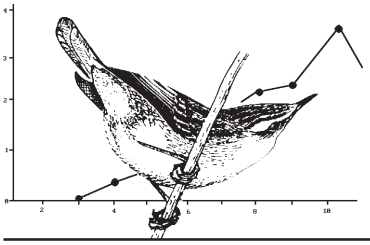
CES *News*



This is the eighteenth edition of the CES News*, the newsletter for the British Trust for Ornithology's Constant Effort Sites Scheme. If you require further copies, then please contact Dawn Balmer at The Nunnery.*

Number 18 March 2005

Cetti's Warbler monitored by CES

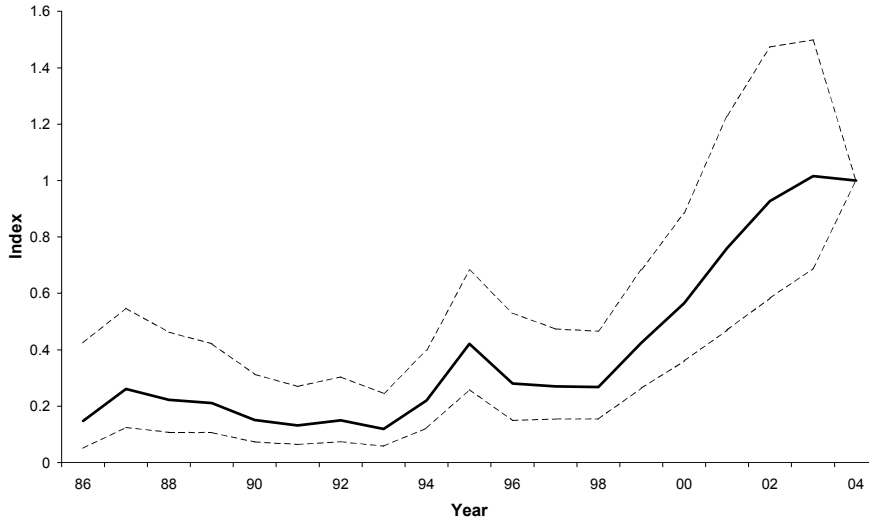


Figure 1. Adult Abundance Index for Cetti's Warbler (1986-2004)

It is exciting to be able to report that enough Cetti's Warblers are now caught on Constant Effort Sites for us to be able to produce an index of adult abundance and productivity. The number of birds caught at present is quite low with most sites catching just one or two birds. We will monitor closely the number of sites contributing records and the usefulness of these data. The long-term trend in adult Cetti's Warbler is shown above (Fig 1). They have really taken off since 1998!

Cetti's Warblers have been expanding their range over the last few years. Productivity of Cetti's Warblers on CE sites is fairly constant so it is likely that the expansion has been partly fuelled by mild winter weather and good over-winter survival. Cetti's Warbler is not currently monitored by any other scheme although their distribution and numbers are reasonably well covered by county bird reports. In 2003, Cetti's Warblers were recorded on ten BBS squares and it is expected there will be an increase for 2004. It will be interesting to see what happens when we get a really cold winter like the 1981/82 winter or February 1991 or if the cold spell at the end of February/early March 2005 had any impact on their population.

CES in 2004

Coverage in 2004

So far, CES returns have been received from 121 sites across Britain and Ireland. The results we present in this newsletter come from catches at 105 sites that submitted data for 2004 by early January. As in previous years, the majority of sites were in England (81 sites) with smaller numbers in Scotland (15), Wales (five) and Ireland (four). We were pleased that eight new sites were started in 2004; five in England, two in Scotland and one in Wales.

The habitats covered by sites were similar to previous years with most sites in dry scrub (36%), wet scrub (27%), reedbed (22%) and a smaller number in deciduous woodland (15%). Net length varied across sites from 45 m to 318 m of netting.

Despite many ringers reporting that windy conditions were a problem in 2004, it is pleasing that all 12 visits were completed at 66% of sites and 11 or more visits were completed at 86% of sites.

New sites needed!

We are always keen to recruit new sites into the scheme, particularly from those areas currently under-represented such as south west Britain, Wales, Ireland and Scotland. CE ringing will be attempted at nine new sites in 2005 – we wish them well! The number of sites operated between 1983 and 2004 is shown in Fig 2. The number of sites increased steadily up to 2000 but Foot & Mouth in 2001 meant that some sites could not be operated (although CES suffered relatively little compared with other schemes); it is taking time to build up the number of sites again. If you are interested in setting up a CES please contact the Dawn Balmer at BTO.

