>
Annalee						Cavan				
Site no.	9	10	11	12	13	14	15	16	17	18
Species	2022	2022	2022	2022	2022	2022	2022	2022	2022	2022
Brown trout	-	0.120	-	-	-	-	0.016	0.225	-	-
0+ brown trout	-	0.069	-	-	-	-	0.016	-	-	-
1+ & older brown trout	-	0.052	-	-	-	-	-	0.225	-	-
Gudgeon	-	-	-	-	-	-	-	-	0.001	-
Lamprey sp.	-	0.009	-	-	-	-	0.024	-	-	-
Minnow	-	-	-	-	-	0.137	0.392	0.020	-	-
Perch	-	-	-	-	-	-	-	-	0.001	-
Roach	-	-	0.015	-	-	-	-	0.049	0.004	-
Three-spined stickleback	-	0.026	0.278	-	0.248	0.641	0.344	-	-	0.810
<b>All fish</b>	<b>no fish</b>	<b>0.156</b>	<b>0.293</b>	<b>no fish</b>	<b>0.248</b>	<b>0.778</b>	<b>0.776</b>	<b>0.294</b>	<b>0.006</b>	<b>0.810</b>
Cavan		Larah								
Site no.	19	20	21	22	23		24		25	
Species	2022	2022	2022	2022	2017	2022	2017	2022	2022	
Brown trout	-	0.028	0.025	0.087	0.293	0.079	0.202	0.053	-	
0+ brown trout	-	0.028	-	0.037	0.092	-	0.061	0.013	-	
1+ & older brown trout	-	-	0.025	0.050	0.201	0.079	0.141	0.040	-	
Gudgeon	-	-	-	-	-	0.009	0.009	-	-	
Lamprey sp.	-	0.014	-	-	0.022	0.009	-	-	-	
Minnow	-	-	0.716	0.425	0.214	0.219	0.094	0.013	-	
Pike	-	-	-	-	0.004	-	-	-	-	
Roach	-	0.085	-	-	-	-	0.005	-	-	
Stone loach	-	0.028	-	0.081	-	0.074	-	-	-	
Three-spined stickleback	0.223	0.042	0.074	0.019	0.135	0.088	-	-	0.050	
<b>All fish</b>	<b>0.223</b>	<b>0.197</b>	<b>0.815</b>	<b>0.612</b>	<b>0.668</b>	<b>0.478</b>	<b>0.310</b>	<b>0.066</b>	<b>0.050</b>	

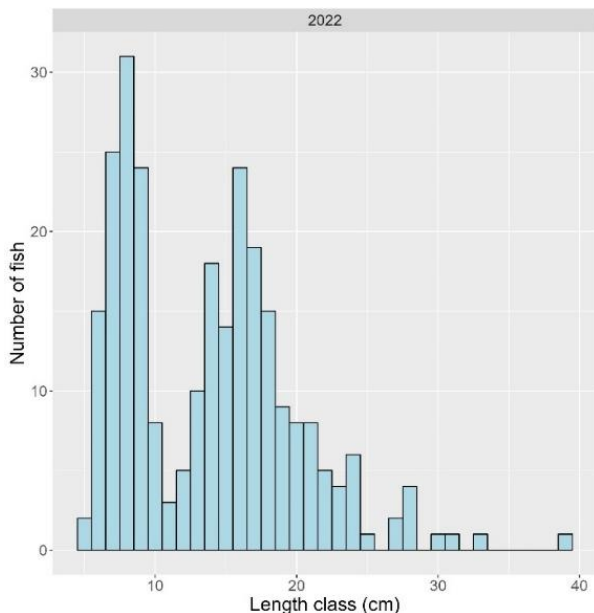


Figure 3. Length frequency distribution for brown trout (n=284) in the Annalee catchment, 2022 (N=45 sites)

Table 3. Brown trout % age class structure (where recorded) for the Annalee River and tributaries, Cavan and Larah sub-catchments, 2022.

