# The effects of the Alderney Grazing Animals Project on floral species richness on Longis Common

### Background

Alderney Grazing Animals Project was launched in 2003 to manage the species rich grassland on Longis Common. In the past, the Common was grazed using traditional methods. Since the traditional grazing declined after the second world war, the Common was invaded by much coarse vegetation, e.g. bramble, bracken and coarse grasses. The grazing project was introduced to counteract the scrub invasion and to maintain the diversity of the species rich grassland on Longis Common.

### **Floral surveys**

Several floral surveys have been conducted on Longis Common since the project started in 2003. This analysis is based on three surveys carried out in 2004, 2011 and 2019. The details of the surveys are described below. It should be noted that all the surveys were done by different surveyors and during different time of the growing season, thus making it difficult to compare the results.

### 2004

Surveyors: C.T. David and B.J. Ozanne

## Timing: July 2004

**Methodology:** The grazed areas were surveyed using transects.  $0,25 \text{ m}^2$  quadrats were placed every 5m in smaller areas and every 10m in larger areas. Five areas were surveyed. In this analysis only data from the areas B and C will be discussed. In area B, two transects were taken. Both of the transects consisted of 12 quadrats ( $0,25m^2$  each). In area C, only one transect was taken. That transect consisted of 11 quadrats.



Picture 1. The locations of 2004 transects.

2011

Surveyors: C. David and J. Henney

**Timing:** September 2011

**Methodology:** Floral species presence was measured in five  $2m^2$  quadrats on lower/older grazing area, upper/newer grazing area and ungrazed area. So total of 15 quadrats ( $2m^2$  each) were surveyed. Quadrats were placed randomly within each section.



Picture 2. The locations of 2011 quadrats.

#### 2019

Surveyors: A. Haden and L. Pyne

Timing: May 2019

**Methodology:** The survey was conducted using same quadrats as in 2011. Due to time constraints, 11 out of 15 quadrats  $(2m^2 \text{ each})$  were re-evaluated. 5 quadrats on lower/older grazing area (1, 2, 3, 4 and 5), 3 on upper/newer grazing area (6, 8 and 10) and 3 on ungrazed area (11, 12 and 15).

#### Results

This analysis will focus mainly on species richness. Species richness is the number of species present. Species diversity takes into account not only the number of species present but also their abundance. Since the abundance was not recorded in all of the surveys, species diversity will not be discussed here. At the end there is some discussion about the changes in species composition. Species composition basically defines which species grow together.

### 2011 vs. 2019

### Lower grazing area

The lowest parts of the grassland at Longis Common have been grazed since the Alderney Grazing Animals Project started in 2003. This area, that is located closest to the sea, is the most species rich part of the grassland. All 5 quadrats, that were surveyed in 2011, were re-evaluated in 2019. The locations of the quadrats can be seen in the picture below.



Picture 3. The locations of the quadrats on the lower grazing area.

The species richness increased in 4 out of 5 quadrats and decreased in 1 quadrat. The total number of plant species found in the lower grazing area increased from 26 to 36. It should be noted that the species richness increased especially in the east corner of the area (quadrats 4 and 5). In this area the species richness was very low in 2011. The number of plant species recorded in the quadrat 5 more than doubled from 11 to 26 species. In 2019 the species richness was higher in quadrats 4 and 5 than in quadrats 1, 2 and 3. These results will be discussed in more detail when comparing the results to the 2004 results.

	Quad	Irat 1	Quad	rat 2	Quad	Irat 3	Quad	irat 4	Quad	Quadrat 5		Lower grazing area TOTAL	
	2011	2019	2011	2019	2011	2019	2011	2019	2011	2019	2011	2019	
Total number of species	17	<b>20</b> ↑	16	<b>22</b> ↑	21	<b>1</b> 8 ↓	16	<b>24</b> ↑	11	<b>26</b> ↑	26	<b>36</b> ↑	

Table 1. 2011 vs. 2019 results of the lower grazing area.

# Upper grazing area

The grassland at the higher levels of Longis Common have been added to the grazing scheme later. This area is less diverse than the lower area discussed in previous section. Currently the grazing area extends almost all the way to the road on the top. However, all the five quadrats surveyed in 2011 are located in lower parts of the slope. 3 out of 5 quadrats were re-evaluated in 2019. Their locations are shown below.



Picture 4. The locations of the quadrats on upper grazing area.

Species richness incressed in 2 out of 3 quadrats and stayed the same in 1 quadrat. The total number of species found in these three quadrats increased from 19 to 28. It should be noted that in 2011 the total number of species found in the upper grazing area was lower than in the ungrazed control area. 2019 this had changed and species richness was higher in the upper grazing area compared to the ungrazed control area.

	Quad	Irat 6	Quad	irat 8	Quad	rat 10	Upper grazing area TOTAL		
	2011	2019	2011	2019	2011	2019	2011	2019	
Total number of species	13	<b>19</b> ↑	11	<b>19</b> ↑	14	14	19	<b>28</b> ↑	

Table 2. 2011 vs. 2019 results of the upper grazing area.

### Ungrazed control area

Part of the grassland on Longis Common has been left as ungrazed control area to enable the monitoring of the effects of the Alderney Grazing Animals Project. 3 out of 5 quadrats were reevaluated in 2019. The locations of the quadrat can be seen in the picture below.



Picture 5. The locations of the quadrats on ungrazed control area.

Before comparing the results, it is good to mention that in 2019 the control area differed significantly from the grazed areas. The control area is dominated by Red Fescue (*Festuca rubra*), Barren Brome (*Bromus sterilis*), Spear Thistle (*Cirsium vulgare*) and Sea Radish (*Raphanus raphanistrum* ssp. maritimus). There is fewer little flowering plants. Since abundance was not recorded in 2019, the data doesn't quite fully highligh the difference. Quadrat 11 is located right next to a foothpath and is probably trampled a lot more. Thus allowing also smaller plants to grow. Quadrat 11 was more similar to the quadrats in the upper grazing area than the quadrats 12 and 15.

In the control area species richness increased in 2 out of 3 quadrats and decreased in 1 quadrat. The total number of species found in the ungrazed control area increased from 23 to 27, so 17%. In the upper grazing area the total species richness increased 47% and in the lower grazing area 38%. Since species richness increased also in the control area, some of the increases detected in the lower and upper grazing areas are probably explained by other factors than grazing. 2019 the survey was carried out in May, where as 2011 it was done in September. Such a big difference in timing will affect on which species are found and detected. However, since species richness increased significantly more in the grazed areas than it did in the control area, grazing can be argued to have had a positive impact on the species richness.

	Quad	rat 11	Quad	rat 12	Quad	rat 15	Control area TOTAL		
	2011	2019	2011	2019	2011	2019	2011	2019	
Total number of species	11	<b>20</b> ↑	14	<b>16</b> ↑	12	<b>10</b> ↓	23	<b>27</b> ↑	

Table 3. 2011 vs. 2019 results of the ungrazed control area.

#### 2004 vs. 2019

First, it should be highlighted that the methodologies used in 2004 and 2019 differ a lot. This should be kept in mind when interpreting the data. The analysis will focus on two areas: the east corner of the lower grazing area (2004: area C, 2019: quadrats 4 and 5) and the middle of the lower grazing area (2004: area B, 2019: quadrats 2 and 3). The picture below shows how these two sampling areas correspond each other.



Picture 6. 2004 vs. 2019 sampling areas.

