



## OPERATION HUNGRY GAP

### RESULTS OF THE 2014 TRIAL SUPPLEMENTARY FEEDING STATION



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Results of the 2014 trial supplementary feeding station

Author: Cristina Sellarés de Pedro

Birds On The Edge

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## SUMMARY

A trial run of a supplementary feeding station was carried out by Birds On The Edge during the winter and spring of 2013/2014. The aim of this experiment was to test the need for this type of conservation measure amongst the locally endangered farmland birds and to gain practical experience in case further implementation and expansion are to follow. The chosen site was an area of arable farmland owned by the National Trust for Jersey where the fields are planted with a winter bird crop after the commercial harvest. Between 20-80kg of wheat and broken maize were put down an average of twice per week at a track or a field margin within the feeding site. The exact placement of the food was changed regularly to avoid build-up of waste and attracting pests. Bird abundance and utilization of the feeding site was measured with regular observations, revealing a peak in presence at the station between February and March. The utilization of the feeding station by target species was not consistent over time and the reasons for this, as well as the practical insights gained by this operation, are discussed in the final section.

## I. INTRODUCTION

Birds On The Edge (BOTE) is a partnership between Durrell Wildlife Conservation Trust, States of Jersey Department of the Environment and the National Trust for Jersey that aims to restore habitats to stop the decline of locally endangered bird species.

One particular group of birds, the farmland birds, has suffered a steeper decline in the UK and across Europe than other groups of birds<sup>1</sup>. This trend has been noticed in Jersey too, where one out of every three endangered birds is a farmland species<sup>2</sup>. Birds On The Edge takes example from UK studies and management techniques to research the causes of such decline and to trial techniques aimed at restoring these populations. Most of these techniques aim to provide arable and mixed farms with the three basic requirements of farmland birds popularly known as the 'Big 3':

- Safe nesting habitat: This can be found in hedges, dense scrub and grassy margins or even on the ground of cereal and stubble fields.
- Summer food: A good supply and variety of invertebrates will allow bird pairs to feed their broods throughout the breeding season. Berries are also an important part of the diet at the end of summer.
- Winter food: Traditionally in the form of spilt cereal in stubble fields and tailings, when other sources of food such as invertebrates or berries are depleted from the habitat.

The lack of winter food has been addressed in many European countries by adopting policy commitments and using the European Union's agri-environment schemes (AESs) as management tools – fulfilled in the UK by the Environmental Stewardship (ES) scheme<sup>3</sup>. The many options detailed in these schemes aim to tackle lack of winter food through two main management strategies: **a)** The provision of food via the management of the fields, either with specialised crops sown in the fields or over-winter stubble, and **b)** The provision of food via direct supply at feeding stations.

While the sowing of winter bird crops (WBC) and management of over-winter stubble had a good uptake amongst UK farmers, research by the BTO on long-term trends showed little or no effect on populations of farmland birds such as the yellowhammer, skylark or grey partridge<sup>4</sup>. Many factors might play a part in this poor result, one being that by late winter there is little food left in fields with stubble or with WBC, especially between February and April. This period is known as the 'hungry gap'.

A solution to fill this 'hungry gap' was tested in Jersey with strategy **b)** The direct supply of food at feeding stations, involving the regular provision of grains, seeds and tailings at certain areas of a single farm, between October and April.

Research conducted between the years 2000 and 2004 studied feeding stations at over 100 sites, monitoring the abundance of birds during winter as well as the breeding abundance between sites with feeding stations and at control areas<sup>5</sup>. This research found little evidence for positive effects of feeding on the breeding abundance between experimental and control areas, but there was great variation in how each species used the sites. Ultimately, the results suggested that effective provision of winter food has the potential to slow or stop declines in farmland bird populations, as


the trends analysed showed: **a)** Positive relationships for house sparrow, chaffinch, goldfinch, and reed bunting; and **b)** That declines of robin, dunnoek, and yellowhammer were less steep where more food was provided.

In Jersey, BOTE works to study the food requirements of bird populations during winter by trying both techniques – crop output (WBC and over-winter stubble) and supplementary feeding at stations - and measuring birds' uptake. The WBC and over-winter stubble fields were implemented via a trial scheme by BOTE in 2013<sup>6</sup>, which covered a total of 12.3ha (68.5vg) in Jersey, clustered in six areas, and provided food for birds between October 2013 and March 2014, when the last fields were ploughed for the cultivation of potato. Other fields were ploughed as early as January. Data from the 2013 trial showed a positive uptake from farmland birds with up to 715 birds at one site (Sorel) and an average of 238.9 birds per survey at the same site. The overall abundance of birds in conservation crops peaked between November and December, and as expected almost disappeared after the fields were ploughed.

