Clee Hill

Community Wildlife Group

Curlews, Lapwings & Other Birds Survey 2012

Curlews, Lapwings and Other Birds Survey

CONTENTS

APPENDICES

Objectives

Bird Group members were asked to find out where Curlew and Lapwing occur in the breeding season, record behaviour indicative of breeding, and record other species, most of which are of nature conservation importance (i.e. they are Target Species for Natural England's Higher Level Scheme, are on the *Red List* or *Amber List* of *Birds of Conservation Concern* because they have suffered large declines in the last 25 or 50 years, and are Target Species in the UK Biodiversity Action Plan).

In addition to Lapwing and Curlew, the target species were:-

- Kestrel
- Red Kite
- Barn Owl
- Grey Partridge
- Snipe
- Skylark
- Meadow Pipit
- Cuckoo
- Dipper
- Swift (nest sites only)
- Yellow Wagtail
- Dunnock
- Wheatear
- Spotted Flycatcher
- Tree Sparrow
- Linnet
- Bullfinch
- Yellowhammer
- Reed Bunting

Methodology

The area covered by the Clee Hill Partnership was divided up into 20 tetrads (2x2 kilometre squares, made up of four of the one kilometre squares shown on Ordnance Survey maps). A map showing all tetrads in the area, with the Tetrad Reference code, is attached as Appendix 1.

People interested in helping were given a copy of the Outline Survey Instructions, attached as Appendix 2.

Those who agreed to help were allocated a square / tetrad, and requested to survey it once during each of three specified two week periods, around 1st April, 1st May and mid June.

1. The first period follows the arrival of Lapwing and Curlew back on the breeding grounds. This is the best time to find breeding Lapwing (first egg date is usually around 1st April).
2. The second period is the best time to find breeding Curlew (first egg date is usually around 30th April).
3. The third period is timed to find any Curlews that have successfully hatched and still have chicks. It is also the best time to find the Other Target Species.

Members were provided with a large scale map of their tetrad for each of the three periods, to record observations, and requested to spend around three hours on each visit. The survey Instructions were printed on the back of the map. These instructions are attached as Appendix 3. Members were also asked to record target species just beyond the boundary of their tetrad.

Members were also requested to send in "Casual Records" of Lapwing and Curlew seen at any time in the rest of the area, and also any seen in their own tetrad(s) outside the periods when the three tetrad surveys were being carried out. Casual Record maps were provided for this purpose.

A fieldwork training session was held for the members that wanted it, at Cleeton St Mary on the morning of Saturday 31st March. Three pairs of Curlew were seen.

A feedback meeting was held on April 23rd, to present the results of the first survey, discuss them and seek clarification where necessary, and iron out any difficulties experienced by the participants. Eighteen people attended. A further feedback meeting was held on 16th August, to consider the results of the full survey, and seek support to repeat the survey next year, and discuss the development of the Group. 14 people attended.

In total, members spent over 200 hours on survey work (excluding the additional time spent when couples or friends surveyed a square together) – an excellent effort.

Curlew

The location of Curlews found during the surveys, or reported on Casual Record maps, is shown on page #.

The pair at Stoke Court Farm (SO58Q) were seen on the first and third survey visits, and behaved as if they had chicks on the final visit.

The cluster of records around Cleeton St Mary, Magpie Hill and Catherton Common (SOD, E, I & J) appears to represent at least four pairs, and probably five. Three pairs were seen concurrently on the training day on 31 March, and have been observed regularly around Cleeton St Mary, in this and previous years (Tim Lee, *pers.comm*.). One of these pairs flew towards Catherton Common, and a pair visited Pot House Farm from there regularly. However, three Curlews were seen on the farm during the first survey, and on one occasion two pairs were at Pot Farm, possibly arriving from Catherton Common, but one of these pairs departed south-east towards Hopton Wafers while the other remained to feed near the farm (Angela & Kirsty MacKirdy, *pers.comm*.). It is unlikely that this latter pair were amongst the first three.

A nest with four eggs was found on Magpie Hill on 13 May (Jon Lingard, *pers.comm*.), and a pair was seen near there on the final survey. Curlews have big territories, so it is possible that this pair went frequently to near Cleeton St Mary to feed, but Curlews have been reported on Magpie Hill in previous years (Gareth Thomas, *pers.comm),* so it is perhaps more likely that this is a different pair.

Clee Hill Community Wildlife Group

Area covers 20 2x2 kilometre squares, known as "tetrads"

Curlew

● First Survey March-April 2012

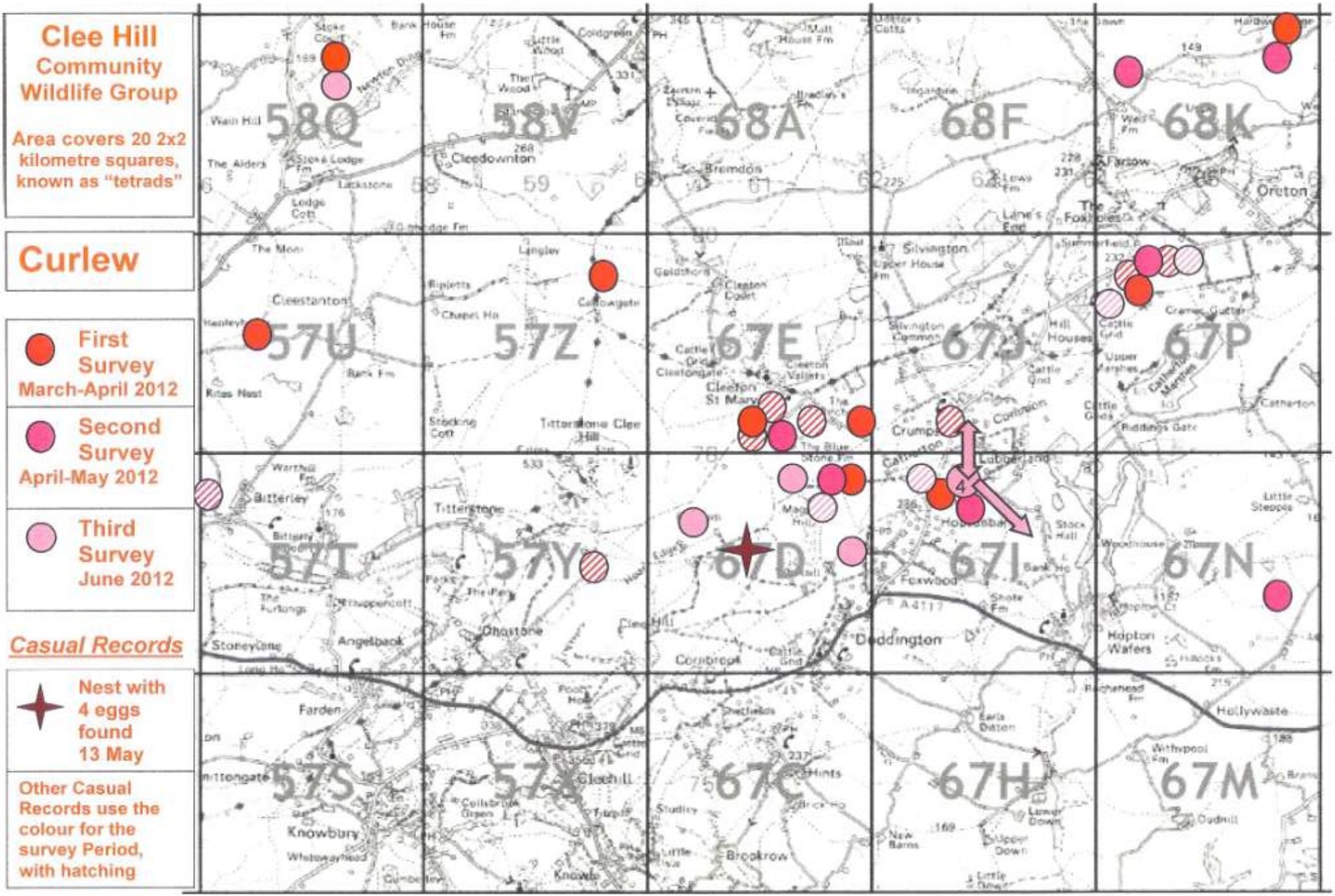
● Second Survey April-May 2012

● Third Survey June 2012

Casual Records

✦ Nest with 4 eggs found 13 May

Other Casual Records use the colour for the survey Period, with hatching



Near Cramer Gutter (SO67P), a pair or single birds were found on the first two survey visits (no third survey was done), and several casual records were received, spanning the whole of the breeding season. However, none of these records suggested the presence of more than one pair.

In SO57T, a curlew was heard by several people on the edge of the survey area over a period of two days starting on 6th May, but not subsequently, and it was not found, in spite of a search (John Lyden, *pers.comm.).* This bird probably nested to the west of the survey area. In SO57U, a curlew recorded on the first survey was calling and moved in a northerly direction, but it was not seen again on that or on subsequent surveys. It was probably one of the birds nesting in SO58Q. A single Curlew was heard in SO57Y, and in SO57Z, during the first survey. Neither was located, or seen or heard again subsequently. Curlews generally nest at the beginning of May, and before that they are very mobile and forage over large distances. They are also surprisingly inconspicuous. It is possible that all these birds nested nearby, but it is more likely that they nested well away from the places where they were observed, either within the survey area or outside it.

The three records from the northern edge of SO68F were of birds heard but not seen, so their location is uncertain. A pair were seen flying and feeding just north of the tetrad, about a kilometre north of Smallbrook Cottage, on 9th June, and a single bird was seen feeding just north of that cottage but outside the tetrad, two weeks earlier on 15th May (Andrew Heideman, *pers.comm.).* A pair are believed to have been breeding close to this location, near Stoddeston (in SO68L), for some years (Chris Bargman, *pers.comm.).*

In SO58V, the smallholder at Little Wood has seen a pair of curlews annually for the last three years. However, it was not seen or heard during three BTO Breeding Bird Survey visits to the 1-kilometre square SO5981 (the north-east quarter of the tetrad, which includes Little Wood), and it is not clear whether the smallholder saw the bird this year, or if it was within the survey area. Attempts will be made to obtain further information about this site over the next year.

