## THOUGHTS ON MONITORING POPULATIONS AND SUGGESTIONS FOR THE FUTURE

To look at the trends in populations of selected species I have calculated the Relative Abundance using the numbers ringed data 1969-2009. The figures are calculated by dividing the numbers of say Wren in 2001 by the total number of birds ringed in 2001. The figures are in the two tables below, the first table is 1969-89 and the second 1990-09. Only those species that have been caught without any specific luring or directed catching attempts have been included. Using these data means overall population and not just breeding population.

- I did not include 1968, when the Group made its initial forays onto the Fen, because there was no ringing at the reedbed.
- I subtracted the catches for hirundines (Sand Martin, Swallow and House Martin) in certain years * because these 3 species were at times specific targets and the numbers caught sometimes severely loaded the overall total (in 1973 over 800 hirundines were ringed out of a total of 2198 birds). I took them out of the overall totals in those years where more than 25 were ringed.
- ${ }^{* * * *}$ Before considering these data species by species please bear in mind that there can be anomalies between any two years and therefore they should be viewed as showing TRENDS rather than year on year changes (much as the BTO produce figures showing trends from their population surveys).

|  | 6 | 97 | 7071 | 72 | 73 | 74 | 475 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Total ringed (thousands) | s) 0.8 | 3.2 | 3.5 | 2.8 | 4.8 | 3.1 | 2.0 | 2.6 | 1.9 | 1.6 | 1.8 | 2.1 | 1.6 | 1.3 | 2.2 | 3.1 | 1.8 | 1.6 | 1.7 | 1.5 | 1.1 |
| Wren | 3.9 | 3.2 | 3.3 | 4.7 | 4.2 | 4.2 | 4.4 | 2.5 | 4.2 | 4.2 | 3.8 | 4.9 | 5.6 | 5.7 | 6.8 | 6.7 | 6.0 | 5.4 | 6.3 | 10.7 | 9.6 |
| Dunnock | 7.5 | 5.0 | 5.3 | 5.6 | 6.0 | 6.5 | 6.0 | 4.8 | 4.0 | 4.8 | 3.0 | 5.1 | 6.3 | 2.9 | 4.3 | 5.1 | 3.2 | 5.3 | 3.6 | 4.9 | 5.0 |