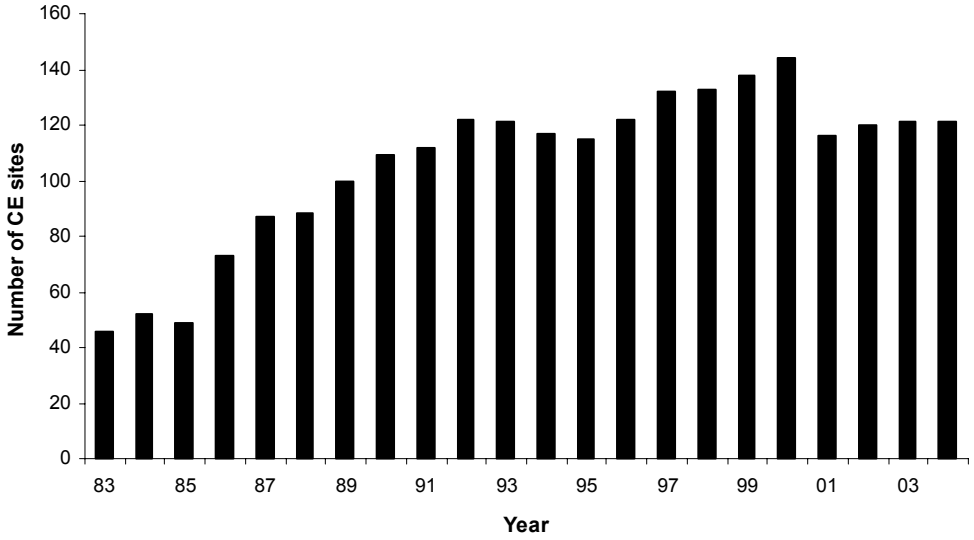


Figure 2. Number of Constant Effort Sites operated 1983-2004

Mixed success for adults

Mild and changeable weather dominated the winter of 2003-2004 with Atlantic fronts moving across throughout the winter with just short periods of cold, frosty and snowy weather.

There were statistically significant increases in the numbers of adults caught between 2003 and 2004 for Sedge Warbler, Reed Warbler, Whitethroat, Blackcap, Willow Warbler and Reed Bunting (Table 1 p5). Interestingly, all these species had a below average breeding season in 2003 which suggests over-winter survival must have been good. All, except Reed Bunting, are long-distance migrants, so this might be related to conditions in Africa. Only four species showed a statistically significant decline in the number of adults caught between 2003 and 2004: Dunnock, Blackbird, Song Thrush and Blue Tit. In our last CES report in *BTO News* 251 we presented long-term trend graphs for Song Thrush, which showed a shallow increase in adult numbers since 1997. Let's hope the decline in 2004 is a temporary drop and numbers will continue to increase in the longer term.

The long-term trend in adult Dunnock abundance on CE sites (Fig 3) shows a shallow decline during the 1980s but a shallow increase since the early 1990s. The decline in 2004 may be a knock-on effect from a poor breeding season in 2003. Fig 3 also shows the long-term trend in catches of adult Robins. Like the Dunnock, the Robin is a fairly common resident insectivore, and it has a similar breeding ecology. On CE sites, Robins have increased steadily since the inception of CES in 1983. It is interesting to note how similar the pattern of change in adult numbers between individual years is for Robin and Dunnock, particularly in the early years. Declines due to the very cold winter of 1990/91 and the poor breeding season in 1996 (reflected in a decline in adult numbers in 1997) can be clearly seen. The long-term trend for Robin from CBC/BBS data shows a large increase since the mid-1980s. Recent research (see *BTO News* 255) shows a long-term increase in Robin survival but a decrease in survival for Dunnocks, though the reason for this difference is not clear.

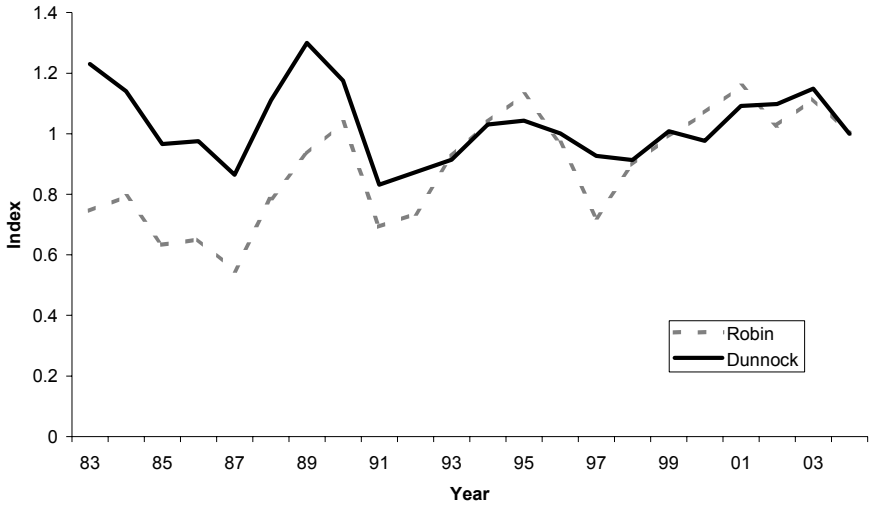


Figure 3. Long-term trends in the Adult Abundance index on CE sites for Robin and Dunnock