In addition, there is a pair in SO68B, just north of the survey area (between Wheathill and the Ludlow – Bridgnorth road). This pair has been at this site for some years.

It is therefore estimated that the Curlew population in the area is currently 6 – 7 breeding pairs, with another two pairs in adjacent tetrads (SO 68B & L).

Breeding success has been very poor, probably because of the atrocious wet weather. It is likely that the 4 – 5 pairs near Cleeton St Mary and Hopton Wafers (SO67D, E, I &J) raised no young. Pairs with young are usually very noisy, and young would be unlikely to fledge before mid-July at the earliest. However, a resident at Cleeton St Mary reported that “there has been little activity this year and much less than other years, with only odd single birds about and occasional calling. Normally, when they have young, I hear them all through the night and see much more of the adults” (Tim Lee, *pers.comm*.). Also, members of the Group living at Pot House Farm (SOI) kept a diary, and recorded Curlews up until 3rd July, but not subsequently.

To help target the parts of the survey area where Curlews should be looked for in particular, several known birdwatchers and wildlife enthusiasts were asked for records from previous years. In addition to the nest site in SO68B referred to above, a nest was reported in 2011 in SO67P, just north of Cramer Gutter. Other people reported Curlews at this site, and other sites on Magpie Hill and Catherton Common were also reported (Gareth Thomas, *pers.comm*.).

Records at the tetrad (square) level submitted to the Shropshire Bird Atlas project between 2008 and 2011, now in its fifth year (out of six) were also studied. Where these records show a higher level of breeding evidence than that found in the current survey, they are shown on the map on page #.

Lapwing

The location of Lapwings found during the surveys is shown on page #. No Lapwings were reported on Casual Record maps, but a verbal report of a pair was given to the Bird Group meeting on 16th August (Eric Davis, *pers.comm*.).

One or two Lapwings were seen in each of two tetrads (SO57U and SO67N) on two survey visits, including the one at the end of April. In both cases a single bird was seen on this second survey visit behaving as if it was guarding a nest with a sitting female, although no direct evidence of a nest was observed. In SO57U the bird was on a newly ploughed field, and in SO67N it was on a spring arable (wheat?) field. It is likely that one breeding pair was present at both sites. No evidence was observed of any chicks or fledged young in 57U, but a pair was seen driving off crows over a grass field near Hillocks Farm on 11th August, indicative of chicks on the ground (Eric Davis, *pers.comm*.).

Another single Lapwing was seen flying south-east over Common Lane (SO67N) during the first survey. No Lapwing was seen at this location in subsequent surveys, and the bird was probably from the site further north in the same tetrad.

A pair was seen chasing crows on an arable field just north of Smallbrook Cottage (SO68K) on 4th and 5th May (indicative of an active nest), but they were not there on 15th May. However, two pairs were incubating in a different arable field just to the north of the tetrad (in SO68L) on that date, and they were still there on 22nd May, but they were not seen on 9th June or subsequently (Andrew Heideman, *pers.comm.).* It is likely that the pair in SO68K joined another pair just outside it when their first nest failed, and, also, that the single Lapwing recorded in this tetrad in the first survey was flying north, and was probably part of these two pairs.

Lapwings need low or non-existent vegetation in nesting fields, so the sitting female can watch out for potential predators. If the nest is predated or otherwise destroyed, she will relay up to three times if conditions are still suitable, but she may have to move if the vegetation on the first nest site has grown too tall since the first clutch was laid. Incubation takes around four weeks. It is extremely unlikely that a pair that still had eggs on 5th May could have re-laid and hatched a brood in five weeks, so at least one of the two pairs failed.

Fledging takes about 5 – 6 weeks after hatching, so even if one of the pairs was brooding tiny young on 22nd May, any chicks would still have been very small on 9th June. The chicks feed themselves almost as soon as they hatch, but the adults often move them to better food supply on damp grassland, sometimes while they are still small. However, it is likely that they would still be on the arable field at 2 – 3 weeks old. The breeding success of the few pairs of Lapwings that are still in the area is very low (due mainly to dry ground conditions and predation), and it is likely that both pairs failed.

It is estimated that the Lapwing population in the area is currently three breeding pairs, with another pair to the north in SO68L.

Again, breeding success was very poor. Only one pair, the one seen driving off crows near Hillocks Farm on the very late date of 11th August, may have successfully fledged any young, but the outcome is not known.

Anecdotal Evidence for the Decline of Lapwing and Curlew

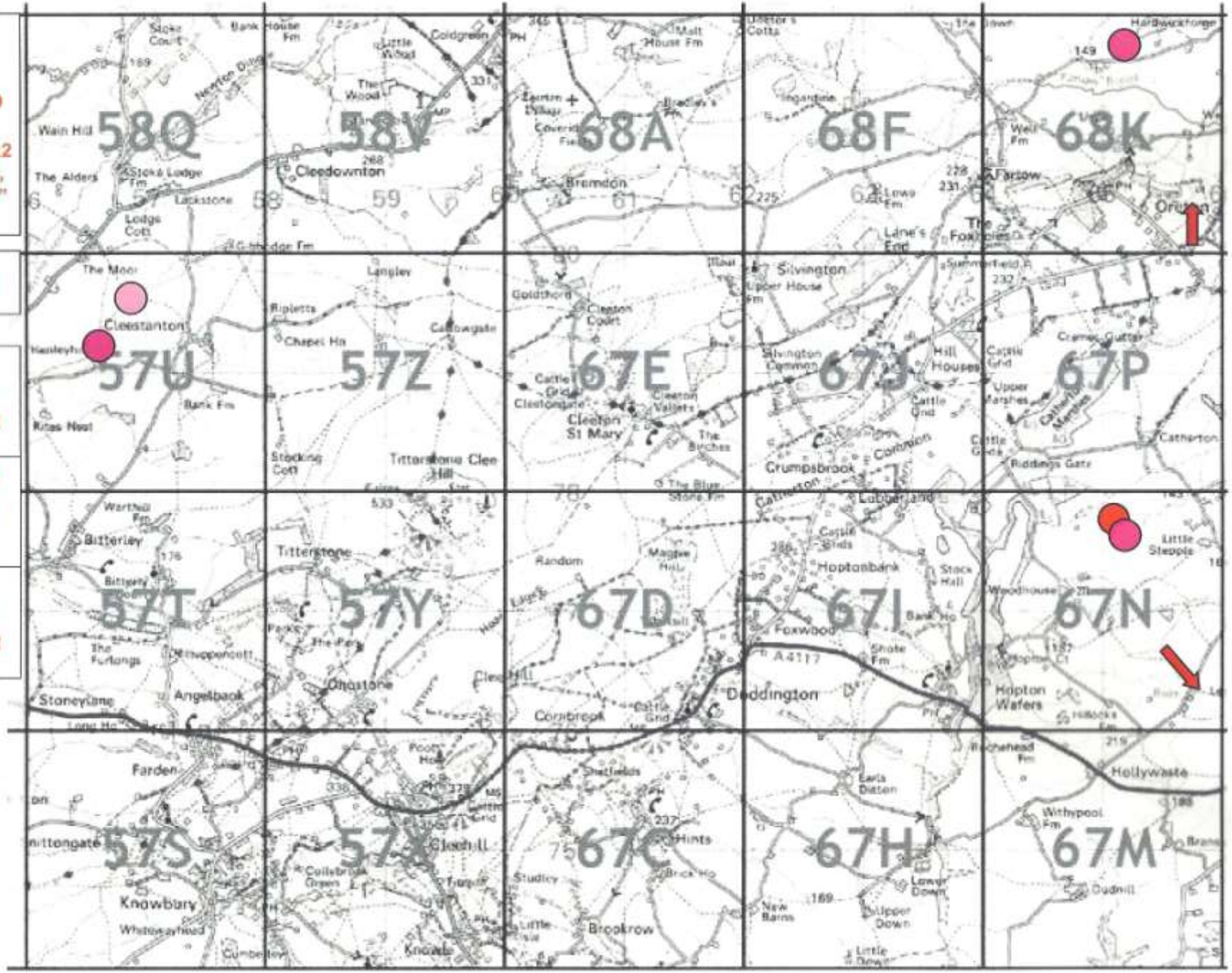
Members of the Bird Group who live in the area, or other local residents, say that Lapwings and Curlews are less common now than they used to be. Some members talked to local farmers in the course of their surveys, and they too said that Lapwings and Curlew are less common now than they used to be. Lapwings have apparently declined much more than Curlews.

Clee Hill Community Wildlife Group

Area covers 20 2x2 kilometre squares, known as "tetrads"

Lapwing

- First Survey March-April 2012
- Second Survey April-May 2012
- Third Survey June 2012



Members say

- “I’ve lived in this patch (SO57S) for six years and never seen a Lapwing or Curlew. The farmer says there used to be Lapwings at New House Farm”
- “I’ve not seen or heard Lapwing in the Upper Marshes area (SO67P) for many years. The local farmer said he used to see them every year, and go round nests when working in the fields”.
- “The farmer at Well Farm (SO68K) has not seen either this year, apart from the occasional passing Curlew. Lapwing did nest on his farm, but not for some years”

Other Target Species

The numbers of the Other Target Species recorded during each of the three survey periods are listed in the Tables in Appendix 4. They are summarised in Table 1 below.

Table 1. Other Target Species - Summary

Square (Tetrad)	Species											
	Kestrel	Red Kite	Skylark	Meadow Pipit	Dunnock	Wheatear	Stone-chat	Spotted Flycatcher	Linnet	Bullfinch	Yellow-hammer	Reed Bunting
57S			2		2				1	1		
57T					11						28	
57U			12		3				2	1	2	
57X	2	2	3			3	3		5			
57Y			10	15		20	3				1	
57Z	1	1	18									5
58Q					1			4			1	
58V	(Not surveyed)											
67C	1			7	2	13			2			
67D	6		17	36		23	2		2			1
67E	3	1	5	40	15	2	2		10		8	8
67H			4		8				2		13	
67I	2		2				1			1		1
67J								1		1		4
67M			6		9				5	2	9	
67N			3		5				4	2	16	
67P	2	1	13	29	12	2	4		42	3	11	1
68A	(Not surveyed)											
68F							2					
68K	1		7	14	22				6	7	16	
TOTALS	18	5	102	141	90	63	17	5	81	18	105	20

The survey maps for each tetrad were compared side by side, to try and eliminate individual birds that were recorded on more than one survey. The assessment is obviously imprecise, but it does produce a more accurate picture than just taking the maximum number found on any of the three surveys, or adding the three totals together.

