



Habitat Advisory visit to the Lough
Beltra catchment, Co.Mayo, Eire.
Undertaken on behalf of Glenisland
Co-operative, by Vaughan Lewis,
Windrush AEC Ltd
January 2011

1.0 Introduction

This report is the output of a site visit undertaken by Vaughan Lewis, Windrush AEC Ltd to Lough Beltra catchment, Co.Mayo, Eire on 12 November 2010. The visit was undertaken on behalf of Wild Trout Trust (WTT) for Glenisland Co-operative (GC). GC controls the fishing rights on the east side of Lough Beltra.

Comments in the report are based on observations on the day of the site visit, discussions with members of the co-operative, and staff of Inland Fisheries Ireland (IFI). IFI also provided data on recent electrofishing surveys of Lough Beltra tributary streams. Throughout the report, normal convention is followed with respect to bank identification i.e. banks are designated Left Bank (LB) or Right Bank (RB) whilst looking downstream.

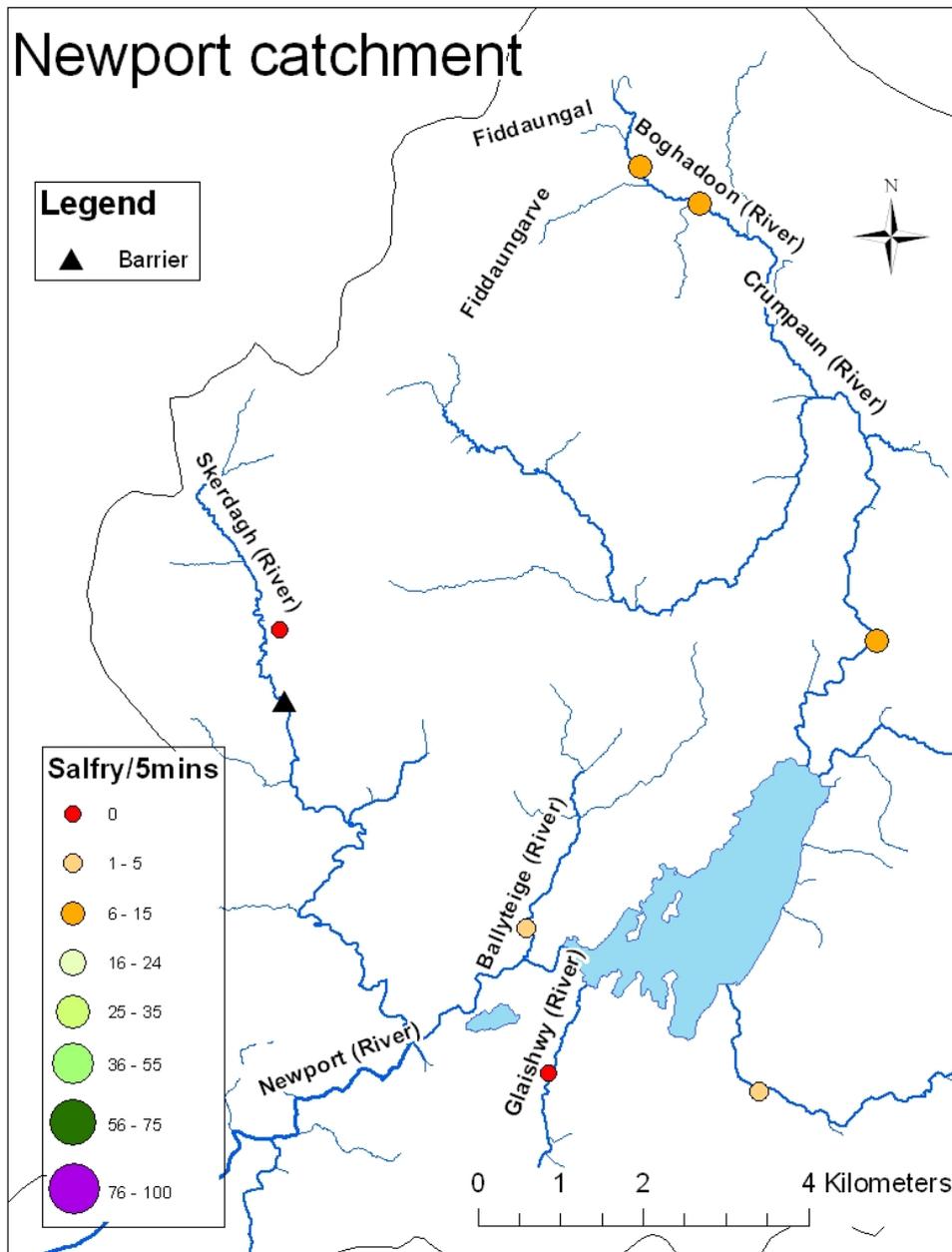
2.0 Habitat description

Lough Beltra is one of the most famous salmon and sea trout loughs in Ireland. Located at the top of the Newport River, and with dimensions of approximately 3km by 2km, it had a reputation as an excellent spring salmon and summer sea trout fishery. However, in recent times, catches have declined, with salmon catches more dominated by small grilse. Total salmon catch for an average season is in the region of 70 fish. Sea trout numbers have fallen, with the spread of cage rearing of salmon on the coast of western Ireland suggested as a likely causal factor.

As a consequence of this decline, Glenisland Co-operative is drawing up a development plan for the lough and its tributary streams. The main streams in the catchment are shown on Map 1. Data from IFI electrofishing surveys in 2009 are shown in Table 1 below and graphically on Map 1, with salmon fry density expressed as fish caught/ 5 minutes. No data are recorded for trout fry densities.

Catchment	Mc/trib	Site No.	Date	GPS easting	GPS northing	Elevation (m)	Habitat/riffle quality rating (1 good - 3 poor)	Salmon Fry (captured & missed)	Mean no. sal fry (all sites)
									5
Newport	Lough Bel	7	25/09/2009	108993	301378	84	2	11	
Newport	Lough Bel	8	25/09/2009	106849	306718	100	2	12	
Newport	Lough Bel	9	25/09/2009	106135	307165	153	2	6	
Newport	Skerdagh	13	26/09/2009	101762	301506	385	1	0	
Newport		14	25/09/2009	104748	297864	64	2	1	
Newport	Lough Bel	15	25/09/2009	105025	296095	94	2	0	
Newport	Lough Bel	16	25/09/2009	107574	295871	998	2	3	

Table 1: Results of electrofishing surveys of main tributaries in 2009 (source IFI)



Map 1: Lough Beltra catchment with results of 2009 fish survey

