Mammal Survey

Survey of Non-Volant Mammalian Prey and Predator Species at Newcastle Woods

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Prepared for: Adam Mulvihill, Biodiversity Officer, Longford County Council

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Compliance

The survey was carried out in compliance with:

- All relevant EU requirements and national legislation for the time
- European Communities (Birds and Natural Habitats) Regulations 2011, as amended Wildlife Act 1976, as amended.
- Good Practice Guidance for Habitats and Species (CIEEM, 2021)
- All records of species identified will be reported to the National Biodiversity Data Centre.

Section 1: Background

Veon Ltd. (Veon Ecology) has been appointed by Adam Mulvihill, Biodiversity Officer at Longford County Council to conduct a survey of mammalian species present in Newcastle Woods. This project was supported by the National Parks and Wildlife Service and Longford County Council and is part of the Local Biodiversity Action Fund initiative. Two of the objectives of the Local Biodiversity Action Fund (LBAF) are particularly relevant to this project, namely:

Objective 3: Secure Nature's Contribution to People

1. *Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature's importance to our culture and heritage and recognising how biodiversity supports our society and our economy.* Newcastle Woods is a popular amenity area. Therefore, developing a greater understanding of the mammal fauna in this area will greatly assist in promoting public awareness/engagement and the importance of conserving wildlife in their area.
2. **Objective 4: Enhance the Evidence Base for Action on Biodiversity**
   This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts. Mount Jessop is a special area of conservation and therefore this baseline information on the mammalian fauna present will help inform conservation objectives for this area. Derrycassin and Newcastle woods are also subject to an LBAF project involving bat (Bat Conservation Ireland) and barn owl (Bird Watch Ireland) surveys. Therefore, this project will compliment these other projects, providing a picture of the food web in these ecosystems and provide baseline knowledge which will inform the development of the Biodiversity Action Plan.

Figure 1.1: A Silver Washed Fritillary (*Argynnis paphia*) observed at Newcastle Woods.

Section 2: Site Location and Description

Newcastle Woods is located in the south of the county, close to the border with Westmeath. It is approximately 3km east of the town of Ballymahon. It is Coillte owned and is a semi-mature mixed woodland of 325 hectares. The River Inny (EPA code: 26101), a main tributary of the River Shannon, runs through the middle of the site **(Figure 2.1 and 2.2),** with the Listobit (EPA code: 26L56) and Rath 26 (26R01) running through the north of the wood. Northeast of the site is also bordered by the Royal Canal. The woodland consists of a mix of broadleaf and coniferous species such as Sitka Spruce (*Picea sitchensis*) **(Figure 2.3)** and Beech (*Fagus sylvatica*) **(Figure 2.4)**

