The BTO/CJ Garden BirdWatch

For many people, the BTO/CJ Garden BirdWatch is simply an extension to the records they already keep of the birds using their gardens throughout the year. The structure of Garden BirdWatch, with its weekly recording format and consistent recording effort, greatly increases the scientific value of these observations. By gathering small amounts of simple information from a very large number of gardens, it is possible to answer some complex ecological questions about the relationships between individual bird species and the garden environment.

Some of the changes in garden bird populations are likely to reflect changes in the bird populations over a wider area. For example, as farmland habitats become less suitable for seed-eating birds during the winter months we see an increasing reliance on feeding stations within rural and suburban gardens. Although it is not clear how bird numbers reported in gardens relate to their absolute populations, the Garden BirdWatch results can be used alongside other BTO studies to examine how changes in populations of individual species differ across habitats.

Yellowhammer by Tommy Holden

History of Garden BirdWatch

The BTO/CJ Garden BirdWatch was launched in late 1994 in readiness for recording to begin in 1995. The idea behind the project came from discussions between Chris Mead and Nigel Clark of the BTO and Chris Whittles of CJ WildBird Foods.

Earlier attempts to monitor garden bird populations, such as the Garden Bird Enquiry, had always encountered the problem of funding the scheme for more than just a couple of years. What was needed was long-term funding. This problem was solved by making what was regarded at the time as a very brave decision – namely to ask participants in the scheme to make an annual contribution to its running costs. It must have been with some trepidation that the BTO first asked its supporters if they would take part in the project and make a contribution to its costs. However, such was the generosity of the BTO supporters that, by the end of the first year of recording, 5,028 participants had become involved. Since that time, Garden BirdWatch has continued to grow and by September 2003, the project involved over 16,000 garden birdwatchers – a remarkable achievement.

Over the period during which Garden BirdWatch has been running, there has also been growth in the resources and level of technology used to manage the project. Initially, Garden BirdWatch was coordinated on a part time basis by Derek Toomer, assisted by Tracey Brookes, both of whom were also involved in other BTO work. Andrew Cannon took over the role of coordinating the project in 1996 and was soon joined by two part-time assistants, Jacky Prior and Carol Povey. Mike Toms took over from Andrew Cannon in 2001 and the team were joined by a third part-time assistant, Margaret Askew, in 2003. Many volunteers have also helped with the running of the project. Today, the BTO/CJ Garden BirdWatch project is the largest year-round citizen science project on garden birds anywhere in the World!

The Garden BirdWatch method

Garden BirdWatch gathers information in a way that makes it possible to measure relative change in the use that birds make of gardens. This approach is similar to that behind other long-running BTO projects and it is particularly suited to large-scale projects covering a wide range of species at many different recording sites.

The scanner by Mike Toms

The sheer size of Garden BirdWatch imposes constraints on the type of research questions that can be addressed and the way in which data may be collected. Fortunately, the type of information gathered can readily be coded on forms that can be automatically read by a scanning machine. This machine reads the forms simply by detecting the contrast between dark ink-filled boxes and the light background.

Garden BirdWatchers are asked to record birds using their gardens, making records from the same place (their defined 'recording area') at more or less the same time or times each week. Continuity of recording effort is more important than the quantity of recording. For the paper forms used by the bulk of participants, 42 common garden species are split into two groups: the ten most frequently seen garden birds from a previous pilot study (known as Table A species) and the remaining 32 (Table B species).

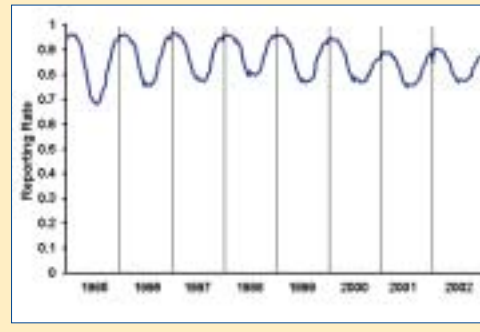
For the Table A species, participants record the size of the largest group of each species seen together in the garden at any one time during the course of the recording week. This use of the 'largest group' avoids double-counting and ensures consistency in defining the recording unit from one week to the next. For Table B species, only presence or absence is noted. All other species, those not included on the scannable form, are recorded on a separate sheet that is submitted once a year. The normal recording form covers a 13 week recording period and is submitted quarterly.