| Robin | 3.1 | 3.1 | 3.1 | 2.1 | 3.2 | 2.7 | 1.9 | 3.2 | 3.0 | 3.0 | 3.8 | 4.2 | 4.7 | 3.7 | 3.5 | 3.4 | 4.1 | 4.6 | 4.3 | 5.3 | 5.8 |
| Blackbird | 7.3 | 3.8 | 3.9 | 3.3 | 3.5 | 2.4 | 3.5 | 3.2 | 5.5 | 4.9 | 4.5 | 7.3 | 12.3 | 7.7 | 9.4 | 8.5 | 7.4 | 7.5 | 6.1 | 5.3 | 6.5 |
| Song Thrush | 7.1 | 4.0 | 7.7 | 6.6 | 5.3 | 3.6 | 5.3 | 4.1 | 6.1 | 5.1 | 4.3 | 6.3 | 6.6 | 5.4 | 6.8 | 5.0 | 5.4 | 4.9 | 3.7 | 4.7 | 3.6 |
| Lesser Whitethroat | 0.5 | 0.9 | 1.2 | 0.7 | 0.7 | 0.9 | 1.6 | 1.2 | 0.6 | 1.1 | 0.6 | 0.3 | 1.0 | 0.6 | 0.7 | 1.0 | 0.7 | 1.5 | 1.8 | 0.9 | 1.5 |
| Whitethroat (2.6) | 0.7 | 1.3 | 0.8 | 0.6 | 0.3 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.3 | 0.1 | 0.2 | 0.1 | 0.2 | 1.1 | 0.2 | 0.3 | 0.3 | 1.2 |
| Garden Warbler | 8 | 20 | 15 | 13 | 28 | 8 | 8 | 11 | 5 | 4 | 5 | 10 | 10 | 13 | 10 | 36 | 20 | 34 | 25 | 18 | 8 |
| Blackcap | 2.1 | 2.2 | 3.5 | 4.0 | 3.2 | 1.9 | 2.5 | 2.2 | 3.3 | 2.7 | 2.7 | 3.8 | 3.7 | 8.4 | 4.9 | 4.7 | 4.7 | 8.2 | 6.2 | 4.9 | 4.6 |
| Chiffchaff | 0.9 | 1.9 | 1.9 | 1.0 | 0.6 | 0.8 | 0.5 | 0.7 | 0.7 | 0.5 | 1.2 | 0.7 | 0.9 | 1.6 | 0.7 | 0.6 | 0.7 | 2.5 | 2.6 | 3.2 | 2.4 |
| Willow Warbler | 6.1 | 5.2 | 5.8 | 3.3 | 2.2 | 2.9 | 2.4 | 1.7 | 4.1 | 2.9 | 2.8 | 2.1 | 2.1 | 6.2 | 4.6 | 4.0 | 6.3 | 8.2 | 7.3 | 9.3 | 5.7 |
| Spotted Flycatcher | 11 | 16 | 18 | 21 | 23 | 29 | 12 | 9 | 10 | 9 | 9 | 21 | 4 | 6 | 14 | 20 | 16 | 13 | 13 | 6 | 0 |
| Willow Tit | 39 | 38 | 22 | 11 | 25 | 19 | 7 | 15 | 9 | 8 | 8 | 19 | 10 | 4 | 5 | 0 | 14 | 12 | 15 | 7 | 3 |
| Tree Creeper | 7 | 7 | 14 | 5 | 10 | 5 | 3 | 10 | 5 | 5 | 6 | 14 | 12 | 12 | 15 | 23 | 1 | 11 | 11 | 7 | 5 |
| Bullfinch | 7.6 | 3.8 | 6.6 | 7.0 | 4.8 | 5.2 | 7.2 | 5.7 | 6.6 | 7.0 | 3.8 | 4.5 | 4.9 | 4.5 | 5.4 | 6.6 | 4.8 | 4.9 | 5.7 | 1.8 | 4.2 |
| Acros 28 | 287 | 823 | 847 |  | 069 | 616 | 5495 | 544 | 373 | 394 | 532 | 493 | 372 | 367 | 367 | 684 | 401 | 344 | 482 |  |  |