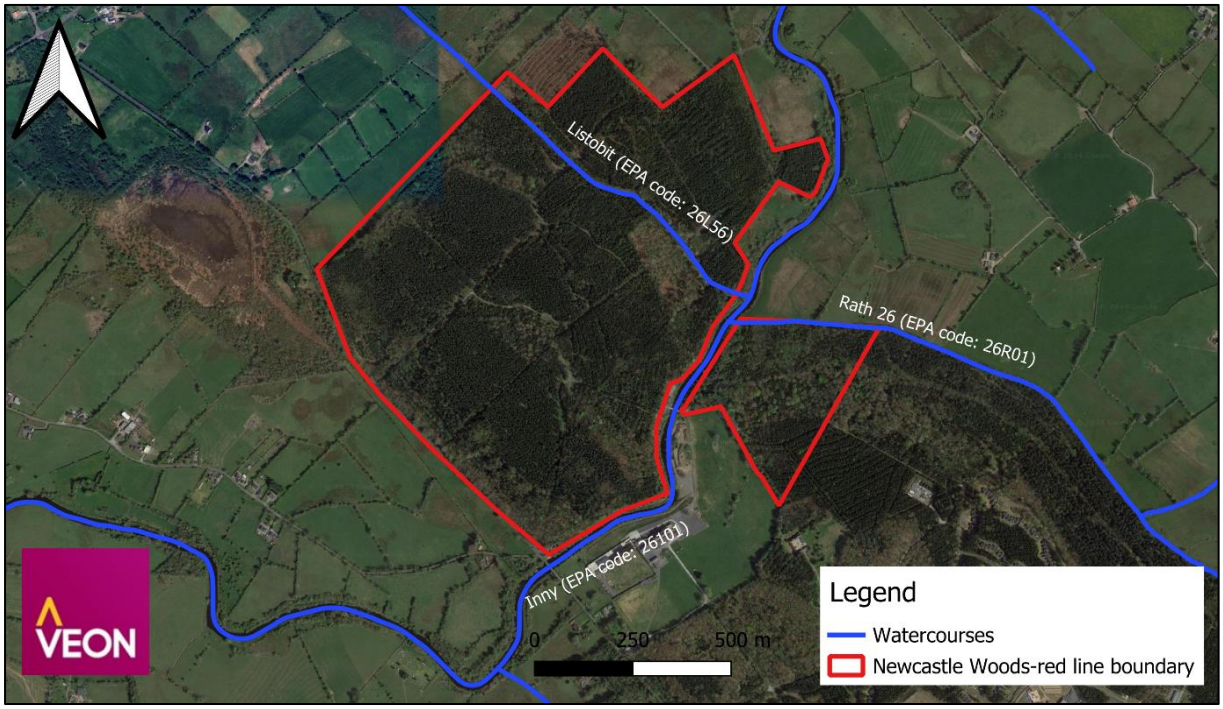

Figure 2.1: The location of Newcastle woods and the watercourses that bisect the site.

Figure 2.2: The River Inny which flows through Newcastle Woods.

Figure 2.3: Sitka Spruce (*Picea sitchensis*) plantations in Newcastle Woods.

Figure 2.4: Beech (*Fagus sylvatica*) trees at the southern section of Newcastle Woods.

Section 3: Methodology

3.1 Small Mammal Trapping

Longworth traps with shrew exclusion holes were deployed by Amy Haigh, mammal lead and Pascal Mc Kenna, head of division of Veon Ecology in July 2024. Sites were selected with good ground cover and in habitat that was deemed suitable for small mammals. An emphasis was placed on having one grid close to the edge and another towards the centre of the site.

Traps were placed at 10 metres from one another, in a 4 x 4 grid. This resulted in a total of 16 traps per grid. Two grids were deployed at each site leading to a total of 32 traps per site.

Before deployment, the main chamber of each trap was filled with hay and the traps were baited with peanuts and dried mealworms. After placing the trap in position, it was camouflaged by covering it with nearby vegetation. The GPS location of each trap was recorded manually (**See Appendices, Table 7.1**) and also on the app Fieldmaps. A red or blue flag was also placed at each trap to aid detection (**See Figure 3.1**).

Baited traps were deployed in the afternoon and checked every subsequent morning thereafter. When traps were closed the entrance tunnel of the trap was enclosed in a polythene bag, the corners of which were snipped to provide breathing holes. The trap was then opened out into the bag and the rodent flushed out. The animal was channelled into the corner and secured before removing the trap. The animal was held securely with its nose out of the breathing hole. It was than identified to species, sexed and classified into an age class. The animal was then released at the site of capture and the trap redeployed. The traps were deployed for a period of three nights, resulting in 96 trap nights.

Figure 3.1: Trapping grid at Newcastle Woods with a red detection flag at the right of the image.

3.1.1 Habitat at each trapping grid

Location 1-Edge

This area had been thinned in places, with the trapping grid being in these open areas and also within neighbouring mixed woodland (**Figure 3.2**). Trees species were composed of Ash (*Fraxinus excelsior*), Sitka Spruce (*Picea sitchensis*) and Sycamore (*Acer pseudoplatanus*). An area of mature Beech (*Fagus sylvatica*) woodland was located nearby. Understorey vegetation was composed predominantly of Moss, Bramble (*Rubus fruticosus*), and Fern but was sparse in some areas.

Figure 3.2: Location of the first trapping grid at Newcastle Woods at the south of the site.