About a quarter of active Garden BirdWatchers submit their weekly observations over the Internet. Online participation enables individual Garden BirdWatchers to view all their own data, including those originally submitted on the paper forms. The observations are validated as they are entered and the information is then automatically loaded into the massive Garden BirdWatch database. Overnight, various programs run automatically to generate reporting rate graphs, summary tables and scrolling maps showing the location of recent sightings.

Alongside the information recorded on birds, other details are gathered on the site at which the recording takes place. These include information about the other features present within the garden recording area, as well as on the nature of surrounding habitats. This information has been used to examine which factors may determine the nature of the bird community visiting gardens at different times of the year.

Recording food provision

It is extremely important to gather weekly information on the foods provided at each site, since the provision of food has been shown to have a significant effect on the use of gardens by birds. The food provided can be factored in when seasonal or regional patterns of bird data are being analysed. This plot shows the proportion of gardens providing peanuts each week.



Peanuts by CJ WildBird Foods

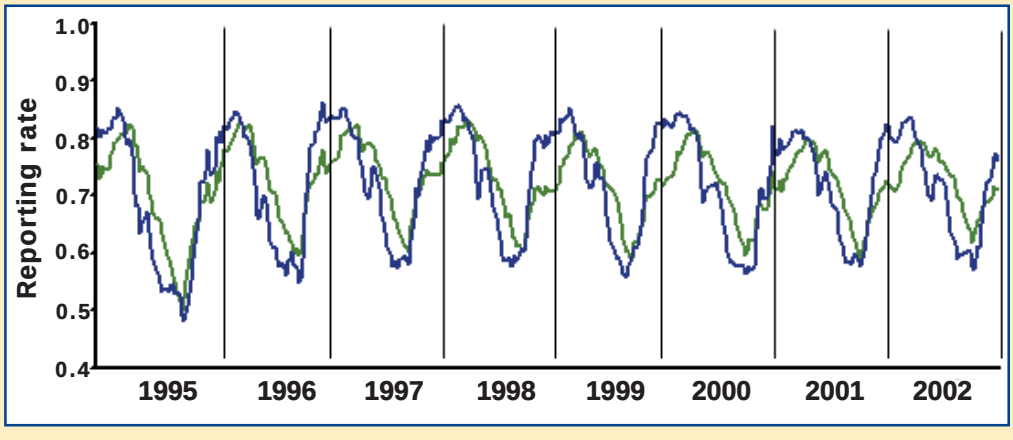
Garden BirdWatch results

The vast Garden BirdWatch dataset can be analysed in many different ways. One of the simplest ways of showing how the use of gardens changes over time is by presenting reporting rate graphs (see boxes). The reporting rate is simply the number of gardens containing the species in a given week, divided by the total number of gardens at which recording was carried out during that week. For example, a reporting rate value of 0.5 would mean that the species was recorded in half (50%) of the gardens that week. More complex analyses can be performed using the count data gathered through Garden BirdWatch or by looking at differences that may exist between regions (see page 34), habitats or seasons. It is also possible to examine how the use of gardens changes in relation to temperature, snow cover and other weather-related variables.