Good breeding season overall

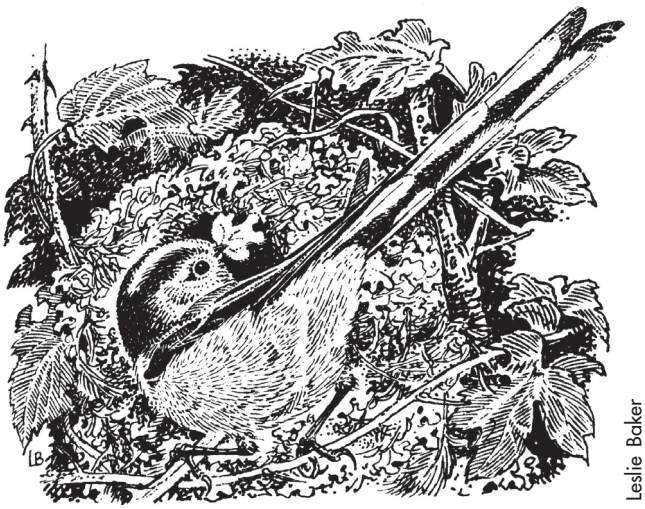
Looking back over the weather reports for spring and summer 2004 (in *British Wildlife*) highlights what a mixed season it was and how extreme regional variation can be. March started off with high pressure producing sunny spells and overnight frosts, turning unsettled mid-month. April and May were generally fine mild months but there were periods of very heavy rain and some flooding, particularly in the north and west. Large catches of Long-tailed Tits suggested successful breeding, but there was a notable absence of juvenile Blackbirds from first broods during the early part of the season. The first half of June was generally mild in England and unsettled in Scotland and later a cold front moved in bringing rain and gales to northern Britain. July started off unsettled but by mid-month high pressure had moved in over most of Britain although cold fronts continued in the north. For many, August was the wettest month since 1956 and the floods at Boscastle in Cornwall will long be remembered; Scotland, on the other hand had below average rainfall.

It is somewhat surprising, given the mix of weather, that productivity was quite good for most species. Table 1 (p5) also presents a measure of how good or bad the breeding season was in 2004 compared with the average in previous years (1983-2003). This helps us to put the results from the 2004 breeding season into a long-term perspective. For many species, breeding success in 2004 was above average. Comparing productivity to 2003 (which was below average) eleven species showed a statistically significant increase: Wren, Dunnock, Robin, Blackbird, Song Thrush, Cetti's Warbler, Blackcap, Chiffchaff, Long-tailed Tit, Blue Tit and Great Tit.

Resident insectivores had a good breeding season compared to 2003, although for Robin productivity was slightly below the long-term average. Blackbirds had a slow start to the season with some failure of first broods; subsequent broods were more successful and overall productivity was 10% above the long-term average. Song Thrush had an excellent breeding season with productivity 40% above the long-term average; a welcome upturn in fortunes. The breeding season for migrants was more mixed. Despite increasing trends in adult abundance for Chiffchaff and Blackcap, breeding success remains fairly constant with large annual fluctuations.

Willow Warbler showed a statistically significant decline in productivity between 2003 and 2004 and for both species breeding success was also below the long-term average. Overall, Willow Warbler shows a long-term decline in productivity although in 2002 and 2003 productivity, was actually above average.

Goldfinch shows quite large annual variation in breeding success between years and although productivity was well below the long-term average, there has been a shallow increase in productivity over the last ten years.