## Area C/Quadrats 4 and 5

The species richess in the east corner of the lower grazing area was relatively low at the beginning of the grazing project. In 2004 19 plant species were found in a total sample area of  $2,75m^2$  (11 x  $0,25m^2$  quadrats). In 2019 24 species were found in the quadrat 4 and 26 species in the quadrat 5. The species richness was significantly higher in 2019, even though the quadrat size ( $2m^2$ ) was smaller that the total sample area ( $2,75m^2$ ) in 2004. As discussed before, the species richness increased significantly in quadrats 4 and 5 between 2011 and 2019. These results indicate that the grazing has had a positive impact on species richness in the east corner of the lower grazing area. Besides grazing, lower water levels might explain at least part of the increases seen in the results. In 2004 area C, that is located south of Longis pond, was described as somewhat damper graasland than the area B.

	2004	2019	2019
	Area C, transect 1	Quadrat 4	Quadrat 5
Total sample	2, 75 m <sup>2</sup>	$2 \text{ m}^2$	$2 \text{ m}^2$
area	(11 x 0,25 m <sup>2</sup> )	$(1 \text{ x} 2 \text{ m}^2)$	$(1 \text{ x} 2 \text{ m}^2)$
Total number of species	19	24 ↑	26↑

Table 4. 2004 vs. 2019 results of the east corner of the lower grazing area.

## Area B/Quadrats 2 and 3

In 2004, two transects were surveyed in area B. Twelve  $0.25m^2$  quadrats were surveyed along each transect, making the total sample area  $3m^2$  per transect. 19 plant species were found in transect 1 and 26 species in transect 2. In 2019 two  $2m^2$  quadrats were surveyed in the middle of the lower grazing area. 22 species were found in quadrat 2 and 18 species in quadrat 3. The slightly lower numbers might simply be explained by the lower total sample area. When comparing the 2011 and 2019 results, species richness increased in quadrat 2 from 16 to 22, and decreased in quadrat 3 from 21 to 18. With the data available it is impossible to say with certainty whether the grazing project has managed to maintain species richness in the middle parts of the lower grazing area.

	2004	2004	2019	2019
	Area B,	Area B,	Quadrat 2	Quadrat 3
	transect 1	transect 2	Quantat 2	Quadrat 5
Total sample	$3 \text{ m}^2$	$3 \text{ m}^2$	$2 \text{ m}^2$	$2 \text{ m}^2$
area	(12 x 0,25 m <sup>2</sup> )	(12 x 0,25 m <sup>2</sup> )	$(1 \times 2 \text{ m}^2)$	$(1 \times 2 \text{ m}^2)$
Total number	10	26	22	10
of species	19	20	22	10 (

Table 5. 2004 vs. 2019 results of the middle of the lower grazing area.

## **Species composition**

The following analysis of the changes in species composition will focus on the lower grazing area that has been grazed since the project started in 2003. Probably the biggest change in the species composition between 2004 and 2019 is the disappearance of Sea Couch (*Elytrigia atherica*). In 2004 Sea Couch was found in 27 of 35 quadrats ( $35 \times 0.25m^2$  quadrats along 3 transects in areas B and C). In 2007 Amanda Strevens classified Longis Common as a mosaic of coastal grassland

habitats dominated by *Festuca rubra*, *Dactylis glomerata*, *Elytrigia atherica* and *Raphanus raphanistrum* in her dissertation. She recommended that grazing could be kept for longer periods of time in larger plots to encourage grazing pressure on dominant species such as Sea Couch and scrub, thereby opening up Longis Common. In 2011 Sea Couch was found in 3 of 5 quadrats in the lower grazing area. In 2019 Sea Couch was not recorded in any of the quadrats surveyed.

In 2004 Scarlet Pimpernel (*Anagallis arvesis*) was not recorded in any of the quadrats. In 2019 it was recorded in both quadrats 4 and 5. As a small plant it requires short sward height to grow. Thus, it is a good signal that grazing has had a positive effect. Especially in the east corner of the grassland that was more degraded at the beginning of the grazing project. Thyme-leaved Sandwort (*Arenaria serpyllifolia*) and Dove's-foot Crane's-bill (*Geranium molle*) were not recorded in 2004, but were found in all the five quadrats in the lower grazing area in 2019. In 2011 Thyme-leaved Sandwort was found in 1 of 5 quadrats. Dove's-foot Crane's -bill was not found in 2011. Other small flowers not recorded in 2004 or 2011, but commonly recorded in 2019 were Early Forget-menot (*Myosotis ramosissima*) and Speedwell (*Veronica arvesis*). One reason why they were not found in the other surveys might the later timing of those surveys.

As a more negative signal, Spear Thistle (*Cirsium vulgare*), a herbaceous species well protected against grazing, was not recorded in 2004. In 2011 thistle was found in 1 of 5 quadrats in the lower grazing area. In 2019 Spear Thistle was found in 4 of 5 quadrats.

# **Highlights:**

- The grazing seems to have had a positive impact on species richness at least in the east corner of the lower grazing area and in the upper grazing area. Both of these areas had relatively low species richness at the beginning of the grazing scheme.
- With the data available it is impossible to say with certainty whether the grazing project has managed to maintain species richness in the middle parts of the lower grazing area.
- The grazing intensity has varied considerably since 2003. It was agreed during the 2019 field survey that the current grazing intensity is not enough (only 3 cattle).

## **Recommendations for the future:**

- If another floral survey is conducted at Longis Common, it would make sense to replicate the 2004 survey (both sampling and timing) as it was meant as a baseline against which the flora can be compared at a future date. No statistical analysis was attempted with the 2019 data due to the differences in sampling and timing.
- It should be noted that both the field survey and the data analysis requires lots of botanical knowledge. Especially if the aim is to analyse changes in species composition, not just the amount of species recorded (species richness).

