# Technical Appendix 6.5: Fish Report

# Technical Appendix 6.5 Fisheries Survey Report

## Ravengill Energy Park

### Ravengill Energy Park Limited

**SLR Consulting Limited**
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**RAVENGILL ENERGY PARK FISH BASELINE SURVEY 2025**

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*Cover Photograph: Brown trout caught in three successive fishing rums at one site (left to right). This is the basis of fully quantitative population estimates.*



The Clyde River Foundation is a registered charity which researches the ecology of the Clyde and its tributaries, and promotes community engagement and environmental education throughout the catchment.

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# 1.0 Introduction

MacArthur Green Ltd (now SLR)[1] commissioned the Clyde River Foundation (CRF) to undertake a fish community survey of watercourses in the vicinity of the Site in South Lanarkshire.

# 2.0 Materials and Methods

The fish communities at 13 sites, were sampled by electric fishing (see **Figure 6.5.1** and **Table 6.5.1** for sample locations and details; **Appendix 1** for sample location photographs within this report; see also **Figure 6.13 (EIAR Volume 3a**) for trout presence/absence and density categories). A total of three of the sample sites were located within the Duneaton Water sub-catchment (coded CDN), four in the Glengonnar Water sub-catchment (Coded CGG), five in the Elvan Water sub-catchment (coded CEV) and one in a watercourse discharging directly to the main River Clyde (coded CGC) (**Figure 6.13 (EIAR Volume 3a)**). Sampling was completed between 14 July 2025 and 16 July 2025 inclusive.

Following Scottish Fisheries Co-ordination Centre (SFCC) guidance[2], electric fishing was carried out using an E-Fish 500E backpack (fishing setting 200V smoothed DC). Fish were caught using a banner net and/or short-handled fry nets where conditions were appropriate. When captured, fish were anaesthetised in a dilute solution of 2-phenoxyethanol, identified and their fork length measured to the nearest millimetre (mm) on a lengthing board. Fish were allowed to recover in natal water before being returned to the river.

Sites were fished with a single pass (semi-quantitative data) or three passes (quantitative data) by wading upstream. Single pass fishing generates a “minimum estimate” of the fish population size and three pass fishing a more accurate statistical population estimate but the latter requires a larger number of fish to be present than is often the case in smaller streams (a rule-of-thumb is a minimum sample size of around 30 of each year class[3]). Semi-quantitative data may significantly underestimate the true population size where high numbers of fish are present.

Fully-quantitative population estimates result from multi-pass removal methods, which use repeated sampling. The decrease in the number of trout (*Salmo trutta*) captured between successive passes is used to estimate capture probability and

[1] Following acquisition, MacArthur Green became part of SLR Consulting Limited on 1 September 2025.

[2] Scottish Fisheries Co-ordination Centre (SFCC) (2007). Electro-fishing team leader training manual. Fisheries management SVQ 3. Manage electrofishing operations.

[3] Riley, S. & Fausch, K.D. (1992). Underestimation of trout population size by maximum-likelihood removal estimates in small streams. North American Journal of Fisheries Management 12, 768-776.

abundance. In this case the trout population density (to the nearest fish) was estimated using the method of Carle & Strub (1978)[4] (see Hedger *et al.,* 2013[5]).

Trout densities are expressed as fish/100 m$^2$ of wetted river bed and are reported here as 0+ (young-of-the-year) and 1++ (older fish). Other fish species are reported as numbers caught. Site details and survey data are stored in the Scottish Fisheries Co-ordination Centre (SFCC) database[6].

[4] Carle, F. & Strub, M. (1978). A new method for estimating population size from removal data. Biometrics 34, 621-630.

[5] Hedger, RD., de Eyto, E., Dillane, M., Diserud, OH., Hindar, K., McGinnity, P., Poole, R. & Rogan, G. (1992). Improving abundance estimates from electrofishing removal sampling. Fisheries Research 137, 104-115.

[6] Fisheries Management Scotland (no date) Scottish Fisheries Coordination Centre (SFCC). Available at: https://fms.scot/sfcc/.