Note that members were asked to record individual birds, not pairs (so at some locations both the birds in the pair were recorded, and in the final survey some recently fledged juveniles may have been recorded as well). Numbers of Linnet and Yellowhammer may be exaggerated by

the presence of winter flocks moving onto the breeding grounds, before dispersing to the individual breeding sites, during the second survey.

Records of species seen or heard just outside the square being surveyed, but in a tetrad within the survey area, are listed at the bottom of the Table in Appendix 4, but these records have been consolidated into the results for the relevant tetrad in the Summary Table 1 above if they are apparently additional to those found during the survey of that actual Tetrad. Records of species outside the 20 tetrads in the survey area have been discounted.

As expected in a survey of this type, the expertise of members, and the time they had available to undertake the surveys, varied considerably. The survey squares also vary considerably, in accessibility and terrain. The “detectability” of the birds themselves also varies considerably, according to prevailing weather conditions, time of day, stage in the breeding cycle, and the normal behaviour of each species. In particular, birds are most conspicuous when they are feeding young (either in the nest or recently fledged), but the poor weather this year, characterised by frequent very heavy downpours of rain, has meant that breeding success for many species has been very poor. Thus the survey results will give an indication of the species present, but only a very small proportion will have been recorded.

Addition records were supplied by a Shropshire Bird Atlas worker in Tetrads 67D, E, J and P. They are listed at the end of Appendix 4. They too are included in the results for the relevant tetrad in Table 1 above if they are apparently additional to those found during the survey of that actual Tetrad (Jon Lingard, *pers.comm*.).

It will be seen that Skylark, Dunnock and Yellowhammer are widespread and numerous, Meadow Pipit, and to a lesser extent Wheatear, are numerous in restricted parts of the area where suitable habitat still exists (the Commons), and the remaining species that were found are present only in their specific habitats, and in small numbers.

Kestrels are conspicuous, and forage over large areas, so an assessment can be made of their population. A nest was reported in SO67I (Angela & Kirsty MacKirdy, *pers.comm*.), and six (presumably a family party) were seen near Cornbrook (SO67D). Two birds seen near Clee Hill village during the first survey, before nesting, may have been this pair. One or two birds were seen around Cleeton St Mary (mainly in SO67E, but also in SO57Y and SO67D) on each survey visit, representing a third pair. Individuals were also seen once in SO67C, SO67P and SO68K, with the latter sightings suggesting a further pair. This gives an estimate of 3 – 4 pairs. Further observations in future years will help clarify the estimate.

Several of the Target Species were not recorded at all during the surveys – Barn Owl, Snipe, Dipper, Swift (nest sites only), Yellow Wagtail or Tree Sparrow.

Three Other Target Species, which are not shown in the Table, were recorded in only one square - Grey Partridge (a pair in SO67E), Cuckoo in SO67P and Spotted Flycatcher (two pairs feeding young in the nest) in SO58Q. However, casual records for Cuckoo were also received from SO67E & J. Cuckoos range far and wide, and these records probably relate to one breeding pair.

The Grey Partridge were unexpected, but it is believed that captive bred birds have been released in the area by the Burwarton shoot (Eric Davis, *pers.comm*.).

A Barn Owl bred in a nestbox in SO67P. Two owlets fledged this year (four each in the two preceding years) and have been ringed by the Shropshire Barn Owl Group (Eric Davis, *pers.comm*.).

In addition, a Dipper family and a Spotted Flycatcher were seen in SO67J (Jon Lingard, *pers.comm*.).

Decline of Lapwing and Curlew

Lapwing and Curlew are in decline, nationally, here, and elsewhere in Shropshire. The decline in the Clee Hill area is shown graphically in Figure 1. This compares the distribution maps representing the results of the current survey in 20 tetrads with the relevant parts of the maps shown in *An Atlas of the Breeding Birds of Shropshire*, based on six years fieldwork 1985-90, and published in 1992. Both maps have been compiled on the same basis and it is likely that more fieldwork has taken place in the current period, so the decline is undoubtedly real.

A large dot indicates that breeding was proved in the tetrad (usually a nest was found, or a bird was seen incubating, or dependent young were seen), a middle size dot indicates probable breeding (usually a pair was seen, or territorial behaviour was observed), and a small dot indicates possible breeding (a bird was seen or heard in the breeding season).

Such an observation needs to occur at least (but perhaps only) once in the whole six-year Atlas survey period, and it gives no indication of the number of breeding pairs. These distribution maps therefore probably overestimate the population

- Lapwings have specific nesting habitat requirements, which in this area usually means they nest on arable fields planted with spring crops, which get moved each year by crop rotation on farms. Therefore one pair or a small colony may breed in several different tetrads over a period of years.
- A pair of Curlew may also move their nest from place to place within their large territories, so again one pair may nest in several tetrads in the Atlas period. Nests are difficult to find, but pairs and territorial display are relatively easy to find, but they may be seen anywhere in the territory, so one pair may be recorded in several tetrads.

Even so, it is clear from the distribution maps in Figure 1 that both species are much less widespread here than they were 20 – 25 years ago.

Other evidence for the decline of Lapwing and Curlew, nationally and elsewhere in Shropshire, is shown in Appendix 5.

Action to attempt to reverse these declines is being taken. Both species have been designated as UK Biodiversity Priority Species by the Government, as part of its commitment to international biodiversity targets, precisely because of the rapid decline. Both species, but particularly Lapwing, nest on farmland, and the Environmental Stewardship Higher Level Scheme (HLS - part of the system of payments to farmers through the Common Agricultural Policy of the European Union) includes provision to reward farmers for sensitive management of habitat on their farms, and providing other environmental benefits. Farmers applying to join the scheme have to take into account the habitat requirements of a number of breeding birds, including Lapwing and Curlew, if they breed on or near the farm, or use land there for feeding. HLS includes specific prescriptions, and payments, for Lapwing and Curlew habitat, if the farmer wants to take them up.

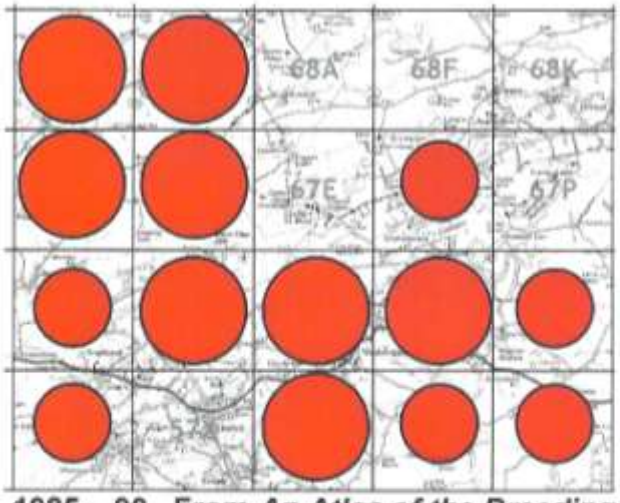
The data provided by Community Wildlife Groups, on the location and habitat of these priority species, helps Natural England (the Government Agency responsible both for achieving the biodiversity targets, and administering the Environmental Stewardship HLS) to target its limited resources more effectively to achieve this objective.

Use of Clee Hill CWG Survey Results

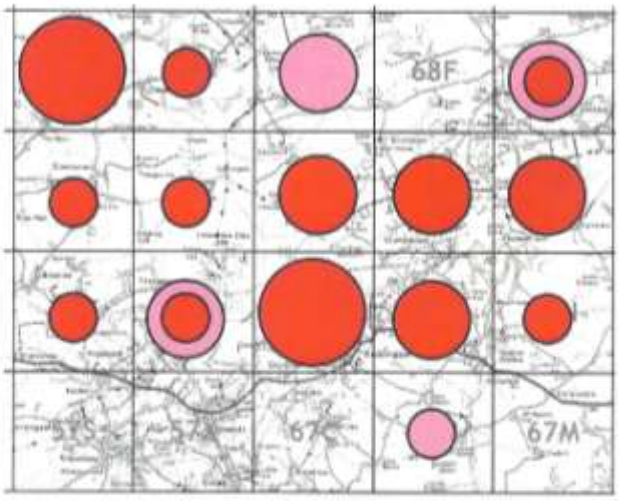
Most importantly, the Clee Hill CWG survey results are made available to Natural England. They show the importance of particular areas for these species, which will encourage farmers to manage their land more sensitively, and provide Natural England with objective evidence to judge individual farm applications to join Environmental Stewardship HLS, and information to target the use of their limited resources more effectively.