Location 2-Stream (Centre)

This site was located close to the Listobit stream, at the centre of the site. Trees at this location consisted of Silver Birch (*Betula pendula*), Oak (Quercus spp.), Sitka Spruce (*Picea sitchensis*), Ash (*Fraxinus excelsior*) and Willow (Salix spp.) (**Figure 3.3**). The understorey vegetation consisted of Marsh Bedstraw (*Galium palustre*), Bramble (*Rubus fruticosus*), and Fern. The area was wet in places but had drainage ditches surrounding it (**Figure 3.4**).

Figure 3.3: The location of the second trapping grid at Newcastle Woods.

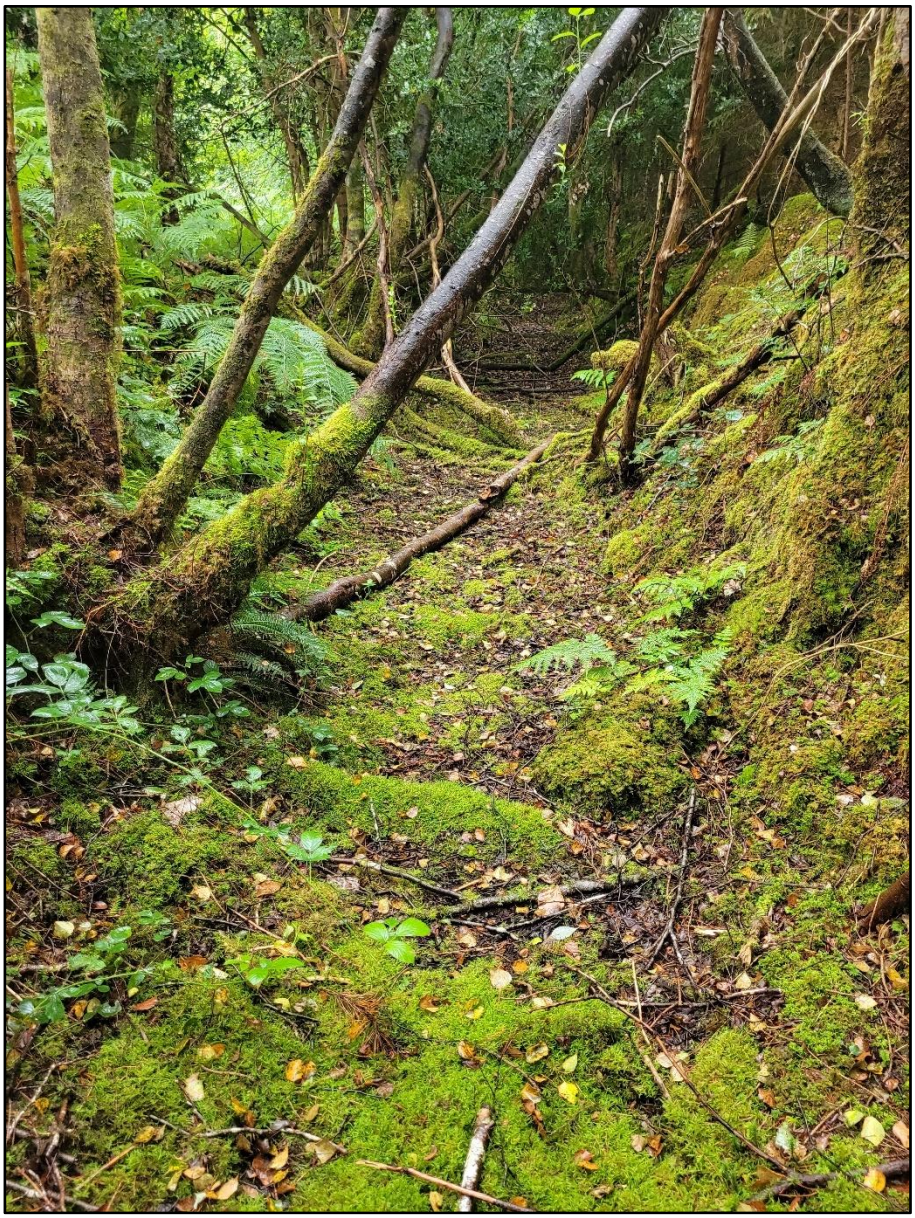

Figure 3.4: One of the drainage ditches surrounding the second trapping site at Newcastle Woods.