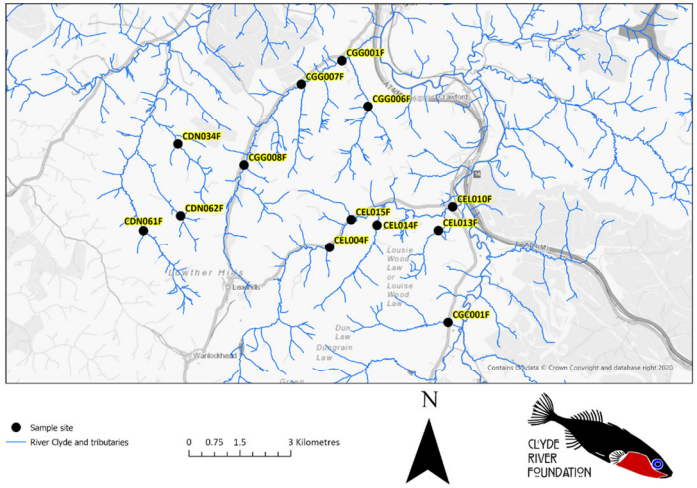


**Figure 6.5.1: The sampling sites**

**Table 6.5.1: Sampling Details**

| Site Code[7] | Site Name | Easting | Northing | Number of Fishing Runs | Sampling Date |
|---|---|---|---|---|---|
| CDN061F | Snar Water | 286067 | 616644 | 3 | 14/07/2025 |
| CDN062F | Glenkip Burn | 287163 | 617077 | 1 | 14/07/2025 |
| CDN034F | Glendorch Burn | 287085 | 619072 | 1 | 14/07/2025 |
| CGG008F | Glengonnar Water d/s Clow Gill | 289033 | 618554 | 1 | 15/07/2025 |
| CGG007F | Laggen Gill | 290722 | 620949 | 3 | 15/07/2025 |
| CGG001F | Glengonnar Water u/s Glencaple Burn | 291197 | 621642 | 3 | 16/07/2025 |
| CGG006F | Glencaple Burn | 292689 | 620296 | 3 | 14/07/2025 |
| CEL004F | Elvan Water d/s Glen Aise Burn | 291555 | 616144 | 3 | 16/07/2025 |
| CEL015F | Lang Cleuch | 292196 | 616967 | 3 | 14/07/2025 |
| CEL014F | Lead Burn | 292953 | 616807 | 1 | 15/07/2025 |
| CEL013F | Glengeith Burn | 294965 | 616654 | 3 | 15/07/2025 |
| CEL010F | Elvan Water, Elvanfoot | 295187 | 617347 | 1 | 16/07/2025 |
| CGC001F | Glenochar Burn | 295051 | 613939 | 1 | 16/07/2025 |

[7] See **Figure 6.5.1** above and **Figure 6.13 (EIAR Volume 3a)**.



# 3.0 Results

No fish were caught at the sampling site on the Glenkip Burn (CDN062F, **Table 6.5.2**).

A total of four species of fishes were recorded among the other 12 sites, comprising trout, brook lamprey (*Lampetra planeri*), minnow (*Phoxinus phoxinus*) and three-spined stickleback (*Gasterosteus aculeatus*) (**Table 6.5.2; Appendix 2**).

Two age-classes (0+ and 1++) of trout were present at all 12 sites (**Figures 6.5.2 & 6.5.3**).

Minnow was present at three sites (**Figure 6.5.4**), and three-spined stickleback (**Figure 6.5.5**) and brook lamprey (**Figure 6.5.6**) at one each.

Invasive North American signal crayfish (*Pacifastacus leniusculus*) were recorded at three sites (**Table 6.5.2; Figure 6.5.7**).

Densities of 0+ trout ranged from 5-149 $m^2$ and 1++ trout from 1-17 $m^2$ (**Figure 6.5.8**).