Leslie Baker

Table 1. Changes in captures on CE sites from 2003 to 2004

Species	n 2004 Ads	n 2004 Juvs	Adult % change vs 2003	Trend	Productivity % change vs 2003	Productivity vs 83-03 ave	Trend
Wren *Troglodytes troglodytes*	100	101	-7	↑	+15*	0	→
Dunnock *Prunella modularis*	98	96	-13*	→	+33*	+10	→
Robin *Erithacus rubecula*	96	100	-10	↑	+16*	-3	↓
Blackbird *Turdus merula*	100	97	-9*	↓	+41*	+10	↓
Song Thrush *Turdus philomelos*	85	77	-22*	↓	+57*	+40	↓
Cetti's Warbler *Cettia cetti*	11	14	-2	↑	+113*	+63	→
Sedge Warbler *Acro. schoenobaenus*	64	67	+31*	→	+7	+1	↓
Reed Warbler *Acro. scirpaceus*	56	55	+22*	↓	+1	+4	→
Lesser Whitethroat *Sylvia curruca*	37	45	+15	↓	+14	-12	→
Whitethroat *Sylvia communis*	63	69	+33*	↓	+9	+7	↓
Garden Warbler *Sylvia borin*	53	62	+2	↓	+19	+3	↓
Blackcap *Sylvia atricapilla*	90	95	+18*	↑	+19*	+4	→
Chiffchaff *Phylloscopus collybita*	87	90	-3	↑	+39*	+11	→
Willow Warbler *Phylloscopus trochilus*	84	90	+30*	↓	-19*	-7	↓
Long-tailed Tit *Aegithalos caudatus*	77	80	-4	↑	+27*	-5	→
Willow Tit *Parus montanus*	9	14	+41	↓	-45	-50	→
Blue Tit *Parus caeruleus*	97	100	-11*	→	+58*	+16	↓
Great Tit *Parus major*	96	100	-5	→	+56*	+24	↓
Treecreeper *Certhia familiaris*	41	67	+1	→	+7	+24	→
Chaffinch *Fringilla coelebs*	81	71	-6	→	+22	+51	→
Greenfinch *Carduelis chloris*	46	42	+1	↑	-6	+8	↓
Goldfinch *Carduelis carduelis*	44	21	+30	→	-57*	-45	→
Linnet *Carduelis cannabina*	18	14	-14	↓	-33	-29	↓
Bullfinch *Pyrrhula pyrrhula*	77	62	-3	↓	-4	0	→
Reed Bunting *Emberiza schoeniclus*	62	46	+25*	↓	+6	-10	↓

n 2004 = number of sites operated in 2004 at which the species was captured
vs 2003 = percentage change between 2003 and 2004
vs 83-03 ave = % change with respect to 1983-2003 average in productivity
* = significance (at the 5% level) of increase/decrease with respect to previous year only
Trend = long-term trend during the period of CES ringing. See Wider Countryside Report on the BTO website for further details (www.bto.org/birdtrends)

↑= long-term trend shows an increase

↓= long-term trend shows a decline

→= long-term trend shows stability

Interesting controls and retraps

T090204	Blackcap	3J	10.08.2004	Strathclyde Country Park CES
		3M	29.09.2004	Icklesham, Sussex

50 days, 626 km. One of a large number of Blackcaps controlled at Icklesham.

2U9613	Willow Warbler	1	21.06.2002	Kippo CES, Fife
		4	28.06.2004	Loch Eye CES, Highland

183 km. An interesting movement to a breeding area north west of its natal site.

6L8813	Wren	3J	21.06.2000	Slimbridge CES, Gloucestershire
		3J	01.07.2000	
		3	29.07.2000	
		4	28.04.2001	
		5M	12.05.2001	
		4M	04.05.2002	
		4M	11.05.2002	
		4M	01.06.2002	
		6M	15.05.2004	
		6M	22.05.2004	
		4	12.06.2004	

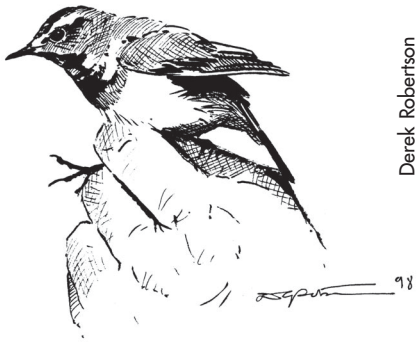
Where was it in 2003?

2Y0475	Chiffchaff	3J	01.09.1999	Nunnery CES, Thetford, Norfolk
		4M	03.05.2001	
		4M	09.05.2001	
		4M	23.05.2001	
		4M	26.07.2001	
		4M	12.07.2002	
		4M	08.07.2003	
		4M	07.07.2004	

Not recorded in 2000 – did it not come back in its first-summer or simply escape capture?

Unusual captures

Pintail – Slimbridge, Gloucestershire
Merlin – Loch Eye, Highland
Grey Partridge – Hauxley, Northumberland
Little Owl – Alton Water, Suffolk
Tree Pipit – Hill of Fortrose, Highland
Bluethroat – Gosforth Park, Tyne & Wear
Wheatear – seven at a new CES in Devon
Aquatic Warbler – Abbotsbury, Dorset
(on an additional visit!)
Marsh Warbler – three Essex, one Gtr London
Brambling – Loch Eye, Highland



Derek Robertson

Vegetation change on CE Sites

Many CE sites are operated in reedbed and scrub habitats, which are subject to successional changes in vegetation. Succession may influence capture efficiency as vegetation gets taller, and potentially bias any long-term trends in CES results. Since 1995, CES ringers have been asked to complete a habitat survey on their site about every three years although this has not always been a popular task! The CES Instructions recognise habitat succession as a potential problem on sites and ringers have been encouraged to undertake limited management to maintain the vegetation state around the nets. Many sites are also in areas where scrub management is undertaken for conservation purposes, such as on reserves.

