

# The Plight of Grassland Curlews

## Introduction

Curlews have become largely confined to the upland areas of Northern England and are virtually extinct in the South of the country. Consequently, we have come to think of them as moorland birds but within living memory curlews were found throughout the rural landscape.

As they retreated to the uplands, their population declined nationally and indeed since the 1970's has decreased by 50%. As a result of this decline, in 2015, they were **Red Listed** as a threatened species in the UK.

The survival of adult curlews is good, 82-95% survive per annum (Taylor & Dodd, 2013).

Population decline is the result of poor breeding success (Brown et al, 2015).

To maintain the population each pair must raise to adulthood 0.48-0.62 chicks per annum (Grant et al, 1999).

This surprisingly low rate of reproduction is enabled by the combination of high survival and longevity of adult curlews (11-30 years).

In stark comparison in grassland landscapes the average chick survival to adulthood is 0.1 per pair per year (Colwell et al, 2020). This rate of reproduction in grassland landscapes will lead to a population decline of 3% per annum and amount to 50% in 13 years (G Hilton in Colwell et al, 2020).

## Studies on Predation and Agriculture

On the Shropshire/Wales Border, an area of livestock producing grassland farms, only 3 eggs hatched successfully from 30 curlew nests in 2 successive years (Curlew Country, 2017). The cause was predation: >50% of eggs were taken by foxes. Curlews in such landscapes are facing a cliff edge extinction. After a generation of failed breeding attempts, they will be gone!

For curlews nesting in grass crops the predominant predators of eggs and chicks are foxes, badgers and carrion crows (Curlew Forum Database, 2019)

England has some rural areas with the highest density of foxes and carrion crows in Europe (Roos et al, 2018). The reasons for this abundance of generalist predators remain uncertain.

In an upland area, lethal control of foxes and carrion crows led to a 3-fold increase in curlew breeding success compared with a similar area where no predator control was undertaken and in which only 15% of pairs produced young (Fletcher et al, 2010).



Livestock can also cause problems for breeding curlews: -  
At high stocking densities 20-33% of nest failures have been attributed to trampling by cattle (Grant,1977)

A sheep has been filmed driving off a sitting curlew and eating the eggs (Zeilonka et al, 2020). This behavior has been reported widely elsewhere but its frequency is unknown.



Despite the above adverse effects, stock grazing is necessary because it controls growth of vegetation and provides areas of below average ground cover in which 78% of curlew nests are found (Johnstone et al, 2017).

Modern agriculture is also problematic:

Improvement of grassland by drainage and reseeded with fast growing non-native grasses, requiring artificial fertilizers to sustain their rapid growth, allows early and repeated cutting for silage. These early cuts destroy the curlews' eggs and subsequent cuts destroy their chicks (Curlew Country, 2021)



Furthermore these agricultural practices create a monoculture of ryegrass with the subsequent loss of insects and other invertebrates which are food for the chicks (Vickery et al,2001; Wilson et al,2005). Consequently, those chicks that survive must range widely, with their parents in tow, to find enough food.



If the chicks are lost to the grass harvesting machinery the parents will not make a second attempt to nest and after a couple of days will abandon the breeding area for that year.



# The Local Picture

Every spring curlews return to the valleys of the Darley Beck catchment area in healthy numbers, although they are noticeably less common compared with 2 or 3 decades ago.

If, like the Shropshire curlew, they are not managing to produce offspring, they may simply be being replaced by surplus birds produced on the nearby moorlands.

Curlews are not facing cliff-edge extinction here but after a life of breeding failure, they would not have made any contribution to curlew populations in the wider countryside.

These valleys could be acting as a population sink.

Over the past decade the breeding success of curlews in the Darley Beck Project area has appeared, on casual observation, to be generally poor. In some years only one chick was noticed to survive to adulthood.