Figure 1. Distribution of Curlew and Lapwing in the Clee Hill area: Comparison between 1985-90 and 2008 – 12

Curlew

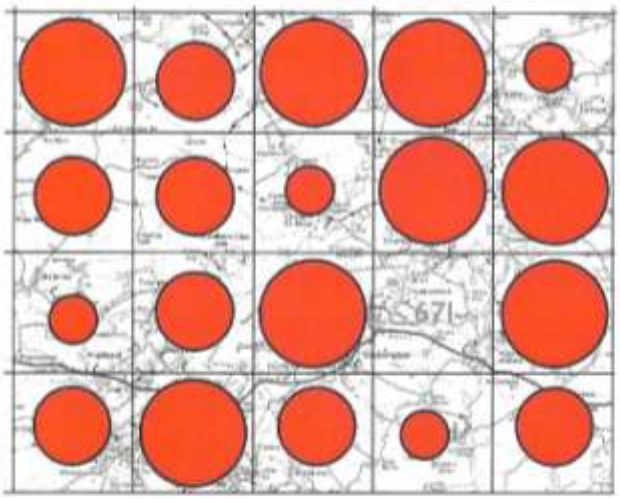


1985 – 90 From *An Atlas of the Breeding Birds of Shropshire* (1992)

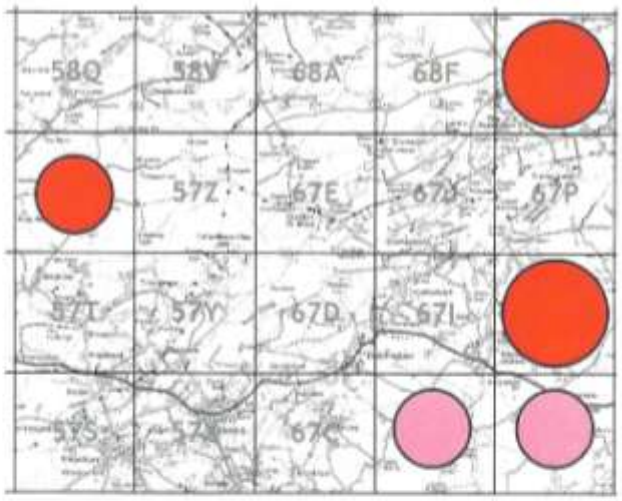


2012 Clee Hill Community Wildlife Group survey (additional records in Pink from the Shropshire Bird Atlas survey 2008 – 11)

Lapwing



1985 – 90 From *An Atlas of the Breeding Birds of Shropshire* (1992)



2012 Clee Hill Community Wildlife Group survey (additional records in Pink from the Shropshire Bird Atlas survey 2008 – 11)

Key

The background map is the 20 tetrads (2x2 kilometre squares) surveyed by the Clee Hill Community Wildlife Group in 2012.
Each dot represents at least one observation during the Atlas period
Large dot = Confirmed Breeding
Middle dot = Probable Breeding
Small dot = Seen or heard in suitable habitat

The results also reinforce and supplement the results from other Community Wildlife Groups operating in the Shropshire Hills, which together now cover over 400 square kilometres, more than half of the Shropshire Hills AONB area.

The records at tetrad level will also be supplied to Shropshire Ornithological Society for incorporation into the Shropshire Bird Atlas. The Atlas project is now in the fifth of its six years 2008-13, and results should be published around the end of 2014.

Coupled with the results of other surveys, the results may also contribute to the identification of potential new County Wildlife Sites. These sites are monitored by Shropshire Wildlife Trust, who encourage the landowners to manage the sites sensitively, so they retain their value for wildlife.

Recommendations

Natural England is recommended to encourage farmers with breeding Lapwing or Curlew , on or near their land, to join the Environmental Stewardship Higher Level Scheme, utilising the appropriate options to maintain and enhance the habitat for these priority species

Acknowledgements

Most importantly, thanks to the Group members who undertook the survey work:-

Clare Allaway
Chris Bargman
John Bayliss
Edwin (“Titch”) & Jill Carter
Eric Davies
David & Jean Faulkner
Andrew Heideman
John Lyden
Angela & Kirsty Mackirdy
Jim Martin
Nina Mills
Iain Prentice
Peta Sams
Anton Schooley
Leo Smith
Margaret & Graham Thompson

Thanks also to:-

- Tim Lee, Jonathon Lingard and Gareth Thomas for additional records and information.
- Matt Cotterill of Natural England, who provided the survey maps.
- Allan Dawes (BTO Regional Representative for Shropshire), who provided the Breeding Bird Survey figures

Report

A copy of this report has been supplied to all people who contributed to the surveys, or supplied additional records, and to Natural England. Copies are available (electronic .pdf versions or paper copies) from Leo Smith, The Bryn, Castle Hill, All Stretton, Shropshire SY6 6JP. Phone: 01694 720296 email leo@leosmith.org.uk.

Summary 2012

This report summarises a very successful first year for the Bird Group. Members showed a high level of commitment, in spite of the poor weather.

All except two of the 20 tetrads were surveyed, and we now have a good understanding of the population and distribution of Lapwing and Curlew, and the status of the Other Target Species. This is valuable information for the conservation of these species. Further survey work in future years will add to this baseline, and establish population trends in the area.

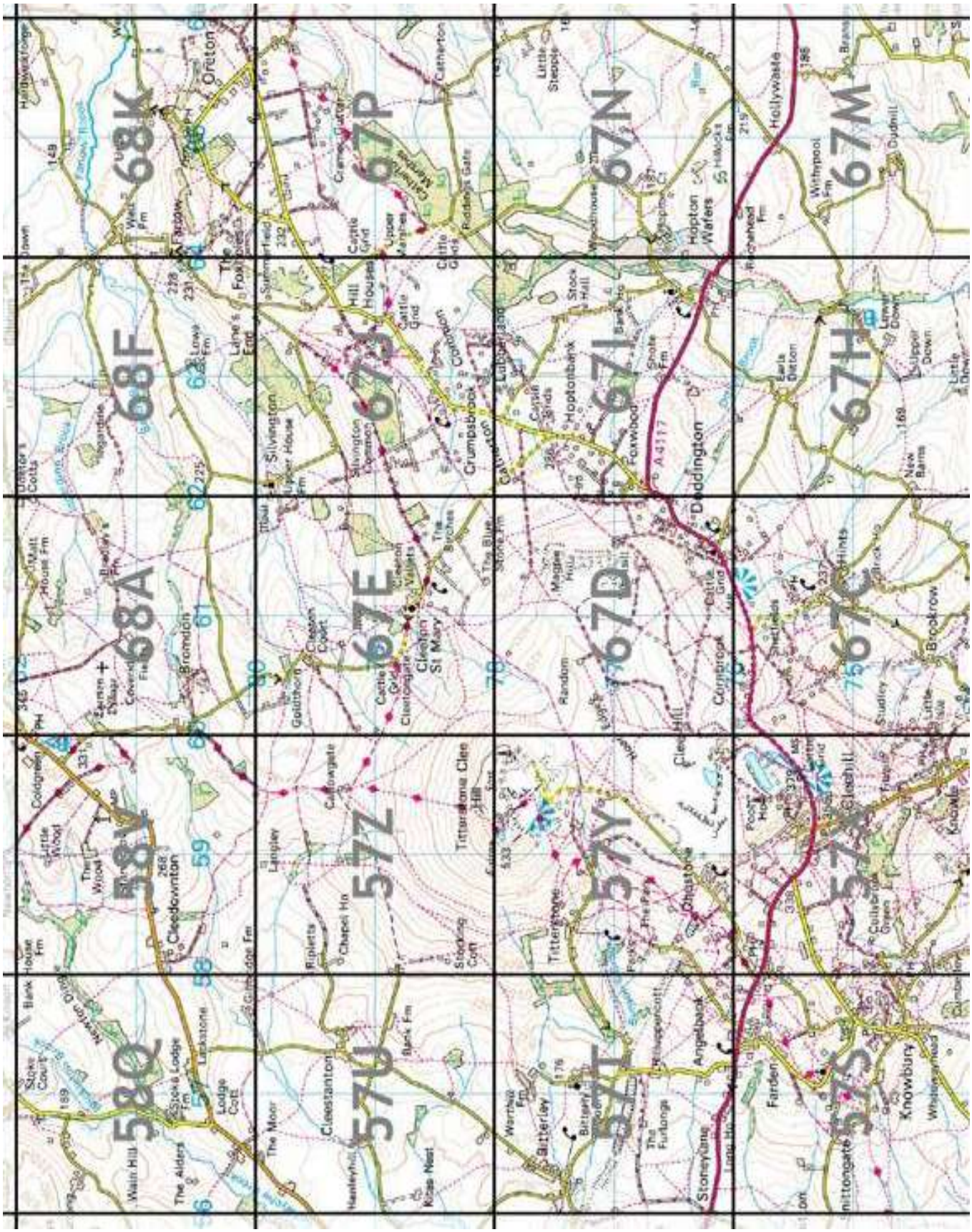
Plans for 2013

The Bird Group intends to repeat the Bird Survey next year. New participants are needed, so we hope to recruit new members.

There is also interest in starting a nest box scheme for woodland birds, and perhaps Barn Owl and Dipper; promoting the BTO Garden Bird Survey; and organising a programme of local bird walks and other activities. Further consideration will be given to these ideas, and any other proposals people want to make, at the next public meeting on 14th November, and at a further Bird Group meeting prior to the next breeding season.

Leo Smith
August 2012

Appendix 1. Map of Survey Area, showing Square Boundaries and Tetrad Codes



Appendix 2. Bird Survey - Outline Instructions

CLEE HILL COMMUNITY WILDLIFE GROUP

Recording Instructions
Curlews & Lapwings Survey

Objectives

1. To find out where Curlew and Lapwing occur in the breeding season
2. To record behaviour indicative of breeding (e.g. song, display, the making of nest scrapes, alarm calls, chicks)
3. In doing the above, to pin-point areas for a separate and more intensive survey
4. To record, in passing, other easily recognised species of nature conservation importance

Survey Unit

The basic unit is the tetrad, a square made up of four of the one kilometre squares shown clearly on Ordnance Survey maps (with pale blue grid lines). You will be allocated one or more tetrads, and requested to survey it three times – around 1st April, 1st May and mid June.

You are also requested to send in "Casual Records" of Lapwing and Curlew seen in your tetrad(s) outside the periods when the three tetrad surveys are being carried out, and at any time in the rest of the area.

Appropriate Maps will be provided.

Between them, members are surveying up to 20 tetrads which cover the area of the Clee Hill Partnership. A map showing all tetrads in the area, with the Tetrad Reference code, is attached. You don't need to know where this code comes from. However, for those that are interested, it includes a number, which is the number of the 10 kilometre square on the Ordnance Survey national grid, and a letter (A – Z, excluding O), which defines the 25 tetrads in the 10km square, from bottom left to top right. Technically the tetrad reference is preceded by the two letters SO, which is the 100 kilometre square on the Ordnance Survey national grid, but this has been omitted as all squares in the area are SO squares

Survey Periods

There are three recording periods, each of two weeks. The dates vary from year to year, and are printed on the back of the Casual Records map as part of the Recording Instructions. You can do the surveys at any time convenient to you within each two week period, but you will be requested to do it as close as possible to particular dates.

1. The first period (a two week period at the end of March and Beginning of April) follows the arrival of Lapwing and Curlew back on the breeding grounds. This is the best time to find breeding Lapwing (first egg date is usually around 1st April), so you will be asked to do the Tetrad survey as close as possible to 1st April
2. The second two week period is at the end of April and beginning of May. This is the best time to find breeding Curlew (first egg date is usually around 30th April), so you will be asked to do the Tetrad survey as close as possible to 1st May.
3. The third period, in the middle of June, is timed to find any Curlews that have successfully hatched and still have chicks. It is also the best time to find the Other Target Species.