|  | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Ringed (thousands) | 1.2 | 0.9 | 1.1 | 1.2 | 0.9 | 1.0 | 1.0 | 1.4 | 1.2 | 1.2 | 1.1 | 0.8 | 1.7 | 2.0 | 1.9 | 2.9 | 3.3 | 4.4 | 2.9 | 4.3 |  |


| Wren | 9.5 | 6.5 | 5.3 | 8.3 | 7.4 | 6.7 | 7.2 | 4.7 | 7.1 | 7.9 | 7.3 | 8.5 | 6.1 | 4.7 | 3.8 | 3.7 | 3.3 | 5.1 | 4.6 | 4.4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Dunnock | 4.3 | 5.9 | 3.1 | 3.1 | 3.9 | 3.2 | 3.4 | 2.0 | 2.2 | 2.9 | 2.5 | 3.3 | 2.6 | 1.9 | 1.5 | 1.3 | 1.3 | 1.9 | 1.9 | 3.0 |
| Robin | 7.4 | 6.4 | 5.5 | 5.9 | 4.7 | 4.6 | 6.1 | 5.0 | 5.8 | 7.2 | 5.7 | 6.1 | 5.5 | 4.4 | 3.3 | 3.2 | 3.4 | 4.1 | 3.6 | 4.2 |
| Blackbird | 10.1 | 8.7 | 6.5 | 4.9 | 4.5 | 2.9 | 3.8 | 5.6 | 4.5 | 5.8 | 4.1 | 6.0 | 6.1 | 3.4 | 3.6 | 3.0 | 4.0 | 6.4 | 4.5 | 4.7 |
| Song Thrush | 4.1 | 1.7 | 1.1 | 1.4 | 0.5 | 0.9 | 0.6 | 1.0 | 1.0 | 0.9 | 1.2 | 1.8 | 1.3 | 0.8 | 1.1 | 1.0 | 1.3 | 2.0 | 1.7 | 2.0 |
| Lesser Whitethroat | 1.0 | 2.2 | 1.2 | 1.9 | 0.7 | 1.3 | 1.0 | 0.6 | 0.4 | 0.3 | 1.0 | 1.0 | 0.6 | 0.4 | 0.3 | 1.0 | 0.4 | 0.6 | 0.8 | 0.4 |
| Whitethroat | 1.7 | 0.7 | 1.1 | 1.1 | 1.3 | 1.5 | 3.3 | 1.6 | 0.6 | 0.6 | 1.7 | 1.8 | 1.7 | 2.7 | 1.4 | 0.8 | 1.2 | 1.3 | 1.0 | 1.9 |
| Garden Warbler | 24 | 11 | 30 | 25 | 21 | 9 | 33 | 23 | 21 | 9 | 20 | 20 | 19 | 26 | 11 | 22 | 24 | 39 | 21 | 43 |
| Blackcap | 5.7 | 6.7 | 6.6 | 7.3 | 6.4 | 5.0 | 5.1 | 6.3 | 10.1 | 6.0 | 6.5 | 5.5 | 9.0 | 3.8 | 4.1 | 4.6 | 4.7 | 7.3 | 6.1 | 7.1 |
| Chiffchaff | 4.4 | 4.8 | 3.8 | 2.4 | 3.1 | 4.7 | 5.9 | 5.1 | 7.2 | 2.4 | 2.5 | 2.4 | 4.4 | 3.4 | 3.8 | 3.2 | 2.7 | 3.5 | 5.4 | 4.1 |
| Willow Warbler | 6.6 | 6.8 | 6.1 | 6.5 | 7.0 | 4.6 | 12.4 | 8.3 | 11.7 | 5.9 | 4.5 | 3.3 | 2.3 | 2.1 | 1.2 | 0.9 | 1.4 | 1.5 | 2.0 | 1.0 |
| Spotted Flycatcher | 1 | 8 | 0 | 1 | 1 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| Willow Tit | 6 | 6 | 1 | 4 | 3 | 7 | 15 | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tree Creeper | 8 | 3 | 5 | 12 | 7 | 2 | 1 | 1 | 9 | 1 | 1 | 6 | 12 | 5 | 10 | 11 | 12 | 18 | 9 | 19 |
| Bullfinch | 3.5 | 5.8 | 3.9 | 2.8 | 1.5 | 2.3 | 2.8 | 3.3 | 2.2 | 4.1 | 4.6 | 2.8 | 2.9 | 2.3 | 2.1 | 1.8 | 2.7 | 2.2 | 2.4 | 2.1 |
| Acros | 110 | 53 | 148 | 278 | 226 | 334 | 186 | 139 | 173 | 188 | 197 | 104 | 175 | 227 | 121 | 299 | 270 | 388 | 367 |  |
| TIts | 143 | 212 | 262 | 191 | 101 | 160 | 164 | 332 | 235 | 219 | 161 | 115 | 353 | 335 | 446 | 605 | 591 | 664 | 454 |  |

- Acro catches (Reed \& Sedge) have varied over time, 53-1000+ due to the proportion of time spent catching at the reedbed. Do they skew the results? I think probably not in most years, however acro numbers are appended beneath to help you to identify years in which acro ringing may have affected the totals.
- Feeding undoubtedly draws in many birds and thus any species that could be thought to be drawn in by feeders has not been considered. Is this a confounding factor? -see below. To show the feeding effect on totals I have also appended blue \& great tit numbers - combined - for recent years. Feeding has forced me to omit Chaffinch from the analysis tables.

Problems for consideration.