3.2 Tracks and Signs Surveys

Prior to trapping commencing the site was walked over by Amy Haigh of Veon Ecology on the 26th July 2024. This was to pinpoint suitable trapping sites, camera trap locations and look for signs of tracks, dwellings (**Figure 3.5**), scats or feeding activity to determine the presence of other mammal species. Unusual sightings of other fauna were also recorded opportunistically. On the week of the 29th July after traps were checked, the site was walked for signs, targeting a different section of the site each time. Each record was photographed, identified and the location recorded (**See Appendices, Table 7.2**).

Figure 3.5: Fox (Vulpes vulpes) den at Newcastle Woods.

3.3 Camera Trapping

Three camera traps were deployed at each site for a period of 10 days. Sites were chosen based on features such as a high concentration of scats, prints, dwellings, intersection of well-trodden paths or due to the proximity of topographical features such as water sources (**Figure 3.6**). When a camera was deployed care was also taken to ensure that views were not obstructed or that the cameras would not be set off by vegetation blowing in the wind. Each camera was secured where possible on a suitable tree (**Figure 3.7**). The location was recorded manually (**See Appendices, Table 7.3**) and on Field Maps and the time of deployment noted. The cameras were set to record images and video.

Figure 3.6: Camera trap beside Listobit River at Newcastle Woods.

Figure 3.7: Camera trap deployed close to a badger sett at Newcastle Woods.

Section 4: Results

4.1 Small Mammal Trapping

Over a total of 96 traps nights, 6 Bank Voles (*Clethrionomys glareolus)* (**Figure 4.1**) and 9 Wood Mice (*Apodemus sylvaticus*) (**Figure 4.2**) (**Table 4.1**) were captured. At the edge grid, traps were disturbed reducing their trapping potential and just four captures took place here. This area was also more open with reduced ground cover, which may have also limited the density of small mammals in this area. There was a greater number of Wood Mice (*Apodemus sylvaticus*) caught at the centrally located grid (**Table 4.2**). Burrows of this species were also evident here (**Figure 4.3**)
Some of the traps were closed at the site but had been occupied, indicating that shrew were present. However, it was unclear whether they were Pygmy Shrew (*Sorex minutus*) or Greater White Toothed Shrew (*Crocidura russula*).

Figure 4.1: Bank Vole (*Clethrionomys glareolus)*

Figure 4.2: Wood Mouse (*Apodemus sylvaticus*)

Table 4.1: Number of small mammals caught at each of the three sites.

Species	Total captures
Bank Vole (*Clethrionomys glareolus)*	6
Wood Mouse (*Apodemus sylvaticus)*	9
Total	**15**

Table 4.2: The number of each species caught at each trapping grid.

Site	Location	Trap nights	Species Caught	Number	Total individuals
Newcastle Woods	Edge	48	Bank Vole (*Clethrionomys glareolus)*	2	4
			Wood Mouse (*Apodemus sylvaticus*)	2	
	Stream (Centre)	48	Bank Vole (*Clethrionomys glareolus)*	4	11
			Wood Mouse (*Apodemus sylvaticus*)	7	
Total	**96**			**15**	**15**

Figure 4.3: Burrow occupied by a Wood Mouse (*Apodemus sylvaticus*) at Newcastle Woods.

4.2 Tracks and Signs Survey

Signs of mammal activity were found in the form of dwellings, feeding activity, prints, scats and direct sightings. There were signs of seven/eight species (unsure whether the feeding activity was that of Otter or Mink) (**Table 4.3**).