														Lower gra	zing area
		Quad	drat 1	Qua	drat 2	Quad	Irat 3		Quad	rat 4	_	Quad	Irat 5	TO.	TAL
		2011	2019	2011	2019	2011	2019		2011	2019	_	2011	2019	2011	2019
Achillea millefolium	Yarrow	х	X	X		х			х	х	_			X	Х
Anagallis arvensis	Scarlet Pimpernel									x	_		х		х
Arenaria serpyllifolia	Thyme-leaved Sandwort		x	_	X		x			x	_	х	Х	X	х
Bellis perennis	Daisy												х		Х
Brachythecium albicans	Whitish Feather-moss						х						х		х
Carex arenaria	Sand Sedge	x		x	x	х	х		x	x		х	х	х	х
Catapodium rigidum	Fern-grass												х		х
Cerastium diffusum	Sea Mouse-ear		х												х
Cerastium fontanum	Common Mouse-ear	х		x	х	х	х		х	х			х	х	х
Cirsium sp.	Thistle								x					х	
Cirsium vulgare	Spear Thistle		х		х		х			х					х
Convolvulus arvensis	Field Bindweed	х				х			х					х	
Cuscuta epithymum	Dodder	х				х								х	
Dactylis glomerata	Cock's-foot	х	х	x	x	х	х		х	х		х	х	х	х
Elvtrigia atherica	Sea Couch					х			х			х		x	
Erodium cicutarium	Common Stork's-bill												x		x
Euphrasia sp.	Evebright					х								x	
Festuca ovina	Sheep's Fescue				x		x			x			x		x
Festuca rubra	Red Fescue	x	x	×	x	Y			Y	Y		Y	x	×	x
Galium verum	Lady's Bedstraw	x	x	x	x	v	v		~	v		v	×	×	× ×
Geranium molle	Dove's-foot Crane's-bill	~	x		x	~	v			v		~			v
Homalothecium sericeum	Silky Wall Feather-moss		~	- ×	~	v	^			^			~	~	~
Hypochaeris radicata	Cat's-par		v		×	~	v			~			v	×	v
Kooloria macrantha	Creeted Hair-grass	~	^	~	<u> </u>	×	~			~			×	×	~
Loontodon savatilis	Lossor Hawkhit	~		~ ~		×					_			×	
	Berenniel Due grass	~				x			X		_	x	X	X	×
Lotun perenne	Common Bird's fast trafeil									X	_				X
Lotus comiculatus	Common Bird s-loot-treioli	X	X	X	X	x	x		x	X	_		X	X	X
Luzula campesiris	Pleid Wood-lush		x	-	X					X	_		X		x
Medicago Iupulina	Black Medick					X								X	
Myosotis ramosissima	Early Forget-me-not		X		X					x	_		х		Х
Unonis repens	Common Restharrow	x	x	x		x			x				х	X	x
Plantago lanceolata	Ribwort Plantain	x	x	×	X	х	х		x	x	_	х	х	Х	Х
Poa annua	Annual Meadow-grass		X	_							_		Х		Х
Ranunculus bulbosus	Bulbous Buttercup	Х	х	×	Х	х	х		х	х			х	х	х
Raphanus raphanistrum ssp. maritimus	Sea Radish	x	x		x		x		x	x		x	x	x	x
Senecio jacobaea	Common Ragwort	х		×	х				х					х	х
Sonchus asper	Prickly Sow-thistle		х							х		х		х	х
Taraxacum spp.	Dandelion				x		х			х			х		х
Thymus polytrichus	Wild Thyme	x		x	x	x	x			x		x	x	x	x
Trifolium dubium	Lesser Trefoil			1	X					x					x
Trifolium occidentale	Western Clover			×		x			x	~			x	×	x
Veronica arvensis	Speedwell		x		x	~	x		~	x	_		~		x
Vicia so.	Vetch		x	1			~			~					x
Vicia sativa	Common Vetch			1	x		x								x
	Total number of				~		~	. L							~
	species	17	20 ↑	16	22 ↑	21	<b>1</b> 8 ↓		16	24 ↑		11	<b>26</b> ↑	26	36 ↑

Table 6. Detailed comparison of 2011 and 2019 results in the lower grazing area (quadrats 1, 2, 3, 4 and 5).

		Qua	irat 6	Quadrat 8			Quad	rat 10	Upper graz TOT		azing area T∆I	
		2011	2019		2011	2019		2011	2019		2011	2019
Achillea millefolium	Yarrow	2011	2010		2011	2010		x	x		x	×
Anagallis arvensis	Scarlet Pimpernel	x			x			~	~		x	
Arenaria serpvllifolia	Thyme-leaved Sandwort		x			x	1					х
Bromus sterilis	Barren Brome					x	1					х
Carex arenaria	Sand Sedge	x			х		1	х			х	
Cerastium fontanum	Common Mouse-ear		х			х	1					х
Cirsium vulgare	Spear Thistle						1	х			х	
Crepis capillaris	Smooth Hawk's-beard				х		1				х	
Dactylis glomerata	Cock's-foot	х	х		х	х	1	х	х		х	х
Elytrigia atherica	Sea Couch	х					1	х			х	
Festuca ovina	Sheep's Fescue						1		х			х
Festuca rubra	Red Fescue	х	х		х	х	1	х	х		х	х
Galium verum	Lady's Bedstraw	х	х		х	х	1	х	х		х	х
Geranium molle	Dove's-foot Crane's-bill		х			х	1		х			х
Holcus lanatus	Yorkshire-fog						1		х			х
Hypochaeris radicata	Cat's-ear					х	1					х
Leontodon Saxatilis	Lesser Hawkbit		х				1					х
Lolium perenne	Perenial Rye-grass		х				1					х
Lotus corniculatus	Common Bird's-foot-trefoil		х			х		х	х		х	х
Luzula campestris	Good Friday Grass		х			х						х
Medicago lupulina	Black Medick	х			х						х	
Myosotis ramosissima	Early Forget-me-not		х			х						x
Ononis repens	Common Restharrow		х					х	х		х	x
Plantago lanceolata	Ribwort Plantain	х	х		х	х		х	x		х	x
Poa annua	Annual Meadow-grass		х			х						x
Ranunculus bulbosus	Bulbous Buttercup	х	х		х			х	x		х	х
Raphanus raphanistrum ssp.	Sea Radish										v	v
maritimus		x	x		x	x		x			x	X
Rumex acetosa	Common Sorrel								x			х
Sonchus asper	Prickly Sow-thistle					х		х			х	х
Sonchus oleraceus	Smooth Sow-thistle	х	х			х					х	x
Taraxacum spp.	Dandelion		х									x
Trifolium dubium	Lesser Trefoil					х						x
Trifolium occidentale	Western Clover	х									х	
Veronica arvensis	Speedwell					х			х			х
Vicia sp.	Vetch	х			х			х			х	
Vicia sativa	Common Vetch		х			х			х			х
	Total number of species	13	<b>19</b> ↑		11	<b>19</b> ↑		14	14		19	<b>28</b> ↑

Table 7. Detailed comparison of 2011 and 2019 results in the upper grazing area (quadrats 6, 8 and 10).

		Quad	rat 11	G		rat 12	Quad	rat 15	Contro TO	ol area FAL
		2011	2019		2011	2019	2011	2019	2011	2019
Anagallis arvensis	Scarlet Pimpernel		x				x		x	x
Anthoxanthum odoratum	Sweet Vernal-grass	x			х				x	
Arenaria serpyllifolia	Thyme-leaved Sandwort		x							x
Brachythecium albicans	Whitish Feather-moss		х							x
Bromus sterilis	Barren Brome					х		х		x
Carduus tenuiflorus	Slender-flower Thistle							x		x
Carex arenaria	Sand Sedge		х			х				x
Carex flacca	Glaucous Sedge						х		х	
Cerastium fontanum	Common Mouse-ear		х							x
Cirsium vulgare	Spear Thistle					х	x	х	х	x
Convolvulus arvensis	Field Bindweed					х	х	х	х	х
Dactylis glomerata	Cock's-foot	x	х		х	х		х	х	x
Echium vulgare	Vipers Bugloss						x		x	
Festuca ovina	Sheep's Fescue		x			х				x
Festuca rubra	Red Fescue	x	x		х	х	х	х	х	х
Galium verum	Lady's Bedstraw	x	x		х	х	х	х	х	х
Geranium molle	Dove's-foot Crane's-bill		х			х				x
Holcus lanatus	Yorkshire-fog	x			х		х		х	
Hypochaeris radicata	Cat's-ear		x							x
Leontodon Saxatilis	Lesser Hawkbit				х	х			х	x
Lolium perenne	Perenial Rye-grass		x							х
Lotus corniculatus	Common Bird's-foot-trefoil				х	х		х	х	х
Myosotis ramosissima	Early Forget-me-not		х			х				х
Ononis repens	Common Restharrow						х		х	
Picris echioides	Bristly Ox Tongue				х				х	
Plantago lanceolata	Ribwort Plantain	x			х				х	
Poa annua	Annual Meadow-grass		x							x
Ranunculus bulbosus	Bulbous Buttercup					х				х
Raphanus raphanistrum ssp.	Sea Radish									
maritimus		x	x		x	x	x	x	x	x
Rumex acetosa	Common Sorrel	x							x	
Senecio jacobaea	Common Ragwort		x							x
Sonchus asper	Prickly Sow-thistle	x	x			х	х		х	х
Stellaria media	Common Chickweed				х				х	
Thymus polytrichus	Wild Thyme		x							x
Trifolium occidentale	Western Clover						x		х	
Trisetum flavescens	Yellow Oat-grass				х				х	
Veronica arvensis	Speedwell		x							x
Veronica chamaedrys	Germander Speedwell	x			х				x	
Vicia sp.	Vetch	x			x				x	
Vicia sativa	Common Vetch		x			х		х		x
	Total number of species	11	<b>20</b> ↑		14	<b>16</b> ↑	 12	<b>10</b> ↓	 23	<b>27</b> ↑

Table 8. Detailed comparison of 2011 and 2019 results in the ungrazed control area (quadrats 11, 12 and 15).