**Table 6.5.2: Fish Communities Recorded**

| Site Code[7] | Site Name | Fish Species/Stages Caught | | | | | |
|---|---|---|---|---|---|---|---|
| | | 0+ Trout/100 m² | 1++ Trout/100 m² | Minnow (number caught) | Three-spined Stickleback (number caught) | Brook Lamprey (number caught) | North American Signal Crayfish |
| CDN061F | Snar Water | 66 | 7 | | | | |
| CDN062F | Glenkip Burn | No fish caught | | | | | |
| CDN034F | Glendorch Burn | 14 | 4 | | | | |
| CGG008F | Glengonnar Water d/s Clow Gill | 5 | 3 | | | | |
| CGG007F | Laggen Gill | 53 | 10 | | | | |
| CGG001F | Glengonnar Water u/s Glencaple Burn | 67 | 7 | 4 | | | |
| CGG006F | Glencaple Burn | 143 | 4 | | | | |
| CEL004F | Elvan Water d/s Glen Aise Burn | 62 | 1 | | 2 | 2 | |
| CEL015F | Lang Cleuch | 149 | 17 | 1 | | | |
| CEL014F | Lead Burn | 22 | 1 | | | | |
| CEL013F | Glengeith Burn | 81 | 8 | | | | Present |
| CEL010F | Elvan Water, Elvanfoot | 9 | 1 | 2 | | | Known to be present (CRF, unpublished data) |
| CGC001F | Glenochar Burn | 5 | 3 | | | | Present |



