



# Bridgeness Biodiversity

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Suzanne Burgess



**Falkirk Council**



Joining up nature across central Scotland



*Saving the small things that run the planet*

## Summary

The Bridgeness Biodiversity project has successfully transformed and managed two sites in Bo'ness for the benefit of people and wildlife.

A former ship breaking yard that is now designated as a wildlife site has been managed for the UK Biodiversity Action Plan priority habitat 'Open Mosaic Habitat on Previously Developed Land' through monthly habitat creation and management events. At least 60 different volunteers have given 312 hours to help with scrub removal, seed sowing, invasive species control, litter picks, creation of habitat piles and meadow management at this site. Additionally, volunteers have been provided with training on how to use tools safely, habitat management and the identification of wildflowers, trees, pollinating insects and other wildlife.

A native species-rich wildflower and grassland meadow was sown in autumn 2015 on former amenity grassland in the Grangepans area of Bo'ness. This meadow area has provided important forage for bumblebees and hoverflies and has proved very popular with residents and visitors to the area.

The help and support provided by volunteers alongside Falkirk Council has been vital in ensuring the success of this project.

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## 1. Introduction

Bo'ness is towards the very east of Falkirk and lies on the south bank of the Firth of Forth. The small town of Bo'ness marks the very eastern extent of the Roman Antonine Wall that runs across the central belt of Scotland. Although now primarily a commuter town, Bo'ness was once very important within various local industry including ship breaking, pottery, salt making, iron works and fishery. The route of the John Muir Way passes through Bo'ness and alongside Kinneil House, managed by Historic Environment Scotland, Bo'ness and Kinneil railway and other local attractions making Bo'ness popular with local residents and visitors.

Bridgeness Biodiversity has transformed and managed two sites in Bo'ness known locally as Bridgeness Ship Breakers and Grangepans grassland for people and wildlife to use and enjoy (Figure 1). Both sites act as an important green corridor that functionally links important habitat and allows the movement and mixing of wildlife along the foreshore of Bo'ness. Bridgeness Ship Breakers is a former brownfield site that is now designated as a local wildlife site and has been managed through this project for the UK Biodiversity Action Plan priority habitat 'Open Mosaic Habitat on Previously Developed Land' (OMH). A native species-rich wildflower and grassland meadow was created in an area of amenity grassland at Grangepans.



**Figure 1.** Location of Grangepans Meadow and Bridgeness Ship Breakers in Bo'ness.

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## 2. Grangepans Meadow

The area of Grangepans is made up of housing, large expanses of amenity grassland and woodland. Through this project we identified an area of amenity grassland that was cut regularly and subsequently had very little benefits for biodiversity and transformed this into a species-rich wildflower and grassland meadow. Native species of wildflower have been planted through seed and as plugs to create a colourful area for local people to enjoy and to provide important foraging and nesting habitat for pollinating insects and other wildlife.

### 2.1. Community Consultation

A community consultation event was held in Bo'ness on the 13<sup>th</sup> of August 2015 to inform residents of the plan to create a native wildflower and grassland meadow through this project. The overall meadow creation plans were well received amongst the 12 attendees who were looking forward to the change of land use of the area. This meeting also discussed the design of the meadow and the species of plant to be used (Figure 2). The area of amenity grassland selected for the project is over 1 hectare in size and it was important to ensure that people could walk between and alongside the meadow areas. The meadow was designed in 4 separate areas totalling 0.7 hectares in size. This allowed for paths to go between the areas as well as possible around them.



**Figure 2.** Original proposed design of the meadow; green- area to be sown; blue- pathways through the meadow; red- areas to be potentially plug planted and left uncut (only one of these was selected in the bottom right of the plan).

### 2.2. Meadow Creation

The four areas identified for meadow creation were marked out by Buglife and Falkirk Council with white line grass marking spray so that these areas could then be sprayed with weed killer in early October 2015. This was to remove unwanted weed species and to reduce competition with the wildflower and grass seed. Signs were installed around the site to inform local residents about the change in grass colour from green to yellow as the weeds died.

The amenity area of Grangepans was once industrial in use and because of this only a few centimetres of soil is currently present. Due to the thin soil, contractors agreed to use a power harrow to break up the surface and then a roller (Figure 3) to further break up the turf and get the ground ready for being hand sown with seed. The ground was prepared in this way in late October 2015.



**Figure 3.** A roller used by contractors to help break up the soil after a power harrow had been used.

Seed used in this project was of a diverse mix of native species which included five species of annuals, four species of biennials, 25 species of perennial wildflowers and six species of grasses (Table 1). An additional amount of the hemi-parasite and annual Yellow rattle (*Rhinanthus minor*) was sown separately into the meadow to help control the growth of any unwanted grasses. Whilst capable of carrying out its own photosynthesis, Yellow rattle is dependent upon grasses for additional supplies of carbohydrates and minerals. By drawing nutrients from their host it reduces the grasses growth and this helps maintain an open sward of vegetation creating more space for wildflowers to grow and set seed.

