

21. SPRING ARRIVAL DATES OF MIGRANT BIRDS

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Figure 21.1 Migrant swallow caught for ringing by Jamie Hooper (see Figure 21.2). Copyright Jamie Hooper.

The dates on which migrant birds return from their wintering locations have been getting earlier across Europe. However these changes are not as great as for plants, or even insects, giving rise to concerns that migrant birds are not adapting sufficiently rapidly to a warming climate. It is now thought that changes in day length trigger migration from Africa, but that temperature modifies migration speed, leading to changes in arrival dates.

We examined the first arrival dates of 20 migrant birds to Guernsey supplied by Barry Wells and Mark Lawlor

from La Société Guernesaise records. The information covers a relatively short period 1985-2004. Whilst the average migrant is now 3 days earlier than 20 years ago, only three species (sand martin, house martin and sedge warbler) are substantially earlier (by 15-30 days). The sand martin has shown great consistency in earlier arrival in Europe. A growing number of observations of migrants in February suggest these birds are wintering closer to Guernsey than the tropics, for example the Mediterranean in the case of house martin, and may in the future over winter on Guernsey itself.

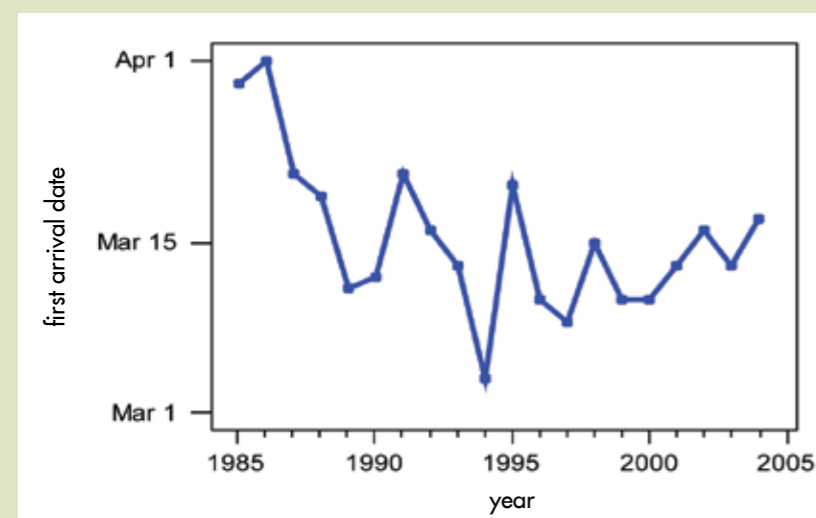


Figure 21.2 First mean arrival dates for migrant birds to Guernsey from 1985 to 2004.

The ornithological section of La Société has been active in recording birds in Guernsey throughout its 125 year history. There have been some remarkable changes in migrant birds during this period; including declines in species such as nightjar, corncrake and nightingale; increased frequency of records of species such as sand martin, spotted flycatcher and several warblers; and winter records of species such as blackcap, chiffchaff and turtle dove. In this section we compare first arrival dates of nine commonly recorded species in two periods for which records are reasonably abundant; 1903-1945 and 1985-2005.

The table below shows mean dates for these two periods. Species are arranged in date order of the earlier period.

Mean first dates

Species	1903-1945	1985-2005	Days earlier
Wheatear	March 24	March 6	18
Ring ouzel	April 8	April 2	6
Swallow	April 8	March 23	16
Willow warbler	April 13	March 26	18
Cuckoo	April 15	April 15	0
House martin	April 20	March 25	27
Sand martin	April 22	March 17	36
Swift	April 30	April 22	8
Turtle dove	May 7	April 28	9

These changes are statistically significant except for ring ouzel and cuckoo. Part of the change may be an artefact of sampling, i.e. because more people are now looking for first migrants than previously and hence observing them earlier. There may be some truth to this, but it is unlikely to have much influence on numerous, obvious species such as swallow and, furthermore, these changes have been recorded across Europe from bird observatories operating 'constant effort' sampling.

Can these changes be attributed to a warming climate? We have taken the analysis one step further by comparing arrival dates in Guernsey with temperatures further south, from Spain. For all species, except ring ouzel and cuckoo, we can find a significant relationship with temperature such that earlier arrival in Guernsey by between 3.3 and 9.4 days (depending on species) is associated with a 1°C increase in temperature in Spain (see Figure 21.3). Cuckoo, and possibly ring ouzel, follows a different migration across France, but we did not find agreement with French temperatures for these species. Both species are in decline which may mask climate influences on their arrival dates. Mean March temperatures in Spain were 8.5°C in 1903-1945 and 10.3°C in 1985-2005.

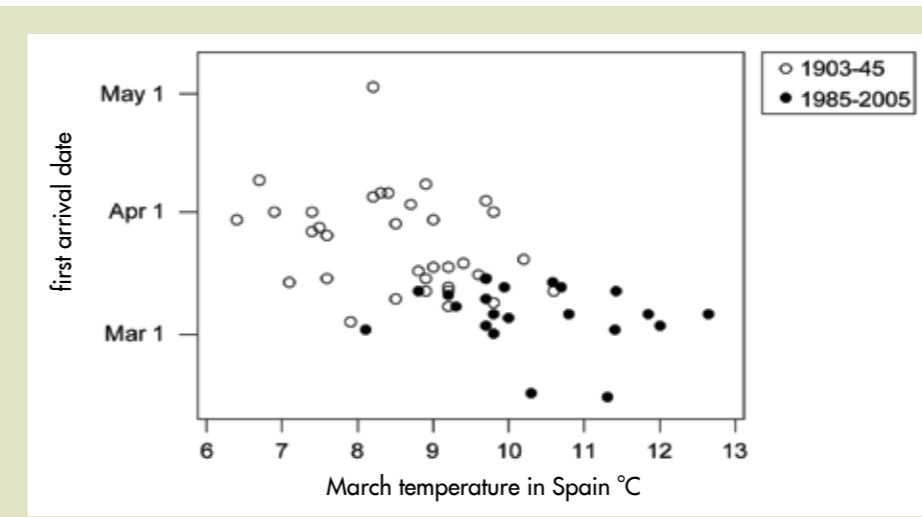


Figure 21.3 the relationship between wheatear first arrival date and Spanish temperatures in March.

These results provide strong evidence for a change in spring arrival dates of migrant birds linked to migration route temperatures. In future years it will also be possible to make use of more Guernsey data, for example on the numbers of birds on spring and autumn migration, e.g. through ringing schemes and roost counts, but currently the data hasn't been recorded for long enough to draw conclusions on the influence of climate on these.

References

1. Dr Tim Sparks is an environmental scientist with the Centre for Ecology and Hydrology.