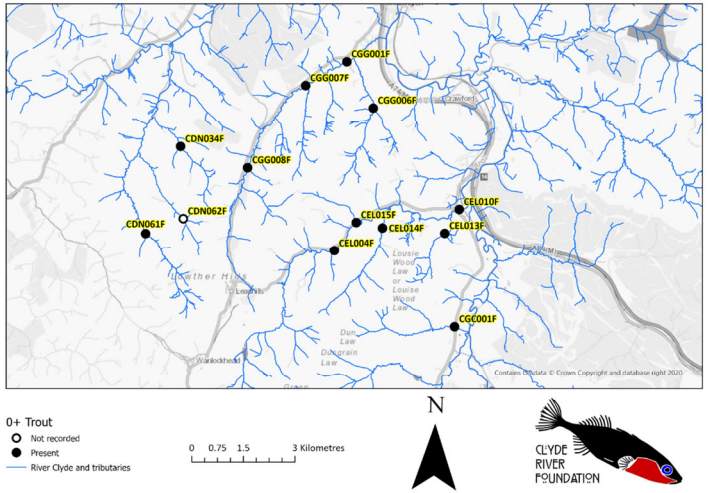


**Figure 6.5.2: Distribution of 0+ trout**

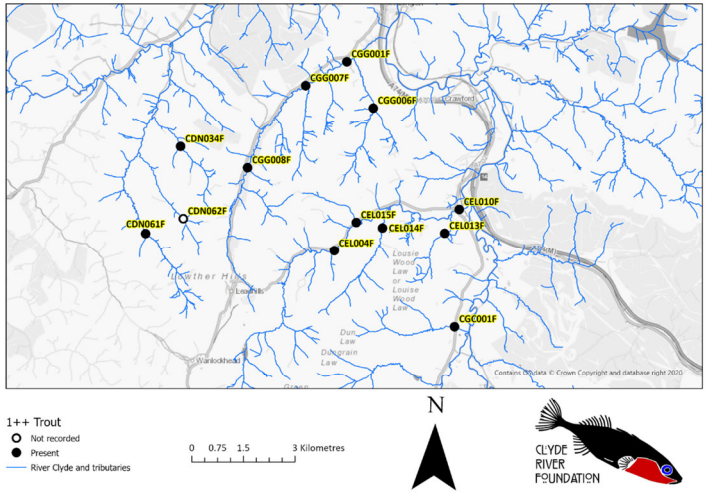


**Figure 6.5.3: Distribution of 1++ trout**



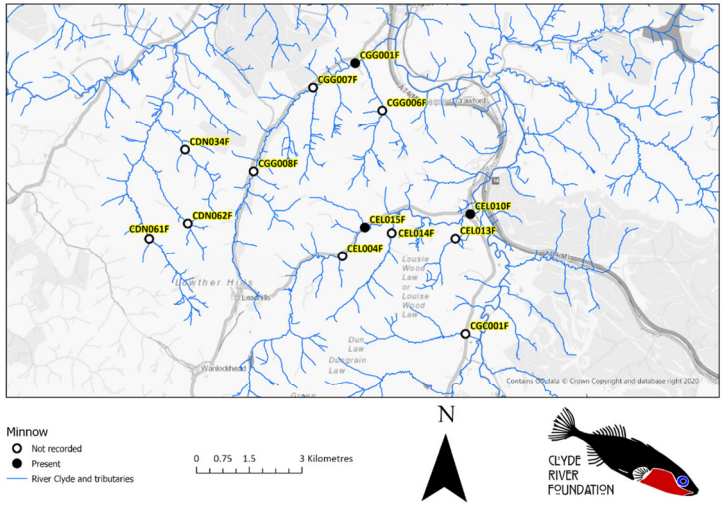


**Figure 6.5.4: Distribution of Minnow**

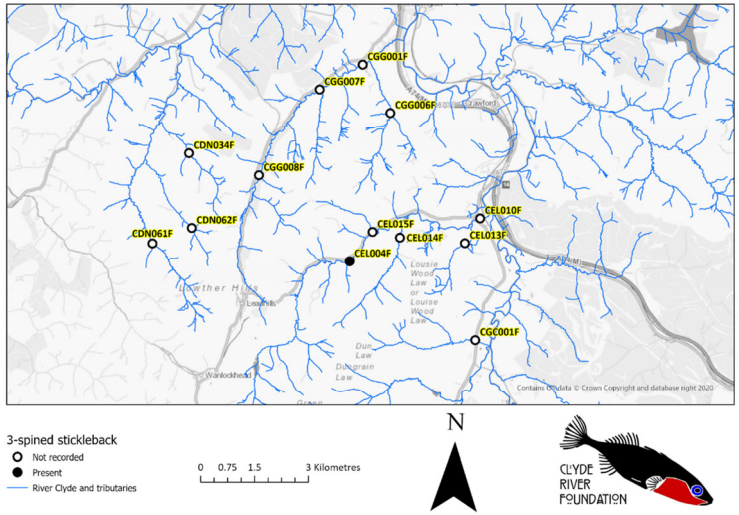


**Figure 6.5.5: Distribution of Three-spined Stickleback**



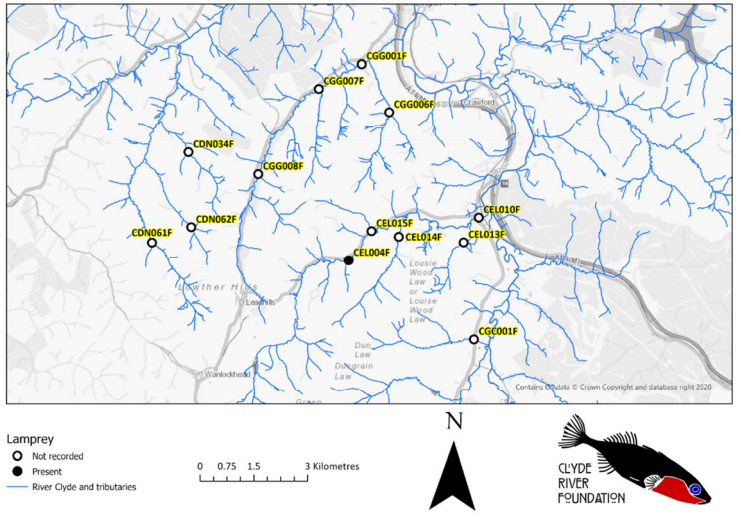


**Figure 6.5.6: Distribution of Brook Lamprey**

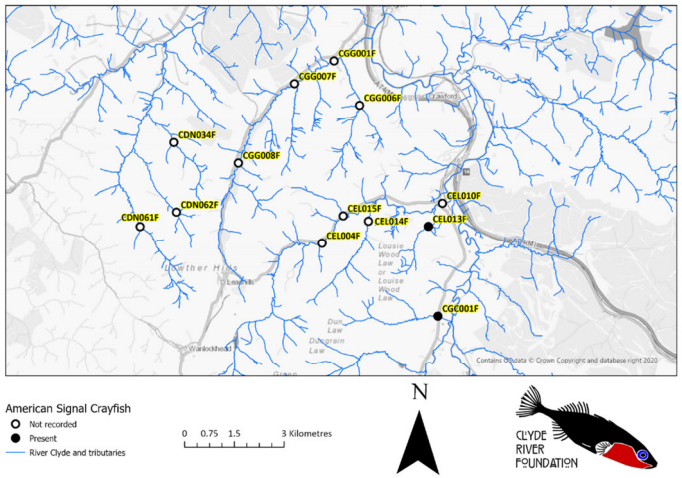


**Figure 6.5.7: Distribution of North American Signal Crayfish**



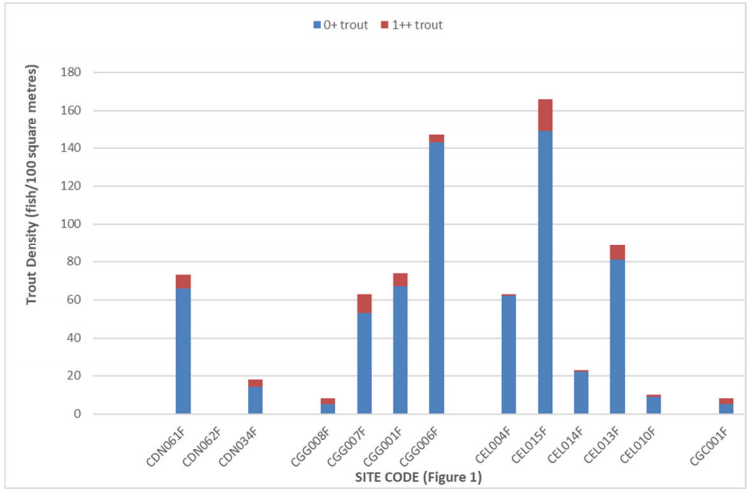


**Figure 6.5.8: Densities of Brown Trout**

# 4.0 Discussion

The apparent lack of fish in the Glenkip Burn at Site CDN062F is unusual but could be caused by barriers to migration for pre-spawning trout further downstream. The watercourse is large enough to support a small population of trout and the species was present approximately 1.5 km downstream in 2010 (CRF, unpublished data). The Glenkip Burn should, therefore, be treated as at least potentially containing trout.

The four species of fishes found among the other 12 sampling sites are part of the normal fauna of River Clyde catchment headwaters, which are almost always dominated by trout, particularly in small, upland burns which feature here. The smaller species are also common in the River Clyde catchment but are usually found in lower gradient watercourses.

The complete absence of stone loach (*Barbatula barbatula*) from the samples is notable; the species frequently occurs with trout in headwaters and is known from other sub-catchments in the vicinity (e.g. Douglas Water; Daer Water (CRF, unpublished data)). Stone loach has been found in the Elvan Water between the two sampling sites in this survey in the past, but they are relatively rare and there are no records of the species in the Glengonnar Water sub-catchment (CRF, unpublished data).