Sub-catchment	Site no.	% Catch				
		0+	1+	2+	3+	4+
Annalee	1	-	-	91	9	-
	3	-	33	67	-	-
	5	100	-	-	-	-
	6	38	63	-	-	-
	7	-	54	46	-	-
	10	57	43	-	-	-
Cavan	15	100	-	-	-	-
	16	-	55	27	9	9
Larah	20	100	-	-	-	-
	21	-	100	-	-	-
	22	43	29	29	-	-
	23	-	38	50	13	-
	24	25	25	50	-	-

Table 4. Fish ecological status for the Annalee River and tributaries, Larah and Cavan sub-catchments, 2022

Site No.	2013	2016	2017	2022
<b>Annalee sub-catchment</b>				
1	M	M	-	M
2	-	-	-	P
3	-	-	-	M
4	-	-	-	P
5	-	-	-	P
6	-	-	-	M
7	-	-	-	M
8	-	-	-	P
9	-	-	-	B
10	-	-	-	M
11	-	-	-	P
12	-	-	-	B
13	-	-	-	P
<b>Cavan sub-catchment</b>				
14	-	-	-	P
15	-	-	-	M
16	-	-	-	M
17	-	-	-	P
18	-	-	-	P
19	-	-	-	P
<b>Larah sub-catchment</b>				
20	-	-	-	M
21	-	-	-	P
22	-	-	-	M
23	-	-	M	M
24	-	-	M	P
25	-	-	-	P



Measuring fish captured on the Cavan River.

### Bunnoe, Dromore and Knappagh sub-catchments

Four sites were surveyed on the Bunnoe sub-catchment (site no. 26-29), as well as 13 (site no. 30-42) on the Dromore and four on the Knappagh (site no. 43-46) sub-catchments in 2022. One Water Framework Directive (WFD) long-term surveillance monitoring (SM) site was surveyed on the Dromore River at Drummuck (Site 33) (Figure 4 and Table 5).

