



**LIFE 13 BIO/UK/000428 EcoCo LIFE
Bonnyfield LNR: EcoCoLife monitoring Impact Report (Action D.6.)**

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Green tiger beetle

1 Introduction

Bonnyfield Local Nature Reserve (LNR) is located in the urbanised area of Bonnybridge in Falkirk. The core area of Bonnyfield LNR is 28.7 hectares in size (Figure 1). This brownfield site contains a valuable open mosaic habitat (OMH) with areas of wetland, ponds, scrub, woodland, and species-rich grassland. Through the previous use of the site as a sand and gravel quarry, there is a varied structure across the site with some slopes that were sculpted previously by Falkirk Council when they took over ownership in the late 1990s.



Figure 1: Aerial view of Bonnyfield LNR

The site is currently managed by Falkirk Council through the ranger service and volunteers from the local community council. The ranger service regularly use the site for outdoor education visits with three local primary schools (St. Josephs Primary, Antonine Primary and Bonnybridge Primary) and other events are held here by the local community each year.

The site is well used by the local community for dog walking, cycling and people passing through. The route of the John Muir Way passes along the Forth and Clyde canal which is used by a number of tourists every year.

2 Background

Bonnyfield LNR is currently being managed by Falkirk Council and in particular the ranger service. Over the last few years and with the help of volunteers and contractors they have removed scrub (such as birch and gorse) from patches across the site, in particular along foot paths. They have also cleared willow from around one of the large ponds and cleared out other ponds. Due to the size of the site there is still plenty of scrub that needs thinned and cleared and this will reduce shading of the species-rich grassland therefore enhancing this habitat at the site for pollinators and other wildlife.

The council have for several years wanted to create a bee bank to provide sandy bare ground for nesting solitary bees, ground beetles and other invertebrates; although this has never happened due to a lack of funding.

Volunteers from The Conservation Volunteers (TCV) helped create a bee bank and clear scrub at this site over six days in early 2018 (Table 1). Through this project, Buglife with the help of TCV created a large bee bank that covered an area approximately 100m² in area (Figures 2 and 3). The bank is approximately 30 metres long and 3 metres wide. Additional habitat surrounding the bank has also been enhanced through the addition of a wildflower seed mix of a native and diverse mix which enhanced a further 400m². The bank will provide very important bare ground habitat that has recently been lost at the site through natural succession.

Table 1: Date volunteers from TCV were active at Bonnyfield LNR, the number of volunteers and their activity.

Date	No. of people	Activity
05/02/2018	4	Scrub clearance
06/02/2018	6	Scrub clearance
12/02/2018	4	Bee bank
13/02/2018	4	Bee bank
19/02/2018	8	Scrub clearance
20/02/2018	5	Scrub clearance



Figure 2: The bee bank being created with the help of volunteers from TCV and a contractor on the 12th of February 2018.



Figure 3: The area around the bee bank was cordoned off and a sign installed with information for dog walkers and others about the bank and to prevent dogs jumping on it.

As well as managing habitat at the site, pupils from two classes from the three neighbouring primary schools (Antonine Primary, Bonnybridge Primary and St. Josephs Primary) were invited to the LNR to learn more about the sites importance for wildlife, in particular its invertebrates (Table 2). School sessions were held over three days at the reserve and each session involved a range of activities to enthuse pupils about the site and the habitat work that had been carried out on the site to benefit its wildlife.

Table 2: Date of session held with each of the two classes from the three neighbouring primary schools along with the number of pupils and teachers that attended the event.

Date	School	Number of pupils	Number of teachers
22/05/2018	Antonine Primary school (primary 4)	24	3
22/05/2018	Antonine Primary school (primary 5)	25	3
23/05/2018	Bonnybridge Primary school (primary 5)	24	3
23/05/2018	Bonnybridge Primary school (primary 4)	21	2
24/05/2018	St. Patricks Primary school (primary 6)	17	2
24/05/2018	St. Patricks Primary school (primary 7)	18	3

3 Monitoring

Buglife was commissioned by Falkirk Council to survey Bonnyfield LNR for invertebrates in 2012. At least 218 species of invertebrate were recorded during this survey (Table 3). A report with recommendations on managing the site for invertebrates was provided to the council. Since this survey, the site has been visited by Buglife for monitoring of the habitats rather than the invertebrates.

