



**INNOVATIVE FARMERS  
DIVERSE FORAGE BIRD SURVEY  
FINAL REPORT**

**Introduction**

This report provides the results of the two surveys completed for each of the four farms involved in the project: Lower Brown Farm, Fortescue Farm, Weston Farm and Higher Thornton Farm.

Whilst the first surveys did not give the true extent to which either the diverse forage crop or kale were attractive to birds the combination of the first and second winter surveys provide more accurate information. The farms were surveyed by Mike Ingram, Thomas Mansfield and Lawrie Sampson in November 2022 and January 2023.

**Aim of study**

The overall aim of the project was to investigate whether the multi-species mix can reduce soil erosion and increase biodiversity by creating habitats for wildlife, while also providing a nutritional crop that maintains animal health and performance.

The aim of this particular study is to compare the diversity and numbers of birds using the diverse species forage crop with a kale forage crop on four mixed livestock and arable farms in Devon and Somerset over the autumn/winter period.

**Methodology**

The survey used timed “point counts” at defined locations with the observer remaining stationary at one position within a prescribed habitat type for a specific period and recording the number and species of each bird seen or heard from that point.

- A location point or points on each of the fields was identified and recorded using a GPS so that it can be relocated for follow up surveys.
- Birds species and numbers were recorded for 15 minutes as a timed count.
- The emphasis was to record birds that are obviously using the crops and any flying over were recorded but a note made that the bird was flying over and not necessarily utilising the crop. This data is useful to record and helps create a picture of what species were using the area although it cannot be known for certain if birds seen in flight were utilising the crops.
- All field data was recorded in tables and presented in this report.
- A “W” shaped transect was walked through the plot after the timed points have been completed to ensure that any birds missed were flushed out of the crop.
- Birds seen on the transect were recorded in a different column on the recording sheet to the timed count and the highest count of each species from the two survey methods was used as final figure for that species. This increased the accuracy of the count while avoiding double counting.
- Where the two crop types are adjacent to each other on the same field a timed count was completed by a pair of observers and then an observer walked each transect for the different crop types simultaneously in opposite directions.
- Where the crop types were well separated and in different fields an observer was located on each field to conduct a timed count and then a transect.
- During the winter survey birds were recorded on both grazed and ungrazed areas of the fields to assess bird use of these different areas.
- Data for all the farms and crop types was collated and is presented in the results section of the report comparing the number of bird species on the two crop types. See Table 2 and 4.