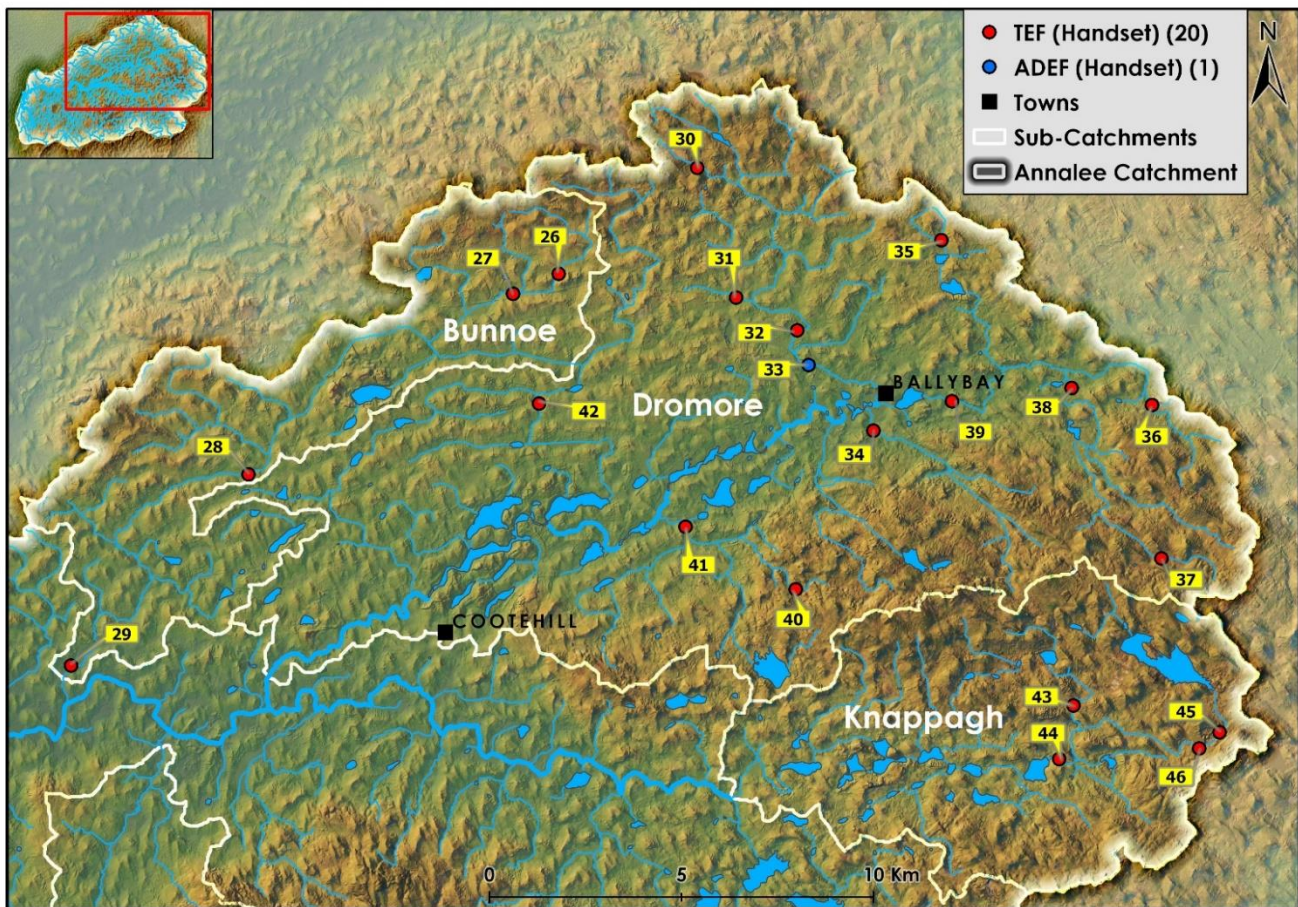


Figure 4. Location of electrofishing survey sites on the Bunnoe (Sites 26-29), Dromore (Sites 30-42), and Knappagh (Sites 43-46) sub-catchments, 2022



Bunnoe River at Dianmore Bridge (Site 28)

Table 5. Site survey details for the Bunnoe, Dromore, and Knappagh sub-catchments, 2022

No.	Sub-catchment	River	Site	Method	WFD	Date
26	Bunnoe	Bunnoe	Rosnaglogh East	TEF (Handset)	No	24/08/2022
27	Bunnoe	Bunnoe	Killygragy North	TEF (Handset)	No	24/08/2022
28	Bunnoe	Bunnoe	Dianmore Bridge	TEF (Handset)	No	26/09/2022
29	Bunnoe	Bunnoe	Ardglushin	TEF (Handset)	No	16/08/2022
30	Dromore	Bannaghroe	Aghnaglogh East	TEF (Handset)	No	24/08/2022
31	Dromore	Cremoyle	Drumgavny	TEF (Handset)	No	23/08/2022
32	Dromore	Dromore	Bluebell Nature Farm	TEF (Handset)	No	23/08/2022
33	Dromore	Dromore	Drummuck	ADEF (Handset)	Yes	15/08/2022
34	Dromore	Annaneese	Corrybrannan	TEF (Handset)	No	27/09/2022
35	Dromore	Lisquigny	Tiromedan_A	TEF (Handset)	No	28/09/2022
36	Dromore	Major Lough	Killycrom_A	TEF (Handset)	No	27/09/2022
37	Dromore	Rossollus	Cabragh South	TEF (Handset)	No	27/09/2022
38	Dromore	Rossollus	Doonhamlet Community Centre	TEF (Handset)	No	23/08/2022
39	Dromore	Dromore	Knappagh	TEF (Handset)	No	15/08/2022
40	Dromore	Edenbrone	Anveyerg South	TEF (Handset)	No	28/09/2022
41	Dromore	Avaghon Lake	Leagh	TEF (Handset)	No	28/09/2022
42	Dromore	Rockcorry	Cornawall East	TEF (Handset)	No	24/08/2022
43	Knappagh	Knappagh	Readuff West	TEF (Handset)	No	29/09/2022
44	Knappagh	Knappagh	Tullyglass	TEF (Handset)	No	26/09/2022
45	Knappagh	Knappagh	Dunaree Latin	TEF (Handset)	No	29/09/2022
46	Knappagh	Knappagh	Dunaree North	TEF (Handset)	No	27/09/2022