In 2014, thanks to an environmental grant, a trial run of supplementary feeding for farmland birds was carried out at a single site on the north coast of Jersey. This trial was named 'Operation Hungry Gap' and was carried out between January and April 2014.

## 2. TIMELINE

**Table 1. Timeline of activities in Operation Hungry Gap 2013-2014.**

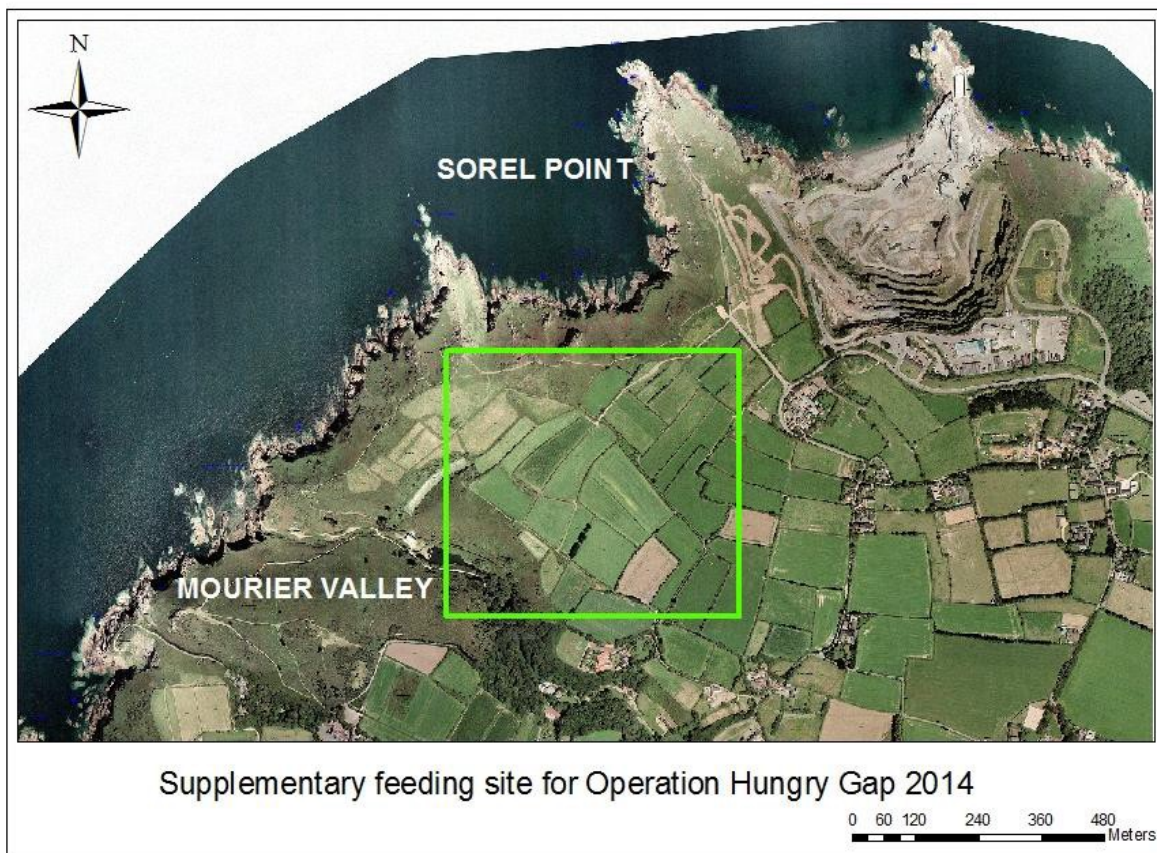
<b>2<sup>nd</sup> Dec 2013</b>	<p>Funding application submitted to the States of Jersey Ecology Fund for:</p> <p><b>Mixed cereals and seed</b> at discounted price (1 ton) £387.50</p> <p><b>Fuel</b> (6,2 miles/trip) x (2trips/week) x 16 weeks = 198.4m @ £0.33/mile= £65.47</p> <p><b>Staff time</b> (1 hour/trip) x (2staff/trip) = 4h/week x 16 weeks= 64h @£20.00/h= £1,280.00</p>
<b>10<sup>th</sup> Dec 2013</b>	Funding awarded by States of Jersey Ecology Fund for a total of £452.97 to cover 'mixed cereals and seed' and 'fuel'
<b>31<sup>st</sup> Jan 2014</b>	<p>1 ton of feed purchased to Dumosch Ltd. (500kg x wheat + 500kg of wheat and broken maize mix).</p> 
<b>22<sup>nd</sup> Jan 2014</b>	First feed and start of monitoring.
<b>16<sup>th</sup> April 2014</b>	Last feed and end of monitoring.