4 Future monitoring

Falkirk Council Ranger Service regularly visit Bonnyfield LNR and monitor the various habitat for wildlife. They are keen to monitor the bee bank to determine if it is being used and by what species, especially of solitary bees. Buglife will provide any further recommendations to monitor the bank to Falkirk Council.

5 Acknowledgements

Buglife would like to thank Falkirk Council for giving us permission to work at Bonnyfield LNR, in particular Lesley Sweeney and Fiona Wishart from the ranger service for their advice and support of the project. We would also like to thank the volunteers from TCV for their hard work helping with the bee bank and scrub removal from across the site.

6 Annex 1

Table 3. List of invertebrates recorded at Bonnyfield LNR during a survey by Buglife in 2012.

Order	Scientific Name	Common Name
Amphipoda	<i>Crangonyx pseudogracilis</i>	freshwater shrimp
Amphipoda	<i>Gammarus pulex</i>	freshwater shrimp
Araneae	<i>Araneus diadematus</i>	Garden spider
Araneae	<i>Araniella cucurbitina</i>	orb-weaver spider
Araneae	<i>Clubiona</i> species	foliage spider
Araneae	<i>Enoplognatha ovata</i>	Comb-footed spider
Araneae	<i>Larinioides cornutus</i>	orb-weaver spider
Araneae	<i>Pachygnatha clerki</i>	long-jawed spider
Araneae	<i>Pardosa amentata</i>	wolf spider
Araneae	<i>Pardosa pullata</i>	wolf spider
Araneae	<i>Tetragnatha extensa</i>	long-jawed spider
Araneae	<i>Tibellus oblongus</i>	Common running crab spider
Araneae	<i>Trochosa ruricola</i>	wolf spider
Araneae	<i>Trochosa terricola</i>	wolf spider
Araneae	<i>Xysticus cristatus</i>	Common crab spider
Coleoptera	<i>Agabus bipustulatus</i>	aquatic beetle
Coleoptera	<i>Agabus nebulosus</i>	aquatic beetle
Coleoptera	<i>Agonum muelleri</i>	ground beetle
Coleoptera	<i>Agriotes obscurus</i>	click beetle
Coleoptera	<i>Agriotes pallidulus</i>	click beetle
Coleoptera	<i>Anaspis thoracica</i>	false flower beetle
Coleoptera	<i>Anotylus rugosus</i>	rove beetle
Coleoptera	<i>Bembidion guttula</i>	ground beetle
Coleoptera	<i>Calathus fuscipes</i>	ground beetle
Coleoptera	<i>Cantharis nigra</i>	soldier beetle
Coleoptera	<i>Coccinella septempunctata</i>	Seven-spot ladybird
Coleoptera	<i>Curtonotus aulicus</i>	ground beetle
Coleoptera	<i>Dryops ernesti</i>	aquatic beetle
Coleoptera	<i>Galerucella lineola</i>	Willow leaf beetle
Coleoptera	<i>Gastrophysa viridula</i>	dock leaf beetle
Coleoptera	<i>Hadroplontus litura</i>	Thistle weevil
Coleoptera	<i>Halipplus lineatocollis</i>	aquatic beetle
Coleoptera	<i>Hippuriphila modeeri</i>	Horse-tail Flea beetle
Coleoptera	<i>Hydroporus erythrocephalus</i>	aquatic beetle
Coleoptera	<i>Hydroporus palustris</i>	aquatic beetle
Coleoptera	<i>Hydroporus pubescens</i>	aquatic beetle
Coleoptera	<i>Hygrotus inaequalis</i>	aquatic beetle
Coleoptera	<i>Liophloeus tessulatus</i>	weevil
Coleoptera	<i>Longitarsis</i> species	flea beetle
Coleoptera	<i>Loricera pilicornis</i>	ground beetle
Coleoptera	<i>Nebria brevicollis</i>	ground beetle