Nine scats were recorded consisting of old Mink/Otter (*Mustela vison/Lutra lutra*), Fox (*Vulpes vulpes*), Stoat (*Mustela erminea*) and Pine Marten (*Martes martes*) (**Figure 4.4**). At Newcastle Woods, a Pine Marten was killed by a car, outside the site entrance (**Figure 4.5**). Dens were also evident at the second trapping grid (**Figure 4.6**) and signs of predation were also present here (**Figure 4.7**).

Squirrel (Sciurus spp.) feeding activity was prevalent throughout Newcastle Woods (**Figure 4.8**).

A Badger (*Meles meles*) sett were found close to the Listobit Stream (**Figure 4.9**), with badger droppings also found nearby (**Figure 4.10**)

Under the White Bridge, signs of fish scales and feeding activity were recorded (**Figure 4.11**). It was unclear whether this was done by Mink (*Mustela vison*) or Otter (*Lutra lutra*) but Mink prints were seen at the southernmost boundary of the site, beside Newcastle Bridge **(Figure 4.12**). Sightings of Fallow Deer (*Dama dama*) were also frequent at this site and Stoat (*Mustela erminea*) scats were recorded on the Newcastle Bridge at the south of the site (**Figure 4.13**).

Table 4.3: Mammal signs recorded during the duration of the project.

	Badger	Deer	Fox	Mink	Otter	Pine Marten	Squirrel	Stoat
Tracks and Signs								
Dwelling	x		x			x		
Feeding activity				x	x	x	x	
Print				x				
Scat	x	x	x	x		x		x
Sighting		x						

Figure 4.4: Pine Marten (Martes martes) scat at Newcastle Woods.

Figure 4.5: Roadkill Pine Marten (*Martes martes*) outside the entrance to Newcastle Woods.

Figure 4.6: Pine Marten (*Martes martes*) den at central trapping grid.

Figure 4.7: Signs of predation at central trapping grid.

Figure 4.8: Squirrel (Sciurus spp.) feeding activity at Newcastle Woods.

Figure 4.9: Badger (*Meles meles*) sett close to Listobit stream.

Figure 4.10: Badger (*Meles meles*) poo close to sett entrance.

Figure 4.11: Signs of mink/otter feeding activity under the White Bridge.

Figure 4.12: Mink (*Mustela vison*) prints along the River Inny.

Figure 4.13: Stoat (*Mustela erminea*) scats on the Newcastle Bridge at the south of Newcastle Woods.

4.3 Camera Trapping

Fallow deer (*Dama dama*) were recorded on the camera traps (**Table 4.4, Appendices, Table 7.4**). (**Figure 4.14, 4.15**). Does and fawns were also frequently sighted throughout the site.

Table 4.4: Species recorded on the camera traps.

Species	Newcastle Woods
Badger (*Meles meles*)	
Brown Rat (*Rattus norvegicus*)	
Fox (*Vulpes vulpes*)	
Irish hare (*Lepus timidus hibernicus*)	
Pine Marten (*Martes martes*)	
Fallow Deer (*Dama dama*)	X
Wood Mouse (*Apodemus sylvaticus*)	

Figure 4.14: Fallow deer (*Dama dama*) fawn at Newcastle Woods.

Figure 4.19: Male Fallow Deer (*Dama dama*) close to the badger sett at Newcastle Woods.

Section 5: Conclusion

In total, ten/eleven terrestrial mammal species were identified at Newcastle Woods (**Table 5.1**). It was unclear whether the feeding activity recorded was that of a Mink (*Mustela vison*) or Otter (*Lutra lutra*). Otter are likely to be present, as they have been previously recorded (**See Further Appendices, Tables 7.5**) and suitable habitat for holt sites were frequent along the River Inny, with a suspected holt also located along the Listobit Stream. However, in the present study, no definitive evidence was found of this species. Prints of Mink (*Mustela vison*) were positively identified downstream at the southern perimeter of the site.