1. The greatest problem with this sort of analysis is a bumper catch of a single species one year can skew the figures downward for all other species.

That's an extreme; but less extreme is that a year on year increasingly ringed species will equally decrease the values for others so that it appears that almost everything, apart from this one species, is declining.
2. Is the feeding regime affecting this analysis? Well probably it is because the increased numbers of bluti/greti/grefi etc will all push the relative abundance figures of all other species lower and may give the impression that they are declining. Although in fact I am not sure that effect shows very strongly in these data.

In practice this seems not to happen very much, if at all. In fact the most surprising feature of these figures is their consistency. I could re-calculate them removing birds that come to the feeders but I don't think that it is worth it at the moment.
3. These numbers relate to both adult and juvenile birds, winter and summer, so without separating the two we cannot tell the size of the BREEDING population without further extracting the data.
4. A possible bias results from presence and absence of ringers! By this I mean that at times we were much less active for certain periods. E.g. until recently August often proved to be a month of low activity due to our holidays. So in some of the years with totals of between $1 k \& 2 k$ there may not have been even distribution of effort. Some species could reflect this, Whitethroat for example.
5. This method is not suitable for many species such as Reewa/Sedwa and now Bluti/Greti Chaff/Grefi/Reebu.
6. Perhaps one of the best ways of looking at the figures is to pack them into 5 year cohorts - this will also dampen any year on year excessive changes but I don't plan to do that just yet.

I could also follow the BTO example and express them as percentage changes from a nominal starting point say 1970 itself. I may well do this next. This might also give some confidence factors.

## THE RESULTS

I have pasted in the BTO trends for comparison with our data.

## Straight numbers

For a small group of species I have put in the raw numbers, why? Well partly to show the dramatic declines in Spotted Flyc and Willow Tit (more of this below) but also to try to show where we seem consistently to ring roughly the same number of birds (Garden Warbler, Tree Creeper) year on year. These look like 1-4 pairs and
their progeny in the case of the Garwa and 1-2 pairs and their progeny in the case of Treec but please read note below.

I don't think that these results show anything startlingly different from trends established by the BTO surveys, on the contrary it is possible to see the BTO trends reflected in our figures (examples below).

CBC/BBS UK 1966-2008
Spotted Flycatcher


CBC/BBS UK 1966-2008
Garden Warbler


CBC/BBS UK 1966-2008
Willow Tit


CBC/BBS UK 1966-2008
Treecreeper


Winners:
Definite winners are Blackcap (2-4 in the 1970s, 4-8 in the 1980s and 5-10 in the 1990s); Chiffchaff (0.6-2 in the 1970s, $0.6-3$ in the 1980s, 2-7 in the 1990s and 2-4 in the 2000s). No surprise there - see BTO trends below.


Apparent winners: (although there are good statistical reasons to explain why these species APPEAR to have had good years that doesn't rule out the possibility that the results are true!)

Wrens give the impression of having a purple patch between 1983 and 2002 but I suspect that this is a reflection of our success at catching wrens even when overall ringed numbers are low. A finite wren population rises in RA when we catch fewer other birds.

Robins also show a rise in RA over the same time period and that may be genuine as the BTO trends show


Losers:
Again, no surprises about the losers. Willow Tit and Spotted Flyc disappear off the radar altogether, interestingly in the same year 94 , yet looking back to the first years of the group we find both species ringed in the 20 s and in 1969 we ringed 39 Willow Tits which seems unimaginable today.

Song Thrush are interesting, again look at the early RAs 69-78 mean 5.5 and compare them with Blabi a mean of 4.1 over the same period; while by 90-99 Songthr are down to a mean of 1.9 and Blabi up to a mean of 5.7. Recent small suggestions of Songthr recovery may show up in the data in the next few years.


The decline in Blackbirds shown on BTO trends was not born out by our figures.

Wicken Willow Warbler crash seems to have taken place about 2002 from a mean of 6.7 in the 5 years 97-01 the drop to 1.3 in the period 02-06 looks fast and severe. Not much evidence of a recovery, in fact quite the opposite.