Time of day and duration of survey

You may survey at any time of day. You are requested to spend a minimum of 45 minutes in each one kilometre square of suitable habitat in each of the three Tetrad Survey Periods. So, if the entire tetrad is composed of suitable habitat, you will need to spend a minimum of three

hours surveying in each period, but if there is only one kilometre square of suitable habitat the requirement drops to 45 minutes in each period.

Survey Maps

You are asked to record your observations on a Tetrad map, which will be provided.

However, for the purpose of planning your route, and in particular for determining Public Rights of Way and open Access areas, we strongly suggest you refer to the Ordnance Survey map at the scale 1: 25,000. *Explorer 203, Ludlow*, covers the southern three-quarters of the area. Almost all of the northern quarter is on *Explorer 217, The Long Mynd and Wenlock Edge*. Unfortunately the eastern half of tetrad 68K is on *Explorer 218. Kidderminster & Wyre Forest.*

Preparation

You should do a preliminary recce so as to plan your route with a view to attempting to visit all likely habitat within the tetrad during your survey. It may well be worth scanning the area from high points to pick out what look like good areas. Clearly there are some habitats, notably woodland and villages, which can be missed out. The two main target species are likely to be on relatively flat ground, and associated with grassland but also with any arable that there may be. In particular, areas of damp ground, as indicated on the OS map, should be covered.

Survey Method

You are asked to walk through your Tetrad concentrating on looking for Lapwing and Curlew.

It is important that we all follow the same standard recording technique repeatable for comparative purposes in the future. Therefore please:

1. Mark the route you have followed.
2. Record the amount of time you spend surveying potential habitat. So if, e.g., your route takes you through a forestry plantation, 'stop the clock' and start it again the other side.
3. Enter your observations directly onto the map using the standard symbols shown on the front and back of the recording form.
4. Return your recording forms on the date shown on them to Leo Smith, The Bryn, Castle Hill, All Stretton, Shropshire SY6 6JP

Permissions

You need to cover the ground systematically; so you may need to deviate from public rights of way (or Access Land). You must seek permission before doing so. Be up-front about the survey and the fact that it being done on behalf of a community group. These birds are 'farmers' friends', farmers like to have them around and may well be able to point out where they are, or used to be. We suggest you share your findings with them and make a record of any information they provide on past distribution and numbers.

Safety

If you are surveying on your own, take special care. Ideally you should take a mobile phone with you. Whether or not you have a phone, be sure to advise someone as to where you are going and when you will be back and ask them to raise the alarm should you fail to show up.

Other Target Species

We would also like you record Other Target Species as well, please. The species selected are also listed on the form. They are all quite easy to recognise, and are mostly of nature conservation importance (i.e. they are Target Species for Natural England's Higher Level Scheme, and are on the *Red List* or *Amber List* of *Birds of Conservation Concern)*.

However, if there are species here that you are unsure of, don't worry – only record what you are certain of. On the other hand by all means add to this list if you wish.

Further Information: Contact Leo Smith 01694 720296, email leo@leosmith.org.uk

Appendix 3. Bird Survey Instructions on Survey Maps

PLEASE USE THE FOLLOWING SPECIES, ACTIVITY AND HABITAT SYMBOLS TO RECORD BIRDS ON THE MAP

Objectives

1. To help locate Curlew, Lapwing and other species of Conservation Concern in the breeding season
2. To record in particular any behaviour indicative of breeding (e.g. song, display, nests, chicks)
3. In doing the above, to help pin-point search areas for more intensive surveys for Lapwing & Curlew

Recording periods

There are three recording periods. The dates are:-

1. 24th March – 8th April
2. 21st April – 6th May
3. 9th June – 24th June

1. The first is the best time to find breeding Lapwing (first egg date is usually around 1st April)
2. The second is the best time to find breeding Curlew (first egg date is usually around 30th April), and to locate any Lapwings that have moved to re-lay if the first clutch has failed.
3. The third period is timed to find any young Lapwing and Curlew, and breeding evidence for most of the other target species

Maps for Recording

Please mark on the map the location of all sightings of the Target Species, using the Species Symbols below. Write the estimated number of each species seen next to its name below.

If you see Lapwing or Curlew in your Squares outside the Survey Periods, or see them anywhere else in the area at any time, please mark them on the casual Record Sheet

SYMBOLS FOR TARGET SPECIES

CU	**Curlew**	**L.**	**Lapwing**	**BO**	**Barn Owl**	**S.**	**Skylark**
CK	**Cuckoo**	**DI**	**Dipper**	**K.**	**Kestrel**	**KT**	**Red Kite**
P.	**Grey Partridge**	**SN**	**Snipe**	**SI**	**Swift (nest sites only)**	**SF**	**Spotted Flycatcher**
MP	**Meadow Pipit**	**YW**	**Yellow Wagtail**	**D.**	**Dunnock**	**W.**	**Wheatear**
SC	**Stonechat**	**TS**	**Tree Sparrow**	**Li**	**Linnet**	**BF**	**Bullfinch**
Y.	**Yellowhammer**	**RB**	**Reed Bunting**				

ACTIVITY SYMBOLS:

Please use the following recording conventions:

1. We need to distinguish between breeding and other activity. So if, for example, the bird is simply feeding or flying over just enter the species letter e.g. L (or 2L for two Lapwings together)
2. If the bird is singing or displaying, put a circle round the letter e.g. (L)
3. If you happen to notice a bird sitting on a nest, or chance upon a nest with eggs please put an asterisk beside the letter e.g. L*
4. If you notice chicks, enter the date letter plus fam (family) e.g. L fam
5. Show movement of birds, and definitely different birds, using the following symbols:

CU ——— CU	Same Curlew in two different locations – circle if singing/displaying
(CU) - - - - - (CU)	Definitely two different Curlews in song at same time
CU ——→	Direction of flight – circle if singing/displaying

Please return the completed survey Maps as soon as possible after the end of each Recording Period, and no later than the date shown on the bottom of the Map, to

Leo Smith, The Bryn, Castle Hill, All Stretton SY6 6JP

Please summarise the number of different Curlews (pairs and individuals) recorded overleaf. Also, if you see any other wildlife of interest, mark it on the map, and record the details here:-

Appendix 4. Bird Survey – Results from each of the Three Survey Periods

First Period Survey: 24th March – 8th April (approx)

Square	Surveyor & Time Spent				Number of Each Species Recorded												
(Tetrad)	First Name	Surname	Hrs	Mins	Lapwing	Curlew	Kestrel	Red Kite	Skylark	Meadow Pipit	Dunnock	Wheatear	Stone-chat	Linnet	Bullfinch	Yellow-hammer	Reed Bunting
57S	Clare	Allaway	3	0	(No Target Species recorded)												
57S	David & Jean	Faulkner	3	40							1						
57S	Peta	Sams	5	0					1								
57T	John	Lyden	3	40							7					24	
57U	John	Lyden	3	33		1			6		2						
57X	Kathleen	Boyland			(No survey return received)												
57Y	Titch, Nina & Jill	Carter	7	30					6	7		4	3				
57Z	Margaret & Graham	Thompson	3	5		1		1	3								
58Q	Leo	Smith	3	30		1					1					1	
58V					(No volunteer to survey this Tetrad)												
67C	Anton	Schooley	3	0			1										
67D	Iain	Prentice	3	0		6	1		17	34	2		2				
67E	Eric	Davies	3	40		3	1	1	1	(lots)	12			6		4	6
67H	Jim	Martin	2	5							3						
67I	Kirsty & Angela	Mackirdy	4	15		3	2		2				1		1		
67J	John	Bayliss				1											
67M	Jim	Martin	2	10					4		6			5		4	
67N	Jim	Martin	2	45	2				2		3				2	11	
67P	Chris	Bargman	4	30		2			3				2				
67P	Andrew	Heideman	6	45		1	1		8	14	6		2			7	
68A					(No volunteer to survey this Tetrad)												
68F	Chris	Bargman	3	15									2				
68K	Chris	Bargman	3	30					2								
68K	Andrew	Heideman	8	0	1	1	1		6	14	14					6	
TOTALS			79	53	3	20	7	2	61	69	57	4	12	11	3	57	6

Second Period Survey: 21st April - 6th May (approx)

Square	Surveyor & Time Spent				Number of Each Species Recorded												
(Tetrad)	First Name	Surname	Hours	Mins	Lapwing	Curlew	Kestrel	Red Kite	Skylark	Meadow Pipit	Dunnock	Wheatear	Stone-chat	Linnet	Bullfinch	Yellow-hammer	Reed Bunting
57S	Clare	Allaway	2	0	(No Target Species recorded)												
57S	David & Jean	Faulkner	3	0							1						
57T	John	Lyden	1	10							3					1	
57U	John	Lyden	3	5	1				11		1			2	1	2	
57X	Peta	Sams	4	30			2	2	3			2	2				
57Y	Titch, Nina & Jill	Carter	7	30					4	5		1				1	
57Z	Margaret & Graham	Thompson	3	30					8								
58Q	Leo	Smith	3	30		2											
58V					(No volunteer to survey this Tetrad)												
67C	Anton	Schooley	2	15						3							
67D	Iain	Prentice	3	0		1			12	36	1	23	2	2			1
67E	Eric	Davies	4	0			2		2	40	6			3		2	
67H	Jim	Martin	1	55					2		3			2		5	
67I	Kirsty & Angela	Mackirdy	3	0		1	2										
67J	John	Bayliss			(No survey return received due to illness)												
67M	Jim	Martin	2	5					4		5			2		2	
67N	Jim	Martin	2	10	1	1			2		3			2		2	
67P	Chris	Bargman															
67P	Andrew	Heideman	7	45		2			10	14	8	1		37	1	8	
68A	Hugh	Fletcher			(No survey return received)												
68F	Chris	Bargman			(No survey return received)												
68K	Chris	Bargman			(No survey return received)												
68K	Andrew	Heideman	6	50		2	1		3		6			6		10	
TOTALS			61	15	2	9	7	2	61	98	37	27	4	56	2	33	1

Appendix 4. Bird Survey – Results from each of the Three Survey Periods (cont.)