Habitat details were recorded for each net and for each side of the net separately. The height of scrub vegetation was recorded; reed, herbs and grass vegetation was ignored, as were trees over 7m in height since these were unlikely to affect capture efficiency. A total of 173 sites submitted habitat data at least once and virtually all sites were managed to some extent (just 5% annually with no management). Most management was in the form of annual cut back of rides (64%) but some sites also coppiced/pollarded trees (15%), and a few reported reed cutting or tree felling.

We looked at habitat information for those sites that had submitted data at least once during each of the periods 1995-1998 and 1999-2002 enabling change in vegetation height to be assessed, over an average period of 4.4 years. Because of the active management that is carried out at most sites, overall levels of vegetation change were quite low, generally only a few cm per year (0.11 m ± 0.25 m).

Overall there was no strong relationship between either numbers of adults and juveniles caught and changes in vegetation height, or between productivity and change in vegetation height. The relationships for Robin are shown in Fig 4. Thus we can be confident that the change in vegetation height is only contributing a small amount of variation in bird numbers, and succession is unlikely to strongly bias the long-term trends reported from CE sites.

On the whole, CE sites appear to be managed in such a way as to minimise succession, increasing the comparability of sites between years.

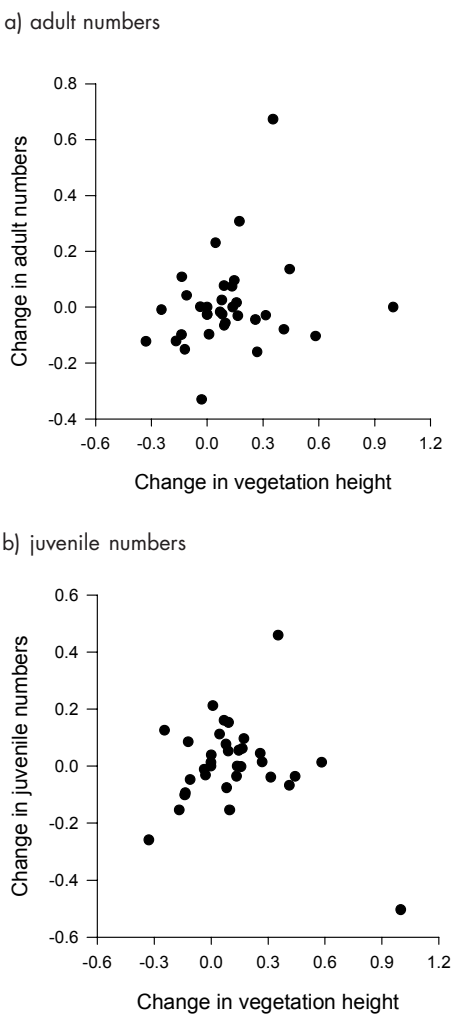
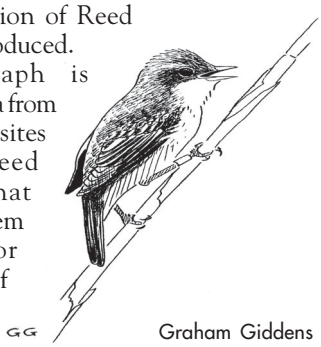


Figure 4. Relationship between change in numbers of a) adult and b) juvenile birds caught on CE sites and change in vegetation height for Robin

Using CES to calculate survival rates

A key aim of the CES scheme is to provide information on survival rates to help monitor bird populations. In the past, we have done this for certain species, such as Sedge Warbler, using a small number of CE sites that catch good numbers of the species. This means we calculate survival rates from only the best sites for a species, which is obviously not ideal for monitoring survival in the national population. However, combining survival rate estimates from a large number of sites (many of which catch relatively few birds) is much more challenging! Steve Freeman has started to tackle this tricky problem by looking in more depth at survival in two species: the Reed Warbler and Bullfinch. Before estimating surival rates, it is necessary to also take into account the likelihood that a bird has moved to another site, or remains on the site, but has simply eluded capture. This 'recapture rate or probability' varies between sites and may be influenced by a number of factors, such as net length (see for example the Willow Warbler study on p. 10).Over 300 sites have contributed records to the scheme since 1983 and this large number of sites can cause problems for the standard survival analysis programs that usually handle a small number of sites. Steve has been working on a new approach based on the assumption that the number of birds recaptured is related to the length of mist-net used at each site. This speeds up the analysis and brings the routine and regular evaluation of survival rates for a large number of species from a large number of sites closer to reality. An example of what we hope to achieve is shown in Fig 5. This is the first long-term trend in adult surival rates for the UK population of Reed Warblers produced.