CBC/BBS England 1966-2008
Willow Warbler


Wicken Bullfinch decline seems to have started around the late 80 s with a mean of 6.1 in the period 69-78 reduced to 3.2 in the10 years 90-99. No signs of recovery much yet.

CBC/BBS UK 1966-2008
Bullfinch


Perhaps the most surprising loser (to me anyway) is Dunnock. Without any confounding factor relating to our activities we find Wicken Dunnock population falling away - not just in RA but is sheer numbers ringed from a
mean RA of 5.5 in the first 10 years this species has declined to a mean RA of 2.1 in the recent 10 year period. AND lo and behold the BTO trend shows this as well.

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CBC/BBS UK 1966-2008
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Dunnock


So all in all this method of checking on the TRENDS seems to be reliable insofar as it shows Wicken trends following national trends as produced by BTO Integrated Population Monitoring.

## A COUPLE OF NOTES

1. To give a more complete view of the populations would require noting, in addition, those previously ringed individuals that are retrapped in any given year, in other words survivors from the previous year(s). Of course if you assume a consistent survival rate then you could argue that these 'extras' will not make much difference to the figures but I am not sure that we can assume a consistent survival rate in fact probably the opposite. However, going back to the principle that these are TRENDS then the extras may not be as significant overall.
2. The recent surge in activity has stoked the totals up and skewed them in favour of those species attracted to the feeders. While increased ringing activity may be great for providing increased data on some aspects of bird biology it is not helpful to anyone analysing population data! The problem now is that by increasing the numbers of certain species then the numbers of all others appear to be in decline in their proportion of the total and you end up with a situation in which all non feeder species look as if they are declining when in fact probably they are not.

Summary: using the RA methodology we have a great deal of data that show in numbers the trends that we witness as ringers and also mirror the trends from the BTO integrated population monitoring scheme.

All of which brings me to standard sites.

## STANDARD SITES - AN APPRAISAL

## System one

The very first standard sites - described by Colin Bibby in the Wicken Fen Group Report number Two - used 5 areas on the same weekend for roughly 35 hours over each of three weekends May 16-17 July 4-5 and August $1-2$. The combined total was 1500 birds, just under half the total numbers ringed in the year. Colin analysed the data using every handling, that is ringed and retraps, (which may have duplicated some individuals) and the results are in the paper (see below).

NOTE $\ggg>$ Within a few years Colin was writing that the changes in vegetation were affecting the catch (downward) and that flexibility in the siting of the nets was required, a suggestion that I think went unheeded.

This ambitious scheme was adapted, first by adding a fourth weekend, then changing the amount of net (not significantly), then by splitting the weekends so that the north end was done one weekend and the reedbed the following weekend and then by reducing the catching time to an overnight session ( 24 hrs ). So there were a
number of changes made to the modus operandi, largely driven by our inability to get the manpower to do the work and in the end an acknowledgement that we simply couldn't keep it up meant that it was abandoned.

## System two

Bearing in mind the difficulty in maintaining coverage of system one I designed a simpler standardised m.o. based on St Edmund's Fen, the fundamental driver of which was that it should be possible for a single person to man. It was, and on occasions I was that single man. It involved roughly the system we are still using except that at first the third site was on the willow scrub field that is situated to the north of the northern path near HEP. When we discovered that the owner was not keen on our activities we moved that site onto HEP. The design was to allow catching for at least 4 hours before dusk and 4 hours from dawn the following morning and the early results are described in the Wicken Fen book from which you can see that there was a certain amount of 'noise' largely because the sample size was very small compared with System One.

It was clear quite early in the piece that the numbers we were handling were decreasing. And they were decreasing from a low starting point compared with the previous scheme - we were sometimes handling fewer than 100 birds all season on standards. Unfortunately CB's note regarding the effect of vegetational change and the need for flexibility in net siting was not invoked but instead an attempt was made to manipulate the vegetation (thanks Neil). I have not looked in detail at recent results but I suspect that this manipulation has not changed netting success much on the standard sessions.