Final Period Survey: 9th - 24th June (approx)

Square	Surveyor & Time Spent				Number of Each Species Recorded												
(Tetrad)	First Name	Surname	Hours	Mins	Lapwing	Curlew	Kestrel	Red Kite	Skylark	Meadow Pipit	Dunnock	Wheatear	Stone-chat	Linnet	Bullfinch	Yellow-hammer	Reed Bunting
57S	Clare	Allaway			(No survey return received)												
57S	David & Jean	Faulkner			(No survey return received)												
57S	Titch, Nina & Jill	Carter	9	0					2					1	1		
57T	John	Lyden	3	10							3					3	
57U	John	Lyden	3	0	1				1							1	
57X	Peta	Sams	1	30	(No Target Species recorded)												
57Y	Hugh	Fletcher			(No survey return received)												
57Z	Margaret & Graham	Thompson	3	5			1		7								
58Q	Leo	Smith	2	30		2											
58V					(No volunteer to survey this Tetrad)												
67C	Anton	Schooley	1	30	(No Target Species recorded)												
67D	Iain	Prentice	3			5	6		16	30	2		2				
67E	Eric	Davies	3	10			1		2	3	4					3	
67H	Jim	Martin	2	10							8			2		10	
67I	Kirsty & Angela	Mackirdy				4	2										
67J	John	Bayliss			(No survey return received due to illness)												
67M	Jim	Martin	1	20					4		3				2	3	
67N	Jim	Martin	1	35							3			1	2	5	
67P	Chris	Bargman	4	45	(No Other Target Species recorded)												
67P	Andrew	Heideman	8	0					2	10	7			31	3	2	1
68A	Hugh	Fletcher			(No survey return received)												
68F	Chris	Bargman	3	30	(No Target Species recorded)												
68K	Chris	Bargman	2	50	(No Target Species recorded)												
68K	Andrew	Heideman	5	0							8				7	8	
TOTALS			60	5	1	11	10	0	34	43	38	0	2	35	15	35	1

Curlew records from Tetrad Surveys in Adjacent Squares

First Survey
67D - 1 Curlew (heard)
67E - 1 Curlew (heard)
67J - 1 Curlew (heard)

Second Survey
67D - 1 Curlew

Curlew Records on Casual Records Map
57T (John Lyden)
57Y (John Lyden)
67E & 67P (Peta Sams)
67J (Fiona Gomersall)
67P (Andrew Heideman)
67P (Gareth Thomas)

Curlews Seen on Training Meeting
Three separate pairs
(one wholly in 67E, one in 67E, D & I, and one in 67J)

Other Target Species Recorded on Adjacent Square Surveys, & Casual Records

First Survey
58Y - 1 Skylark & 2 Meadow Pipit
67E - 1 Meadow Pipit & 4 Reed Bunting

Second Survey
57Y - 18 Wheatear
67C - 13 Wheatear, 4 Meadow Pipit, & 2 Dunnock
67E - 2 Stonechat & 2 Wheatear
67I - 1 Stonechat & 1 Reed Bunting
67J - Bullfinch

Third Period
67E - 1 Cuckoo
67P - 1 Red Kite, 1 Cuckoo

Final Survey
57X - 1 Wheatear, 1 Meadow Pipit, 1 Stonechat & 5 Linnet
57Y - 2 Wheatear
57Z - 5 Reed Buntings
67C - 1 Wheatear
67E - 1 Kestrel, 1 Cuckoo & 1 Reed Bunting
67J - 4 Reed Buntings
67P - 2 Stonechat, 1 Dunnock & 2 Linnet
68F - 1 Skylark

Additional Records supplied by Bird Atlas Worker (Jon Lingard)
67D - 2 Stonechat, Linnet (nest), Wheatear
67E - 2 Kestrel, 2 Stonechat, & Linnet (5 nests)
67J - Dipper (family), Spotted Flycatcher
67P - 2 Kestrel, Linnet (nest), & Meadow Pipit (family)

Additional Species

First Survey
Fieldfare - 7 in 57U
Short-eared Owl - 3 in 67I & J
Crossbill in 67P
Chiffchaff - 1 in 67I, & in 67M
22 other species in 67E

Second Survey
Peregrine - 1 in 57X, & 1 in 57U
Green Woodpecker - 1 in 67C, 67D & 67I
Whinchat - 1 in 67P
Redstart - 1 in each of 67D, 67P & 68K
6 other species in 67C
7 other species in 67E

Final Survey
Redstart - 1 in 57S
Lesser Whitethroat - 1 67N
25 other species in 67E

Lapwing – Population Decline and Habitat Loss

Population Decline

Lapwings were common and widespread in the area only 20 – 30 years ago. Many farmers and other local people remember many breeding sites that held several pairs then, where there are none now.

The population has been declining since the 1960s, but more quickly in recent years. National surveys organised by the Royal Society for the Protection of Birds (RSPB) and the British Trust For Ornithology (BTO) found a 49% decline in the breeding population between 1987 and 1998. Further monitoring through the annual Breeding Bird Survey (BBS), organised nationally by the BTO, showed a 53% decline over the 25 years up until 2006. As a result, Lapwing was included on the national *Red List* of *Birds of Conservation Concern 3: 2009.* The BBS Report 2011 shows that the decline has continued since 2006.

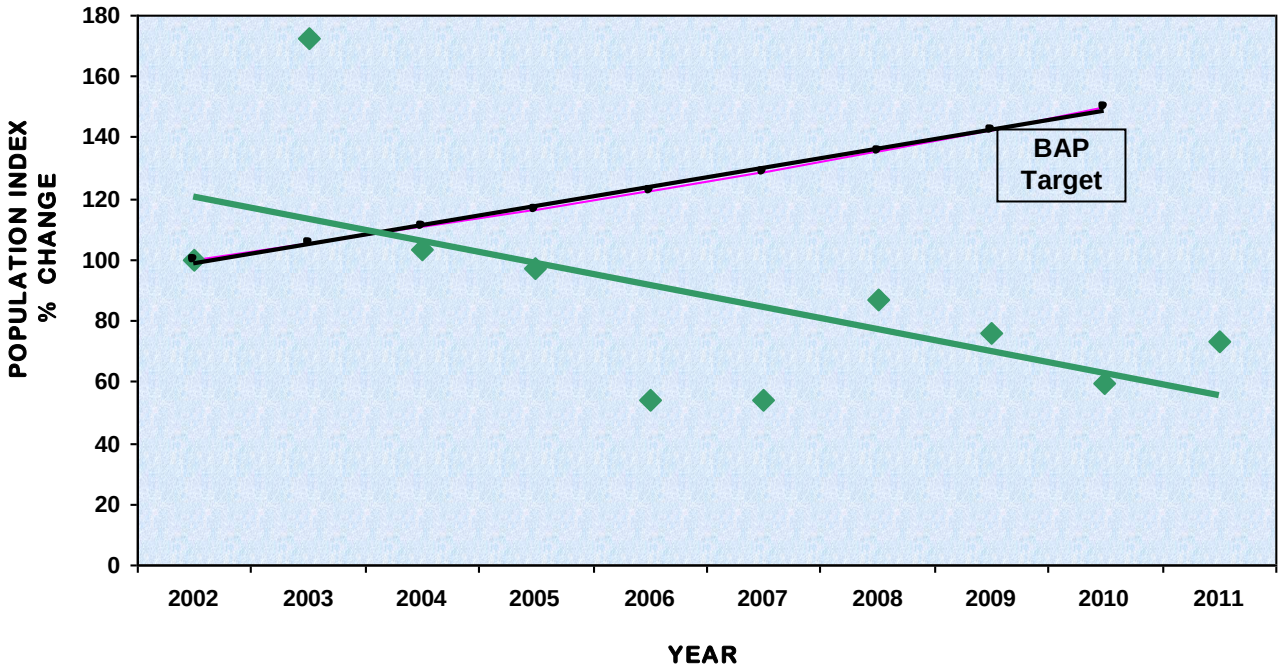
In Shropshire, the local results of these national surveys suggest that the County population is now less than one-sixth of what it was just 22 years ago – a decline of 85%.

Population Trends for Breeding Lapwing in Shropshire

An indication of recent local population trends can be estimated from the BBS, supported by the Shropshire Ornithological Society. An average of 52.4 1-kilometre squares ("survey plots") has been surveyed each year from 2002 to 2011 by members. The survey plots are selected at random, so they are representative of the countryside as a whole.

The graph shows the change in the Population (total number of birds counted, divided by the number of plots surveyed, expressed as a percentage taking 2002 as the baseline i.e. 2002 = 100%, by definition). The "Target" trendline is the change that would have been needed to achieve the target in the Shropshire Biodiversity Action Plan, set in 2002 (a 50% increase in the 2002 population by 2010), but officially the monitoring of this target has ceased because the County BAP and Biodiversity Partnership is no longer supported (either financially or in policy terms) by the Government.

Fig 2. Lapwing Population Change In Shropshire 2002 – 2011 (Results from BBS)



Many of the same squares have been surveyed each year, so the steady reduction in the number of squares that Lapwings have been found in, as well as the reduction in the number of birds found, is also an indicator of the decline.

For Lapwing, this trend is consistent with that found in other surveys.