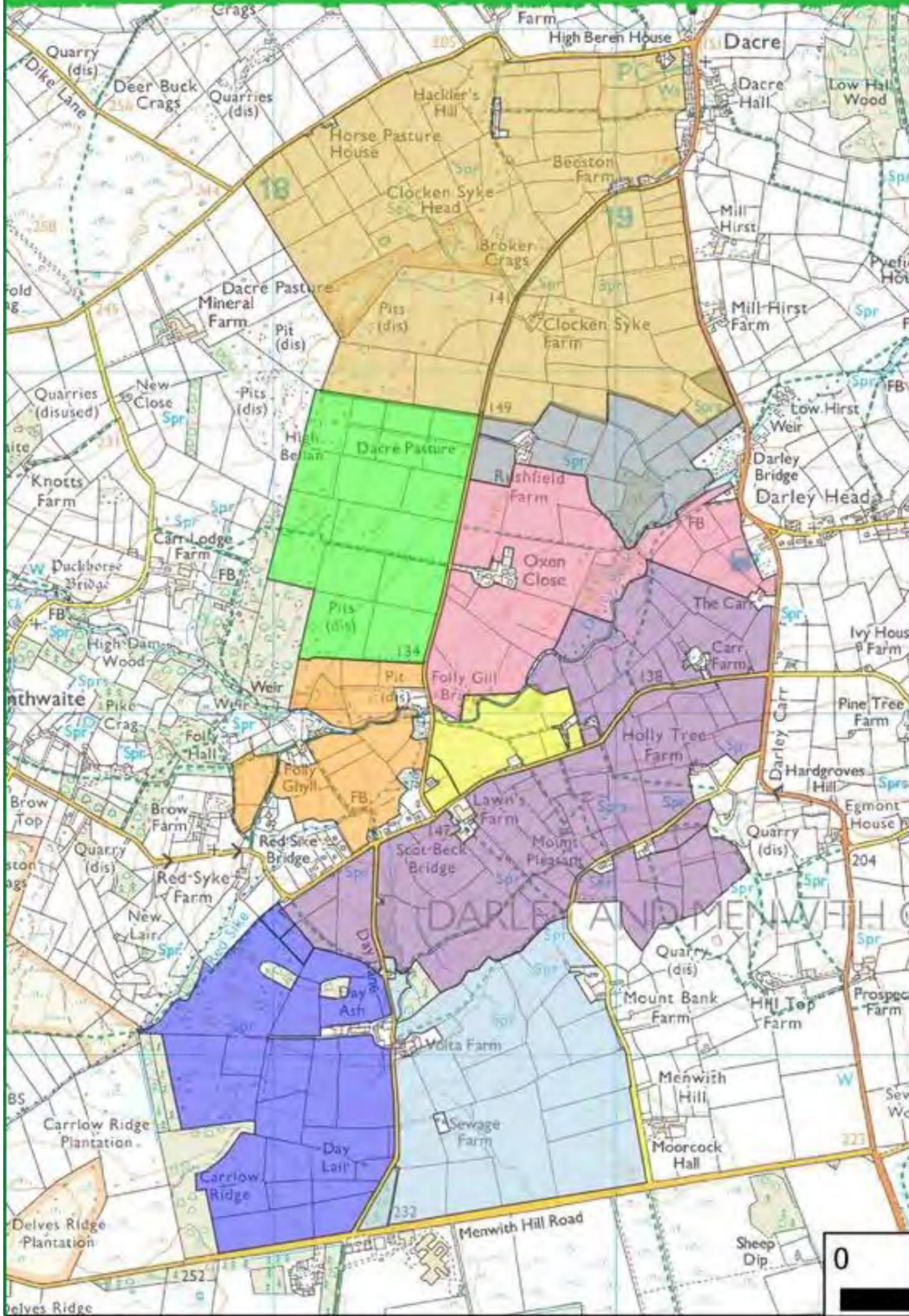
The Darley Beck project area consists of several grassland farms involved in the production of sheep and cattle.

Could the factors identified as causing declines in the curlew population of a similar area, such as the Shropshire/Welsh Border (Curlew Country, 2015-2016), also be in play here?

The Darley Beck Curlew Project (DBCP) has been established to determine what is happening to the curlew in this valley and to what extent predation and modern agriculture are affecting them.

Only when we understand the problems locally can we devise ways to help improve the breeding success of our curlews.

# Darley Beck Curlew Study -Surveyor Group Areas





# Site Fidelity

In 2022 and 2023 the curlew territories were similar in number and location.