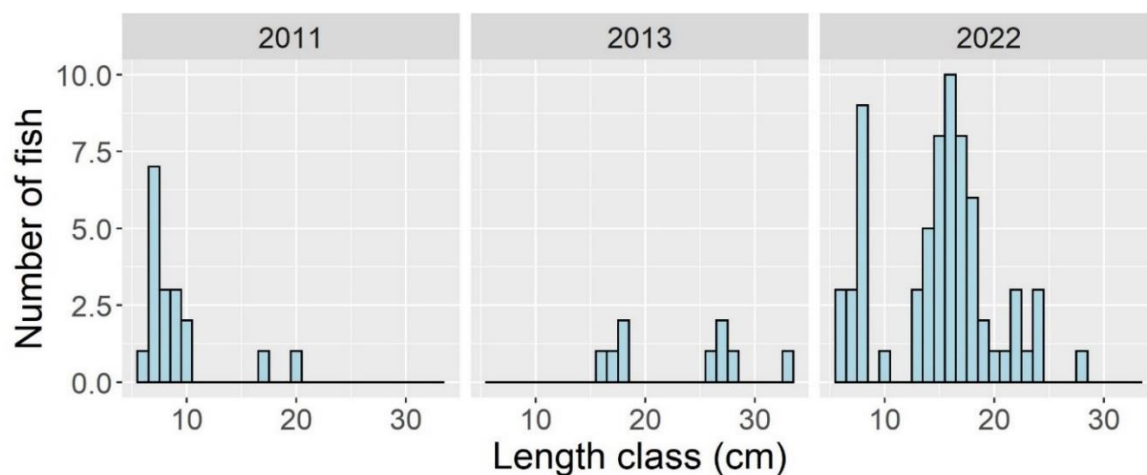


Dromore River at Drummuck (Site 33)



**Table 6. Minimum density estimates (no. fish/m<sup>2</sup>) for the Bunnoe, Dromore, and Knappagh sub-catchments, 2022.**  
Previous results are shown where applicable