The graph is based on data from the best 80 sites for Reed Warbler, that between them account for 80% of all of this species



GG Graham Giddens

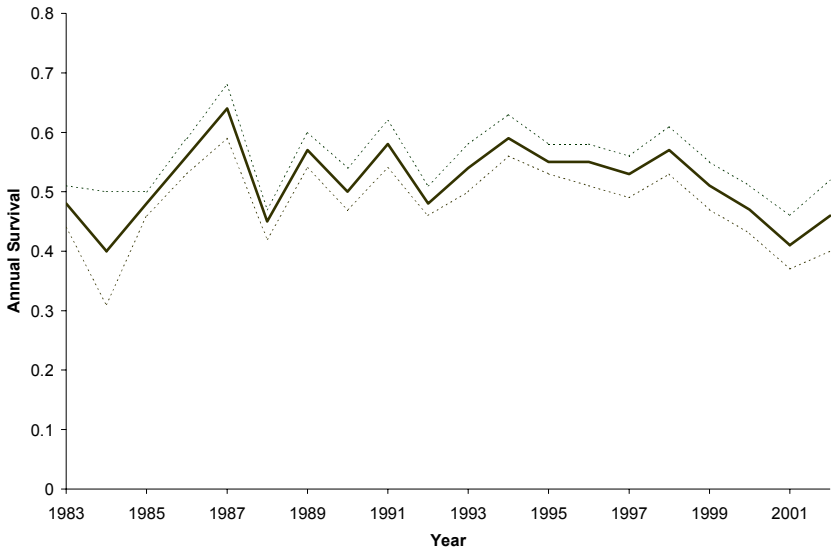


Figure 5. Annual adult survival for ReedWarbler based on 80 CE sites

caught by CES ringers. The confidence limits (dotted lines) are close to the estimate (solid line) suggesting the estimate is quite precise. There is no apparent long-term change in survival for Reed Warbler, which is currently increasing in adundance and productivity, and expanding its range. For species like the Reed Warbler which is locally abundant but patchily distributed, this type of approach seems to work well. For Bullfinch, which is more widely distributed, but in lower numbers at each site, we can also produce an annual trend in survival, but the confidence limits are wider, indicating greater uncertainty in the estimates.

So far the work is producing some promising results, and further work planned for next year will help refine the methods. When we have fully developed the method, the results will form an important part of the BTO's Integrated Population Monitoring Programme and it is exciting to think we will be able to produce regular reports of trends in survival, as we do currently for abundance and productivity.

News Items

CES Email Forum

The CES email forum proved to be a great success last summer. Just under 95 ringers subscribe to the forum. Many CES ringers found it interesting to know how others were getting on across Britain and Ireland. The number of emails ranged from 12-17 per month during the summer months. The forum (like all BTO email forums) is moderated, so ie 'spam'-free.

To subscribe to the CES Forum please send a blank email to:
btocesforum-subscribe@yahoogroups.co.uk

If you want to be able to change the way you receive messages (daily summary, one message at a time) or view previous messages on the web then you will need to become a member of Yahoo Groups. To join Yahoo Groups visit the website http://uk.groups.yahoo.com and click on the links to register.

Habitat recording in 2005

Following our recent analysis of habitat data collected by CES ringers (see page 7) we will be reviewing the habitat recording procedure later in 2005. For new sites starting in 2005 please make a simple sketch map of your site, marking on the major habitat types, and return it at the end of the season to BTO HQ. We will work on an improved method of habitat recording, perhaps covering a larger area beyond the individual nets.

IPMR improvements

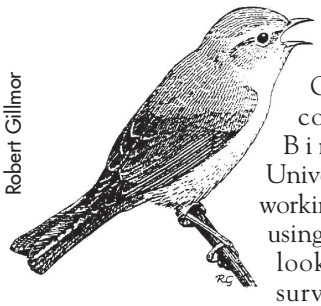
Mark Cubitt, in conjunction with BTO staff, has made a number of improvements to the CES side of recording in IPMR. These include enhancements to the CES checking report to allow printing, inclusion of the ability to record cloud cover (see below) and the summary report now excludes pulli which are subsequently retrapped from pulli column. The best thing is that the CES Summary Sheet will now be included in the same submission as the data files so there is no need to send two emails to BTO. The next release of IPMR (v2.2) will be available later in the summer and contains many other improvements. Everbody should upgrade as soon as possible after its release.