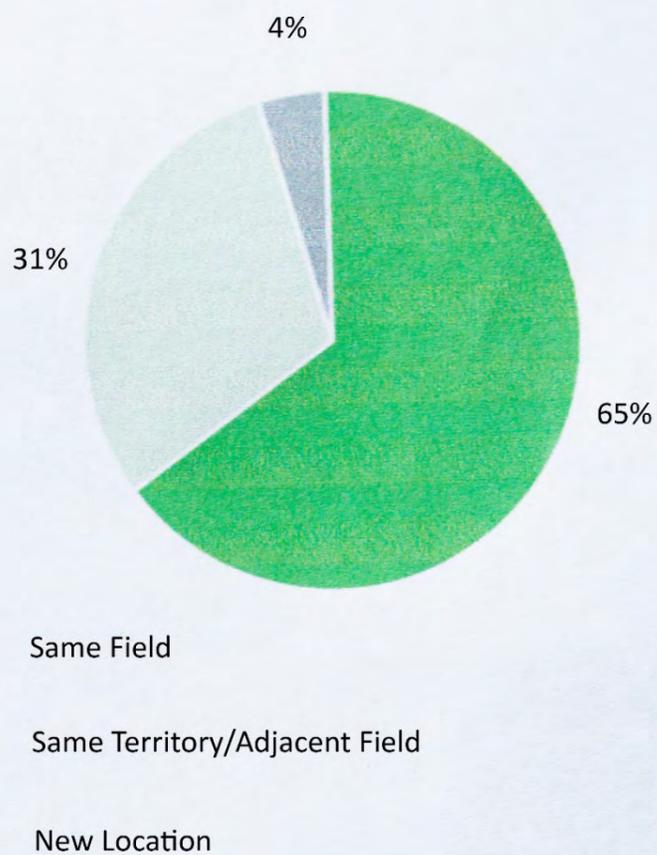
Curlew are site faithful in their choice of territory.

Any variation in territories may be due to surveyor interpretation rather than the birds themselves.

If undisturbed curlew often nest in the same field every year.

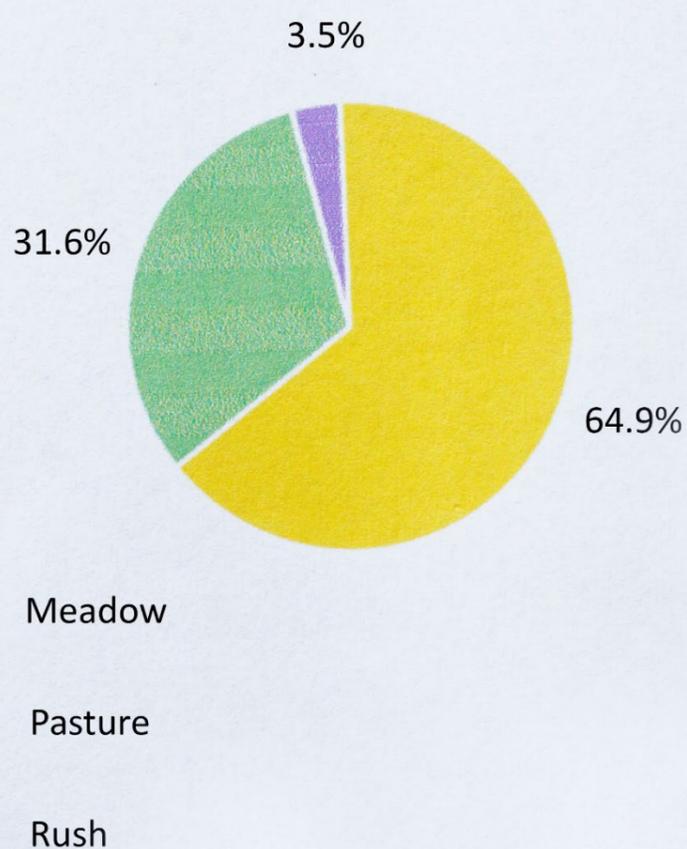
Nest sites are prone to variation if agricultural activities, such as stock movements or stocking levels, change.

# Site Fidelity and Habitat Choice in DBCP



Curlew, if undisturbed, often nest in the same field each year.

Of twenty three pairs in 2023, fifteen were in the same field as 2022, seven were within the previous territory in a nearby field and one was in a field adjacent to the previous territory.



In both 2022 and 2023 the preferred habitat has been meadow. This consists of improved grassland that is usually grazed in Spring then closed up to grow a silage crop, which is normally harvested in June. The majority of the remaining nests were in grazing pasture, with only two in rush pasture.

# Protection of Breeding Curlews

Different areas require different types of protection.