Firstly, SOS repeated in 2003 and 2008 the sample survey carried out by the BTO in 1987 and 1998. Thirty-four randomly selected tetrads (4% of the County total) were covered in these surveys. The decline is shown graphically in Figure 3 below

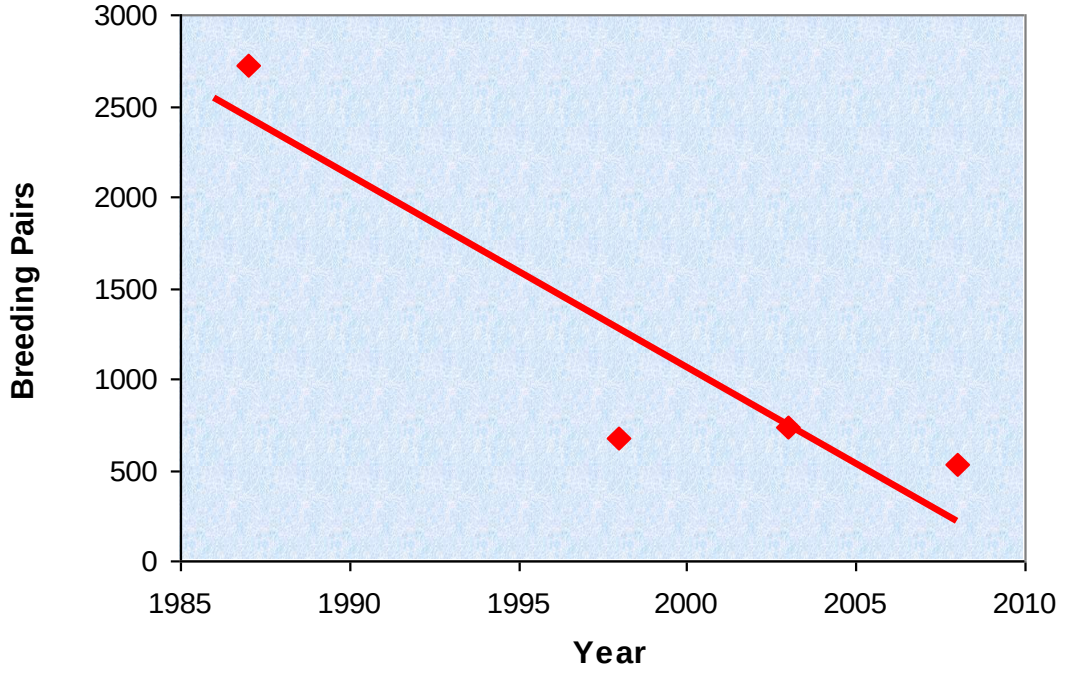
Secondly, the breeding population has been monitored annually in five specific areas within the County since 2003 or 2004. The results are shown on the following page. Projecting the rate of decline found in these five areas indicates that Lapwing will be locally extinct in three of them within 5 years (by 2012). This may have already happened in the Upper Clun, where no breeding pairs were found in 2009 or 2011. The exception to the downward trend is the Upper Onny area, where systematic conservation work by the Wildlife Group with Natural England and several local farmers initially reversed the decline, although subsequently the most important site ceased being managed for Lapwing, with the result that, by 2012, the population had declined again, back to the level when monitoring started in 2004.

The BBS graph shows a 25% decline since 2002. If this is taken as a projection on the results of the sample surveys in 1987 and 2003, it suggests the County Lapwing population in 2011 was around 400 pairs, only one-sixth of the population in 1987.

An Atlas of the Breeding Birds of Shropshire (1992) mapped the distribution of Lapwing, based on six years fieldwork 1985-90. This fieldwork is currently being repeated, and after the first four years (2008-12), it is already apparent that Lapwing have disappeared from large areas – the range has contracted at the same time as the population has declined.

Therefore, the evidence suggests that the breeding population of Lapwing is still declining rapidly, and urgent action is needed if the species is not to disappear from large parts of the Shropshire farmed landscape.

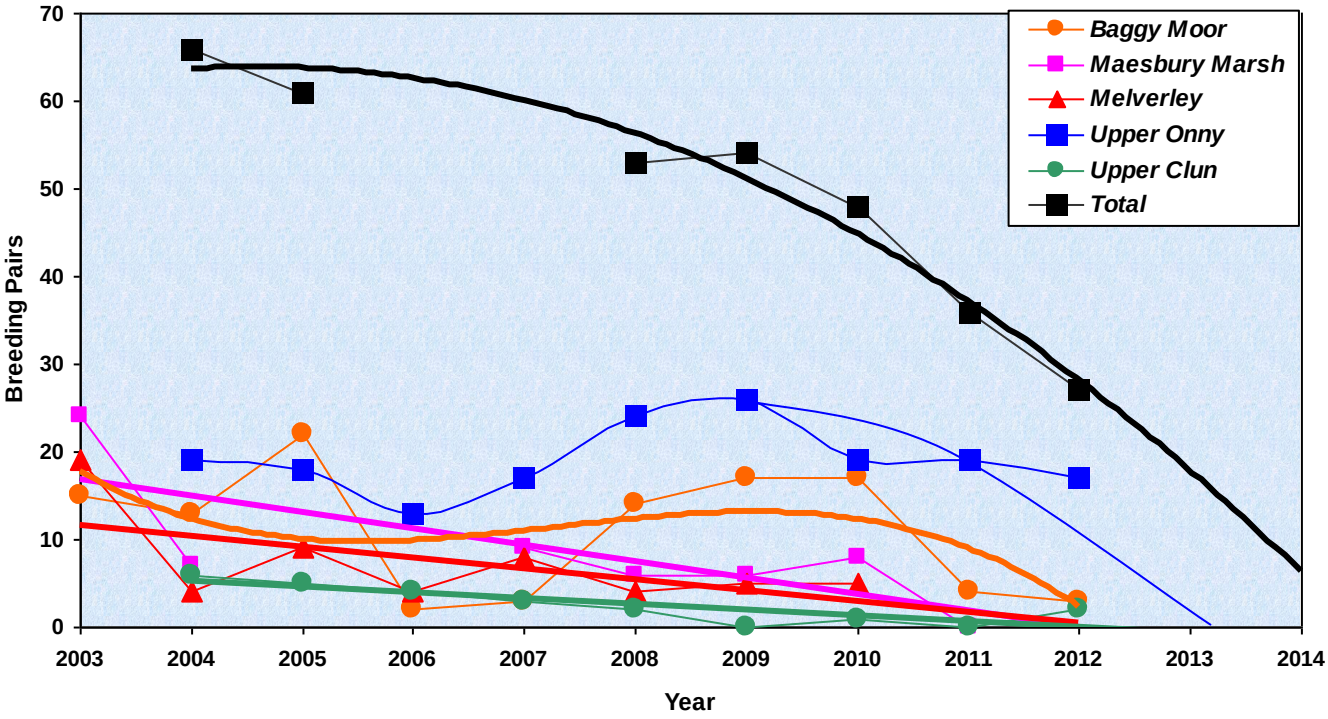
Figure 3. Estimated Shropshire Lapwing Population 1987 – 2008 (Based on 4% sample of County Tetrads – survey organised by BTO & SOS (1987 & 1998), and by SOS (2003 & 2008)



Thanks to Allan Dawes (BTO Regional Representative) for providing the figures.

Lapwing: Population Change 2004 – 10 in Five Areas in Shropshire

The Lapwing population has been counted in five different parts of Shropshire for most of the period 2003 – 12, as shown in the Chart. No total is given for 2003, as monitoring started in two areas in 2004. No monitoring took place at Maesbury Marsh in 2006 and 2007, or in 2010, and there was no monitoring around Melverly in 2011 or 2012..



It should be noted that, while survey effort and methodology has remained constant in the Upper Onny and Upper Clun, that in the three areas in north Shropshire has varied from year to year, and it is possible that some pairs were overlooked, particularly before the Lapwing Meadows project started in 2009.

The Baggy Moor and Maesbury Marsh figures for 2009 - 2012 are for the same area surveyed in previous years. They are extracted from RSPB surveys, initially for the Lapwing Meadows project, where intensive surveys of a larger area on Baggy Moor, and on Weald Moor, found an initial increase of 27 to 32 pairs on Baggy Moor, then a decline to only 19 pairs in 2011 and 10 pairs in 2012, and, on Weald Moor, an increase from 13 to 15 to 17 pairs by 2011, and 17 again in 2012. Surveys in 2011 & 2012 were less thorough than in the first two years, but they were concentrated on the best areas, so results are not directly comparable, but give a good guide.

The trendline for each area has been projected to 2014, and it will be seen that Lapwing are likely to disappear from most of these areas by then. None were found in the Upper Clun in 2009 or 2011, although one (failed) pair was found there in 2010, and two (failed) pairs in 2012.

Detailed figures are given below. The total population in the five areas is only one-third of that in 2004.

Area	Estimated Population (Breeding Pairs)									
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Baggy Moor	15	13	22	2	3	14	17	17	4	3
Maesbury Marsh	24	24	7			9	6	6	8	0
Melverley	19	4	9	4	8	4	5	5		
Upper Onny		19	18	13	17	24	26	19	19	17
Upper Clun		6	5	4	3	2	0	1	0	2
Total		**66**	**61**			**53**	**54**	**48**	**31**	**22**

Leo Smith
March 2013

Habitat Requirements

Lapwings have two separate breeding requirements. The nest is built on bare earth, or short vegetation, with good all-round visibility. In our area this is usually on ground that is tilled in spring (this is mainly spring barley or wheat, although maize and oilseed rape, both of which are less suitable for Lapwing, are increasing), or on cattle pasture. However, chicks leave the nest soon after hatching, and largely feed themselves. While the chicks are small, their food is mainly insects and spiders, but, as they grow, they need larger prey, particularly earthworms. This prey is much more plentiful and accessible on damp ground, and chicks preferentially forage on the wetter areas. Chicks from late nests, where clutches have been re-laid following earlier nest loss, will not hatch until early June, and therefore need this damp feeding habitat to be available until the middle of July.

Lapwings return to their breeding grounds in mid March, and first clutches are laid in late March or early April. Repeat clutches will usually be laid if the first clutch is lost, sometimes several times over. The incubation period is about 4 weeks. Chicks leave the nest almost as soon as they hatch, and feed themselves. Fledging takes another 5-6 weeks, but, although the chicks are extremely well camouflaged and freeze when approached, their mortality is high.

Reasons for the Decline

A large number of research papers have been published on the reasons for the reduction in the Lapwing population (summarised most recently in Sheldon 2002a & 2002b, Taylor & Grant 2004 and Shrubb 2007).