Bunnoe					Dromore							
Site no.	26	27	28	29	30	31	32	33		34	35	
Species	2022	2022	2022	2022	2022	2022	2022	2011	2013	2022	2022	2022
Brown trout	-	0.040	0.265	0.394	-	-	0.030	0.031	0.032	0.290	0.016	-
0+ brown trout	-	0.020	-	0.172	-	-	-	0.022	-	0.056	-	-
1+ & older brown trout	-	0.020	0.265	0.223	-	-	0.030	0.009	0.032	0.234	0.016	-
Salmon	-	-	-	-	-	-	-	-	-	0.037	-	-
0+ salmon	-	-	-	-	-	-	-	-	-	0.033	-	-
1+ & older salmon	-	-	-	-	-	-	-	-	-	0.005	-	-
European eel	-	-	-	-	-	-	-	-	-	0.005	-	-
Lamprey sp.	-	-	-	-	-	-	-	0.018	0.048	0.033	-	-
Minnow	-	-	-	-	-	-	0.030	0.343	0.008	0.084	-	-
Nine-spined stickleback	-	-	-	-	-	-	-	-	0.004	-	-	-
Perch	-	-	-	-	-	-	-	-	0.008	-	-	-
Roach	-	-	-	-	-	-	0.202	0.004	-	0.023	-	-
Stone loach	-	-	-	0.008	-	-	-	-	-	-	-	-
Three-spined stickleback	0.245	0.616	0.349	0.012	0.730	-	-	0.677	0.071	0.070	0.276	1.049
<b>All fish</b>	<b>0.245</b>	<b>0.656</b>	<b>0.614</b>	<b>0.414</b>	<b>0.730</b>	<b>no fish</b>	<b>0.262</b>	<b>1.091</b>	<b>0.171</b>	<b>0.543</b>	<b>0.292</b>	<b>1.049</b>
Dromore								Knappagh				
Site no.	36	37	38	39	40	41	42	43	44	45	46	
Species	2022	2022	2022	2022	2022	2022	2022	2022	2022	2022	2022	
Brown trout	0.240	-	0.010	0.534	-	0.164	-	0.055	0.127	0.010	0.013	
0+ brown trout	0.240	-	-	0.392	-	0.067	-	-	-	-	-	
1+ & older brown trout	-	-	0.010	0.142	-	0.097	-	0.055	0.127	0.010	0.013	
Gudgeon	-	-	-	-	-	0.005	-	-	-	-	-	
Lamprey sp.	-	-	0.036	0.033	-	0.015	-	-	-	-	-	
Minnow	-	-	0.025	0.501	-	-	-	-	-	-	-	
Pike	-	-	-	-	-	-	-	-	-	-	0.007	
Roach	-	-	-	0.065	-	0.021	-	-	-	-	-	
Three-spined stickleback	-	0.424	-	-	0.204	-	0.526	0.083	-	0.308	-	
<b>All fish</b>	<b>0.240</b>	<b>0.424</b>	<b>0.071</b>	<b>1.134</b>	<b>0.204</b>	<b>0.205</b>	<b>0.526</b>	<b>0.138</b>	<b>0.127</b>	<b>0.318</b>	<b>0.020</b>	



**Figure 5. Length frequency distribution for brown trout (2011 n=18, 2013 n=9, 2022 n=68) in the Dromore River at Drummuck (Site 33)**

Table 7. Salmonid % age class structure (where recorded) for the Bunnoe, Dromore, and Knappagh sub-catchments, 2022.

Species	Sub-catchment	Site no.	% Catch				
			0+	1+	2+	3+	4+
Brown trout	Bunnoe	27	50	50	-	-	-
		28	-	44	39	11	6
		29	44	52	2	2	-
		32	-	50	-	50	-
Brown trout	Dromore	33	24	57	12	6	1
		34	-	100	-	-	-
		36	100	-	-	-	-
		38	-	100	-	-	-
		39	77	19	4	-	-
		41	40	40	20	-	-
		43	-	33	67	-	-
Brown trout	Knappagh	44	-	36	55	9	-
		45	-	-	100	-	-
		46	-	100	-	-	-
		33	88	13	-	-	-
Salmon	Dromore	33	88	13	-	-	-

Table 8. Fish ecological status for the Bunnoe, Dromore and Knappagh sub-catchments, 2022.

Site No.	2011	2013	2022
<b>Bunnoe Sub-catchment</b>			
26	-	-	P
27	-	-	M
28	-	-	M
29	-	-	M
<b>Dromore Sub-catchment</b>			
30	-	-	P
31	-	-	B
32	-	-	P
33	P	P	M
34	-	-	P
35	-	-	P
36	-	-	M
37	-	-	P
38	-	-	P
39	-	-	M
40	-	-	P
41	-	-	M
42	-	-	P
<b>Knappagh Sub-catchment</b>			
43	-	-	P
44	-	-	P
45	-	-	P
46	-	-	P



Bunnoe River at Ardlushin (Site 29)