The Darley Beck Curlew Project (DBCP) is a stock rearing area of grassland farms. It consists of wooded river cliffs with rushy pastures in the valley bottom. There are gently sloping sides to the valley with meadows of improved pasture which are cut for silage. Towards the top of the valley the sides become steeper, often rocky, and the fields are not suitable for silage making and have been left as unimproved pasture. Throughout the whole area the fields tend to be small, averaging 11.5 acres. Around the rim of the valley are scattered woodlands. The topography restricts silage making but those areas that are unsuitable for silage making provide a reasonable amount of rough pasture.

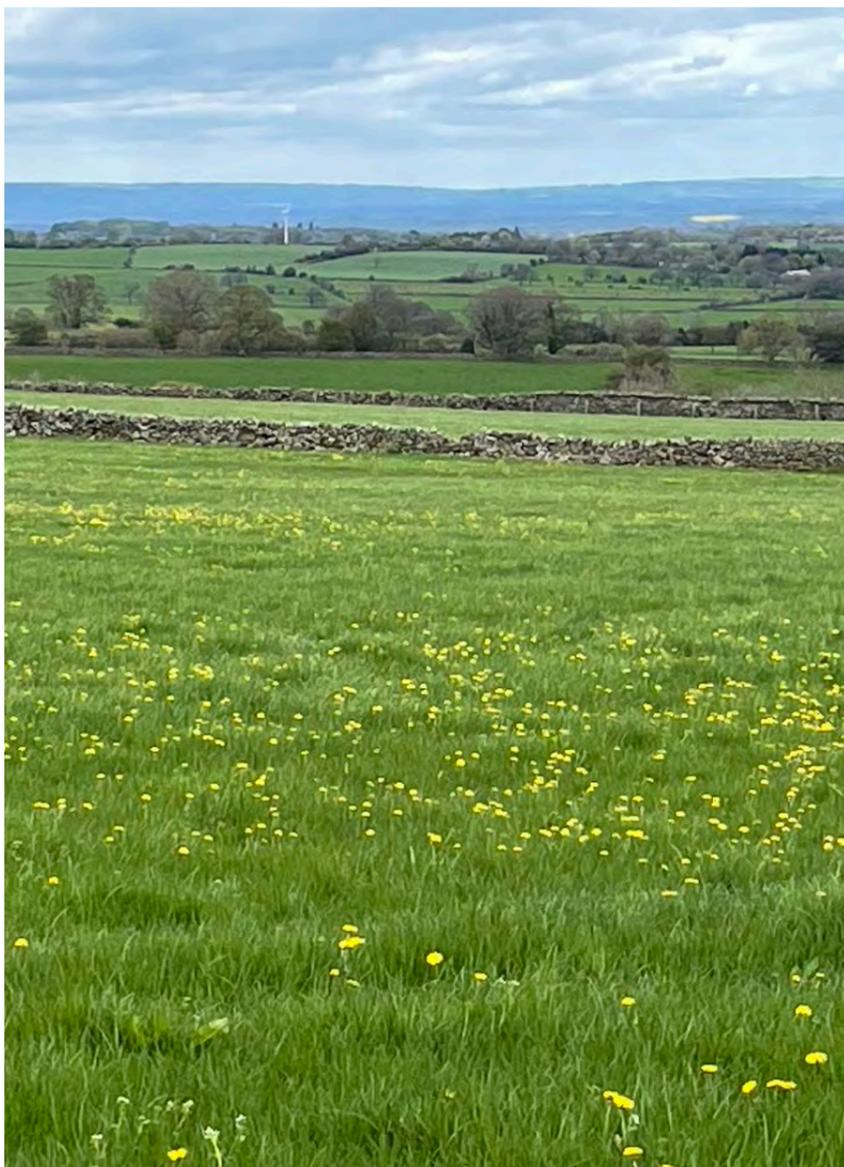
In DBCP, as a result of our experience in 2022, we did not consider it necessary to fence nests. In 2023 we only lost three of seventeen clutches of eggs. One pair of curlew lost their first clutch to sheep but successfully hatched a second clutch. Another pair definitely lost their second, and most probably their first clutch to carrion crows.



# The Hartwith Connection

In contrast, a neighbouring curlew project based at Hartwith consists predominantly of dairy farms. Here the landscape is more open with large fields of improved grassland devoted to the production of high quality silage considered necessary for milk production. This grassland is subject to early and repeated cutting and, in this environment, curlew nests need special protection from mowing machines if the birds are to breed successfully.

