

Shortest Day Survey

Title

Shortest Day Survey 2004

Description and Summary of Results

During winter, birds need extra energy to keep warm, and the effect of long winter nights on small birds can be pronounced. Both Blue and Great Tits are known to be some 5% lighter at dawn than when going to roost the previous night, and it has also been shown that birds lose more weight overnight during periods of cold weather than they do during periods of mild weather. The length of the night is also important. In midwinter nights are particularly long: some 16 hours in Cornwall and 18 hours in Shetland. All this makes things very difficult for small birds, which may have to spend up to 85% of their time in the winter finding food. It is not surprising therefore that they have come up with a few adaptations to help them cope with the difficult conditions they may encounter at our northern latitudes. Such adaptations are not needed by birds living closer to the equator and so we see differences between species (and within some species) in their behaviour and morphology. Most birds can only feed during daylight hours but, with the small overall time available in winter, it is of interest to know when they start feeding in the mornings. This survey was designed to find out. For practical reasons the easiest places to record such events were gardens and especially those with feeders already established, and it was decided to do it as a snapshot on a single day (the shortest day of the winter) as this could generate maximum publicity -- the BBC Radio 4 Today programme picked it up to help. It was hoped that there would be enough responses to determine if there were any regional differences over the country or any between rural and urban areas.

In the event nearly 5500 people took part, spending an average of 1 hour and 16 minutes recording, and they were spread widely around the country.

The first bird to arrive was the Blackbird *Turdus merula*, some 13 minutes (on average) after first light, followed by Robin *Erithacus rubecula*, Blue Tit *Cyanistes caeruleus* and Song Thrush *T. philomelos* (22 minutes after first light). Three of these are regularly recorded moving around before this, and indeed can sometimes be heard singing then, especially near street lamps. Among the later arrivals were the, often more dominant, Woodpigeons *Columba palumbus*, Starlings *Sturnus vulgaris* and some finches and these also often arrived in flocks rather than as single birds.

Examination of the dataset revealed that: 1) time of arrival was related to relative eye size, with birds with larger eyes, relative to body size, arriving first – this supports the hypothesis that birds are limited by their degree of visual acuity when foraging at dawn; 2) examination of arrival times within species between habitats revealed that urban-living birds arrived later than their rural counterparts – suggesting that heat pollution in urban areas may benefit roosting birds, such that their overnight energy losses are reduced, compared with birds roosting within the wider countryside.

Methods of Data Capture

Volunteers were asked to observe the birds coming to their garden feeders from before daybreak. They recorded the time of first light – when they could first see their feeders – and the time at which each of up to ten different species first appeared. (The time of first light was deliberately taken from the observers' record rather than using the published civil twilight time (sunrise times) as local conditions will play a large part at any one site, for example weather on the day, latitude and how much artificial light (eg street lights) is nearby.)

The information gained was input onto a form available on the BTO website and the data stored in the online database.

Purpose of Data Capture

To record at what time each species first came to garden feeders in relation to local light conditions.

Geographic Coverage

Gardens in the UK and Ireland. Sites were selected by volunteers themselves. In practice many were already contributors to Garden BirdWatch although a fair number contacted BTO following the broadcast on the Today programme on BBC Radio 4.

Temporal Coverage

All observations were on 21 December 2004, the shortest day of the winter.

Other Interested parties

It was set up as a joint project with BBC Radio 4's *Today* programme, and mainly funded by Garden BirdWatch.

Organiser(s)

Mike Toms

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Publications

There have now been two scientific contributions reporting the main results in respect of urbanisation and the eye size of the birds. These are:

Ockendon, N., Davis, S.E., Miyar, T. & Toms, M.P. 2009. Urbanization and time of arrival of common birds at garden feeding stations. *Bird Study* 56: 405-410.

Ockendon, N., Davis, S.E., Toms, M.P. & Mukherjee, S. 2009. Eye size and the time of arrival of birds at garden feeding stations in winter. *Journal of Ornithology* 150: 903-908. Some results were made available on the website within a couple of days of the survey. The Garden BirdWatch magazine *Bird Table* has also reported on some of the results.

Available from NBN?

No.

Computer data -- location

All the data were input directly by the observers and are stored in the online Oracle database.

Computer data -- outline contents

The species and the time it arrived at a feeding station as well as the time of first light at that feeding station.

Computer data -- description of contents

Information held in BTO Archives

None as the survey received data only via the website application.

Notes on Access and Use

Other information needed

Notes on Survey Design

Specific Issues for Analysis