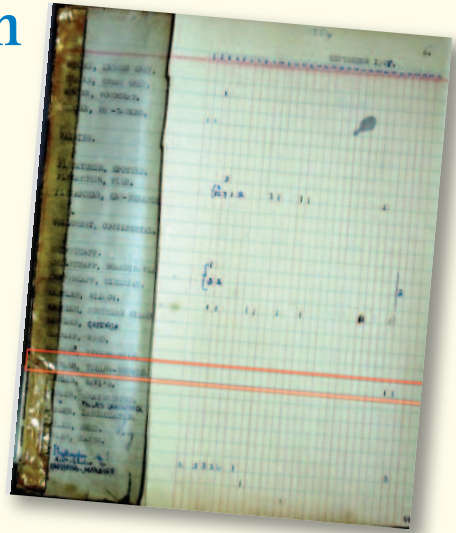


The Fair Isle Migration Project – analysis of Fair Isle Bird Observatory’s long-term migration data

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Plate 1. The original paper logbook from September 1948 and the page showing the first counts for Yellow-browed Warbler, outlined in red (plus counts for several other warblers, shrikes, Waxwing, flycatchers and Goldcrest). © W. Miles



A grand challenge facing ornithologists is to understand how populations of migrant birds are changing in the face of climate change and other forms of environmental variation. Fair Isle is a world-renowned hotspot for migrant birds. Most of the migrant species which land on Fair Isle every year are travelling within the Western Palaearctic-Afrotropical migration system, a network of major migration flyways that extend, for some species, all the way from arctic Europe to the southern latitudes of Africa.

Every year since 1948, Fair Isle Bird Observatory Trust (FIBOT) has conducted daily migration census counts during the main spring and autumn migration periods. From the beginning of April to late June, and from early August to the end of October, the three census areas of Fair Isle ('North', 'South-east' and 'South-west', which collectively cover the whole island) have been walked by the wardening staff, all migrant bird species have been counted, and total daily counts have been compiled and entered into the daily log. This process is ongoing and on a good day for migrants can be incredibly frantic and exciting, with observations from visitors to the observatory welcomed and included.

The Fair Isle migration dataset is very valuable due to its duration (67 years spanning 1948–2014), the fact that all migrant species have been counted across the full spring and autumn periods, the high level of daily coverage

of the entire recording area (i.e. the whole island), and the fact that the methodology has been relatively consistent across years and across days within each year (e.g. no bias due to increased weekend counting). Historically, all the census data were stored in paper log books (see Plate 1). These books provide a fascinating historical record, but do not facilitate easy data extraction or analyses. However, with the help of generous support from the SOC, the entire dataset has recently been digitised, meaning it can be efficiently analysed and is now ready to reveal its secrets.

In August 2014, the Fair Isle Migration Project began. This is a new, collaborative and jointly-funded project between FIBOT and the University of Aberdeen to carry out scientific analyses and presentation of the Fair Isle migration dataset. The first phase has involved initial data preparation, exploration and pilot analyses. The next phases and major objectives are to undertake full-scale, multi-species analyses; to produce scientific papers, general interest publications and presentations; and to look for funding to continue the work.

The initial data exploration has already revealed some striking, if not unexpected, patterns. For example, during the last 60 years there has been a huge change in the occurrence of Yellow-browed Warblers on Fair Isle in the autumn. Figure 1 shows the grand total of all

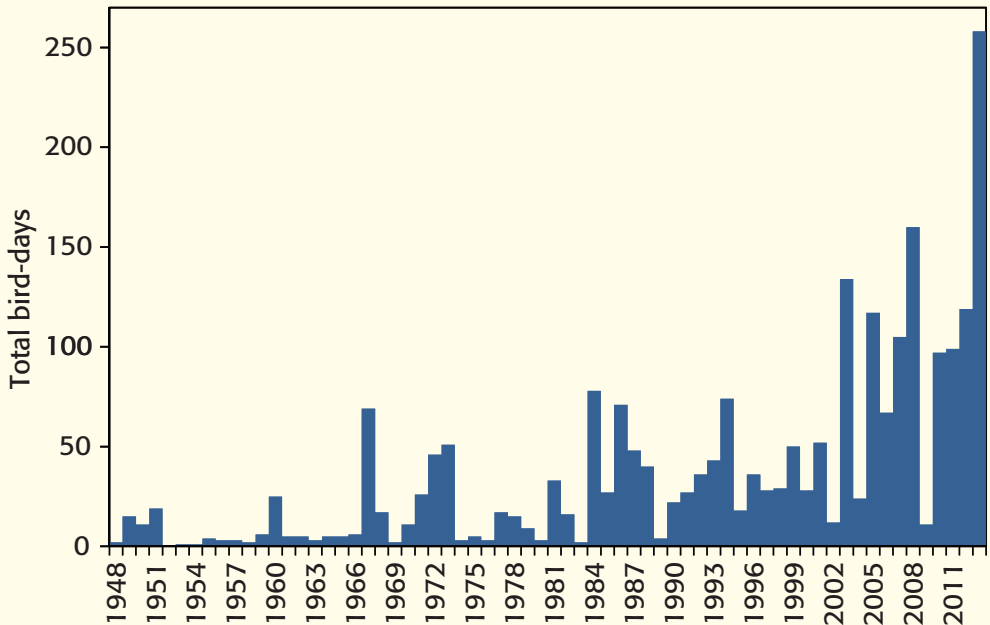


Figure 1. Change in the occurrence of Yellow-browed Warbler in autumn on Fair Isle during 1948 to 2013. Total bird-days = the grand total of all counts of Yellow-browed Warblers on all days in September and October for the given year.

counts of Yellow-browed Warblers on all days in September and October (autumn ‘bird-day’ totals) for each year from 1948 to 2013. Clearly, there is a compelling increase, with a total of 258 Yellow-browed Warbler bird-days in 2013 in comparison with just two in 1948.

To summarise, in addition to ongoing, rigorous collection and archiving of migration data, part of FIBOT’s vision is to analyse the long-term Fair Isle migration dataset and contribute to the state of knowledge regarding changes in migratory bird populations (including species composition, numbers and phenology). The aim of the Fair Isle Migration Project is to achieve this, through high-quality scientific analyses of the dataset and presentation of results in primary scientific publications and as more directly accessible, general interest talks, notes and articles.

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Reference

Riddington, R. 2013. Any divers, swans... a project to computerise the Fair Isle Bird Observatory daily log. *Scottish Birds* 33(4): 347–348.



Plate 2. Yellow-browed Warbler, Fair Isle, autumn 2012. © Roger Riddington