This research has shown that the decline, locally and nationally, has been caused by:

- The switch from Spring to Autumn/Winter Cereals, thereby reducing the availability of short vegetation on arable land in April (Autumn/Winter Cereals have already grown too high to provide nest sites).
- Drainage of farmland, and reduction in the level of the water table through increased extraction for agricultural and other human activities, which reduces the availability of damp feeding areas for chicks.
- A reduction in mixed farming, so chicks have to move a considerable distance from the nest site to the nearest suitable feeding area. This takes up a lot of energy, and exposes the chicks to predation, and many drown trying to cross steep-sided drainage ditches. Chick survival rate has therefore declined.
- Increased intensification in modern agriculture
    - i) Spring arable crops grow more uniformly, and more quickly, than they used to, so there are fewer suitable nest sites later on in the breeding season, limiting the opportunity for pairs which lose early clutches to re-lay
    - ii) Farm machinery is much bigger, so farmers who traditionally drove around or moved Lapwing nests are less likely to see them now
    - iii) Farms are bigger, and more likely to employ casual or contract labour, who are perhaps less sympathetic to local wildlife
    - iv) Stocking levels on pasture have increased substantially, increasing the risk of trampling nests and chicks.

In particular, the ever-increasing distance between suitable nest sites and damp chick feeding areas creates a major dilemma for the breeding pairs - do they keep the chicks close to the natal area, running the risk of starvation, or do they try and move them long distances, running the risk of exhaustion, predation or drowning?

In the Shropshire Hills, the switch from arable crops to pasture, which was actively promoted by the two ESA schemes in their early years, has also contributed to the loss of habitat.

The Lapwing, by Michael Shrubb, published by T & AD Poyser in 2007, summarises current knowledge about Lapwings, and contains a comprehensive bibliography.

Productivity Requirements

If any population is to be stable, then the number of young birds that reach breeding age must be equal to the number of older birds dying off.

Research elsewhere shows that, based on the known survival rates of first year and adult birds, Lapwings must produce around 0.7 fledged young per pair per year in order to sustain any current breeding population.

Wintering Lapwing

It is often difficult to persuade people that Lapwings are declining rapidly, because they see large flocks in winter.

However, the British population generally moves south in winter, particularly in hard weather, while large numbers of Lapwings which breed in northern and eastern Europe come here to escape the frozen ground, which prevents them being able to forage for food there. However, the migrants depart, and the British birds return to their breeding grounds, during March. Lapwings are much more scarce between March and August.

Curlew – Population Decline and Habitat Loss

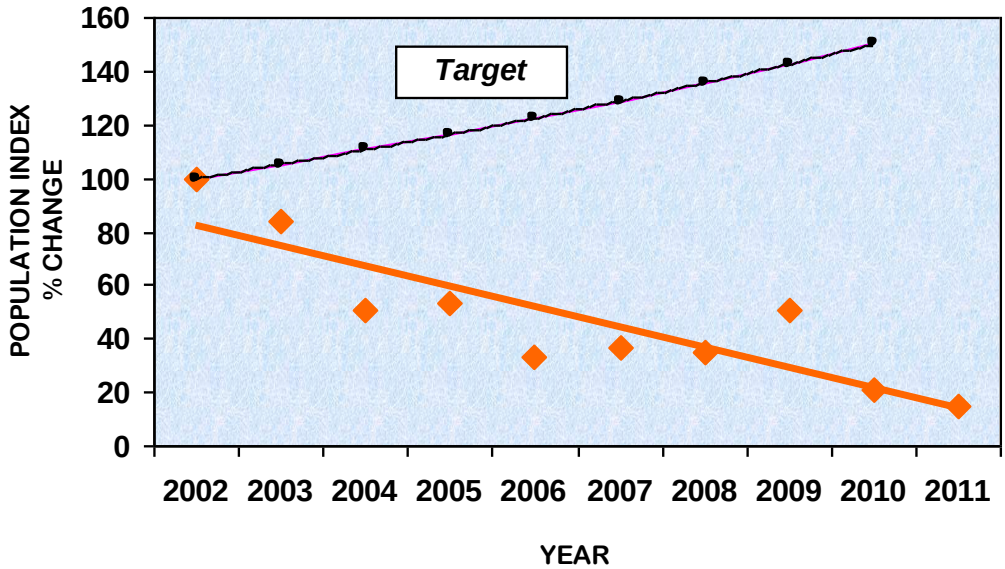
Population Decline

Nationally, Curlew is in serious decline, and is on the *Amber List* of *Birds of Conservation Concern 3 2009,* because the UK population has declined by more than 25% in the previous 25 years. It is also a Biodiversity priority species in the UK, and in England.

The national Breeding Bird Survey (BBS), organised by the British Trust for Ornithology, started in 1995. The 2011 BBS report found a decline of 44% in the UK over those 16 years, and 31% in England in the same period.

In Shropshire, more than 50 randomly selected survey squares (the number necessary for a reasonably reliable statistical analysis) have been covered since 2002. The resulting population trend is shown in Figure 4.

Figure 4. Curlew Population Change in Shropshire 2002 – 11 (Results from BBS)



Only 14% of the number of Curlews found in 2002 were found in 2011 – a local decline of 86%. The "Target" trendline is the change that would have been needed to achieve the target in the Shropshire Biodiversity Action Plan, set in 2002 (a 50% increase in the 2002 population by 2010), but officially the monitoring of this target has ceased because the County BAP and Biodiversity Partnership is no longer supported (either financially or in policy terms) by the Government.

The national *Birds of Wet Meadows Survey* 2002 (Wilson *et al., 2005*.) found a 38.9% decline since 1982. The *Repeat Upland Bird Survey* 2002 (Sim *et al.,* 2005) revisited nine study areas that had previously been surveyed between 1980 and 1991, and also reviewed data from four other upland areas. It found an estimated decline of over 50%, with a 41% decline in only seven years between 1987 and 1994 at one site in North West Wales.

In the West Midlands, the *Birds of Wet Meadows Survey* found a 61.3% decline between 1982 and 2002. In Shropshire, the same survey covered 11 sites, mainly in the Severn Valley and the Wealdmoors north of Telford, and found a reduction from 25 pairs to 11 (a 56% decline).

In Shropshire, *An Atlas of the Breeding Birds of Shropshire* (1992) showed Curlew occurring in both the uplands, and lowland wet meadows, but suffering from a steady reduction in the area of optimum habitat in the lowlands. The County population was estimated at 700 pairs. Since then, the decline in the lowlands has continued, and steep declines have been recorded in upland areas too. The Atlas survey is being repeated, and comparison of the current map after four of the six years fieldwork shows Curlews no longer breed in many places where they were found only 20 years ago.

In the Shropshire Hills, breeding bird surveys on the Stiperstones and the Long Mynd have shown a catastrophic decline of Curlew in the last 15 years. The Long Mynd Breeding Bird Project found 11-13 pairs in 1995, declining to 7-8 pairs in 1998, 3 pairs in 2002 and 2003, and only 2 pairs in 2004. Very few chicks or young birds were seen, indicating very poor breeding success (Smith 2004a, 2004b). Since 2004 the annual population has usually been two pairs, including 2012, but in 2009 it was three, and in 2010 and 2011 it was only one. On the Stiperstones, five breeding pairs were recorded in 1995-96, but breeding apparently ceased prior to 2000, and certainly none were found during surveys in 2002 and 2004 (Smith 2004).

Community Wildlife Groups have also been monitoring Curlew.

- In the Upper Onny area, covering 122 square kilometres between the Long Mynd and the Welsh border, Curlews have declined considerably since 2004, by around one-fifth (by an estimated 18%, down from 38 pairs to 31 pairs in 2011).
- In the Upper Clun, covering around 110 square kilometres mainly in the river Clun catchment west of Clun bridge, the population has halved in only five years (22 pairs in 2007, down to 9-12 pairs in 2011).

A comparison of these Wildlife Group survey results with the relevant sections of the distribution map in *The Atlas* (1992) also shows a considerable reduction in range within the Groups' areas. Breeding success of these remaining pairs appears to be low, and insufficient to halt, let alone reverse, the decline. The breeding density is also relatively low, and Curlews are mainly found now in areas of wet pasture, where emergent springs have enabled soft rushes and marshy ground to remain.

Habitat Requirements

Curlews nest in rank vegetation, such as unimproved grassland and heather moorland, or in rushes or tussocks on rough grazing, or in hay and silage crops, all of which provide cover for the sitting birds and eggs. They feed on open damp pasture and meadows - wet, boggy areas are necessary for the invertebrates that Curlews feed on. Suitable habitat includes mires & flushes, wet meadows, rush pasture and wet rough grazing.

Curlews are ground nesting birds, and all-round visibility is important in avoiding predator attacks, so Curlews are only found in open landscapes.

Reasons for the Decline

Nationally, the population decline is attributed primarily to agricultural intensification, leading to habitat loss and increased destruction of nests and chicks by agricultural activity (see *Birds of Wet Meadows Survey* 2002 (Wilson *et al., 2005*.) and the *Repeat Upland Bird Survey* 2002 (Sim *et al.,* 2005.)):-

- increased and more efficient land drainage, leading to a reduction in the amount of rank vegetation for nest sites, and to a reduction in the quality and quantity of invertebrate food supply in the wet meadows.
- Other practices used to "improve" grassland, including control of "weeds" such as rushes that are used as cover for nests, and rolling and chain harrowing that destroys nests and chicks.

- Increased use of fertilisers, which accelerates the transfer of the water in the ground into the growing grass, thereby reinforcing the effect of drainage.
- Production of silage, rather than hay, which is cut earlier and more often, thus increasing the destruction of eggs and chicks.
- More intensive grazing, and higher stocking levels, which reduces nest cover still further, and, in addition, increases the risk of nests being trampled.

Predation has also played a part in the decline (Grant *et al*, 1999) - the smaller number of Curlews, with the reduced amount of nesting cover, mean nests and chicks are ever more vulnerable to the increasing number of predators, particularly Crows, Magpies and foxes.

Insufficient young birds now fledge to replace the older ones that die off, and even if habitat improvements are made, the levels of predation are likely to prevent population growth.

Productivity Requirements
If any population is to be stable, then the number of young birds that reach breeding age must be equal to the number of older birds dying off.

Research elsewhere shows that, based on the known survival rates of first year and adult birds, Curlews must produce around 0.8 fledged young per pair per year in order to sustain any current breeding population.

Wintering Curlew
Most Curlews go to the estuaries in winter. They return to their breeding grounds in late February or March, and is rare to see them in Shropshire between September and the end of February, except in the western lowlands that make up the floodplain of the Severn-Vyrnwy confluence.

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