Coleoptera	<i>Neocrepidodera transversa</i>	flea beetle
Coleoptera	<i>Nicrophorus vespilloides</i>	carrion beetle
Coleoptera	<i>Oreodytes sanmarkii</i>	aquatic beetle
Coleoptera	<i>Phaedon armoraciae</i>	leaf beetle
Coleoptera	<i>Phyllobius pomaceus</i>	Nettle weevil
Coleoptera	<i>Phyllobius viridicollis</i>	weevil
Coleoptera	<i>Phyllotreta flexuosa</i>	flea beetle
Coleoptera	<i>Polydrusus pterygomalis</i>	weevil
Coleoptera	<i>Protapion assimile</i>	Small clover weevil
Coleoptera	<i>Protapion dichroum</i>	Red-legged clover weevil
Coleoptera	<i>Psylliodes picina</i>	flea beetle
Coleoptera	<i>Pterostichus madidus</i>	ground beetle
Coleoptera	<i>Pterostichus niger</i>	ground beetle
Coleoptera	<i>Pterostichus vernalis</i>	ground beetle
Coleoptera	<i>Quedius fuliginosus</i>	rove beetle
Coleoptera	<i>Rhagonycha fulva</i>	Red soldier beetle
Coleoptera	<i>Rhagonycha limbata</i>	soldier beetle
Coleoptera	<i>Sitona striatellus</i>	Broom weevil
Coleoptera	<i>Sitona sulcifrons</i>	clover weevil
Coleoptera	<i>Sitona suturalis</i>	Vetch weevil
Coleoptera	<i>Stenus flavipes</i>	rove beetle
Coleoptera	<i>Stenus fulvicornis</i>	rove beetle
Coleoptera	<i>Stenus similis</i>	rove beetle
Coleoptera	<i>Tachinus rufipes</i>	rove beetle
Coleoptera	<i>Tachyerges salicis</i>	Willow weevil
Collembola	<i>Dicyrtomina minuta</i>	springtail
Collembola	<i>Isotoma species</i>	springtails
Collembola	<i>Sminthurus viridis</i>	Lucerne Flea
Dermoptera	<i>Forficula auricularia</i>	Common earwig
Diplopoda	<i>Cylindroiulus punctatus</i>	millipede
Diplopoda	<i>Ommatoiulus sabulosus</i>	millipede
Diplopoda	<i>Ophiulus pilosus</i>	millipede
Diplopoda	<i>Tachypodoiulus niger</i>	Black snake millipede
Diptera	<i>Agromyza idaeiana</i>	leaf-mining fly
Diptera	<i>Chironomidae species</i>	non-biting midge
Diptera	<i>Dasineura ulmaria</i>	Meadow Sweet gall midge
Diptera	<i>Episyrphus balteatus</i>	Marmalade hoverfly
Diptera	<i>Eristalis abusivus</i>	hoverfly
Diptera	<i>Eristalis arbustorum</i>	hoverfly
Diptera	<i>Eristalis horticola</i>	hoverfly
Diptera	<i>Eristalis interruptus</i>	hoverfly
Diptera	<i>Eristalis intricarius</i>	hoverfly
Diptera	<i>Eristalis pertinax</i>	hoverfly
Diptera	<i>Eristalis tenax</i>	hoverfly
Diptera	<i>Erizona syrphoides</i>	hoverfly