Note that no fry were captured at site 13 which is upstream of an impassable set of falls on the Skerdagh river. Comparison of data from 2007 and 2009 for the Newport River shows a decline in salmon fry density from 15 fry/min to 5 fry/min. (no units stated). The average catch of salmon fry from all sites surveyed in 2009 (5 fry/min) is below the recommended density of 17 fry/min to achieve the conservation limit set by the SSC. Although trout fry were noted as being present at all sites, no quantitative data are recorded. Eel and stickleback were the only other species recorded.

The Crumpaun River is the main spawning tributary. It has two stems, one rising in Glendorragha, and the Boghadoon River. Two sites were surveyed by IFI on the latter stream, with a density of salmon fry of between 6-15/5 mins recorded at both. No data are available for the Glendorragha branch, although local opinion is that this

has the better spawning potential. IFI note that the majority of rivers in the Northwest of Ireland meeting their salmon conservation limit (CL) had a fry density of >15 salmon fry/5 minutes electrofishing. The sites on the Boghadoon fall below this level.

Habitat quality in all the sites surveyed was assessed by IFI as 2 (1 = good, 3 = poor) The lower Glendorragha had generally poorer habitat quality, with a lower gradient, slow flow, and banks heavily over-grown with trees and shrubs causing excessive shading. Coilte had recently cut some of this vegetation to try and increase light penetration locally. Further upstream at Derryroe Bridge (Grid Reference FG061019), good spawning gravel was present for sea-trout and salmon. IFI staff had apparently electro-fished this site recently with good results, although no data have been provided. Salmon are believed to spawn to the northern limit of the forestry plantation at FG 051031, with sea-trout dominating spawning upstream of this point, albeit at a lower density.



Good spawning habitat for salmon and sea trout on the Glendorragh River upstream of Derryroe Bridge

Abstraction takes place from the stream's catchment to supply drinking water to Newport and the surrounding area. No data was available on the volumes abstracted daily or annually. As such, no assessment of the potential impact of this operation could be made. pH of the stream is believed to vary from 4-7, although no water quality or macro-invertebrate data have been provided.

Examination of the forestry planting revealed significant cause for concern with regard to run-off patterns and associated water quality. The plantations are heavily drained, with a network of ditch systems and roadways providing preferential pathways for run-off water that by-pass the deciduous tree buffer strips planted adjacent to the river. As a consequence, run-off from the plantations will inevitably be very flashy, with peaks of low pH (acidic) water entering the stream, along with significant volumes of fine sediment, which are very damaging to the spawning and

juvenile habitat of spawning salmonids. The consequences of this flashy, sediment laden run-off are discussed further below.