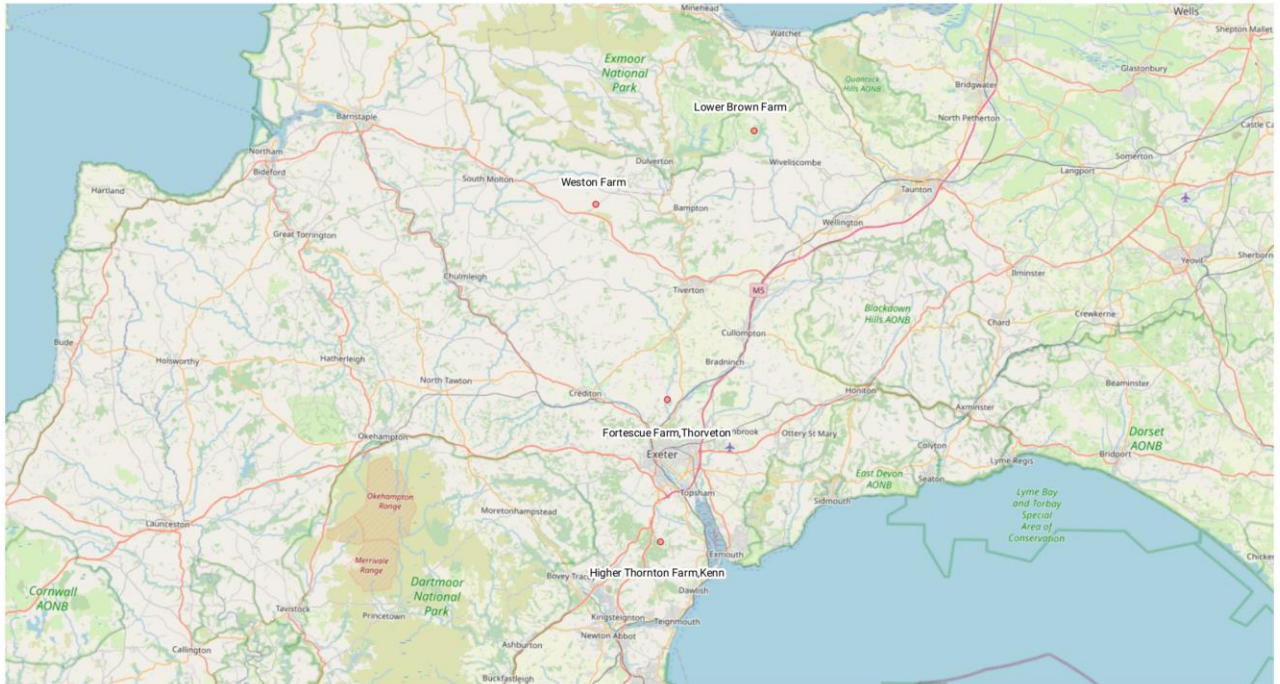
## Summary

- A total of 36 species of bird were recorded over the 4 farms and of these 8 were Red listed species of Conservation Concern and 13 were Amber listed birds (see definition below).
- A total of 20 species were recorded using the experimental forage crops and a total of 20 species were observed using the kale crop.
- Whilst the number of species recorded on each of the crops is the same the number of birds using the diverse forage crops was overall higher than in the kale crops. See Tables 1 and 3.
- The number of species and overall numbers of birds varied between farms and this may be an indication of numbers and species of birds that are present/using the wider farm landscape and habitat rather than the quality of the forage.
- The diverse forage crop, as might be expected, was particularly attractive to seed eating birds such as Linnets, Chaffinch, Goldfinch and Greenfinch which were often present in large flocks. See Table 5.
- Fortescue Farm had the highest numbers of birds and diversity of species recorded for both crop types overall with considerable general bird activity over the farm.
- There was still a lot of insect activity on the fields for the autumn visits due to the mild weather and crop plants still in flower. This will have attracted birds to the crop for example Stonechats were observed catching insects perched from the top of sunflowers.
- There is value in both crops providing insect habitat and cover for foraging but there were a greater number of species that tend to go for insects etc like Wren, Blackbirds, Song Thrushes in the kale crop, possibly because it creates a sheltered overstorey for slugs/snails and other invertebrates, while providing enough structure to allow the birds to get in and find them. See Table 5.
- The presence of other casual/volunteer seed bearing species of plant in the crops such as Fat Hen and Chicory were a key element in attracting seed eaters like Linnets, Goldfinches and Greenfinches. The only sown crop that had gone to seed in the autumn survey were the radishes on most of the farms. These casual species were largely gone by the time of the winter survey.
- The winter visits had little insect activity with the cold weather although there was noticeable bird activity amongst the grazing livestock who were no doubt disturbing any insects in the vegetation, soil organisms such as worms as well as spilt seed as well as dung.
- Highest bird numbers were on the grazed diverse forage crop areas but this was largely concentrated on the interface between the grazed and ungrazed areas where livestock were feeding and this appeared important for birds with good numbers present. This was not observed at Lower Brown Farm as both crops had been completely grazed off and no livestock were present.
- The grazed areas were quite poached on nearly all the farms with little residue vegetation/stubble left on the ground -the wet weather over previous weeks to the survey being a key factor in this. On other trials there was considerably more "stubble" and detritus left on the ground largely due to more frequent movements of livestock. The only exception was the diverse forage crop on Fortescue Farm where back fencing had been done and some stubble remained which seemed to allow seed eating birds to use the entire grazed area.
- It should be noted that the results of this work are indicative only and the accuracy of the data would have been improved by more field work and defined statistical tests.

## The Farms

Map showing location of farms.