Diptera	<i>Haematopota</i> species	Common cleg
Diptera	<i>Helophilus pendulus</i>	hoverfly
Diptera	<i>Melanogaster hirtella</i>	hoverfly
Diptera	<i>Melanostoma mellinum</i>	hoverfly
Diptera	<i>Melanostoma scalare</i>	hoverfly
Diptera	<i>Platycheirus albimanus</i>	hoverfly
Diptera	<i>Platycheirus angustatus</i>	hoverfly
Diptera	<i>Platycheirus clypeatus</i>	hoverfly
Diptera	<i>Platycheirus granditarsus</i>	hoverfly
Diptera	<i>Platycheirus peltatus</i>	hoverfly
Diptera	<i>Platycheirus rosarum</i>	hoverfly
Diptera	<i>Rhingia campestris</i>	Heineken hoverfly
Diptera	<i>Rivellia syngenesiae</i>	fly
Diptera	<i>Sericomyia silentis</i>	hoverfly
Diptera	<i>Simuliidae</i> species	blackfly
Diptera	<i>Sphaerophoria philanthus</i>	hoverfly
Diptera	<i>Syrphus ribesii</i>	hoverfly
Diptera	<i>Syrphus torvus</i>	hoverfly
Diptera	<i>Volucella bombylans</i>	hoverfly
Diptera	<i>Volucella pellucens</i>	hoverfly
Ephemeroptera	<i>Baetis rhodani</i>	mayfly
Ephemeroptera	<i>Cloeon dipterum</i>	mayfly
Hemiptera	<i>Agallia venosa</i>	leaf hopper
Hemiptera	<i>Anoscopus flavostriatus</i>	leaf hopper
Hemiptera	<i>Anthocoris nemorum</i>	Common flowerbug
Hemiptera	<i>Aphrodes makarovi</i>	leaf hopper
Hemiptera	<i>Aphrophora alni</i>	Alder froghopper
Hemiptera	<i>Baopelma foersteri</i>	jumping plant louse
Hemiptera	<i>Capsus ater</i>	plant bug
Hemiptera	<i>Cicadella viridis</i>	leaf hopper
Hemiptera	<i>Cixius nervosus</i>	lace hopper
Hemiptera	<i>Corixidae</i> species	lesser waterboatman
Hemiptera	<i>Elasmostethus interstinctus</i>	Birch shieldbug
Hemiptera	<i>Elymana sulphurella</i>	leaf hopper
Hemiptera	<i>Grypocoris stysi</i>	plant bug
Hemiptera	<i>Leptopterna dolabrata</i>	plant bug
Hemiptera	<i>Lygus rugulipennis</i>	plant bug
Hemiptera	<i>Macustus grisescens</i>	leaf hopper
Hemiptera	<i>Nabis flavomarginatus</i>	Common damsel bug
Hemiptera	<i>Nabis limbatus</i>	Marsh damsel bug
Hemiptera	<i>Neolygus contaminatus</i>	plant bug
Hemiptera	<i>Neophilaenus lineatus</i>	frog hopper
Hemiptera	<i>Notonecta glauca</i>	Common backswimmer
Hemiptera	<i>Notostria elongata</i>	plant bug
Hemiptera	<i>Philaenus spumarius</i>	Common spittle bug

Hemiptera	<i>Pithanus maerkelii</i>	plant bug
Hemiptera	<i>Plagiognathus arbustorum</i>	plant bug
Hemiptera	<i>Plagiognathus chrysanthemi</i>	plant bug
Hemiptera	<i>Stenodema calcarata</i>	plant bug
Hemiptera	<i>Stenodema holsata</i>	plant bug
Hemiptera	<i>Stenodema laevigata</i>	plant bug
Hemiptera	<i>Streptanus sordidus</i>	leaf hopper
Hemiptera	<i>Thamnotettix confinis</i>	leaf hopper
Hemiptera	<i>Trigonotylus ruficornis</i>	plant bug
Hydracarina	<i>Hydracarina</i> species	water mites
Hymenoptera	<i>Aleiodes unipunctator</i>	parasitoid wasp
Hymenoptera	<i>Alomya debellator</i>	parasitoid wasp
Hymenoptera	<i>Apis mellifera</i>	Honey bee
Hymenoptera	<i>Bethylus fuscicornis</i>	parasitoid wasp
Hymenoptera	<i>Bombus hortorum</i>	Garden Bumblebee
Hymenoptera	<i>Bombus lapidarius</i>	Red-tailed bumblebee
Hymenoptera	<i>Bombus lucorum</i>	White-tailed bumblebee
Hymenoptera	<i>Bombus pascuorum</i>	Common carder bumblebee
Hymenoptera	<i>Bombus pratorum</i>	Early bumblebee
Hymenoptera	<i>Bombus terrestris</i>	Buff-tailed bumblebee
Hymenoptera	<i>Dyspetes luteomarginatus</i>	parasitoid wasp
Hymenoptera	<i>Lasius niger</i>	Black garden ant
Hymenoptera	<i>Limerodops elongatus</i>	parasitoid wasp
Hymenoptera	<i>Macrocentrus nidulator</i>	parasitoid wasp
Hymenoptera	<i>Megachile centuncularis</i>	Patchwork leaf-cutter bee
Hymenoptera	<i>Myrmica rubra</i>	red ant
Hymenoptera	<i>Tenthredo notha</i>	sawfly
Isopoda	<i>Asellus aquaticus</i>	Common water hoglouse
Isopoda	<i>Philoscia muscorum</i>	Common stripped woodlouse
Isopoda	<i>Trichoniscus pusillus</i>	Pygmy woodlouse
Lepidoptera	<i>Aglais urticae</i>	Small tortoiseshell butterfly
Lepidoptera	<i>Agriphila straminella</i>	Pearl veneer moth
Lepidoptera	<i>Agriphila tristella</i>	Common grass veneer
Lepidoptera	<i>Anthocharis cardamines</i>	Orange tip butterfly
Lepidoptera	<i>Aphantopus hyperantus</i>	Ringlet butterfly
Lepidoptera	<i>Campogramma bilineata</i>	Yellow shell moth
Lepidoptera	<i>Chiasmia clathrata</i>	Latticed heath moth
Lepidoptera	<i>Chrysoteuchia culmella</i>	Garden grass-veneer moth
Lepidoptera	<i>Coenonympha pamphilus</i>	Small heath butterfly
Lepidoptera	<i>Crambus perlella</i>	Yellow satin veneer moth
Lepidoptera	<i>Epinotia tenerana</i>	Nut bud moth
Lepidoptera	<i>Hepialus lupulinus</i>	Common swift moth
Lepidoptera	<i>Hypena proboscidalis</i>	Snout moth
Lepidoptera	<i>Inachis io</i>	Peacock butterfly
Lepidoptera	<i>Maniola jurtina</i>	Meadow brown butterfly