### 3. EXECUTION

#### 3.1 Feeding station and feeds

The area chosen as feeding station was located on the north coast between Sorel Point and Devil's Hole (**Map 1**). This area was chosen because its arable fields are owned by the National Trust for Jersey and managed for wildlife conservation purposes, alternating potato, WBC, invertebrate crops and over-winter stubble. Nearby fields, managed by private farmers, are also used for WBC via the BOTE scheme.

**Map 1. Feeding station area.**





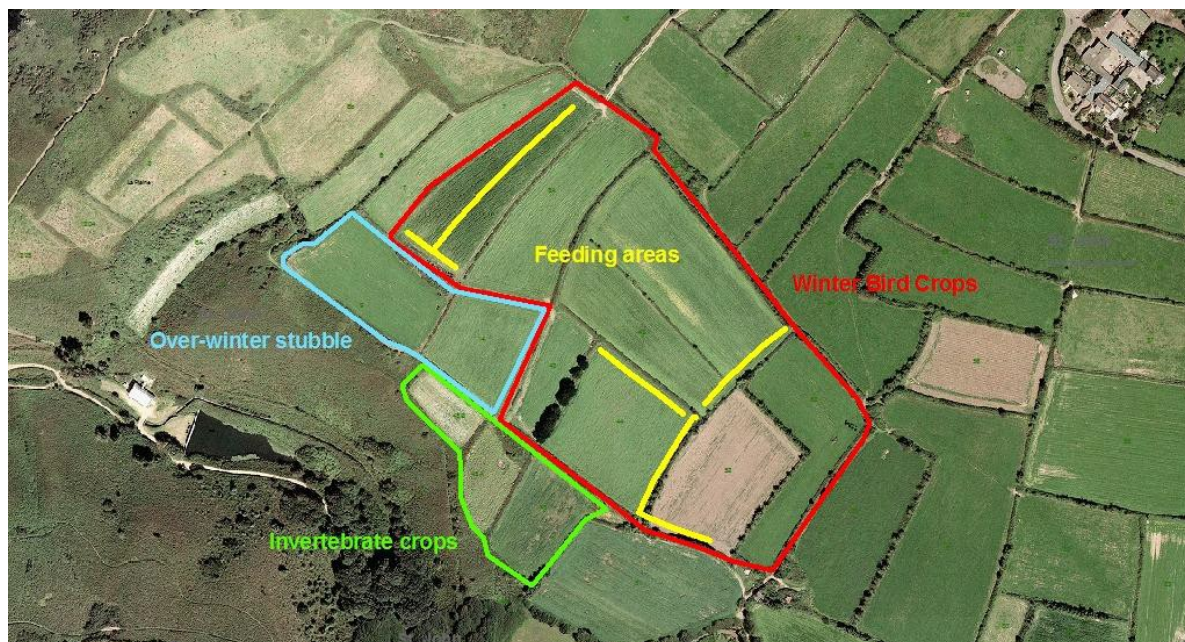
Between 22<sup>nd</sup> January and 16<sup>th</sup> April 2014 a total of 21 loads of food were put out at the feeding station in set amounts of 20, 40, 60 or 80kg (**Table 2**). The delivery was carried out between 0900h and 1700h, always on dry days or during dry intervals in the weather. The delivery rate varied between one and three times per week, except for one week in April during which there was no delivery, with an average of two feeds per week. The foodstuff was comprised of a mix of wheat and broken maize.

**Table 2. Dates of delivery and quantities of foodstuff delivered at the feeding station.**

Date	Amount (kg)	Date	Amount (kg)
22/01/2014	40	07/03/2014	40
31/01/2014	80	10/03/2014	60
04/02/2014	40	12/03/2014	40
04/02/2014	40	18/03/2014	40
11/02/2014	60	19/03/2014	60
13/02/2014	40	25/03/2014	40
18/02/2014	20	26/03/2014	40
18/02/2014	60	01/04/2014	40
24/02/2014	60	14/04/2014	40
04/03/2014	40	16/04/2014	60
05/03/2014	60		

The areas where the food was put down were alternated between various sites within the area (**Map 2**). This variation was aimed at avoiding buildup of seed and attracting non-target species such as rats, mice, pheasants and carrion crows.