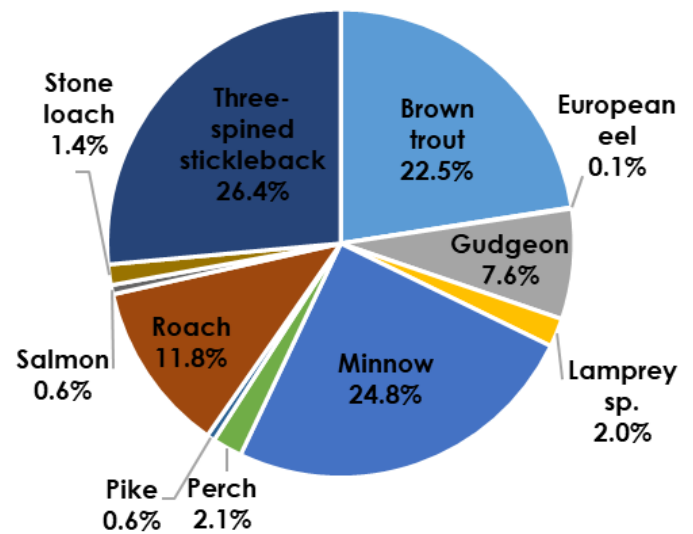


Figure 6. Fish species composition (%), Annalee catchment, 2022.