Diverse Forage Project  
Farm Locations



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<p><b>FORTESCUE FARM</b> EJ Greed, Fortescue Farm, Thorveton ,Exeter,Devon, EX5 5JN Field Grid Reference: Field 7653- SS927005 Field 7337-SX926994</p>	<p><b>WESTON FARM</b> JRRA and RDA Stanbury The Barton,East Knowstone ,South Molton,Devon,EX36 4DZ Field Grid Reference: SS844 227</p>
<p><b>HIGHER THORNTON FARM</b> Chris Berry Higher Thornton Farm, Kenn, Exeter EX6 7XH Field Grid Reference: Field 1745- SX92177 82447</p>	<p><b>LOWER BROWN FARM</b> John Armitage Lower Brown Farm Huish Champflower Taunton,Somerset,TA4 2EL Field Grid Reference: Field 3155- ST0331 3737 Field 3737-ST0331 3155</p>



## Autumn Survey Results

### Lower Brown Farm

- The number and variety of species using the crops was fairly low with a total of 11 species recorded with 7 recorded on the forage mix and 7 on the kale with additional species observed around the fields. Key species include skylark and song thrush and a flock of 13 Linnets was seen flying over with Mistle Thrush observed in the surrounding hedgerows.
- The diverse forage crop had grown well and was quite dense and difficult to traverse and most crop had established well apart from the sunflowers. The kale had also established well.
- A number of arable plant species were noted on the fields including Corn Spurrey, Field Pansy and Field Woundwort and Fumitory. Many formerly common arable plants have declined and provide nectar source for insects as well as seed for farmland birds foraging in the winter and are therefore an important component of arable landscapes and can also help with integrated crop management.



Lower Brown Farm Kale crop



Lower Brown Farm Diverse Forage crop

## Fortescue Farm

- A very good diversity and number of species were recorded on this farm and the diverse forage crop was particularly attractive to birds with 11 species recorded and highlights of a flock of 60 Linnets and 50 Greenfinch both red listed birds.
- The kale mix was poorer in species and number of birds but flocks of Linnet, Goldfinch and Meadow Pipit were noted although the Linnet and Goldfinch were feeding on the chicory seed from plants dotted around the crop. Other species noted nearby but not on the crops included an impressive flock of c30 Stock Dove, Snipe and Mistle Thrush. In general there was a lot of bird activity on the farm.
- The diverse forage mix had established well with a dense mat of vetch and clover with a lot in flower which attracted many of insects.
- The kale was of low vigour and very patchy with open areas of ryegrass.



Fortescue Farm Kale crop Fortescue



Fortescue Farm Diverse forage crop

## Weston Farm

- The highlight of this visit was the good numbers of Reed Bunting using the kale crop other wise bird numbers and species were not that high. It is possible the Reed Buntings had bred on the Culm moors which were not far away and were using the kale to winter. This is quite an exposed site with low hedgerows which is not ideal for birds in winter and may have influence on number of birds present. Yellowhammers were also good to see as this species seen declines in the UK.
- The kale crop had established extremely well and was up to 2m high in places and very dense so would provide some shelter for birds. The diverse forage crop had also established well with a good showing of sunflower and legumes.