**Table 1.** A list of species sown to create the Grangepans Meadow showing the percentage of each within the seed mix. This mix doesn't show the Yellow rattle that was sown after separately.

Scientific name	Common name	% by weight
<b>Perennial wildflowers</b>		
<i>Achillea millefolium</i>	Yarrow	0.67
<i>Centaurea nigra</i>	Common knapweed	3
<i>Cerastium fontanum</i>	Common mouse-ear	0.33
<i>Galium verum</i>	Lady's bedstraw	2.67
<i>Lathyrus pratensis</i>	Meadow vetchling	1.83
<i>Leucanthemum vulgare</i>	Oxeye daisy	1.33
<i>Lotus corniculatus</i>	Birds-foot trefoil	0.17
<i>Pimpinella saxifraga</i>	Burnet saxifrage	0.06
<i>Plantago lanceolata</i>	Ribwort plantain	1
<i>Primula veris</i>	Cowslip	0.03
<i>Prunella vulgaris</i>	Selfheal	2
<i>Ranunculus acris</i>	Meadow buttercup	0.83
<i>Rhinanthus minor</i>	Yellow rattle	0.4
<i>Rumex acetosa</i>	Common sorrel	0.5
<i>Scorzonerooides autumnalis</i>	Autumn hawkbit	0.17
<i>Succisa pratensis</i>	Devils-bit scabious	0.17
<i>Vicia cracca</i>	Tufted vetch	2.17
<i>Geranium pratense</i>	Meadow cranesbill	1

<i>Knautia arvensis</i>	Field scabious	0.67
<i>Origanum vulgare</i>	Wild marjoram	0.17
<i>Silene dioica</i>	Red campion	2.33
<i>Silene flos-cuculi</i>	Ragged robin	0.66
<i>Silene latifolia</i>	White campion	2.33
<i>Stachys sylvatica</i>	Hedge woundwort	0.33
<i>Vicia sepium</i>	Bush vetch	1.67
<b>Biennial wildflowers</b>		
<i>Dipsacus fullonum</i>	Teasel	0.33
<i>Echium vulgare</i>	Viper's bugloss	2.67
<i>Tragopogon pratensis</i>	Goats beard	0.33
<i>Verbascum thapsus</i>	Mullein	0.17
<b>Annual wildflowers</b>		
<i>Centaurea cyanus</i>	Cornflower	18.2
<i>Fumaria officinalis</i>	Common fumitory	0.87
<i>Glebionis segetum</i>	Corn marigold	4.33
<i>Papaver rhoeas</i>	Corn poppy	15.6
<i>Triploeuospermum inodorum</i>	Mayweed	4.33
<b>Grasses</b>		
<i>Agrostis capillaris</i>	Common bent grass	2.67
<i>Alopecurus pratensis</i>	Meadow foxtail grass	1
<i>Anthoxanthum odoratum</i>	Sweet vernal grass	1.67
<i>Cynosurus cristatus</i>	Crested dog's tail grass	4
<i>Festuca rubra ssp. commutata</i>	Chewing's fescue grass	11.67
<i>Poa pratensis</i>	Smooth-stalked meadow grass	5.67

In the summer of 2016, the annuals put on a fantastic display showing a range of reds, yellows and blues (Figure 4). This then gave time for the perennials to develop through the summer and a variety of these, including Wild carrot (*Daucus carota*) and Red campion (*Silene dioica*) where visible from July onwards (Figure 5).



**Figure 4.** Annuals in flower at Grangepans Meadow on the 14<sup>th</sup> of July 2016.



**Figure 5.** The meadow as observed on the 20<sup>th</sup> of September 2016 with far fewer annuals but larger numbers of perennials present.

### **2.3. Meadow Extension and Further Enhancement**

An additional area of grassland meadow was created alongside one of the sown areas to remove one of the regularly cut strips that ran alongside woodland (the bottom right area marked in red in Figure 2). This additional area totalled 0.1 hectares in size and was planted with over 2,310 plug plants of 13 native wildflower species (including Field scabious (*Knautia arvensis*) and Red campion (*Silene dioica*) (Table 2). Volunteers from the Inner Forth Landscape Initiative (IFLI) trainee scheme and Carriden Community helped plant the plug plants on the week of the 16<sup>th</sup> of May (Figure 6). Six IFLI trainees and their supervisor came every day this week to plant the majority of the plug plants. At least 12 children and 11 adults from Carriden Community After School club helped to plant the plug plants on the 19<sup>th</sup> of May. The children learnt about the importance of native wildflowers for pollinators and what flowers they should expect to see within the meadow over the summer and in future years.