Area B, tanset     Area B, tanset     Data S,			20	04	20	04	2019	2019
total sample area: 3m²     total sample area: 3m²     total sample area: 2m²     total sample area: 2m² <thtotal sam²<="" th="">     total sam²     total sa</thtotal>			Area B, tr	ansect 1	Area B, tr	ansect 2	Quadrat 2	Quadrat 3
presence     presence     sequent*     presence     sequent*     presence     presence       Adjrositis sp.     Bart     1     X     2/12     X     6/12     1       Alra praces     Early Hair-grass     X     1/12     X     2/12     1       Antoxanthun odoratum     Sweet Vernal-grass     X     1/12     X     2/12     1       Artenzia serp/filoila     Thyme-leaved Sandord     X     7/12     X     1/12     X     X       Carsot areanais     Sand Sedge     X     7/12     X     1/12     X     X       Carsot areanais     Sand Sedge     X     7/12     X     1/12     X     X       Carsotian glomentum     Sticky Muse-ear     X     Y     X     2/12     X     X       Carsotian glomentum     Conton Muse-ear     Y     Y     X     1/12     X     X       Carsotian glomentum     Codef     X     1/12     X     1/12     X     X       Carsotian glomentu			total sample	e area: 3 m <sup>2</sup>	total sample	e area: 3 m²	total sample area: 2 m2	total sample area: 2 m2
Achite millefolium     Yarow     ×     10/2     ×     4/12       Afra preacx     Enty Hair-grass     ×     2/12         Afra preacx     Enty Hair-grass     ×     2/12         Antoxanthum odoratum     Sweet Venal-grass     ×     1/12     ×     2/12        Antoxanthum odoratum     Sweet Venal-grass     ×     1/12     ×     ×     ×       Brachythecium albicas     Whitsh Festhermoss     ×     1/12     ×     ×     ×       Careas stem finatum     Saa Feingrass     ×     1/12     ×     1/12     ×     ×       Careastium formeratum     Stick Mouse-ear     ×     1/12     ×     1/12     ×     ×       Convolvalus arronsis     Field Bindweed     ×     1/12     ×     1/12     ×     ×     ×       Convolvalus arronsis     Field Bindweed     ×     1/12     ×     1/12     ×     ×     ×       Convolvalus arronsis     Field Bindweed     ×     1/12			presence	frequency*	presence	frequency*	presence	presence
Agrostis sp.     Bent     Image Second     2/12     Image Second       Anis prescond     Sweet Vernal-grass     X     1/12     X     2/12     Image Second       Antonation odoratum     Sweet Vernal-grass     X     1/12     X     2/12     Image Second       Aresonia serp/Hindigation     Thyme-leaved Sandword     Image Second     X     X     X       Carex stransfa     Sand Sedge     X     7/12     X     10/12     X     X       Carex stransfaria     Sand Sedge     X     7/12     X     10/12     X     X       Carex stransfarom Mouse-ser     X     1/12     X     1/12     X     X       Consolvulus arenais     Field Bindweed     X     1/12     X     1/12     X     X       Consolvulus arenais     Smooth Hawk's-beard     X     1/12     X     1/12     X     X       Consolvulus arenais     Sheedy Fescue     X     1/12     X     1/12     X     X       Consolvulus arenais     Sheedy Fescue     <	Achillea millefolium	Yarrow	х	10/12	х	8/12		
Aira precox     Entry Hair-grass     X     1/12     X     2/12     Image: Constraint of the	Agrostis sp.	Bent			x	2/12		
Anthocanthum odoratum     Sweet Vernal-grass     X     1/12     Image and Sandort       Branzań szerythicija     Whitab Feaher-moss     Image and Sandort     X     X     X       Brachythecium albicans     Whitab Feaher-moss     Image and Sandort     X     X     X       Caras sranafa     Sand Stödge     X     7/12     X     10/12     X     X       Carastium formanum     Gentern Mouse-ear     X     1/12     X     2/12     Image and Sandort       Creastium formarum     Speat Thistle     Image and Sandort     X     1/12     X     2/12     Image and Sandort       Crostivus arvensis     Field Bindweed     X     1/12     X     2/12     Image and Sandort       Cuscus epithymum     Doder     Image and Sandort     X     1/12     X     2/12     Image and Sandort       Cuscus epithymum     Doder     X     1/12     X     1/12     X     1/12     X     X     X       Exploration     Ref Fascue     X     9/12     X     1/12     X	Aira praecox	Early Hair-grass	x	1/12	x	2/12		
Arearai serpylifolio Thyme-leaved Sandwort n   Brachytheckum abloans Whish Farlaher-moss n n   Catex armaria Sand Sedge X 7/12 X 10/12 X X   Catex armaria Sand Sedge X 7/12 X 10/12 X X   Catex armaria Sand Sedge X 1/12 N 10/12 X X   Carestium fontnum Common Mouse-ear X 1/12 X 1/12 N N   Construm fontnum Sticky Mouse-ear X 1/12 X 1/12 N N   Convolvulus arvensis Field Bindwed X 3/12 X 1/12 N N   Coscut aplifyrium Dodder X 1/12 X 1/12 X X   Cascut aplifyrium Dodder X 1/12 X 1/12 X X   Festura orba Red Fescue X 9/12 X 1/12 X X   Festura orba Red Fescue X 9/12 X 1/12 X X   Festura orba Red Fescue X 9/12 X 1/12 X X   Gallam	Anthoxanthum odoratum	Sweet Vernal-grass	x	1/12				
Brachythecium albicans     Whitsh Feathermoss     Image: Carex arenaria     Samd Sedge     X     7/12     X     10/12     X     X       Carexolum mariuum     Sae Fenn-gass     X     1/12     X     10/12     X     X       Carestium fontanum     Common Mouse-ear     X     1/12     X     X     X       Carestium fontanum     Spart Thatle     X     1/12     X     1/12     X     X       Convolvulus avensis     Field Bindweed     X     1/12     X     1/12     X     X       Dacylis glomerata     Scock-foot     X     1/12     X     1/12     X     X     X       Dacylis glomerata     Cock-foot     X     1/12     X     1/12     X     X     X       Euphrasis sp.     Eybright     X     1/12     X     1/12     X     X     X     X     X     X     X     X     X     X     X     X     X     X     X     X     X     X     X	Arenaria serpyllifolia	Thyme-leaved Sandwort					x	х
Carax senaria Catapodium mainum Catapodium mainum Icatapodium mainum Icatapodium mainum Sea Fen-grass Censium flotanamSea Fen-grass Curve for the senaria senaria Sea Fen-grassX1/12X10/12XXCensium flotanam Cristim vulgare Cristim vulgare Crepis capillaris Sucot have shard Curve for the sha	Brachythecium albicans	Whitish Feather-moss						х