Cloud Cover

Many ringers have suggested in the past that we should be recording cloud cover on CES because sun on nets can affect the catch. We have now introduced a cloud cover score to complement the existing wind and rain scores. It uses a standard system of estimating how many eighths (oktas) are covered with cloud. These should be recorded for the first half and second half of the CES visit. The scores are listed below:

0 Clear (<1oktas)
1 Scattered cloud (1-4 oktas)
2 Broken cloud (5-7 oktas)
3 Overcast (>7 oktas)

Study of Willow Warbler survival


Robert Gillmor

Brian Johnson, a student on the Diploma in Ornithology course at Birmingham University, has been working on a project using CES data to look at adult survival rates of Willow Warblers. Five sites that catch good numbers of Willow Warblers were selected and the ringers were happy for their records to be used – thank you! The sites were Loch Eye, Highland (Bob Swann), Conon Islands, Highland (Ronnie Graham & Michael Thompson), Kippo, Fife (Jim Cobb), Finningley Park, South Yorkshire (Dave Hazard & Doncaster RG) and Wraysbury Gravel Pits, Berkshire (Runnymede RG). The number of years included in this analysis varied across sites (between nine and 15 years).

Using the program MARK, Brian estimated the recapture rate (Fig 6) and the adult survival rate (Fig 7) of Willow Warblers at each site. The probability of recapturing a bird varied across sites and recapture rate was higher at those sites with the greatest net length. Average adult survival for Willow Warblers varied too, being generally lower in Scotland: Conon Islands (28.1%), Kippo (30.3%), Loch Eye (31.7%), Finningley Park (34.3%) and Wraysbury GP (36.7%). These figures mean that, on average, fewer than one in three adult Willow Warblers survive to return to their breeding sites each year.

Previous studies based on individual retraps have produced average annual survival estimates of 47.1% (Hertfordshire) (Pratt & Peach, 1991), 37.1% (seven sites) (Peach 1993) and 38.9% (ten sites in central and northern Britain) (Peach *et al* 1995). In the latter paper, survival at ten sites in southern Britain declined from 45% during 1987-1988 to 24% during 1991-1992. Studies based on recoveries of dead birds have produced estimates ranging from 55% (Baillie & McCulloch 1993) to 27-34% (Siriwardena et al 1998). So estimates from the five sites looked at here are typical, but there is much variation between sites.

References

Peach, W.J. and Baillie, S.R. & McCulloch, N. 1993. In Lebreton, J.D. and North, P.M. (eds) *Marked individuals in the study of bird populations*. Birkhauser Verlag Basel/Switzerland.

Peach, W.J., Crick, H.P.Q. & Marchant, J.H. 1995. *Journal of Applied Statistics* **22** Nos 5 & 6.

Pratt, A & Peach, W.J. 1991. *Ringing & Migration* **12** pp128-134.

Siriwardena, G.M, Baillie, S.R. & Wilson J.D. 1998. *Bird Study* **45** pp276-292.

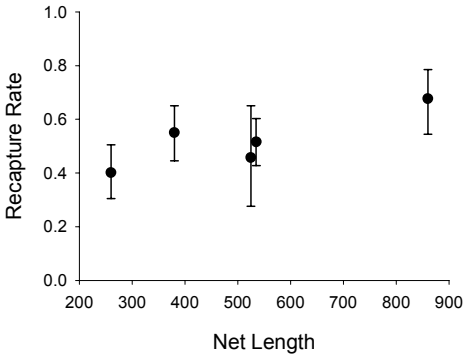


Figure 6. Recapture rates at the five study sites

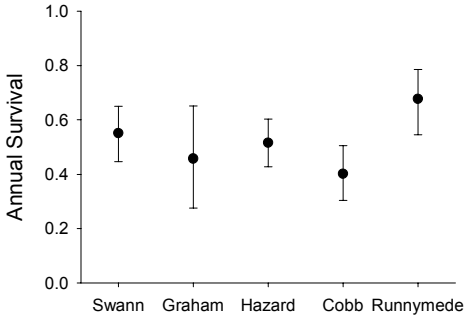


Figure 7. Adult survival rates at the five study sites

Do missed visits influence results?

Will Miles, an undergraguate student at Anglia Polytectnic University, contacted the BTO with an interest in using CES data for his project. Will is a trainee ringer at Wicken Fen and regularly helps out with the long-term CES style ringing there. His supervisor, Nancy Harrison, is a CES ringer at Cow Lane Gravel Pits in Cambridgeshire, so clearly Will is well placed to undertake a study using CES information.

Each year we ask ringers to make 12 visits to their site during the breeding season, but occasionally, for one reason or another (holidays, unsuitable weather), one or two visits are missed. For sites with low numbers of missed visits, methods were devised by Will Peach to take these into account and to work out what would have been caught had the visits been completed, based on previous captures at the site. Will Miles' project was to look at what effect using sites with missing visits had on the overall trend. To do this he calculated the trend in productivity (using the standard BTO method) for a number of species based on just those sites that had completed all 12 visits in a year and then compared it to the trend produced by BTO which includes sites with missing visits.