**Map 2. Location of the temporary feeding areas at the site.**





### 3.2 Bird monitoring

Twenty-two 1 hour-long monitoring sessions were carried out to determine the abundance of birds at the feeding station. Each session was carried out immediately after the feed, with an extra recording session on 21st February, as it fell between two large feeds and the number of birds was showing an interesting increase.

All species of birds and mammals near or on the feeding site were recorded on each session, with notes on their location and activity.

## 4. RESULTS

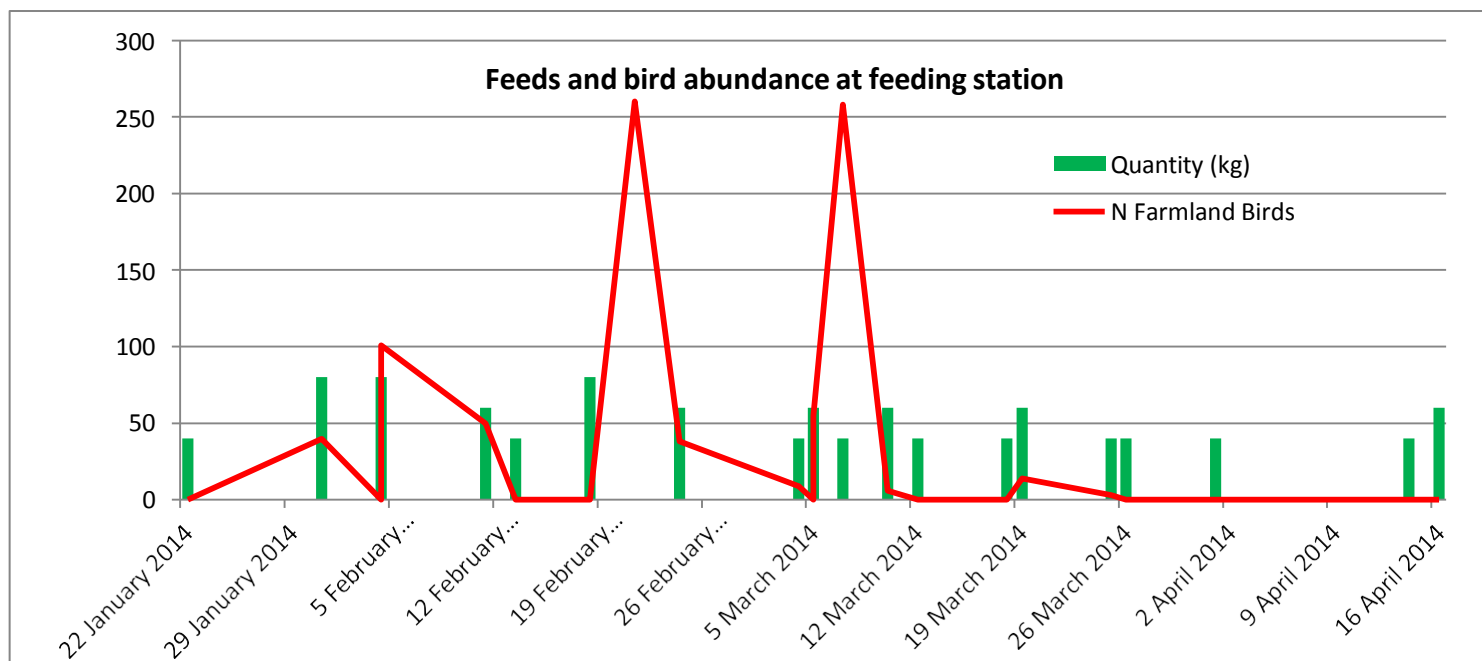
A total of 17 bird species were recorded near or at the feeding site, of which six were considered direct target species (starling, dunnock, meadow pipit, chaffinch, linnet and goldfinch: **Table 3**), three were considered opportunistic pests (pheasant, magpie and carrion crow) and seven were considered neither a target nor a pest. This later group was comprised of marsh harrier, buzzard, kestrel, blackbird, robin, and stonechat, with one or two records each, and wren, with a maximum of six individuals recorded.