At Hartwith, twelve nests were fenced to prevent their otherwise inevitable destruction by machinery. One additional nest was trampled by cattle before it could be protected and one of the fenced nests was predated, most probably by crows.



# Further Observations from 2022

In 2022 we also learnt that: -

Curlew will not nest in fields that are heavily stocked with sheep or cattle.

Curlew will not nest in long vegetation, hence their dislike for rushy pastures.

Curlew lay their eggs in short grass that has been grazed beforehand; subsequently the grass grows up and provides cover for the chicks when they hatch a month later.

Fields used for silage are not ideal for young chicks; invertebrates are scarce relative to unimproved grassland and are often inaccessible to chicks at ground level.

Chicks need access to nearby fields with shorter vegetation and plentiful invertebrates, conditions provided by grazing livestock.

# Recommendations for 2023

In 2023 we have tried to use the lessons of 2022 to persuade the curlew to nest in predictable fields by doing the following: - We have identified fields that, if undisturbed, the birds would probably choose to nest in.

We have suggested to farmers that these fields are grazed before the nesting season to provide the short grass attractive to nesting curlew.

We have suggested that when livestock have been removed and the chosen fields shut up for silage that the livestock are grazed in fields around the chosen fields, thus creating a disincentive for birds to nest in fields other than those we identified as preferred nest sites. These grazed fields also provide a better, more accessible food source for the chicks.

We have suggested where curlew have previously chosen to nest in rough pasture, which is grazed but not used for silage, that livestock are removed from these fields before the curlew are due to nest. This can be done by closing gates or the use of electric fencing until the chicks have hatched and are sufficiently mobile to avoid trampling, around mid-June.

# Electric Fencing to Protect Nests.

Nest fencing has three purposes:

To prevent egg predation by mammals such as foxes and badgers.

To prevent nest trampling by cattle or predation by egg-eating sheep.

To prevent nest destruction by agricultural activity, especially silage harvesting.

Nest fencing does not prevent the following:

Egg predation by avian predators such as carrion crows.

Predation of chicks by birds or mammals or killing of chicks by silage harvesting; because within a couple of days of hatching the chicks spread out widely beyond the fence into the rest of the field.

Nest fencing does not pose a risk to the nest provided:

It is carried out by a well drilled, efficient team who can complete the task within 30 minutes.

The weather is not cold and wet, or hot and sunny.

The eggs are covered, to hide them from the eyes of crows or protect them from the heat of the sun.

The corner posts are designed so they cannot be used as lookout posts by crows.

Grass trampling within the fence, during its erection, is minimised.

# Erection of Nest Fencing.

This requires a well-practised team of 3 people and has to be completed in 30 minutes.