Weston Farm Kale Crop



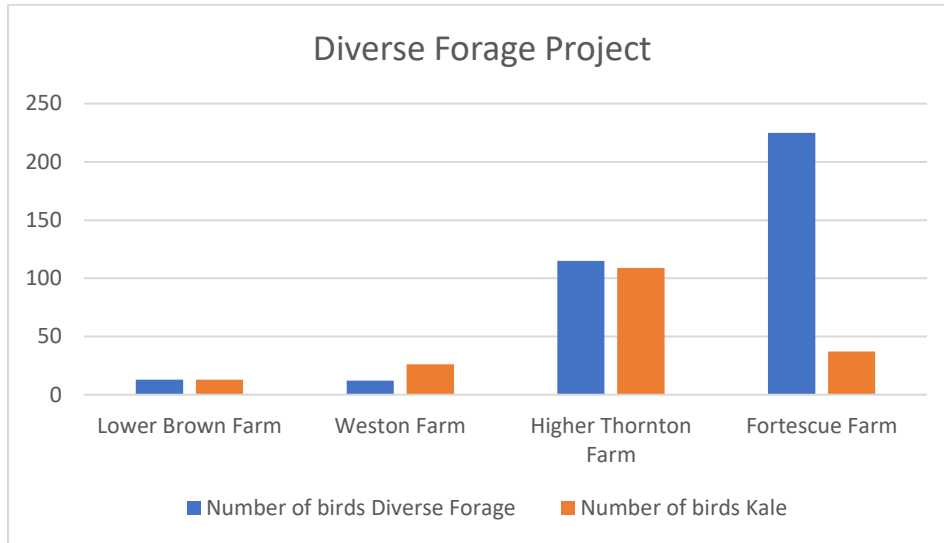
Weston Farm Diverse forage crop

## Higher Thornton Farm

- There was a reasonable amount of bird activity on the fields with flocks of linnets were seen in both the diverse forage and kale crop but with slightly more in the kale crop. However it did appear that the Linnets were feeding on Fat Hen seeds as these plants were abundant in the diverse forage crop and the open patches of kale and this will skew the results.
- Generally numbers of birds were low and other species noted flying over included Fieldfare, Grey and Pied Wagtail, Song Thrush, Mistle Thrush and Siskin.
- The kale had generally established well with some small gaps whereas the diverse forage crop was very patchy with some large gaps and poor establishment of the legume crop and relatively little in flower. As mentioned the gaps were often filled with Fat Hen.



**Table 1.** Bird numbers on the two crop types for each farm



**Table 2.** Bird species recorded for each farm (includes timed and transect counts and not including those flying over) DFC =Diverse Forage Crop.

Farm	Lower Brown		Weston		Fortescue		Thornton	
Surveyors	M.Ingram T. Mansfield		M.Ingram T. Mansfield		M.Ingram L. Sampson		M.Ingram L.Sampson	
Survey Date	25/10/2022		25/10/2022		26/10/2022		26/10/2022	
SPECIES	CROP							
	DFC	Kale	DFC	Kale	DFC	Kale	DFC	Kale
Chaffinch	2	1	1		4		1	
Blackbird		1		5				
Dunnoek	2		1		1	3	1	6
Goldfinch		2			1			
Great Tit					1			
Greenfinch			2		70		1	
Linnet					60+	11	c.100	40
Meadow Pipit	4		3	5	5	19	3	2
Pheasant	1	2	1	1	16		3	4
Pied Wagtail	1					1		
Red legged Partridge				1				
Reed Bunting			2	10				
Robin								2
Skylark		2		1				
Song Thrush		1				3	2	
Starling								
Stonechat	1				2		1	3
Woodpigeon					3			
Wren	1	4	2	1	2		1	1
Yellowhammer				2				
<b>No of species</b>	11		11		13		10	



## Winter Survey Results

### Lower Brown Farm

- Overall there was comparatively little bird activity on both the diverse forage crop and kale and both fields had been completely grazed off with no livestock present and little vegetation left. The highlight was a flock of c 200 Chaffinch using the grazed diverse forage crop field and using the adjacent beech trees for roosting. A flock of 10 Skylark were also using the diverse forage crop field as was a single Snipe.
- Generally numbers and species of birds were low and the weather conditions on arrival were extremely poor with blizzard conditions and snow covering the ground which may have contributed to this.



Grazed kale field



Grazed diverse forage crop field

### Fortescue Farm

- A very good diversity and number of species were recorded on this farm and the diverse forage crop was again particularly attractive to birds with 13 species recorded and highlights of a flock of 250 Linnets, 80 Stock Dove with smaller but significant flocks of Goldfinch and Skylark.
- The kale mix although a little poorer in the number of birds but had a good number of species (16) associated with the crop with flocks of Linnet, Starling, Redwing and Fieldfare were noted. Other species noted nearby but not on the crops included Stock Dove, Raven and Goldfinch.
- There was little bird activity on the ungrazed kale and most of the birds were noted around the livestock as they were foraging on the crop.
- As in the autumn survey there was a lot of bird activity on the farm in general.
- The kale was of low vigour and very patchy with open areas of ryegrass.