While squirrel feeding activity was frequent throughout Newcastle Woods, as there were no visual sightings, it is unclear whether it was the work of Red (*Sciurus vulgaris*) or Grey Squirrel (*Sciurus carolinensis*). As County Longford was the release site of the invasive grey squirrel in 1911 (Dominguez McLaughlin *et al.* 2022) it was traditionally a stronghold for the species. However, the population of greys has crashed in the midlands, causing Red Squirrels to be common in these areas after an absence of 30 years (Sheehy and Lawton, 2014). In the latest, squirrel survey (Lawton *et al.* 2020), greys were not recorded in Longford, but Red Squirrels and Pine Marten both had 17 records for the county, with Red Squirrel abundance increasing by 58%. Therefore, the feeding activity is likely to be that of Red Squirrel. Similarly, as shrews were not visually seen, it is unclear whether the Greater White Toothed Shrew (*Crocidura russula*), Pygmy Shrew (*Sorex minutus*), or both, were present. The Greater White Toothed Shrew (*Crocidura russula*) which was first discovered in 2007 (Tosh *et al.* 2008) been previously recorded in Newcastle Woods (**Further Appendices, Table 7.5**) and is present in County Longford (McDevitt *et al.* 2014). Likewise, the Pygmy Shrew (*Sorex minutus*) is widespread and has been previously recorded at Newcastle Woods (**Further Appendices, Table 7.5).** Therefore, it cannot be ruled out that both species are present at the three sites. However, this could only be determined through targeted trapping.

Signs of Badger (*Meles meles*), Fox (*Vulpes vulpes*) and Pine Marten (*Martes martes*) were identified (**Table 5.1**), with dens/setts, scats and sightings all being recorded during the tracks and signs survey. However, none of the species were recorded on the camera traps, demonstrating the importance of a multiple methodology approach.

Table 5.1: The number of terrestrial mammal species recorded at each site and the method by which they were detected.

	Camera trap	Droppings	Dwelling	Feeding Sign	Print	Roadkill	Sighting	Trapping
Newcastle Woods								
Badger		x	x					
Bank Vole			X					x
Brown Rat								
Fallow Deer	X	x					X	
Fox			x					
Irish Hare								
Mink		X		X	X			
Otter		x		x				
Pine Marten		x	x			x		
Shrew species								x
Squirrel species				x				
Stoat		x						
Wood Mouse			x					x

Section 6: References

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Section 7: Appendices

Table 7.1: Results of the small mammal trapping.

Date	Weather	Temp.	Area	Northing	Easting	Night	Trap	Open/closed	Species	Age	Sex
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	1	Open			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	2	Disturbed			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	3	Disturbed			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	4	closed/empty			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	5	Disturbed			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	6	closed/empty			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	7	Open			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	8	Open			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	9	Open			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	10	Open			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	11	Open			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	12	closed/empty/shrew			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	13	Open			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	14	Open			
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	15	closed	Bankvole	Female	Adult
31/07/2024	Sunny	22	Edge	53.564095	7.724114	1	16	Open			
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	1	Closed/empty			
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	2	Open	Woodmouse	Male	Adult
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	3	Open			
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	4	closed	Woodmouse	Female	Juvenile
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	5	Open			
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	6	Open			
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	7	Open			
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	8	closed	Woodmouse	Female	Juvenile
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	9	closed	Bankvole	Female	Adult
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	10	Open			
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	11	closed	Bankvole	Female	Adult
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	12	Open			
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	13	Open			
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	14	Open			
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	15	Open			
31/07/2024	Sunny	22	Stream	53.568201	7.721075	1	16	Open			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	1	Disturbed			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	2	closed/empty			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	3	Disturbed			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	4	closed/empty			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	5	Disturbed			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	6	Disturbed			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	7	Disturbed			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	8	Disturbed			

01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	9	closed	Woodmouse	Male	Juvenile
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	10	closed/empty			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	11	open			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	12	closed/empty			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	13	closed	Woodmouse	Male	Juvenile
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	14	Disturbed			
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	15	closed	Bankvole		Juvenile
01/08/2024	Overcast, sunny	21	Edge	53.564095	7.724114	2	16	Open			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	1	closed	Bankvole	Female	Juvenile
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	2	closed	Bankvole	Female	Juvenile
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	3	open			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	4	closed	Woodmouse	Female	Juvenile
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	5	Open			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	6	Open			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	7	Open			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	8	Open			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	9	Open			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	10	closed/empty			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	11	Open			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	12	Open			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	13	Open			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	14	Open			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	15	closed/empty			
01/08/2024	Overcast, sunny	21	Stream	53.568201	7.721075	2	16	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	1	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	2	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	3	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	4	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	5	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	6	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	7	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	8	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	9	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	10	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	11	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	12	closed/empty			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	13	Open			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	14	Open			