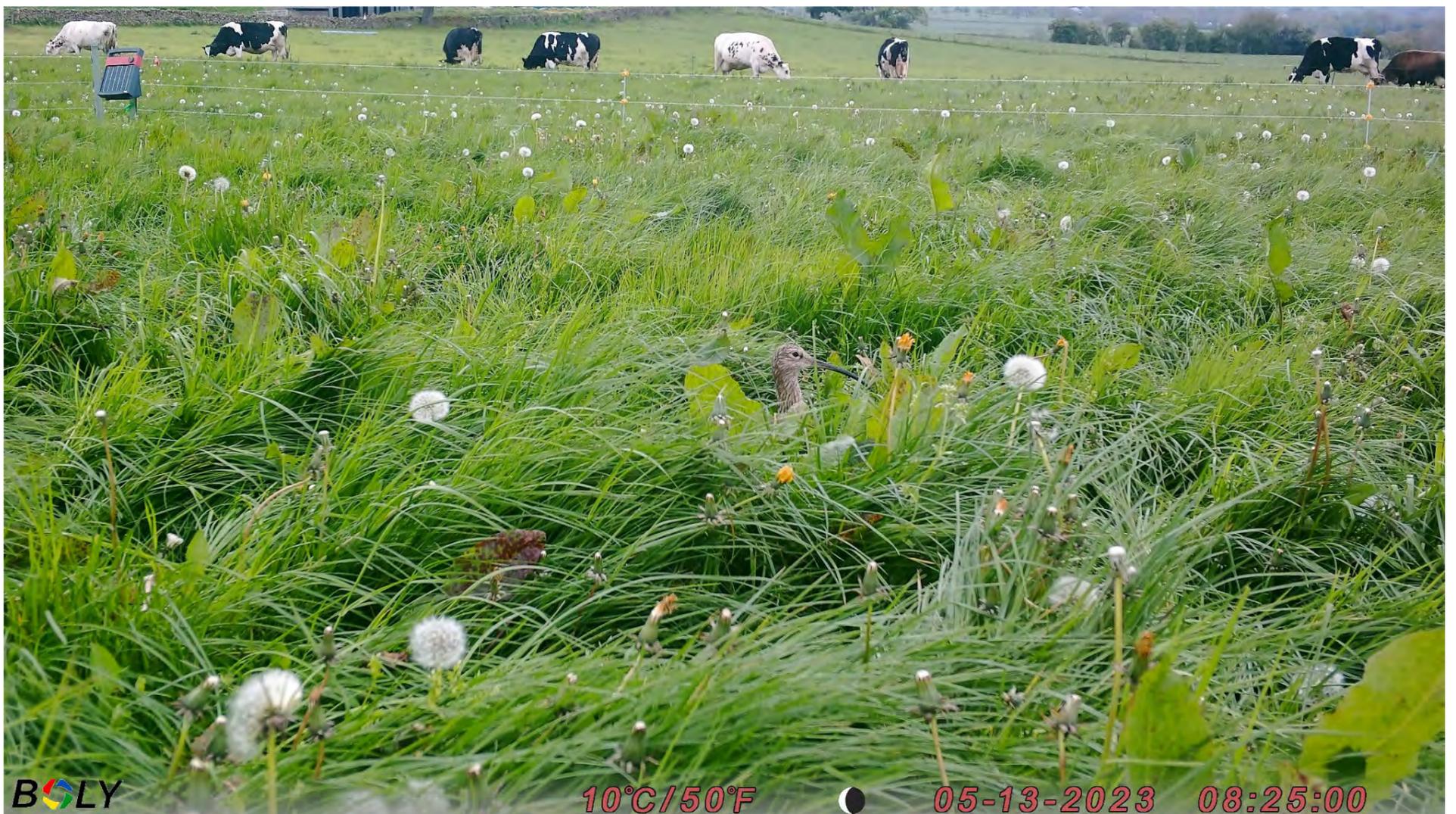
The nest is located, marked, and a 20 metre square electric fence is erected with the nest at the centre.



The energiser is connected.



The grass below the fence is strimmed and may be strimmed again after 2-3 weeks.



Some nests may have a nest cam set up to monitor the activity of the birds during incubation.

# Images from Hartwith Nest Camera



Daytime incubation by Female



Night-time Incubation by male



Nest Exchange

# What have Darley Beck Curlew Project (DBCP) and Hartwith Group Accomplished in 2023?

Both groups, using different approaches to cope with different agricultural business models, managed to protect curlew eggs and chicks from agricultural activity. Unfortunately, in both groups, the majority of successfully hatched chicks were subsequently killed by predators.

In DBCP only 2 chicks fledged from an estimated 60 eggs. The definition of fledging being a chick disappearing with its father when older than 42 days; these two chicks were 47 and 44 days.

In Hartwith Group, 30 were seen on nest cams to have hatched and 8 definite, plus a probable 3 more, fledged. (in this group after 40 days)

## **Why was the Hartwith Group more successful at protecting chicks from predation than DBCP?**

There are two commercial shoots in or adjacent to the Hartwith area. Also, it is a more open landscape with fewer trees or woodland to harbour predators. For these reasons the number of predators, particularly crows and foxes, are likely to be lower in Hartwith than DBCP. In DBCP it seems likely, based on the behaviour of the adult curlews, that the main predators of young chicks were crows and buzzards. However, the majority of chicks were lost at 3-4 weeks, probably taken by foxes.

In support of the above findings and speculations, some of the DBCP volunteers have observed that curlew on the adjacent grouse moors nest and hatch chicks some 2 weeks earlier than in DBCP. This discrepancy can be explained by less disturbance from livestock which are turned out later and in lower numbers than lower lying area, allowing earlier curlew nesting. Also, there are no nest destroying operations such as harrowing and rolling. Finally, the grouse moors are efficiently kept with consequently fewer foxes both on the moors and in the adjacent rough pasture and unimproved meadows where the curlew prefer to nest.