Catagodium marinum Common Mouse-ear Carsitum fonnaum Common Mouse-ear Carsitum glomeratumSea Fern-grass Common Mouse-earX1/12NNCirsitum glomeratum Convolvulas avensis Convolvulas avensis Convolvulas avensisSpeat ThistleNXXXXCropic capillaris Cuscuta epithynum DodderSmooth Hawk's-beardX1/12X1/12NNCuscuta epithynum DodderDodderX3/12X1/12NNCuscuta epithynum DodderDodderX3/12X4/12XXXElytrigia atherica Estuca ovinaSee CouchX3/12X1/12NNFestuca ovina Gallum verum Llady's BedstrawSheep's FescueX9/12X10/12XXFestuca ovina Gallum verum Llady's BedstrawX6/12X10/12XXXHolcot ichon pubseons Homatothecium sericeum Pitky Wall Feather-moss Aryosotis ranossima Common Risk-shortwoitX6/12X4/12X1/12NLotus conciutatis Common ResharrowCommon ResharrowX6/12X1/12NNPhatago alexacita Raphanistrum sep. matimumSea Radish Mosotifi ranossima Early Forget-menotX1/12X1/12NCommon Ragvort Taraxecum sep. Tribul mapersSea Radish Mit CloverX1/12X1/12NSea Radish Vinic IlowerX1/12 </td <td>Carex arenaria</td> <td>Sand Sedge</td> <td>x</td> <td>7/12</td> <td>x</td> <td>10/12</td> <td>x</td> <td>х</td>	Carex arenaria	Sand Sedge	x	7/12	x	10/12	x	х
Censitium formanum Censitium glomeratum Sticky Mouse-ear Cristium vulgare Convolvulus avensis     Convolvulus Field Bindweed     x     1/12     X     2/12     X     X       Convolvulus avensis     Field Bindweed     X     1/12     X     2/12     X     X       Convolvulus avensis     Field Bindweed     X     3/12     X     1/12     X     X       Cuscuta epithymum     Dodder     X     3/12     X     4/12     X     X       Dacylis glomerata     Cock-shot     X     3/12     X     4/12     X     X       Euphrasia sp.     Eyebright     X     3/12     X     1/12     X     X       Festuca viha     Red Fescue     X     9/12     X     10/12     X     X       Galium verum     Lady's Bedstraw     X     6/12     X     10/12     X     X       Holicutrichron pubescens     Dowe's-bot Cra's-bit     X     1/12     X     1/12     X     1/12     X     1/12     X     1/12     X     1/12	Catapodium marinum	Sea Fern-grass	x	1/12				
Cerasium glomeratum Cirsium vulgare     Stoper Thistle     X     1/12     X     2/12     X     X       Cirsium vulgare     Spear Thistle     Spear Thistle     X     1/12     X     X     X       Cropic capillaris     Smooth Hawk's-beard     X     1/12     X     1/12     X     X       Cuscuta opithymum     Dodder     X     3/12     X     1/12     X     X       Dartylis glomerata     Cock's foot     X     3/12     X     4/12     X     X       Elythrajis atherica     Sea Couch     X     11/12     X     7/12	Cerastium fontanum	Common Mouse-ear					x	х
Circinum vulgare     Spear Thistle     Image: Convolvulus avensis     Field Bindwed     X     3/12     X     1/12     X     X       Convolvulus avensis     Field Bindwed     X     3/12     X     1/12	Cerastium glomeratum	Sticky Mouse-ear	x	1/12	x	2/12		
Convolvului arvensis Field Bindweed X 3/12 X 1/12   Cregic capillaris Smooth Hawk's-beard X 1/12 X 1/12   Cuscuta epilymum Dodder X 1/12 X 1/12   Dactyrijs glomerata Cock's-foot X 3/12 X 4/12   Eybrigis atherica Sea Couch X 3/12 X 4/12   Euphrasia sp. Eybright X 1/12 X 1/12   Festuca ovina Sheep's Fescue X 9/12 X 10/12   Festuca rubra Red Fescue X 9/12 X 10/12   Geranium mole Dows-foot Crane's-bill X 2/12 X X   Holicotrichon pubsecens Downy Oragrass X 1/12 X 2/12   Honalothecium sericeum Slivy Wall Feathermoss X 1/12 X 2/12   Honalothecium sericeum Slivy Vall Feathermoss X 1/12 X X   Loiur perenne Perennial Rye-grass X 1/12 X X   Loiur perenne Perennial Rye-grass X 1/12 X X   Mysocisi ramossima Early Forget-me-not X <td>Cirsium vulgare</td> <td>Spear Thistle</td> <td></td> <td></td> <td></td> <td></td> <td>x</td> <td>x</td>	Cirsium vulgare	Spear Thistle					x	x
Crepis capillaris Smooth Hawk's-beard X 1/12 X 1/12   Cuscuia epithynum Dodder X 2/12 X 4/12 X   Dartylis glomerata Cock's foot X 3/12 X 4/12 X   Elytrigia atherica Sea Couch X 11/12 X 4/12 X X   Elytrigia atherica Sea Couch X 11/12 X 4/12 X X   Elytrigia atherica Sea Couch X 11/12 X 4/12 X X   Eightrasia sp. Eyebright X 11/12 X 11/12 X X   Festuca ovina Sheep's Fescue X 9/12 X 10/12 X X   Galium verum Lady's Bedstraw X 6/22 X 10/12 X X   Helictotrichon pubescens Dowey Soci Crane's-bill - - X X   Holcus lanatus Yorkshire-fog X 1/12 X 1/12 -   Lofum prenne Perennial Rye-grass X 1/12 X 1/12 -   Lotus concludatus Good Friday Grass X 1/12 X 4/12 X	Convolvulus arvensis	Field Bindweed	x	3/12	x	1/12		
Cuscuta epithymum Dodder   Dactylis glomerata Cock's-foot   Sea Couch ×   Elytrigi atherica Sea Couch   Euphrasia sp. Eyebright   Festuca ovina Sheep's Fescue   Festuca ovina Sheep's Fescue   Festuca ovina Sheep's Fescue   Festuca ovina Sheep's Fescue   Galium verum Lady's Bedstraw   Geranium molle Dov's-foot Crane's-bill   Holicottrichon pubsecens Down's-foot Crane's-bill   Holicottrichon pubsecens Silky Wall Feather-moss   X 1/12   X 2/12   Homatothecium perene Perennial Rye-grass   X 1/12   Lotus corriculatus Common Bird's-dot-trefoil   Luzula campestris Good Friday Grass   Mysocister amossima Early Forget-me-not   Connon Reghtarrow X   Bultous Buttercup K   Pheum arenarium Sand Cat's-tail   Plantagi ancelasta Cat's-tail   Raumuculus bulbous Bultous Buttercup   Seneco jacobaea Common Ragvort   Taraxacum spp. Dadelion   Tribolum tubium Lesser Trefoil   Tribolum tubuium Lesser Trefoil   <	Crepis capillaris	Smooth Hawk's-beard	x	1/12	x	1/12		
Dactylis glomerata     Cock's-foot     X     3/12     X     4/12     X     X       Elydrigia atherica     Sea Couch     X     11/12     X     4/12     X     X       Elydrigia atherica     Sea Couch     X     11/12     X     7/12     Image: Concent of the concent	Cuscuta epithymum	Dodder		-,	x	2/12		
Elytrigia atherica Sea Couch X 11/12 X 7/12   Euphrasia sp. Eyebright   Festuca ovina Sheep5 Fescue   Festuca ovina Sheep5 Fescue   Gallum verum Lady's Bedstraw   Garanium molle Dove's-foot Crane's-bill   Helictotrichon pubescens Downy Oat-grass   Holtots lanatus Yorkshire-fog   Honalothecium sericeum Silky Wall Feather-moss   Lolium perenne Perennial Rye-grass   Lolium perenne Perennial Rye-grass   Lotus corriculatus Commo Bird's-foot-tefoil   Luzula campestris Godo Triday Grass   Myosotis ramossima Early Forget-me-not   Onnis repens Commo Restharrow   Pheum arenarium Sad Ca's-tail   Plantago lanceolata Ribwort Plantain   X 6/12   X 1/12   X 4/12   X 2/12   Commo Reguont   See Radish   X 6/12   X 4/12   X 4/12   X 4/12   Yata X   Sen Coli actobase Common Restharrow   Natimus Size Radish   X 1/12	Dactylis glomerata	Cock's-foot	x	3/12	x	4/12	x	x