**Table 3. Numbers of target bird species recorded at the feeding site.**

Date	Starling	Dunnock	Meadow pipit	Chaffinch	Linnet	Goldfinch
22/01/2014						
31/01/2014					40	
04/02/2014						
04/02/2014		1		60	40	
11/02/2014					50	
13/02/2014						
18/02/2014						
18/02/2014						
21/02/2014	80			70	110	
24/02/2014					21	
04/03/2014		1	1	7		
05/03/2014		5				
07/03/2014		1		250		7
10/03/2014		2	1	3		
12/03/2014						
18/03/2014						
19/03/2014			7	2		
25/03/2014		3				
26/03/2014						
01/04/2014						
14/04/2014						
16/04/2014						

**Graph 1** details dates and quantities of each feed and combined totals of farmland birds recorded. Two noticeable peaks of bird numbers occurred in mid-February and in mid-March.

**Graph 1. Feeds and bird abundance at feeding station.**



Although never in high numbers, the presence of opportunistic pest species at the feeding site was also recorded. In 22 recording sessions only one pheasant was recorded, as well as two magpies and two crows. Two brown rats were also recorded at two separate times, and once a noticeably strong musky smell at the site suggested the presence of a ferret.

## 5. CONCLUSIONS AND MANAGEMENT RECOMMENDATIONS

### 5.1 Conclusions

The implementation of Operation Hungry Gap was carried out as planned and ran without logistic problems or incidents. The birds' uptake was measured with direct observations that revealed two major peaks of usage in mid-February and again in mid-March. These two peaks did not coincide with the period in which adjacent winter birds crops had the highest records of birds on them, which was between November and January of the same winter<sup>6</sup>. If the value of the feeding station is to be measured by high numbers of birds after they stop using conservation crops, these, albeit limited, results appear to support this.

However, the overall uptake from birds was not as high or as regular as had been hoped, with small amounts of food left over between feeds. Whilst the low numbers of birds at the beginning of the operation is

likely due to the time delay in finding the site and becoming used to feeding there, the low numbers observed after the two main peaks might be due to some, or a combination of, the following factors:

- **Migration.** It is thought that a high percentage of birds using the winter bird crops and feeding station is comprised by wintering migrants. The number of birds in conservation fields in Jersey during the 2013-14 peaked between mid-November and mid-December, with most birds gone by the end of January. It is possible that this reflected an early migration after a mild winter, which according to the UK Met Office had a mean temperature above the long-term average for all three months, and a notable absence of frosts<sup>7</sup>.
- **Availability of food.** By March there was little available food left on the WBC, and some fields had been ploughed or even covered (**Photos 1 and 2**), so birds might have left to other areas. However, this problem would have been addressed with the feeding station, which always had some food left in between feeds. This also suggests that the quantity of food put down at the feeding station was enough, if not too much.

**Photos 1 and 2:** Fields used for winter bird crops adjacent to the feeding site in March 2014.



- **Type of food.** The mixture of wheat and broken maize seemed to attract mainly chaffinch, while other species such as linnet and starling were found in the vicinity of the feeding site.
- **Location.** The food was put down on a track or by the field margins, but most of these lacked hedges, trees or shrub (**Photos 3 and 4**), which would provide birds with cover from predators. The lack of nearby hedges might have discouraged birds from feeding at the site more regularly.

**Photos 3 and 4:** Some of the feeding sites are lacking hedgerows.



- **Timing.** Operation Hungry Gap started during the third week of January, when the first feed was put down, and ran for 13 weeks until mid-April. As this was the first time that this feeding experiment had been trialed in the area it is possible that some of the birds that would have benefitted from it did not find this food source in time.
- **Predation and pests.** Pheasants, pigeons and rats were recorded at low numbers at the feeding site and did not seem to disturb target species that were feeding. No attack from a bird of prey was ever observed. The presence of nocturnal predators such as ferrets and cats was not studied during the trial.

## 5.2 Management recommendations

The aim of this trial was to investigate the practical aspects of implementing a small feeding station at a conservation site. It is intended that it will contribute to the planning and management of future conservation actions involving similar techniques.

The main goals of the feeding station are:

- To offer a source of food high in energy and nutrients at a time where other food sources are depleted.
- To cater to the highest number of farmland bird species, taking into account a wide range of beak sizes and feeding strategies.
- To be implemented in a way that minimizes the energy expenditure of the birds and the risk of predation, pests and diseases.