Two obvious criticisms of system two are:

- that the scheme is insufficiently ambitious to provide meaningful data
- that the area chosen is in no way representative of the Fen habitat as a whole

I think that the initial driver was flawed because it gave no consideration to the scientific value of what was proposed; rather it was put in place because we wanted to continue some putative monitoring in order that the Group show its commitment to the principle of population monitoring using ringing data.

Surveying.
Having spend some time in the field I have no doubt that surveying/mapping is a much more reliable way of estimating all populations and a far more effective use of time/manpower. One person can achieve a great deal. For example the songbird survey that I carried out in 2002 provided an excellent idea of the number of breeding pairs of most common species - exceptions as below. The survey took in 10 visits covering all the area of 'old' Fen and all singing birds were mapped.

For most species this proved remarkably easy and there was very little sense of overlap or double counting, however, Reewa/Sedwa and Greti/Bluti were problematic to detect accurately because the former are only sporadic singers, often becoming silent when paired and the latter are quite quiet in summer. A more intensive surveying is required to place these species. Tits probably need some intensive work in late March/early April while the acros need intensive work in early May as they arrive. Nevertheless for a total 20-30 hours surveying a recorder can get a good picture of the breeding numbers of most common songbirds.

## THE FUTURE

There is clearly no scientific justification to continue with the St Edmund's standard sites and now would be a good time to admit my error of supposing it was worth doing in the first place. We should stop them. If we want to have some special effort at the piggeries end then a piggerython or two would seem a much better use of resources but for 2011 see below.... under the heading Finally

To look at the populations of most common birds then we obviously have a good enough mechanism using the overall ringing data with the exception of certain species and for those we can use surveying methodology.
We should continue with sight/sound surveys using mapping to enable us to work out the overall breeding populations of songbirds and these are probably best done in two intensive periods late March/early April and early May. I would anticipate spending 3 days in each period at the Fen, hopefully in 2011.

Finally - and the greatest challenge - I would like us to repeat the 1969 protocol of 3 weekends intensive ringing using the same footage of net as before simultaneously at both North end and Reedbed in as close to the same sites as we can. This would possibly supplant the earlier two reedbedathons but it would provide comparable data on not just populations and communities but it would also give us an indication as to whether the volume of birds has changed over that $40+\mathrm{yr}$ gap. It may be that this is too ambitious to do in 2011. I am retiring at the end of September 2011 and would have more time to devote in 2012. We would need to prepare ourselves by identifying the net runs and clearing them where necessary. Those by the Brick pits would have to be re-sited - preferably close by. The sites on $B$, although they have changed in habitat a little will probably not be a problem. The sites on A2 would need to be cleared as would the sites on the lode side of the reedbed FL and we might need to be certain of animal restraint. In short this calls for a bit of planning over the winter but with the present manpower is, I think doable. I have scanned and appended Colin's original report on that first year's results and methodology. Note: site B produced the most birds by a substantial margin!

The appropriate weekends for 2011 would be May 13-15, July 1-3, August 5-7.
Be assured I consider this as a one-off, maybe repeated in 10 years time if any of us are still here!
Do I hear agreement???

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POPULATION ESTIMATES AND MIST NETTING: AN INTERIM REPORT

## Introduction

This note describes the result of an attempt made in 1970 to sample the bird populations in different habitats by means of mist netting. The areas concerned are not wholly suited to mapping census work, because of the very dense vegetation: mapping has not however been attempted. During three weekends (May 16th-17th, July 4th-5th, and August Ist-2nd). netting was carried out simultaneously at five different sites, which are described below. The nets were placed in the same sites each time, in order to make the programme reproducable in subsequent years. Two hundred feet of net were used on all sites except B ( 300 ft ) from Friday evening to Sunday morning. To consider the catching effort to be the same on all sites is probably erroneous however as the net sites vary in their conspicuousness and susceptibility to wind. It is hoped that the numbers of each species caught are closely related to their number in the area with the exception of all non-passerines and corvids, which are unlikely to be caught as they do not move in thick vegetation. Tables 1 and 2 show the total numbers of captures of each species on the five sites. Adults and juveniles are separated. The five sites are briefly described below and some of the more obvious differences in the hird