In addition to providing information on the seasonal patterns of garden use, the Garden BirdWatch results can also give us important information on longer-term changes. Increases in Garden BirdWatch reporting rates for species like Goldfinch and Woodpigeon (see box) are the result of changes in populations of these species within other habitats. In the case of the Woodpigeon, a change in cropping practices within agricultural land appears to have

Similarities and differences

Although many species follow the general pattern of winter peak and late summer or autumn trough, there are often more subtle differences between individual species in their use of gardens. Greenfinches (green) and Chaffinches (blue) both move into gardens over the same few weeks during late autumn but, while the reporting rate for Chaffinch keeps going up, that for Greenfinch levels off before going up again in the New Year. Once the reporting rates for these two species have peaked they begin to fall, as the breeding season approaches and birds leave gardens, either to breed in other habitats or to return to breeding grounds elsewhere in Europe. What is of particular interest is that the Chaffinches leave first, several weeks before the Greenfinches, even though the two arrived together. This may tie in with the timing of the breeding season. By monitoring these patterns over a long run of years Garden BirdWatch will be able to provide useful supplementary information on changes in the timing of the breeding season, which may relate to climate change.



Greenfinch by Tommy Holden

increased overwinter survival and has resulted in an increase in the Woodpigeon population, particularly in the south and east of England. The Goldfinch population in farmland has been recovering from an earlier population decline but the species has also begun to exploit the wider range of supplementary foods and feeding opportunities provided in gardens.

Several of the declining farmland seed-eaters are regularly reported from rural gardens during late winter. In the case of the Yellowhammer this decline is still continuing, something that can be seen from the Garden BirdWatch reporting rate for this species (see box). In this instance, the Garden BirdWatch trend is similar to that

Greenfinches by Jill Pakenham

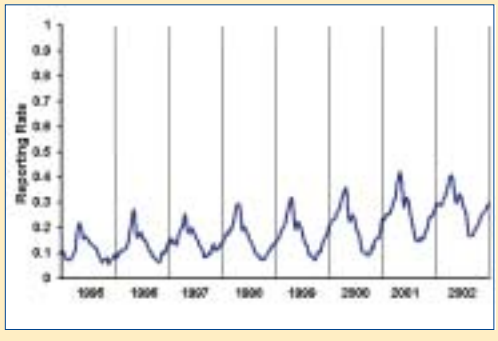
produced by other farmland surveys, reinforcing the message to conservation bodies that the species is in difficulty.

For other species, where much of the population breeds in urban and suburban areas, Garden BirdWatch provides one of the best tools for monitoring population change. The ongoing decline of House Sparrow and Starling populations in urban and suburban

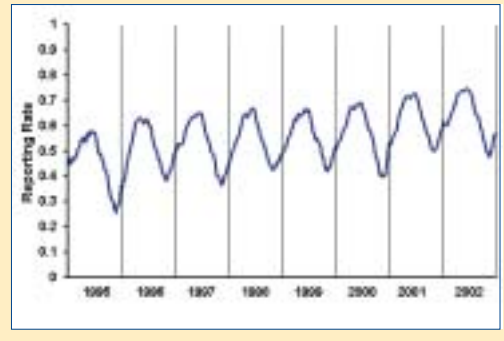
Ups and downs

By running a project in a consistent manner over many years, it is possible to gather information on population change. Many such changes tend to be gradual in nature, with a small percentage increase or decrease each year, often masked by the short-term effects of weather events, such as a severe winter or a summer drought.

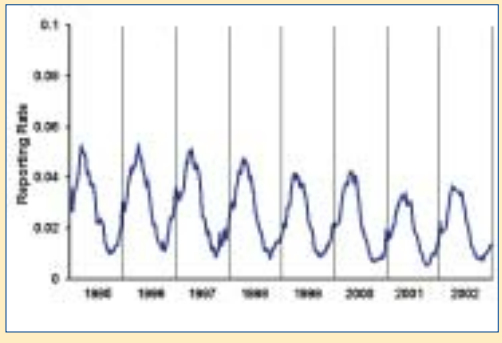
a) Goldfinch



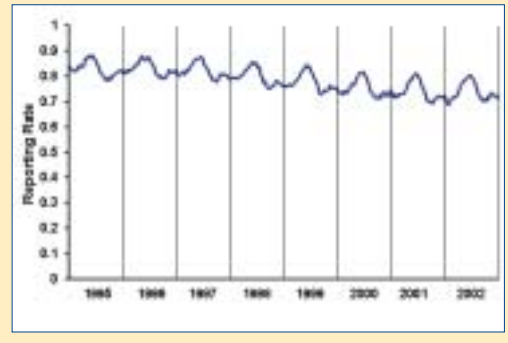
b) Woodpigeon



c) Yellowhammer



d) House Sparrow



areas is revealed by both the Garden Bird Feeding Survey and Garden BirdWatch. However, it is only through Garden BirdWatch, with its large number of participants and good geographical coverage, that regional differences in the rates of decline can be determined.