**Figure 6.** Children attending Carriden Community After School club helping to plant plug plants and extend the meadow area at Grangepans.

**Table 2.** Species and number of wildflower plug plants.

Scientific Name	Common Name	Spring 2016
<i>Centaurea nigra</i>	Common knapweed	300
<i>Leucanthemum vulgare</i>	Oxeye daisy	400
<i>Knautia arvensis</i>	Field scabious	200
<i>Silene dioica</i>	Red campion	50
<i>Anthriscus sylvestris</i>	Cow parsley	100
<i>Digitalis purpurea</i>	Foxglove	150
<i>Lathyrus pratensis</i>	Meadow vetchling	300
<i>Lotus corniculatus</i>	Common bird's foot trefoil	150
<i>Lamium album</i>	White dead nettle	66
<i>Trifolium pratense</i>	Red clover	200
<i>Cardamine pratensis</i>	Cuckoo flower	50
<i>Daucus carota</i>	Wild carrot	200
<i>Galium verum</i>	Ladies bedstraw	150

In October 2016, using the same seed mix as sown in 2015 a further area of amenity grassland about 0.2 hectares and highlighted in red in the bottom left of figure 2 has been prepared and sown by contractors. This area will be in flower in spring/summer of 2017 and will provide additional habitat for pollinators and other wildlife.

#### 2.4. Interpretation Board

The route of the John Muir Way passes along the foreshore of Grangepans Meadow. An interpretation board was installed with information on the project and the importance of wildflower-rich grasslands and what species of plants and insects that people may see (Figure 7). This interpretation board is next to a bench which has recently been installed in the area through another project.



**Figure 7.** The interpretation board at Grangepans Meadow.

#### 2.5. Meadow Management

Wildflower and grassland meadows require some management to ensure long-term benefits for wildlife. Unlike grasses, wildflowers don't like too many nutrients. Grasses can very easily and quickly outcompete wildflowers for space when they have plenty of nutrients to assist in their development and growth. So as to ensure success of the wildflowers within the Grangepans meadow and prevent unwanted grasses taking over, the meadow was cut and the cuttings removed

in October 2016. By removing the cuttings this reduces nutrients leaching back into the ground and will help prevent the grasses becoming dominant next year.

No additional Yellow rattle seed was sown in autumn 2016 to help with any additional control of grasses as it was decided to wait and see what would return from when they were sown in year one.

## 2.6. Meadow Success

This native wildflower and grassland meadow has proved very popular with local people and visitors to Bo'ness with several images being shared on social media. Everyone has appreciated the colour from the flowers and the wildlife this has attracted. Bumblebees have been seen in great numbers this summer, including a Tree bumblebee (*Bombus hypnorum*) which is a recent arrival in Scotland. Additionally the meadow has proved important for hoverflies such as the Tiger hoverfly (*Helophilus pendulus*) and 7 spot ladybird (*Coccinella septempunctata*) and butterflies such as the Small copper (*Lycaena phlaeas*) and Six spot burnet moth (*Zygaena filipendulae*) but also for Swallows (*Hirundo rustica*) and a family of hunting Kestrels (*Falco tinnunculus*).

## 3. Bridgeness Ship Breakers

During a survey by Buglife in 2010, Bridgeness Ship Breakers was on the Scottish Vacant and Derelict Land (SVDL) register and was identified as being important for wildlife, particularly invertebrates such as the Hobo spider (*Tegenaria agrestis*) which is uncommon in Scotland and typical of brownfield sites. This site is also important for wildflowers with over 90 species being recorded so far. This initial survey identified the importance of the site and it was subsequently removed from the SVDL and designated as a local wildlife site. In 2013, a permanent tarmac footpath was installed through the site as part of the completion of the John Muir Way that passes from Helensburgh in the west through Bo'ness to Dunbar in the east.

Volunteer habitat creation events started in October 2015 and have been run once a month from 10am-1pm. Volunteers are welcome to come for as long or as little as they are able and refreshments are provided. During habitat creation events, volunteers have been involved with a number of tasks including scrub clearance, creation of habitat piles and litter picks (Table 3). A total of 134 people (equates to 60 different individuals) have been involved in volunteer activities through this project and have contributed 312 hours of time (Table 3).

**Table 3.** Date of habitat creation events with the number of people that attended and total hours for each date along with information on the activity.