Forestry drain and road adjacent to the Glendorragha River

Shading on a section of the lower Crumpaun downstream of the quarry at Heggerties (FG090035) had recently been reduced by cutting riparian trees, providing good holding areas for adult salmon and sea trout. Upstream and downstream of Ballinderg Bridge, there was a long section, estimated to be 6km, of good spawning habitat for both sea trout and salmon.



Good spawning and juvenile habitat on the Lower Crumpaun

In the Skerdagh catchment, there were large blocks of recently felled forestry.



Recently clear felled forestry plantation

The moorland within the catchment was extensively and heavily grazed by sheep, with visible signs of over-grazing. There was also clear evidence of impact of flashy, sediment laden run-off from both grazing land, and more importantly, forestry plantations. In places, the banks of the river had been torn away, with blocks of peat eroded into the river, leaving an over-wide cross-section to the channel. Large deposits of silty gravel were present at a number of locations, with a build up of fine sediment also visible where forest roads crossed the river.



Fine sediment build-up in the river at a forest road crossing

Electro-fishing data from the Skerdagh confirmed that no salmon spawned above the falls at FG013024, with only brown/sea trout spawning above this point. A cursory examination of the macro-invertebrate fauna was made by stone turning. There were relatively few invertebrates noted, although a few individuals of stone clinging Ephemeroptera were present, suggesting reasonable water quality.

The lower reaches of the Skerdagh appeared to have better gravel quality, with reduced amounts of silt present. The banks were more wooded and appeared to be more stable, with water moss *Fontinalis antipyretica* present. IFI had apparently undertaken electrofishing surveys here in the past with good numbers of sea trout and salmon fry noted. However, no data were provided for these surveys.

The Glenisland Stream entered Lough Beltra along its southern shore. It is a short, but important spawning tributary, particularly for sea-trout. The river was straightened historically, with the channel moved westwards by perhaps 100m or so. As a consequence of the straightening, the river's gradient has increased, resulting in higher water velocity, particularly during flood flows. Considerable downstream movement of gravel has taken place, with a large delta building up at the entry of the stream into Beltra.