Euphrasia sp. Eyebright   Festuca ovina Sheep's Fescue   Festuca ovina Ref Fescue   Galium verum Lady's Bedstraw   Carland X   Galium verum Lady's Bedstraw   Carland X   Geranium molle Dove's-foot Cran's-bill   Helictotrichon pubescens Downy Oat-grass   Downy Oat-grass X   Monalothecium sericeum Silky Wall Feather-moss   Hypochaeris radicata Cat's-ear   Lofuur perenne Perennial Rye-grass   Lotus corniculatus Common Bird's-foot-trefoil   Luzu campestris Good Friday Grass   Mysootis rancossima Common Restharrow   Pheum arenarium Sand Cat's-tail   Raunculus bulbosus Bulbous Buttercup   Raphanus raphanistrum ssp. Sea Radish   Trifolium dubium Lesser Trefoil   Tritolium dubium Lesser Trefoil   Tritolium dubium Lesser Trefoil   Tritolium dubium Lesser Trefoil   Kite astiva X   Veronica arvensis Speedwell   Yero X   Speedwell X   Yuma Phanes raphanistrum ssp. Spee Radish   Yuma Phanes raphanistrum ssp. Speedwell	Elytrigia atherica	Sea Couch	x	11/12	x	7/12		
Festuca ovina Festuca rubraSheep's Fescue Red Fescuex9/12x10/12xxGalium verum Galium rerum Lady's Bedstraw Geranium molleLady's Bedstraw Dow's-foot Crane's-billx6/12x10/12xxHelictotrichon pubescens Holcus IanatusDowy Oat-grass Yorkshire-fogx2/12xxxHolcus Ianatus Holcus IanatusYorkshire-fog Yorkshire-fogx1/12xxxHonalothecium sericeum Luzula campestris Ononis repens Dononis repens Common Restharow Shery Walf Patheran Sand Cat's-tailx4/12xxxPheum arenarium Raphanis repansitivm ssp. Trifolium dubium 	Euphrasia sp.	Evebright		,	x	1/12		
Festuce rubra Galium verumRed Fescue (second)X9/12X10/12XGalium verum Geranium molleLady's Bedstraw Dow's-foot Crane's-billX6/12X10/12XXGeranium molleDow's-foot Crane's-billIX6/12X10/12XXHelictotrichon pubescens Hondothecium serieurDowny Oat-grass Silky Wall Feather-mossX1/12X2/12Image: Common Bird's foot-trefoilHondothecium serieurSilky Wall Feather-moss (at's-earX1/12X2/12Image: Common Bird's foot-trefoilLotus corniculatus Luzula campestrisCommon Bird's-foot-trefoilX4/12XXXMysootis ramossisma Bandy Erget-me-not Ononis repens Ranunculus bulbosusSand Cat's-tail Bulbous ButtercupX8/12X3/12Image: Common Restharrow Sind Cat's-tailPlantago lanceolata Raphanus raphanistrum ssp. Trifolium dubium Lesser TrefoilSand Cat's-tail Sind ChargesX1/12XXXSenecio jacobaea Trifolum dubium Lesser TrefoilCommon RagwortX8/12X1/12XXTrifolum dubium Ucia sativaCommon VetchX8/12X1/12XXVeronica arvensis Veronica arvensisSpeedwellImage: Common VetchX1/12XXTotal number of species1926221818	Festuca ovina	Sheep's Fescue				-,	x	x
Galium verum Geranium molle Lady's Bedstraw Dove's-foot Crane's-bill X 6/12 X 10/12 X X   Helictotrichon pubescens Downy Oat-grass X 2/12 X 2/12 X   Holicus lanatus Yorkshire-fog X 2/12 X 2/12 X   Homalothecium sericeum Silky Wall Feather-moss X 1/12 X 2/12 X   Hypochaeris radicata Cat's-ear X 2/12 X X X   Lolum perenne Perennial Rye-grass X 1/12 X X X   Luzula campestris Good Friday Grass X 1/12 X X X   Myosotis ramossima Early Forget-me-not X 2/12 X X   Pheum arenarium Sand Cat's-tail X 6/12 X 4/12 X X   Plauma sraphanistrum ssp. Bulbous Buttercup X 6/12 X 4/12 X X   Raphanus raphanistrum ssp. Barly Forget-merot X 6/12 X X X   Senecio jacobaea Common Ragwort X 6/12 X X X   Trifolium dubium Lesser Trefoil X <t< td=""><td>Festuca rubra</td><td>Red Fescue</td><td>x</td><td>9/12</td><td>x</td><td>10/12</td><td>x</td><td></td></t<>	Festuca rubra	Red Fescue	x	9/12	x	10/12	x	
Geranium molleDow's-foot Crane's-billImage: Crane's-billImage: Crane's-billImage: Crane's-billHelictotrichon pubescensDowny Oat-grassX2/12XXHolcus lanatusYorkshire-fogX2/12Image: Crane's-billImage: Crane's-billHomalothecium sericeumSilky Wall Feather-mossX1/12X2/12Image: Crane's-billHypochaeris radicataCat's-earX2/12XXXLolium perennePerennial Rye-grassX1/12X4/12XXLotus corniculatusCommon Bird's-foot-trefoilX4/12XXXMyosotis ramossimaEarly Forget-me-notXX2/12Image: Crane's billImage: Crane's billPhleum arenariumSand Cat's-tailX8/12X3/12Image: Crane's billPhleum arenariumSand Cat's-tailX2/12XXXPhleum arenariumSand Cat's-tailX2/12XXXRanunculus bulbosusBulbous ButtercupImage: Crane's billXXXXSenecio JacobaeaCommon RagvortImage: Crane's billX1/12XXXTrifolium dubiumLesser TrefoilImage: Crane's billX1/12XXXTrifolium dubiumLesser TrefoilImage: Crane's billX1/12XXXVicia sativaCommon VetchX1/12XX <t< td=""><td>Galium verum</td><td>Ladv's Bedstraw</td><td>x</td><td>6/12</td><td>x</td><td>10/12</td><td>x</td><td>x</td></t<>	Galium verum	Ladv's Bedstraw	x	6/12	x	10/12	x	x
Helictotrichon pubescens Holcus lanatusDowny Oat-grass Yorkshire-fogx2/12xHolcus lanatusYorkshire-fogx2/12	Geranium molle	Dove's-foot Crane's-bill		0/12	~	10/12	x	x
Holcus lanatusYorkshire-fognJuitHomalothecium sericeumSilky Wall Feather-mossx1/12x2/12Hypochaeris radicataCat's-earx2/12xxLolium perennePerennial Rye-grassx1/12xxLotus comiculatusCommon Bird's-foot-trefoilx4/12xxLuzula campestrisGood Friday Grassx1/12xxMysosolis ramossimaEarly Forget-me-notx8/12x3/12Ononis repensCommon Restharrowx8/12x3/12Pheum arenariumSand Cat's-tailx6/12xxPlantago lanceolataRibwort Plantainx6/12x6/12xRaphanus raphanistrum ssp. maritimusSea Radishx5/12x1/12xSenecio jacobaeaCommon Ragwortx8/12x1/12xxTrifolium dubiumLesser Trefoilx8/12x1/12xxTrifolium rapensWhite Cloverx1/12xxxTrifstum flavescensYellow Oat-grassx2/12xxxVeronica arvensisSpeedwellx1/12xxxTotal number of species1926221818	Helictotrichon pubescens	Downy Oat-grass			x	2/12		
Homalothecium sericeumSilky Wall Feather-mossx1/12x2/12Hypochaeris radicataCat's-earX2/12XXLolium perenePerennial Rye-grassX1/12XXLotus corniculatusCommon Bird's-foot-trefoilX4/12XXLuzula campestrisGood Friday GrassX1/12X4/12XXMyosotis ramossimaEarly Forget-me-notX1/12X2/12XXOnonis repensCommon RestharrowX8/12X3/12XXPlantago lanceolataRibwort PlantainX6/12XXXRaphanus raphanistrum ssp.Sea RadishX1/12X2/12XXSenecio jacobaeaCommon RagwortX8/12X1/12XXTrifolium dubiumLesser TrefoilX8/12X1/12XXTrifolium repensYhite CloverX1/12XXXVeronica arvensisSpeedwellX2/12XXXVicia sativaCommon VetchX1/12XXX	Holcus lanatus	Yorkshire-fog			x	2/12		
Hypochaeris radicataCat's-earx2/12xxLolium perennePerennial Rye-grassx1/12xxxLotus corniculatusCommon Bird's-foot-trefoilx4/12xxxLuzula campestrisGood Friday Grassx1/12xxxMyosotis ramossimaEarly Forget-me-notx3/12xxOnonis repensCommon Restharrowx8/12x3/12xPheum arenariumSand Cat's-tailx6/12x6/12xxRanunculus bulbosusBulbous Buttercupx6/12xxxxRaphanus raphanistrum ssp.Sea Radishx1/12xxxxSenecio jacobaeaCommon Ragwortx8/12x7/12xxxTrifolium repensWhite Cloverx8/12x7/12xxxTrifolium repensYhello Oat-grassx1/12xxxxVeronica arvensisSpeedwellxx1/12xxxVicia sativaCommon Vetch19262218	Homalothecium sericeum	Silky Wall Feather-moss	x	1/12	x	2/12		