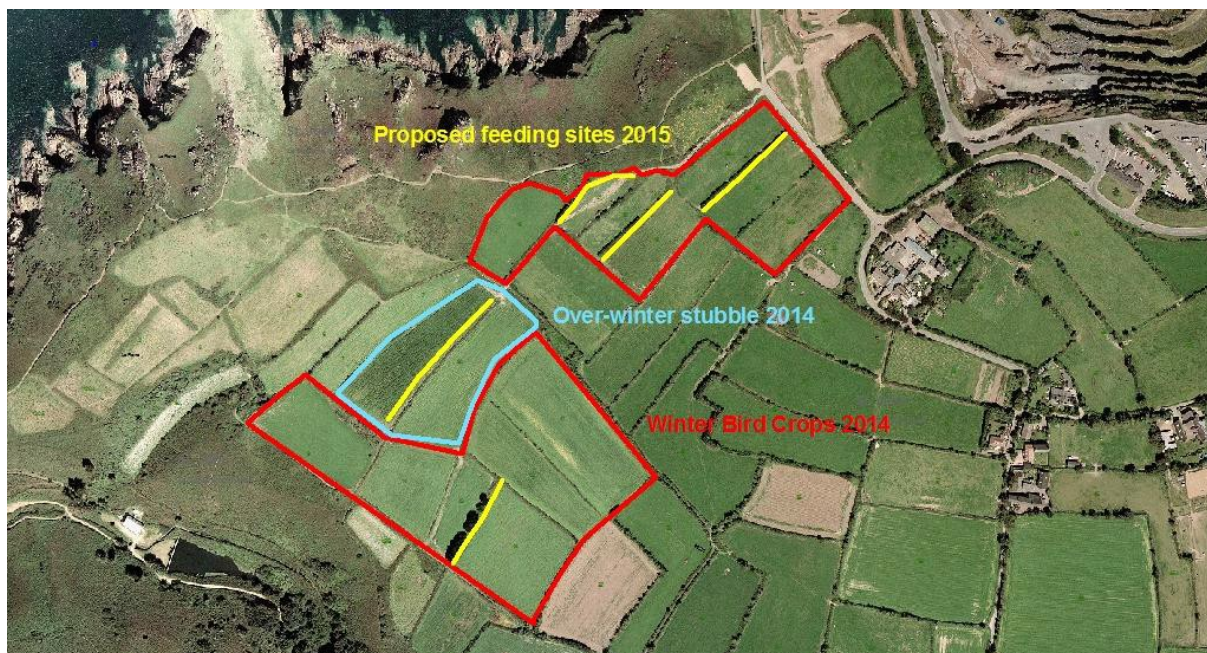
In order to achieve these goals we have combined insights gained during Operation Hungry Gap and RSPB<sup>8</sup> and BTO-Natural England guidelines<sup>8</sup> to produce the following recommendations:

1. **Type of food.** In order to cater for a wide range of species it is recommended to offer a mix of seeds and grains ranging in size from red and yellow millets to cut maize, and including sunflower, wheat and oat. Canary seed can also be used for bunting species such as the ciril bunting, which benefits from targeted management in England. In order to minimize energy expenditure and predation risk it is further recommended that the food is offered in a de-husked form, such as naked oats and sunflower hearts.



2. **Location.** The feeding station should be located near or on conservation sites, featuring fields with over-winter stubble or winter bird crops. This would target the birds that are already present at the area, minimizing their travel distance to the supplementary feeding station. Dry tracks next to good, tall hedges would be the best areas to put down the food, as well as the margins of stubble fields where the low, dry crop allows birds to find the food. See **Map 3** for a detail of the proposed feeding sites for 2015.

**Map 3. Location of proposed feeding sites for 2015.**



3. **Timing.** In order to allow the birds to get used to finding and using the feeding site, we suggest starting feeding in November and carrying on until April or as late as possible, when other food sources such as invertebrates are beginning to increase. Once the birds know where to find the food, the autumn feeds might be smaller and further apart than the feeds during peak demand (between January and March).
4. **Quantity.** About one ton per site should cover a varying demand of 20-40kg per week between October and April.
5. **Monitor and adjust.** Observations and records of birds on the day of each feed or on following days are paramount in order to guide the amount to be put down at the next feed. The abundance of birds will vary throughout the winter, and the reasons for that might not be related to the management of the feeding site, but it is still advisable to adjust the quantity of food put down as well as the rate of delivery when necessary. This will reduce wastage, minimize presence of pests, reduce risk of infectious diseases and save resources. The use of surveillance technology such as camera-traps might help monitor the usage of the feeding site and provide remote information on species abundance, predation events and presence of pests.



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