Cattle foraging on kale crop



Ungrazed and grazed diverse forage crop.

## Weston Farm

- The highlight of this visit were the small flock of Lapwing present around the cattle foraging on the diverse forage crop. There were reasonable flocks of Starling (c.50), Redwing c.30) and Chaffinch (c.30) plus a flock of 40 Skylark all using the diverse forage crop and mostly feeding close to or amongst the cattle. Reed Buntings were also noted on the diverse forage crop but none recorded on the kale in contrast to the autumn.
- The kale crop had established extremely well and was up to 2m high in places and very dense so would provide some shelter for birds but overall there was little bird activity noted amongst the kale both grazed and ungrazed.



## Higher Thornton Farm

- There was surprisingly little bird activity on the diverse forage crop with few species or numbers. The kale crop had a higher number of species but still low numbers of birds with a flock of 13 Chaffinch being the largest amount.
- Overall numbers and species of birds using both crops were low although other species were noted flying overhead or using the hedgerows and woodlands nearby. These included Buzzard, Nuthatch, GS Woodpecker and Stonechat.

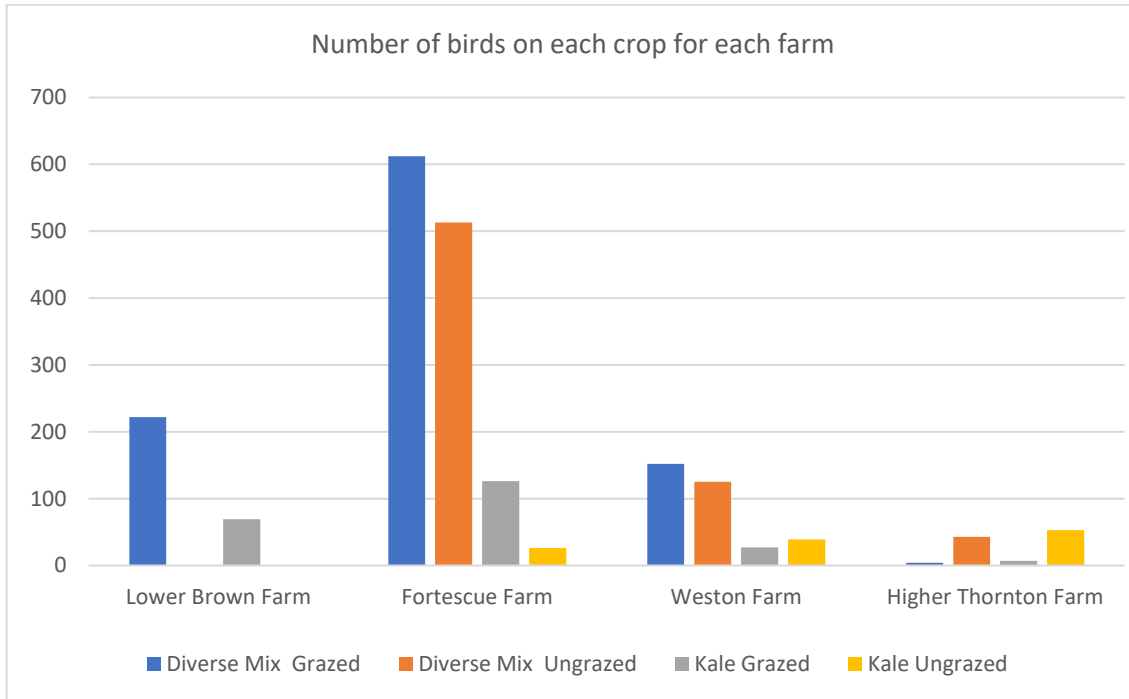


Grazed kale crop



Ungrazed diverse forage crop

**Table 3.** Bird numbers on the two crop types for each farm

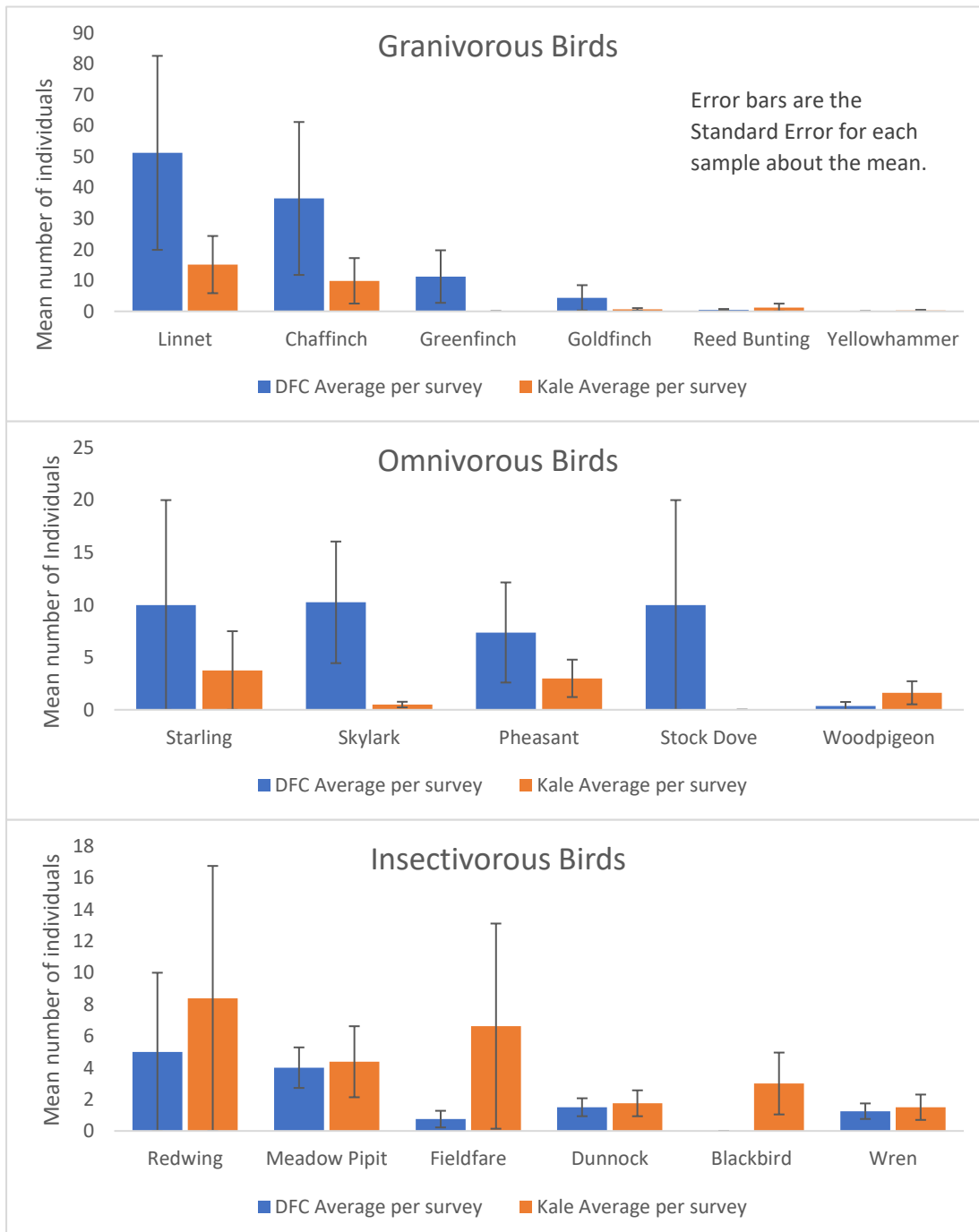


**Table 4.** Bird species recorded for each farm (includes timed and transect counts and not including those flying over) DFC =Diverse Forage Crop, G=Grazed, U = Ungrazed