02/08/2024	Rain	18	Edge	53.564095	7.724114	3	15	closed/empty			
02/08/2024	Rain	18	Edge	53.564095	7.724114	3	16	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	1	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	2	closed	Woodmouse	Male	Juvenile
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	3	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	4	closed	Woodmouse	Male	Adult
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	5	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	6	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	7	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	8	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	9	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	10	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	11	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	12	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	13	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	14	closed	Woodmouse		Juvenile
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	15	Open			
02/08/2024	Rain	18	Stream	53.568201	7.721075	3	16	Open			

Table 7.2: The results of the tracks and signs survey.

Date	Site	Northing	Westing	Observation type	Species
26/07/2024	Newcastle	53.565402	7.721105	Feeding activity	Otter/Mink
26/07/2024	Newcastle	53.565402	7.721105	Old Scats	Mink ?
26/07/2024	Newcastle	53.565345	7.721021	Scat	Pinemarten
26/07/2024	Newcastle	53.567795	7.720921	Sett	Badger
26/07/2024	Newcastle	53.5679808	7.7210779	Latrine	Badger
26/07/2024	Newcastle	53.570776	7.715605	Sighting	Fallow doe and fawn
26/07/2024	Newcastle	53.565408	7.72125	sighting	Silver washed fritillary
01/08/2024	Newcastle	53.565668	7.716306	Scat	pinemarten
01/08/2024	Newcastle	53.568397	7.721411	Scat	pinemarten
01/08/2024	Newcastle	53.568422	7.721552	Scat	pinemarten
01/08/2024	Newcastle	53.568429	7.721568	Scat	Fox
01/08/2024	Newcastle	53.568432	7.721756	Den	Fox
01/08/2024	Newcastle	53.565279	7.717291	Feeding activity	Squirrel
01/08/2024	Newcastle	53.56572	7.716889	Sighting	Fallow deer and fawn
01/08/2024	Newcastle	53.561961	7.725335	Prints	mink
01/08/2024	Newcastle	53.561888	7.725782	Scat	Stoat
01/08/2024	Newcastle	53.561888	7.725782	Scat	Stoat
01/08/2024	Newcastle	53.568424	7.721931	Feathers/sign of predation	Pinemarten/Fox
02/08/2024	Newcastle	53.568278	7.721607	Feeding activity	Squirrel
02/08/2024	Newcastle	53.568414	7.721793	Den	Pinemarten
02/08/2024	Newcastle	53.568395	7.721803	Den	Pinemarten
02/08/2024	Newcastle	53.568396	7.721951	Feeding activity	Squirrel
08/08/2024	Newcastle	53.562198	7.726397	Roadkill	Pinemarten
08/08/2024	Newcastle	53.567952	7.719467	Feeding activity	Squirrel
08/08/2024	Newcastle	53.568218	7.718824	Scat	Fox
08/08/2024	Newcastle	53.568622	7.719394	Feeding activity	Squirrel
08/08/2024	Newcastle	53.568431	7.719433	Feeding activity	Squirrel
08/08/2024	Newcastle	53.568325	7.719637	Holt?	Otter/Mink
08/08/2024	Newcastle	53.567021	7.724381	Feeding activity	Squirrel
08/08/2024	Newcastle	53.565185	7.727913	Feeding activity	Squirrel
08/08/2024	Newcastle	53.565137	7.722004	Feeding activity	Squirrel
08/08/2024	Newcastle	53.565623	7.722959	Feeding activity	Squirrel

Table 7.3: The location of camera traps at the site.