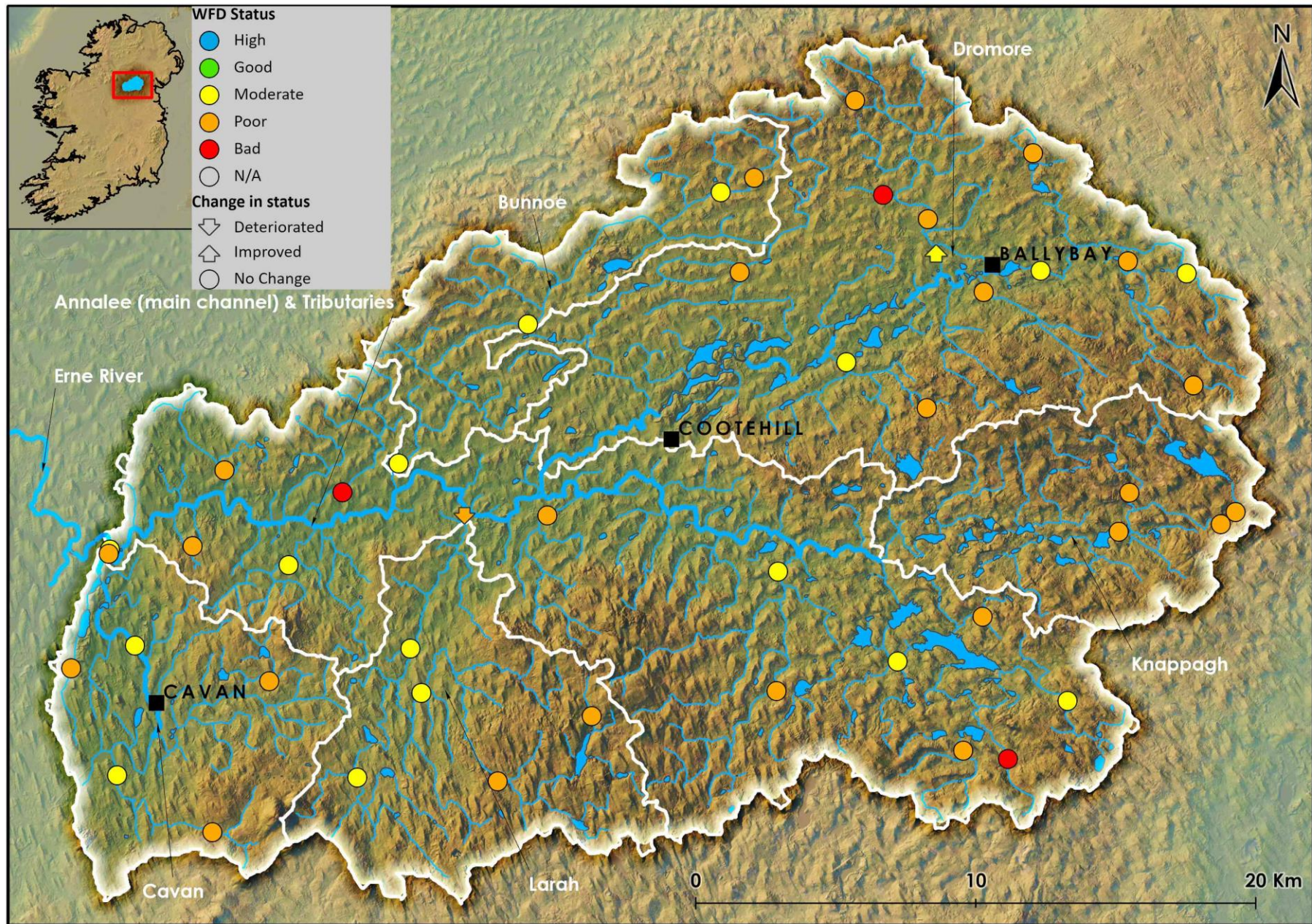


Figure 7. Fish ecological status in the Annalee catchment in 2022. Arrows indicate a change in status since previous survey where applicable.

## Summary

A total of 11 fish species were recorded at 46 sites fished on the Annalee catchment in 2022.

Three-spined stickleback was the most common species present (31 sites, 67%), followed by brown trout (27 sites, 59%), minnow (17 sites, 37%), roach (11 sites, 24%) lamprey sp. (eight sites, 17%), gudgeon (six sites, 13%), stone loach (five sites, 11%), perch and pike (three sites each, 7%), European eel and salmon (one site each, 2%).

Three-spined stickleback was also the most abundant species recorded, followed by minnow, brown trout, roach, gudgeon, perch, lamprey, stone loach, salmon, pike, and European eel.

Salmon were captured at one site only (all ages combined)(0.037 fish/m<sup>2</sup>); Site 33 on the Dromore River at Drummuck. Salmon ranged in length from 7.3 to 15.3cm. Two age classes were present 0+ (0.033 fish/m<sup>2</sup>) and 1+ (0.005 fish/m<sup>2</sup>), with 0+ being the most abundant cohort.

Brown trout ranged in length from 5.8 to 39.8cm. Five age classes were present (0+, 1+, 2+, 3+ and 4+), with 1+ the most frequently encountered cohort. The highest density of 0+ brown trout (0.392 fish/m<sup>2</sup>) was recorded at Site 39 on the Dromore River at Knappagh while the greatest density of 1+ and older brown trout (0.361 fish/m<sup>2</sup>) was observed on Site 7 on the Annalee River at Annafarney Bridge.

Tolerant fish species (e.g. three-spined stickleback, minnow and stone loach) proliferated at 26 sites across the catchment. These species are more tolerant of poor water quality and poor habitat than type specific indicator species (e.g. brown trout and salmon). When dominant at a site or present in relatively high abundances they can be an indicator of poor water quality (Kelly *et al.*, 2007).

The highest density of three-spined stickleback (1.997 fish/m<sup>2</sup>) was recorded at site 2 (Killyvann stream at Drumkeeran). The highest density (0.716 fish/m<sup>2</sup>) of minnow was recorded at site 21, Larah River at Clifferna North.

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 46 sites surveyed in the Annalee catchment during 2022 (Tables 4 and 7, and Figure 7). Seventeen sites achieved Moderate status, with twenty-six sites Poor, and three Bad. Four sites were surveyed previously on this catchment and assigned fish ecological status. When compared with their most recent previous surveys, one site deteriorated in status, one site improved and two remained unchanged (Tables 4 and 7, and Figure 7).

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 pressures such as nutrient enrichment, hydromorphological issues and habitat modification, or fish passage obstruction due to artificial barriers.

## References

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**Inland Fisheries Ireland: 3044 Lake Drive, Citywest Business Campus, Dublin, D24 Y265, Ireland**

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