Lolium perennePerennial Rye-grassx1/12x4/12xxLotus corniculatusCommon Bird's-foot-trefoilx4/12xxxxLuzula campestrisGood Friday GrassGood Friday Grassx4/12xxxMyosotis ramosssimaEarly Forget-me-notx3/12xxmodelOnonis repensCommon RestharrowX8/12x3/12xmodelPhleum arenariumSand Cat's tailx6/12x2/12xxPlantago lanceolataRibwort Plantainx6/12x2/12xxRaphanus raphanistrum ssp. maritimusSea Radishx5/12x2/12xxSenecio jacobaeaCommon Ragwortx8/12x1/12xxxTrifolium dubiumLesser Trefoilx8/12x1/12xxxTrifolium dubiumLesser Trefoilx1/12xxxxxVeronica arvensisSpeedwellx1/12xxxxxVicia sativaCommon Vetchx1/12xxxxx	Hypochaeris radicata	Cat's-ear	x	2/12		-,	x	x
Lotus corniculatusCommon Bird's-foot-trefoilx4/12xxLuzula campestrisGood Friday GrassSx4/12xxMyosotis ramosssimaEarly Forget-me-notx3/12xxOnonis repensCommon RestharrowX8/12x3/12xPhleum arenariumSand Cat's-tailx6/12xxxPlantago lanceolataRibwort PlantainX6/12xxxRanunculus bulbosusBulbous ButtercupSea RadishxxxxSenecio jacobaeaCommon Ragwortx1/12xxxTaraxacum spp.Dandelionx8/12x1/12xxTrifolum dubiumLesser Trefoilx8/12x1/12xxTrifolum dubiumLesser Trefoilx1/12xxxTrifolum dubiumLesser Trefoilx1/12xxxVicia sativaCommon Vetchx1/12xxxTotal number of species1926221814	Lolium perenne	Perennial Rye-grass	x	1/12				
Luzula campestrisGood Friday GrassnnnnMyosotis ramosssimaEarly Forget-me-notnnnnOnonis repensCommon RestharrowX8/12X3/12nPhleum arenariumSand Cat's-tailnnnnPlantago lanceolataRibwort PlantainX6/12X6/12xnRanunculus bulbosusBulbous ButtercupnnnnnRaphanus raphanistrum ssp.Sea Radishx5/12x2/12nnSenecio jacobaeaCommon Ragwortnx1/12xxnTaraxacum spp.Dandelionx8/12x1/12xxnTrifolium dubiumLesser Trefoilnx8/12x1/12nnTrifolum repensWhite Cloverx1/12nnnnnVicia sativaCommon Vetchnx1/12xxnTotal number of species1926221818	Lotus corniculatus	Common Bird's-foot-trefoil		-/	x	4/12	x	x
Myosotis ramosssima Ononis repensEarly Forget-me-not Common Restharrowx8/12x3/12Pheum arenarium Plantago lanceolata Ranunculus bulbosus Raphanus raphanistrum ssp. maritimusSand Cat's-tail Raphanus raphanistrum ssp. Sea RadishX8/12X3/12Image: Common RestharrowSenecio jacobaea Trifolium dubium Trifolium repensSea RadishX6/12X6/12XXThymus polytrichus Vricia sativaWild Thyme Yeenoica arvensisX8/12X7/12XXTotal number of species19262218	Luzula campestris	Good Friday Grass			~	.,	x	
Ononis repensCommon RestharrowX8/12X3/12Image: common rest common re	Myosotis ramosssima	Early Forget-me-not					x	
Phleum arenarium Plantago lanceolata Ranunculus bulbosus Bulbous ButtercupSand Cat's-tailx2/12x2/12Ranunculus bulbosus Raphanus raphanistrum ssp. maritimusBulbous Buttercupx6/12xxxSenecio jacobaea Taraxacum spp.Common Ragwortx5/12x2/12xxTaraxacum spp. Trifolium dubium Trifolium repensDandelionx8/12x7/12xxVeronica arvensis Vicia sativaSpeedwellx1/12xxxxTotal number of species19262218 j	Ononis repens	Common Restharrow	x	8/12	x	3/12		
Plantago lanceolata Ranunculus bulbousRibwort Plantain Bulbous ButtercupX6/12X6/12XXXRaphanus raphanistrum ssp. maritimusSea RadishX5/12X2/12XXXSenecio jacobaea Taraxacum spp.Common RagwortImage: Signal Sig	Phleum arenarium	Sand Cat's-tail		0/12	x	2/12		
Ranunculus bulbousBulbous Buttercup3/12NNNRaphanus raphanistrum ssp. maritimusSea RadishXXXXSenecio jacobaeaCommon Ragwort5/12X2/12XXTaraxacum spp.DandelionX1/12XXXThymus polytrichusWild ThymeX8/12X7/12XXTrifolium dubiumLesser TrefoilX1/12XXXTrifolium repensWhite CloverX1/12XXVeronica arvensisSpeedwellX2/12XXVicia sativaCommon VetchX1/12XXTotal number of species19262218 j	Plantago lanceolata	Ribwort Plantain	x	6/12	x	5/12	x	x
Raphanus raphanistrum ssp. maritimusSea Radishxx2/12xxSenecio jacobaea Taraxacum spp.Common RagwortxxTaraxacum spp.Dandelionx1/12xxThymus polytrichusWild Thymex8/12x7/12xxTrifolium dubiumLesser Trefoilx1/12Trifolium repensWhite Cloverx1/12Trisetum flavescensYellow Oat-grassx2/12Veronica arvensisSpeedwellxxxVicia sativaCommon Vetchx1/12xxTotal number of species1926221818	Ranunculus bulbosus	Bulbous Buttercup		0/12		0/12	x	x
maritimus5/12x2/12xxSenecio jacobaeaCommon RagwortxTaraxacum spp.Dandelionx1/12xxThymus polytrichusWild Thymex8/12x7/12xxTrifolium dubiumLesser Trefoilx1/12Trifolium repensWhite Cloverx1/12Trisetum flavescensYellow Oat-grassx2/12Veronica arvensisSpeedwellxxxVicia sativaCommon Vetchx1/12XxxTotal number of species19262218	Raphanus raphanistrum ssp.	Sea Radish	x				~	~
Senecio jacobaeaCommon RagwortxxTaraxacum spp.Dandelionx1/12xxThymus polytrichusWild Thymex8/12x7/12xxTrifolium dubiumLesser Trefoilx1/12xxTrifolium repensWhite Cloverx1/12Trisetum flavescensYellow Oat-grassx2/12Veronica arvensisSpeedwellxxxxVicia sativaCommon Vetchx1/12xxxTotal number of species19262218 L	maritimus			5/12	x	2/12	x	x
Taraxacum spp.Dandelionx1/12xxThymus polytrichusWild ThymeX8/12X7/12XXTrifolium dubiumLesser TrefoilX1/12XTrifolium repensWhite CloverX1/12Trisetum flavescensYellow Oat-grassX2/12Veronica arvensisSpeedwellX1/12XVicia sativaCommon VetchX1/12XXTotal number of species19262218 j	Senecio jacobaea	Common Ragwort		-,		-,	x	
Thymus polytrichusWild ThymeX8/12X7/12XXTrifolium dubiumLesser TrefoilXTrifolium repensWhite CloverX1/12Trisetum flavescensYellow Oat-grassX2/12Veronica arvensisSpeedwellX1/12XXVicia sativaCommon VetchX1/12XXXTotal number of species19262218 L	Taraxacum spp.	Dandelion			x	1/12	x	х
Trifolium dubium Lesser Trefoil x x   Trifolium repens White Clover X 1/12 Image: Constraint of the system	Thymus polytrichus	Wild Thyme	x	8/12	x	7/12	x	х
Trifolium repensWhite Cloverx1/12Trisetum flavescensYellow Oat-grassx2/12Veronica arvensisSpeedwellxxxVicia sativaCommon Vetchx1/12xxTotal number of species19262218	Trifolium dubium	Lesser Trefoil					x	
Trisetum flavescens Yellow Oat-grass x 2/12 Image: constraint of the system   Veronica arvensis Speedwell x 2/12 x   Vicia sativa Common Vetch x 1/12 x x   Total number of species 19 26 22 18	Trifolium repens	White Clover			x	1/12		
Veronica arvensis Speedwell Image: Common Vetch X X   Vicia sativa Common Vetch X 1/12 X X   Total number of species 19 26 22 18 [	Trisetum flavescens	Yellow Oat-grass			х	2/12		
Vicia sativa Common Vetch x 1/12 X x   Total number of species 19 26 22 18 J	Veronica arvensis	Speedwell					x	x
Total number of species 19 26 22 18 j	Vicia sativa	Common Vetch			x	1/12	x	x
		Total number of species	19		26		22	18↓