## The Sites

A1 is the old brick pits in the NE corner of theFen. Deep water, wit a sturdy growth of reeds on the borders is surrounded by willow and hawthorn, with woodland adjoining. The habitat is the nearest to th climax found on the Fen, where mature trees are uncommon. Reed Sedge Warblers are both numerous, but surprisingly perhaps, woodle birds such as tits and thrushes are not particularly numerous.
A2 is the common Fen in the NE corner. A narrow plot of uncut se edged on both sides by carr, which on the north side is fairly mature with a small area of young Oakwood. Reed and Sedge Warblers are sent in roughly equal numbers but are not particularly numerous. A wide range of species is present, but none are very abundant, althou tits and finches are fairly well represented.
B lies at the extreme NE corner of the Fen, and in this area, the und lying clay soil reaches the surface, and there is thus a different kind habitat from that found on the peat-covered fen. The netting sites re resent the boundary between dense hawthorn and willow thickets o the peat, and the hawthorn scrub interspersed with rough grassland the clay. Sedge grows in the small open areas on the peat. This area I the richest and most diverse avifauna of any found on the Fen. Tits, thrushes, Reed, Sedge and other Warblers, Dunnocks and finches are well represented. This is shown particularly by the very large numbe of juveniles caught. It must be remembered that 300 feet of net wer used on this site as against 200 on all the others, but the catches are still larger on this site than any other even when this has been allowe for.
FR is the ride running along the SE edge of the Reed Bed on Adven ers' Fen. The reed bed is a large ( 50 acres) stand of almost pure reed with a thick hawthorn-fringed ride between it and a wet field of rou pasture with rushes. Sedge and Reed Warblers are approximately equ numerous. Some tits and finches are fairly well represented.
FL is on the opposite side of the Reed Bed from FR, from which it differs somewhat. On FL, the Reed Bed is edged with scattered hav thorns and a dense growth of grasses and willow herbs, and this appe to make it a better habitat, particularly for Reed Warblers, but also 1 Sedge Warblers. For some unknown reason, many more juvenile bir were caught on this site than on FR, atthough there were less adults.

## Conclusions

Before it is possible to assess the suitability of this method of estime bird numbers in a habitat, it is necessary to repeat the observations

another. When more data of this kind have been accumulated, a fuller analysis of the diversity of species in a habitat and the habitat preferences of particular species should be possible. The difference between sites and species which have been shown briefly in this note are, by and large, as one would expect, and it is hoped that more work of this kind will provide more detailed and usefut information.

Table 2
Capture of juvenile birds

Species
A1 A2 B $\begin{aligned} & \text { Site totals } \\ & \text { A2 }\end{aligned}$ $\qquad$
Grand Grand Weekend total
$\qquad$ total May Jul

Snipe Swallow
Cuck
Gay
Great Tit
Blue Tit
Willow Tit
Long-tailed Tit
Tree Creeper
Wren
Song Thrush
Blackbird
Nightingale
Robin
Grasshopper Warbler
Reed Warbler
Sedge Warbler
Blackcap
Garden Warbler
Whitethroat
Lesser Whitethroat
Willow Warbler
Chiffchaff
Spotted Flycatcher
Dunnock
Dunnock
Red-backed
Greenfinch
Greenfinch
innet
Linnet
Redpoll
Bullfinch
Chaffinch
Yellowhammer
Reed Bunting
Tree Sparrow
Totals

It need hardly be emphasised that the number of birds caught in the three weekends of intensive effort was 1512. This respresents a very valuable contribution to the year's ringing total and collection of information on wing lengths and weights. This reason alone would almost be enough to justify continuing the programme, even without the promise of some very interesting findings in years to come.