Date	Number of people	Humber of hours	Activity
29/10/2015	5	12	Scrub clearance, habitat pile creation
19/11/2015	6	20	Litter pick, scrub clearance, habitat pile creation, Yellow rattle seed sowing
13/01/2016	8	19.9	Litter pick, scrub clearance, habitat pile creation
11/02/2016	15	36	Litter pick, scrub clearance, habitat pile creation
02/03/2016	7	22.5	Litter pick, scrub clearance, habitat pile creation
06/04/2016	10	17.25	Scrub clearance, habitat pile creation
04/05/2016	8	23.5	Scrub clearance and meadow visit
01/06/2016	12	26.45	Litter pick
06/07/2016	9	27	Pollinator species identification training
03/08/2016	8	21	Sea buckthorn removal, scrub clearance
07/09/2016	9	15	Sea buckthorn removal, Buddleia control

05/10/2016	8	14.5	Litter pick, scrub clearance, habitat pile creation
25/10/2016	21	31.5	Crocus planting
02/11/2016	8	25.5	Scrub clearance and habitat pile creation

Through these events volunteers have enjoyed seeing the benefit of their work. For example, results are easy to see once an area has been cleared of litter and similarly when clearing the meadow of birch scrub the results were instantaneous (Figure 8 and 9).



**Figure 8.** Litter has been a big problem at this site and so far over 40 bags have been removed.



**Figure 9.** Clockwise from top left- The meadow area before scrub was cleared; volunteers, including Lesley Sweeney from Falkirk Council Ranger Service clearing scrub; Habitat piles created within woodland from the cleared scrub; Pollinator species identification training on the 6<sup>th</sup> of July 2016.

### 3.1. Interpretation Board

The route of the John Muir Way passes through this wildlife site and an interpretation board with information on the importance of OMH for wildlife was installed for visitors and locals to read and enjoy (Figure 10).



**Figure 10.** Interpretation panel at Bridgeness Ship Breakers about the importance of OMH for biodiversity.

### 4. Additional events in Bo'ness

During this project, additional events have been run within Bo'ness through other organisations and Buglife to highlight the importance of Bridgeness Ship Breakers and Grangepens Meadow for both people and wildlife, how volunteers can get involved with the project as well as how to identify and monitor invertebrates such as hoverflies and bumblebees (Table 4).

**Table 4.** Additional events held in Bo'ness through this project alongside the number of people that attended each event and activity of each.

Event name	Date	Number of people	Activity
How to create and manage grasslands	09/12/2016	9	Outdoor workshop on how to create and manage grasslands held in meadows by Snab Lane
Inner Forth Landscape Initiative Networking event	22/02/2016	22	Stand for project promotion
Herriot Watt students Green Infrastructure class	10/03/2016	30	Talk about project and importance of green infrastructure
John Muir birthday celebration event	21/04/2016	11	Scrub removal from meadow area at Kinneil Local Nature Reserve and a pollinator bug hunt
Bo'ness Fun Run	04/05/2016	20	Stand for project promotion
Deanburn Primary School visit	16/05/2016	23	Bug walk out with the school grounds
Carriden Community afternoon club	25/05/2016	33	Talk about project and importance of pollinating insects
Kinneil Foreshore bug hunt	04/08/2016	36	Bug hunt at foreshore
Introduction to hoverflies	05/08/2016	12	Workshop on how to identify different

			hoverflies held at foreshore
Crocus planting event with Carriden Community (including After School Club) and Bo'ness rotary club and	25/10/2016	31	Planting almost 5,000 crocus bulbs into amenity grassland adjacent meadow in Grangepans
Friends of Kinneil Volunteer Work Day	26/11/2016	14	Scrub removal from meadow area at Kinneil Local Nature Reserve

## 5. Conclusion

This project has enhanced two sites in Bo'ness for wildlife and people that has functionally linked important habitat allowing the movement and mixing of wildlife along the foreshore of Bo'ness. Through the various events held in Bo'ness and information within press releases in the local Bo'ness Journal, this project has engaged with people of all ages from across Bo'ness and surrounding areas. Due to the popularity of the wildflower and grassland meadow in Grangepans we have since extended the area to add further colour from Poppies and other annuals in spring 2017 and create another important area for foraging pollinating insects. Volunteer habitat creation events will continue once a month at Bridgeness Ship Breakers until March 2018.

Contact us: Buglife, Balallan House, 24 Allan Park,  
Stirling, FK8 2QG

[www.buglife.org.uk](http://www.buglife.org.uk)

Tel: 01786 447504

Email: [info@buglife.org.uk](mailto:info@buglife.org.uk)

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Photo credits L-R; Ladybird spider (*Eresus sandaliatus*) © S. Dalton, Jellyfish © D. Huffman, Tansy beetle (*Chrysolina graminis*) © S. Falk and Large garden bumblebee (*Bombus ruderatus*) © S. Falk



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Peterborough, PE2 5UU

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