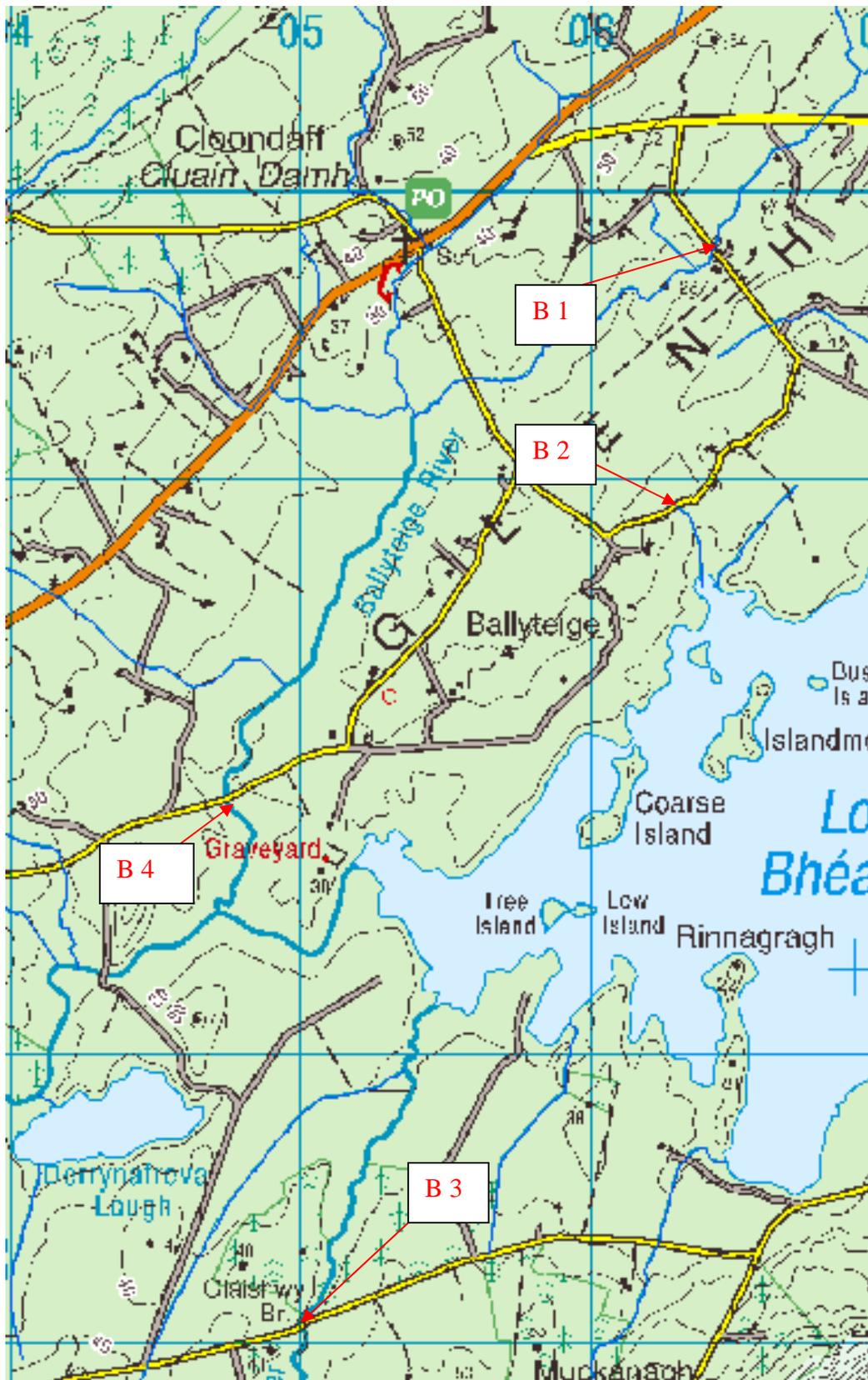


Glenisland River, showing straightened course and steep gradient with high water velocity

A small un-named tributary of the river at Glenisland village was also walked. This is also important for sea-trout spawning.

3.0 Water quality

Water quality sampling of four of the rivers flowing into the south and west of Lough Beltra was carried out by the North West Regional Fisheries Board in June 2007. The sites sampled are detailed in Map 2 below



Map 2: Water quality sampling sites on Lough Beltra tributaries

The data from the sampling indicated slight pollution at sites B1 (Ballyteige River at Irwin's Stream) and B4 (Ballyteige River at Nevin's Stream). The parameters with elevated levels were MRP (reactive phosphate) at site B1 and MRP and nitrite at site B4. Possible sources of the pollution cited in the report include Derrinumeera landfill site and local farms. The report summary recommends sampling farms upstream of sites B1 and B4, and notes that Lough Beltra has been accorded 'good ecological status'.

Water quality data were also made available for the outflowing Newport River. These showed that the river had generally excellent water quality. Data taken from Lough Beltra itself also showed generally good water quality. However, there were some abnormally high readings recorded for ammonia at times January and May 2006,) perhaps indicating an influx of poor quality into the lake at this time.

The only samples taken from the streams at the northern end of the lough are on the Crumpaun river near to the lake and at Boghadoon Bridge. Both sites show a Q score of 4-5 indicating good to high water quality.

Macroinvertebrate data have been taken from a number of sites and analysed using the Small Stream Risk Score (SSRS) methodology. The SSRS uses the presence of pollution sensitive indicator species including those of the mayfly, stonefly, and caddis families, in conjunction with the overall abundance of Gaastropods, Oligochaetes, Dipteran larvae and *Asellus*, to broadly describe water quality in sampled streams. Data analysed for the Beltra catchment categorise a number of streams as 'at risk' or 'probably at risk'. These sites are shown in Table 2 below:

Table 2: Data showing Small Stream Risk Score

TOWNLAND	SSRS_SCORE	RISK
GORTNAHELTIA	8.000000	6.5-8 = probably at risk
CLOONDAFF	6.400000	<6.5 = at risk
CLOONDAFF	8.000000	6.5-8 = probably at risk
BOGGY	6.400000	<6.5 = at risk
BRACKLAGH	6.400000	<6.5 = at risk
BELTRA	9.600000	> 8 = probably not at risk
DERRYMARTIN	11.200000	> 8 = probably not at risk
BOGGY	5.600000	<6.5 = at risk
CLOGHBRACK FAR	7.200000	6.5-8 = probably at risk
CUILMORE	0.000000	
DERRYCONTOORT EAST	0.000000	
CLOONESHIL	0.000000	
DERRYLOUGHAN EAST	0.000000	
GORTNAHELTIA	8.000000	6.5-8 = probably at risk
GORTNAHELTIA	8.000000	6.5-8 = probably at risk
KNOCKMOYLE (ED Newport East)	6.400000	<6.5 = at risk
KILGARVE	9.600000	> 8 = probably not at risk
MUCKANAGH (ED Croaghmoyle)	0.000000	
CLAGGARNAGH EAST	0.000000	
BELTRA	8.000000	6.5-8 = probably at risk
BELTRA	9.600000	> 8 = probably not at risk