Brown trout densities were very high at the sampling sites in the Glencaple Burn and the Lang Cleuch (in excess of 1 /$m^2$) and high in the Snar Water, the Laggen Gill, the lower Glengonnar Water, and the upper Elvan Water. The presence of multiple year classes at all sampling sites (apart from the Glenkip Burn) confirms the presence of permanent populations of trout at each. The preponderance of 0+ fish confirms that most of the burns sampled are important spawning areas for resident brown trout.

The presence of invasive North American signal crayfish in the upper River Clyde catchment is well-known but the two records here represent range extensions for this species, which is also known from the lower Elvan Water.





# 5.0 APPENDIX 1: Site Images

**Plate 1: Site CDN061F, Snar Water**

**Plate 2: Site CDN062F, Glenkip Burn**

**Plate 3: Site CDN034F, Glendorch Burn**



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**Plate 4: Site CGG008F, Glengonnar Water d/s Clow Gill**

**Plate 5: Site CGG007F, Laggen Gill**

**Plate 6: Site CGG001F, Glengonnar Water u/s Glencaple Burn**

**Plate 7: Site CGG006F, Glencaple Burn**





**Plate 8: Site CEL004F, Elvan Water d/s Glen Aise Burn**

**Plate 9: Site CEL015F, Lang Cleuch**

**Plate 10: Site CEL014F, Lead Burn**

**Plate 11: Site CEL013F, Glengeith Burn**





**Plate 12: Site CEL010F, Elvan Water, Elvanfoot**

**Plate 13: Site CGC001F, Glenochar Burn**

# 6.0 APPENDIX 2: Fish Images

**Plate 14: 0+ trout**

**Plate 15: 1++ trout**





**Plate 16: Minnow**

**Plate 17: Three-spined stickleback**

**Plate 18: Brook Lamprey larva**

**Plate 19: North American signal crayfish**