Deployed	Removed	Site	Northing	Westing	Reason
08/08/2024	19/08/2024	Newcastle	53.567676	7.720801	Sett
08/08/2024	14/08/2024	Newcastle	53.568354	7.721743	Den sites
08/08/2024	19/08/2024	Newcastle	53.568374	7.719601	Water source

Table 7.4: Species captured on the camera traps.

Date of capture	Time of capture	Site	Location	Northing	Westing	Species
12/08/2024	05:48	Stream	Newcastle	53.568374	7.719601	Deer
13/08/2024	10:19	Stream	Newcastle	53.568374	7.719601	Deer
14/08/2024	12:44	Stream	Newcastle	53.568374	7.719601	Deer
08/08/2024	21:39	Badger sett	Newcastle	53.567676	7.720801	Deer
08/08/2024	21:39	Badger sett	Newcastle	53.567676	7.720801	Deer
12/08/2024	20:30	Badger sett	Newcastle	53.567676	7.720801	Deer
12/08/2024	20:30	Badger sett	Newcastle	53.567676	7.720801	Deer
13/08/2025	07:45	Badger sett	Newcastle	53.567676	7.720801	Deer
13/08/2025	07:45	Badger sett	Newcastle	53.567676	7.720801	Deer
13/08/2025	07:46	Badger sett	Newcastle	53.567676	7.720801	Deer
13/08/2025	07:46	Badger sett	Newcastle	53.567676	7.720801	Deer
13/08/2025	07:47	Badger sett	Newcastle	53.567676	7.720801	Deer
15/08/2024	07:21	Badger sett	Newcastle	53.567676	7.720801	Deer
15/08/2024	07:21	Badger sett	Newcastle	53.567676	7.720801	Deer
15/08/2024	07:22	Badger sett	Newcastle	53.567676	7.720801	Deer
15/08/2024	07:22	Badger sett	Newcastle	53.567676	7.720801	Deer
15/08/2024	18:12	Badger sett	Newcastle	53.567676	7.720801	Deer
15/08/2024	18:13	Badger sett	Newcastle	53.567676	7.720801	Deer
16/08/2024	15:50	Badger sett	Newcastle	53.567676	7.720801	Deer
16/08/2024	15:50	Badger sett	Newcastle	53.567676	7.720801	Deer

Further Appendices (Biodiversity Data)

Table 7.5: Terrestrial mammal species recorded in 10km^2 grid surrounding the Newcastle site recorded since 2000 (NBDC, 2024).

Terrestrial mammal species recorded within 10km^2 of Newcastle Woods	
Common Name/Scientific Name	**Designations/Conservation Status**
American Mink (Mustela vison)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Brown Long-eared Bat (Plecotus auritus)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Brown Rat (Rattus norvegicus)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Common Pipistrelle (Pipistrellus pipistrellus sensu stricto)	
Daubenton's Bat (Myotis daubentonii)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Eastern Grey Squirrel (Sciurus carolinensis)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Eurasian Badger (Meles meles)	Protected Species: Wildlife Acts
Eurasian Pygmy Shrew (Sorex minutus)	Protected Species: Wildlife Acts
Eurasian Red Squirrel (Sciurus vulgaris)	Protected Species: Wildlife Acts
European Otter (Lutra lutra)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
European Rabbit (Oryctolagus cuniculus)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Greater White-toothed Shrew (Crocidura russula)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
House Mouse (Mus musculus)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
Irish Hare (Lepus timidus subsp. hibernicus)	
Irish Stoat (Mustela erminea subsp. hibernica)	
Lesser Noctule (Nyctalus leisleri)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Pine Marten (Martes martes)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Pipistrelle (Pipistrellus pipistrellus sensu lato)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Red Deer (Cervus elaphus)	Protected Species: Wildlife Acts
Red Fox (Vulpes vulpes)	
Soprano Pipistrelle (Pipistrellus pygmaeus)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
West European Hedgehog (Erinaceus europaeus)	Protected Species: Wildlife Acts
Whiskered Bat (Myotis mystacinus)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Wood Mouse (Apodemus sylvaticus)	

This project was supported by the National Parks and Wildlife Service and Longford County Council and is part of the Local Biodiversity Action Fund initiative.