Lepidoptera	<i>Opsibotys fuscalis</i>	Yellow rattle moth
Lepidoptera	<i>Phlogophora meticulosa</i>	Angled shades moth
Lepidoptera	<i>Phragmatobia fuliginosa</i>	Ruby tiger
Lepidoptera	<i>Pieris brassicae</i>	Large white butterfly
Lepidoptera	<i>Pieris napi</i>	Green-veined white
Lepidoptera	<i>Pieris rapae</i>	Small white butterfly
Lepidoptera	<i>Scotopteryx chenopodiata</i>	Shaded broadbar
Lepidoptera	<i>Stigmella aurella</i>	micro-moth
Lepidoptera	<i>Udea lutealis</i>	Pale straw pearl moth
Lepidoptera	<i>Xanthorhoe fluctuata</i>	Garden carpet
Lepidoptera	<i>Xanthorhoe montanata</i>	Silver-ground carpet
Lepidoptera	<i>Zygaena filipendulae</i>	Six-spot burnet
Mecoptera	<i>Panorpa germanica</i>	scorpionfly
Mollusca	<i>Acroloxus lacustris</i>	Common lake limpet
Mollusca	<i>Cepaea hortensis</i>	White-lipped snail
Mollusca	<i>Cepaea nemoralis</i>	Brown-lipped snail
Mollusca	<i>Galba truncatula</i>	Marsh pond snail
Mollusca	<i>Oxychilus alliarius</i>	Garlic snail
Mollusca	<i>Oxychilus cellarius</i>	Cellar snail
Mollusca	<i>Potamopyrgus antipodarum</i>	New Zealand pond snail
Mollusca	<i>Radix balthica</i>	Wandering pond snail
Mollusca	<i>Sphaerium</i> species	pea clam
Mollusca	<i>Trochulus hispidus</i>	Hairy snail
Mollusca	<i>Arion ater</i> (agg.)	Black slug
Myriapoda	<i>Lithobius forficatus</i>	Common brown centipede
Odonata	<i>Aeshna juncea</i>	Common hawker
Odonata	<i>Enallagma cyathigerum</i>	Common blue damselfly
Odonata	<i>Ischnura elegans</i>	Blue-tailed damselfly
Odonata	<i>Pyrrhosoma nymphula</i>	Large red damselfly
Odonata	<i>Sympetrum danae</i>	Black darter
Odonata	<i>Sympetrum striolatum</i>	Common darter
Opiliones	<i>Lophopilio palpinalis</i>	harvestman
Opiliones	<i>Nemastoma bimaculatum</i>	harvestman
Opiliones	<i>Oligolophus tridens</i>	harvestman
Opiliones	<i>Platybunus triangularis</i>	harvestman
Orthoptera	<i>Chorthippus parallelus</i>	Meadow grasshopper
Pharyngobdella	<i>Erpobdella</i> species	leech
Plecoptera	<i>Nemourella pictetii</i>	stonefly
Psocoptera	<i>Mesopsocus immunis</i>	barkfly
Seriata	Planariidae	aquatic flatworm
Trichoptera	<i>Limnephilus</i> species	caddisfly
Trichoptera	<i>Rhyacophila dorsalis</i>	caddisfly