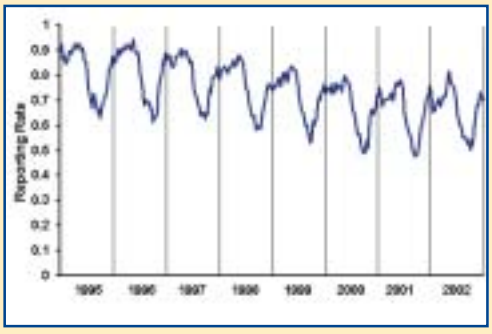
For the House Sparrow, a significant decreasing population trend across the UK masks tremendous regional differences. The decline is most pronounced in the southeast, whilst populations in Wales and Scotland appear almost stable. The regional pattern for Starling (see box) is complicated by the presence of varying numbers of immigrant Starlings during the winter months. Careful examination of the plots suggests a decline in both our breeding and wintering populations in southeast England. This sort of information, presented regionally, can be used to establish the underlying causes behind population change.

One of the most valuable and exciting aspects of Garden BirdWatch is the range of uses to which the information gathered can be put. In addition to telling us how and why birds use gardens, Garden BirdWatch also provides an insight into what is happening to birds in other habitats and could make a very valuable contribution to the BTO's Integrated Population Monitoring Programme, which provides conservation agencies with information about species in difficulty. Garden BirdWatch would not have been able to fulfil this potential were it not for the generosity and commitment of the Garden BirdWatchers.

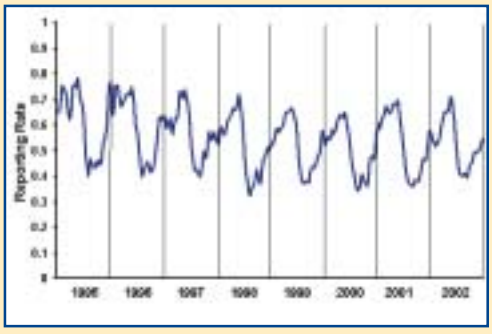
Regional patterns

Regional differences in Garden BirdWatch reporting rates can be used to help discover the reasons for the observed decline in Starling numbers noted by other surveys. The falling reporting rate for southeast England is very different from the pattern seen elsewhere in Britain and Ireland.

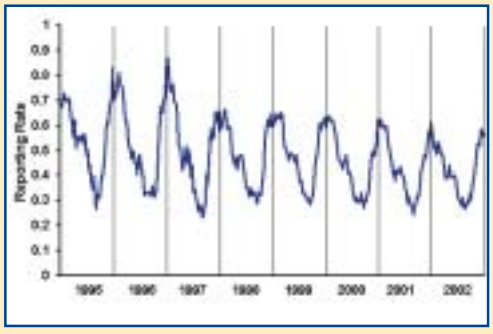
Southeast England



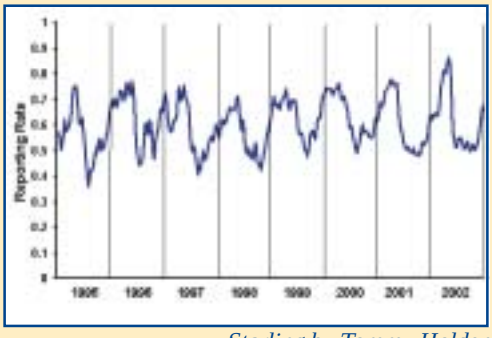
Southern Scotland



Wales



Ireland



Starling by Tommy Holden