The results for Blackcap (Fig 8) are shown below. As you can see the similarity in trend is quite impressive. The dashed line is the trend produced by BTO which includes a number of sites with missed visits and the solid line is based on sites with complete coverage. For a relatively common species like Blackcap, then, the results show that using sites with missed visits is acceptable. Will is now working on a range of species that are not so abundant on CES.

We always encourage ringers to complete all 12 visits where possible, but it's good to know that sites which have missed the odd visit can still contribute to the long-term trends we produce.

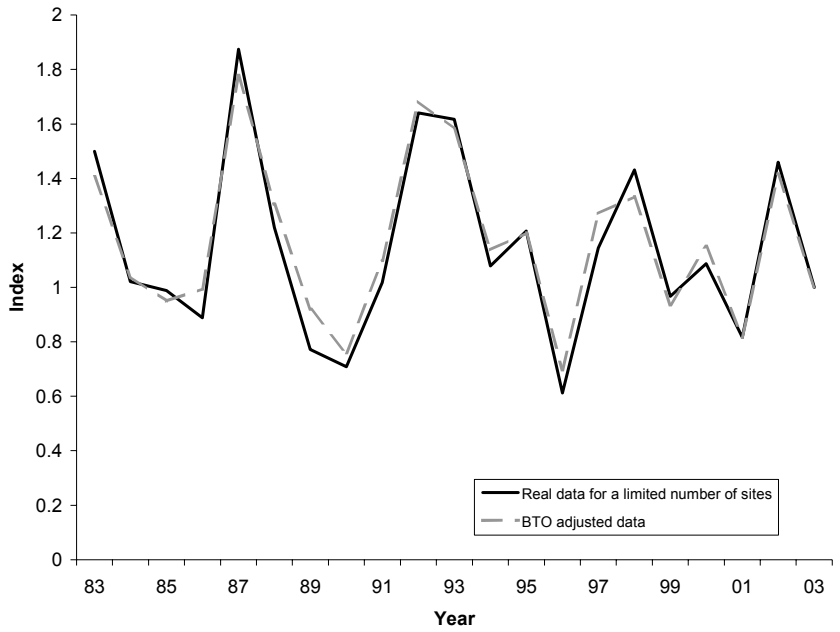
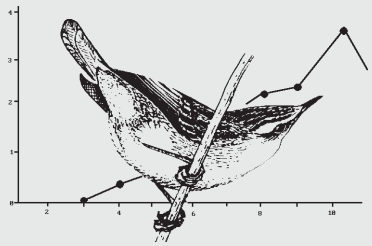


Figure 8. Long-term trends in Blackcap Productivity



BTO
The Nunnery
Thetford
Norfolk
IP24 2PU

Tel: 01842 750050
Fax: 01842 750030

Email: ces@bto.org

Editors
Dawn Balmer & Rob Robinson

Desk Top Publishing
Jane Waters

Illustrations
Leslie Baker
Graham Giddens
Robert Gillmor
Derek Robertson

The Constant Effort Sites Scheme is supported by the BTO and the JNCC Partnership and is also part of the BTO Ringing Scheme which is funded by a partnership of the British Trust for Ornithology, the Joint Nature Conservation Committee (on behalf of English Nature, Scottish Natural Heritage and the Countryside Council for Wales, and also on behalf of the Environment and Heritage Service in Northern Ireland), The National Parks and Wildlife Service (Ireland) and the ringers themselves.

Monitoring Bird Populations using Mist Nets

In October 1993 a workshop on 'The use of mist nets to monitor bird populations' was held in California and was attended by Will Peach (then CES Organiser) and Stephen Baillie (Head of Populations Research). Papers were written following the workshop, updated during 2001-2003 and finally the proceedings from the workshop have just been published!

Will and Stephen presented two papers on the CES scheme. The first gives background to the scheme, discusses current practices and goes on to compare CES results for adult abundance with those from the Common Birds Census. The second paper shows how between-year recaptures from CES can be used to estimate adult survival and that information from different sites can be combined to provide regional estimates of survival. They also show how birds that pass through the site (transients) can be dealt with to produce a more accurate estimate of survival.

CES stalwarts Chris du Feu and John McMeeking present a paper on the relationship of juveniles captured in CES ringing with local abundance. As they ring large numbers of nestlings on their CE site at Treswell Wood in Nottinghamshire, they compared the number of juvenile Blackbirds, Song Thrushes, Blue Tits and Great Tits they caught during CES with the number of nestlings ringed. The results suggest that the number of young birds caught on CE sites is a good index of the number of young in the population following juvenile dispersal.

Overall, it is a very useful collection of papers that bring us up to date with current practice and gives recommendations for the future. Copies are available for $23 from the Cooper Ornithological Society, California, USA.

C. John Ralph and Erica H. Dunn (Editors). *Studies in Avian Biology* No. 29 (publication of the Cooper Ornithological Society).