BELTRA	9.600000	> 8 = probably not at risk
GRAFFY	0.000000	
GRAFFY	8.000000	6.5-8 = probably at risk
GRAFFY	8.000000	6.5-8 = probably at risk
DERRYLOUGHAN NORTH	3.200000	<6.5 = at risk
COOLNABINNIA	11.200000	> 8 = probably not at risk
COOLNABINNIA	9.600000	> 8 = probably not at risk
COOLNABINNIA	7.200000	6.5-8 = probably at risk
DERREEN (ED Letterbrick)	9.600000	> 8 = probably not at risk
BOGHADOON	11.200000	> 8 = probably not at risk
DOONAROYA	9.600000	> 8 = probably not at risk
BOGHADOON	9.600000	> 8 = probably not at risk
CLOONDAFF	11.200000	> 8 = probably not at risk
BARNASTANG	9.600000	> 8 = probably not at risk
DOOGARY (ED Croaghmoyle)	6.400000	<6.5 = at risk
MONAGARRAUN	9.600000	> 8 = probably not at risk
KNOCKBAUN (ED Croaghmoyle)	9.600000	> 8 = probably not at risk
MONAGARRAUN	8.000000	6.5-8 = probably at risk
KILHALE	11.600000	> 8 = probably not at risk
MUCKANAGH (ED Croaghmoyle)	8.000000	6.5-8 = probably at risk

4.0 Recommendations for management

A number of key issues have been identified in the Lough Beltra catchment. The following recommendations are made as a result:

Macroinvertebrates:

Data from the SSRS shows a number of sites tributary streams to be ‘at risk’ or ‘probably at risk’ from poor water quality. It is recommended that the co-operative work with IFI to identify and causes of water quality perturbations and attempt to remedy them. There is likely to be a requirement for IFI to undertake this task under the Water Framework Directive.

If members of the co-operative are interested in continuing the monitoring of these streams, then the Riverfly partnership <http://www.riverflies.org/> is able to provide information on monitoring invertebrate populations in rivers. If there are one or two enthusiastic volunteers in the co-operative, it would be worth contacting the partnership for further advice and information. It is possible that the Riverfly partnership may be able to assist co-operative members to become familiar with the requirements of SSRS. A training manual for SSRS can be found at http://www.westernrbd.ie/PDF/SSRS-Training-manual_11_01_06.pdf

Habitat management

The present drainage system within the forestry blocks is increasing the rate of sediment run-off into the tributary streams. Coillte should be approached with a view to addressing excessive run-off. Changing the planting and harvesting policy to move away from a reliance on mono-cultures of coniferous trees, and a reliance on clear-felling is a fundamental requirement to address peak run-off. Realistically, this change may not be deliverable in the short term. There are however small scale

interventions that could easily be adopted. These include the provision of cross-drainage on all forest tracks, so as to intercept water flow along them and direct it to areas of rough grassland where soakage can occur. The direction of tracks can also be changed over time so that they run parallel to streams rather than directly into them. The outfall from the forest drainage streams could be diverted so that they discharge in to constructed wetland areas which will help to detain increased volumes of sediment. An interesting article on improving forestry practice to benefit fisheries will be published in the WTT's forthcoming issue of *Salmo Trutta*, available free to all members of the Trust.

Increased use should be made of Large Woody Debris (LWD) in the headwater streams. By retaining naturally occurring LWD and introducing additional sections in the form of engineered debris dams, significant benefit can accrue to the form of the river and its ecology. LWD helps reduce flood peaks, retain fine sediment, protect banks from excessive scour, mitigate for some of the impacts of acid run-off and off course, provides cover for a range of species including fish. This technique would be of particular benefit on the Glenisland stream. Carefully placed LWD could potentially help to introduce meanders along the RB of the stream, decreasing the gradient locally and helping to slow down the movement of coarse sediment along this artificially straightened channel. Information on practical methods of introducing LWD can be found in the Upland Rivers Habitat Manual available free as a PDF from the WTT website www.wildtrout.org

Where there is evidence of excessive grazing pressure from sheep, then ideally the number of sheep present needs to be reduced. Where this is not possible, the use of 'log and xmas tree top' revetment should be considered. This has proved very successful at a number of sites in Ireland, particularly where banks are rapidly eroding. Fencing of any revetment work installed is essential to prevent further damage by grazing stock. Details of installation are again available for the Upland Rivers Habitat Manual.