Table 9. Detailed comparison of 2004 and 2019 results in the middle of the lower grazing area.

		200	4	2019	2019
		Area C, tra	ansect 1	Quadrat 4	Quadrat 5
		total sample a	rea: <b>2,75 m<sup>2</sup></b>	total sample area: 2 m <sup>2</sup>	total sample area: 2 m <sup>2</sup>
		presence	frequency*	presence	presence
Achillea millefolium	Yarrow	х	4/11	х	
Agrostis sp.	Bent	x	2/11		
Aira praecox	Early Hair-grass	x	1/11		
Anagallis arvensis	Scarlet Pimpernel			x	x
Arenaria serpyllifolia	Thyme-leaved Sandwort			х	х
Bellis perennis	Daisy				х
Brachythecium albicans	Whitish Feather-moss				х
Carex arenaria	Sand Sedge	x	4/11	х	х
Catapodium rigidum	Fern-grass				х
Cerastium fontanum	Common Mouse-ear			х	х
Cirsium vulgare	Spear Thistle			х	
Dactylis glomerata	Cock's-foot	x	4/11	х	х
Elytrigia atherica	Sea Couch	x	9/11		
Erodium cicutarium	Common Stork's-bill				x
Festuca ovina	Sheep's Fescue			х	x
Festuca rubra	Red Fescue	x	8/11	х	x
Galium verum	Lady's Bedstraw	x	7/11	х	x
Geranium molle	Dove's-foot Crane's-bill			х	х
Hypochaeris radicata	Cat's-ear	x	1/11	х	х
Leontodon saxatilis	Lesser Hawkbit				х
Lolium perenne	Perenial Rye-grass			х	
Lotus corniculatus	Common Bird's-foot-trefoil	x	4/11	х	х
Luzula campestris	Field Wood-rush			x	x
Myosotis ramosissima	Early Forget-me-not			х	х
Ononis repens	Common Restharrow	x	6/11		x
Plantago lanceolata	Ribwort Plantain	x	7/11	х	x
Poa annua	Annual Meadow-grass				х
Ranunculus bulbosus	Bulbous Buttercup			х	x
Raphanus raphanistrum ssp.	Sea Radish	x			
maritimus			10/11	x	x
Senecio jacobaea	Common Ragwort	x	1/11		
Sonchus asper	Prickly Sow-thistle			x	
Taraxacum sp.	Dandelion			x	х
Thymus polytrichus	Wild Thyme	х	4/11	x	x
Trifolium dubium	Lesser Trefoil	х	1/11	x	
Trifolium occidentale	Western Clover				x
Trifolium repens	White Clover	x	2/11		
Trisetum flavescens	Yellow Oat-grass	x	1/11		
Veronica arvensis	Speedwell			x	
Vicia sativa	Common Vetch	x	4/11		
	Total number of species	19		24 ↑	26↑

Table 10. Detailed comparison of 2004 and 2019 results in the east corner of the lower grazing area.

#### **References:**

David, C.D. and Ozanne, B.J. (2004). Initial Survey of the Alderney Environmental Grazing Scheme at Longis and Mannez. Guernsey Biological Records Centre.

Strevens, A. (2007). The Effect of Herbivore Grazing on Grassland Diversity in Longis Common, Alderney. University of Wales, Aberystwyth & Alderney Wildlife Trust.

David, C. and Henney, J. (2011). Floral Survey of Longis Common. Environment Guernsey.