Farm	Lower Brown				Weston				Fortescue				Thornton			
Surveyors	M.Ingram T. Mansfield				M.Ingram T. Mansfield				M.Ingram L. Sampson				M.Ingram L.Sampson			
Survey Date	18/1/2023				18/1/2023				19/1/2023				19/1/2023			
Species	DFC		Kale		DFC		Kale		DFC		Kale		DFC		Kale	
	G	U	G	U	G	U	G	U	G	U	G	U	G	U	G	U
Chaffinch	203		60		7	50		1	20		1	2	3	1		14
Blackbird							6	10				2				
Black h Gull											1					
Duncock						2		1		5		4				
Fieldfare	4				2			1			50	2				
Goldfinch									2	31				1		3
Greenfinch					6	1			10	10						
Herring Gull															2	
Lapwing					5											
Linnet									250	70						
Meadow Pipit	4					1	6		12		1	2				
Mistle Thrush											1		1			
Pheasant											1	1		38		15
Pied Wagtail	1				1		3		2		1				1	
Redwing					30	10					60	7				
Reed Bunting						1				1						
Robin															4	5
Skylark	10				40				30	2	1					
Snipe	1															
Song Thrush			1							4		1		2		4
Starling					50	30					30					
Stock Dove									80							
Stonechat							3		4	4				1		
Woodpigeon			8									5				
Wren										4						6
<b>No of species</b>	6		3		11		7		13		15		10		8	

**Table 5 Crop preference by species and primary diet-type.**

The figures below show the mean number of individuals of different species seen using the diverse crops and the kale crops. The mean of the counts across all eight surveys of each crop type is used. Data for the most abundant species of granivorous (seed eating), omnivorous and insectivorous birds were used to create the graphs. They indicate that granivorous (seed-eating) and omnivorous species had a strong preference for the diverse forage crop, while insectivorous birds possibly preferred the kale crop, possibly because of the dense cover provided by the kale.



## Conclusion

A key reason why farmland birds have declined in the UK is due to lack of winter food which affects winter survival and the ability of birds to come into the breeding season in good condition (Newton 2004). The provision of winter stubbles, planted seed mixes and sacrificial crops particularly through agri environment schemes has helped to ameliorate this decline.

This survey has shown that the diverse forage crop offers good benefits for farmland birds as well as potentially providing benefits for livestock through a more diverse forage system. This is demonstrated by the higher numbers of birds attracted to this crop. The key benefits are:

- Seed availability and variety both on the plants and spilt seed on the ground. Birds were observed foraging on eg sunflowers and on the ground.
- Nectar source particularly in the autumn before the crops have been grazed off and there were many plants in flower at that time. Good numbers of insects were disturbed from the forage crops during transect walking. Birds were seen foraging for insects often using sunflowers as observation points.

A key observation in the autumn survey was that the diverse forage crop on most farms had a very dense and matted vegetation structure. This means birds are not able to forage easily for seeds on the ground although in the autumn this is not normally a limiting factor as seed can be more available in the wider landscape. When the diverse forage crop is grazed this should generate more seed source for the birds through disturbance of vegetation and soil when food is more scarce later in the winter.

The kale crops did provide some benefits and in particular reed buntings were attracted to this crop at Weston Farm. When well established the tall stands of this plant do provide cover for some birds and the ability to forage on the ground. Dunnocks, Song Thrushes, Wrens and occasionally Stonechat were particularly noted using the kale crop and these are species that generally feed on insects. The kale will only produce seed in its second year and any arable “weeds” present would provide a potential seed source.

An important observation on both the diverse forage crop and kale is that most of the bird activity was in the vicinity of the livestock themselves once grazing had been started. Birds were feeding amongst the cattle presumably on worms/grubs etc that were being disturbed by hooves as well as spilt seed from the crop itself. This is more evident where the cattle are not back fenced.

### Birds of Conservation Concern

The British Trust for Ornithology (BTO) has produced a document which highlights the status of UK bird species based on Red, Amber and Green designations and shown in colour on Table 2.

**Red** listed birds are those species which have shown a steep decline in recent years.

**Amber** listed species have shown an improvement in status and moved off the Red list or showed a deterioration in numbers therefore moving from Green to Amber. Green listed birds are those not showing moderate or steep declines.

### References:

Newton I. (2004) The recent declines of farmland bird populations in Britain: an appraisal of causal factors and conservation actions. *Ibis*, 146, 579-600.

British Trust for Ornithology

<https://www.bto.org/our-science/publications/birds-conservation-concern>

### Report compiled by:

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