

Gleanings from the Northumberland Bird Database

GLOBAL WARMING IN NORTHUMBERLAND

By Clive E. Goodwin

In October last I mentioned the arrival dates of Ospreys, and the fact it appeared that the birds were appearing two weeks earlier than they did in the 1970's, or for that matter in the 1800's. While I came on this information more or less by chance, it required some manipulation to find it, so of course having found one case of apparent evidence for warming, I began wondering if there were others, and started trying to see what I could find.

But finding out if a bird is arriving earlier is not quite as simple as it may sound. I've discussed this problem before, but here even choosing a suitable bird is difficult. The 'first' robin may have spent the winter feasting on buckthorn in a nearby creek valley, and the first Song Sparrow may well have wintered at a nearby feeder. The same thing holds for most of the waterfowl, blackbirds, and flickers, Winter Wrens and goldfinches. On the other hand, birds that winter in the tropics may well be much less sensitive to climate patterns than those that winter further north, and so be relatively unresponsive to warming on their breeding grounds. Rarer birds will not have yielded enough data to provide a clear picture, and more cryptic species such as sparrows are not suitable because their first arrivals are too easy to miss.

Finally I settled on four species that are common migrants, all relatively distinctive, and which usually first arrive between the beginning of March and the first week in May: Tree Swallow, Eastern Phoebe, Ruby-crowned Kinglet and Yellow-rumped Warbler. They arrive roughly in sequence, and although some have a few records going into early winter, none have been reported later in that season. Both the swallow and warbler, as the traditional 'firsts' in their much-anticipated families, were easy choices; phoebes are familiar birds from familiar places; and the kinglet, while it lacks glamour, has a big voice that demands attention. For comparison I also selected three neotropical wintering birds: Scarlet Tanager, Eastern Kingbird and Ruby-throated Hummingbird [I use initials in the table below to denote all these species]. The latter was chosen mainly because I recently read an account that said it was arriving earlier. It will also winter in very small numbers in the extreme south of the US, so in that sense it is intermediate between the others.

As with the Osprey, I took all our relevant records and looked for the point for each species at which we had a consistent series of annual arrival data. Taking our data from that point I then asked the computer to show me by year the number of days from January 1 for all first arrival dates, and then separated these results into decades.

The figures in the table that follows are the average of the first arrivals for each decade. The number shown in each box is the day numbered from January 1, and I've put the corresponding date above the first and last entry to make them easier to interpret. The

three later species have their decades starting a year earlier as 2009 arrivals were not known at the time of writing.

	TRSW	EAPH	RCKI	YRWA		RTHU	SCTA	EAKI
1970-1979	[4/7] 97	[4/6] 96	[4/18] 108	[4/24] 114	1969-1978	[5/10] 130	[5/11] 131	[5/8] 128
1980-1989	88	97	104	101	1979-1988	129	132	125
1990-1999	85	87	100	105	1989-1998	124	133	122
2000-2009	[3/23] 82	[3/26] 85	[4/7] 97	[4/11] 101	1999-2008	[5/1] 121	[5/2] 122	[4/24] 114

First Arrival Dates of Seven Species of Migrant by Decade, 1970-2009

These figures suggest that Tree Swallow is arriving some 15 days earlier than in the 1970's, phoebe and Ruby-crowned Kinglet 11 days, and Yellow-rumped Warbler 13 days. To my surprise the three tropical winterers also show some trend to arriving earlier, Scarlet Tanager and Ruby-throated Hummingbird by 9 days, and Eastern Kingbird by 14.

Does this really mean that our migrants are arriving earlier? I think the answer is a qualified 'Yes'. Both the swallow and the kinglet show neat, orderly progressions. One could argue that we receive many more records annually today than in the 1970's, so the chances of encountering an early bird are much greater. This is undoubtedly true, but at the same time our annual total of records, while much higher today than in 1970, has not shown an orderly increase of the same kind, but rather is a series of steps, actually with a decline in the 2000's. The years with earlier sightings do not coincide with these 'steps', and indeed the earliest records come from the present decade. So while our increased effort may be part of the story, it doesn't account for all of it.

The picture from the phoebe and the warbler is less clear-cut. The former was somewhat earlier in the 70's than in the next decade. In fact the two periods were very similar, but there was one year in the 80's when the arrival was very late, which was enough to create the difference. But the warbler is not susceptible to such an easy explanation. Here the 70's total was influenced by at least three very late dates – late even by the criteria of that decade. We have relatively few records from those years, and I'm inclined to think that we are seeing the results of that limited coverage. If the April 24 average above was in fact a few days earlier, there would be relatively little change in Yellow-rumped Warbler arrivals over the years.

Note that the Yellow-rumped is the latest of our group of four to arrive. Which brings me to our tropical migrants. They average even later, of course, and I'm more skeptical about our results here. The reasons relate to the picture yielded by the analysis.

Unfortunately [or maybe not], there's no space to show the humongous tables the computer churns out, but they do reveal a pattern. On the three earlier migrants, and to a limited extent with the Yellow-rumped, the motley scatter of early and late dates through successive decades shows a very gradual, but distinct, upward trend towards earlier arrival. The later species, on the other hand, tend more towards a fairly tight concentration of records around a quite level centre point, but with a few widely scattered late and early records, and it is these that influence the averages.

All populations of birds will include some that move early. Presumably species that migrate north later are less able to survive the cold, which is why they leave the continent in the first place. The very early movers in this group probably would succumb before they got this far north in most years. But with global warming it's increasingly possible they'll survive, and perhaps this is what we are seeing. So I think April 24 for the kingbird and May 2 for the tanager may really be a little too early for average arrivals yet, but it's coming.

Looking at average arrival dates is only one way – and a rather complicated way – of looking at our birds' response to global warming. We'll be talking about some of the other alternatives next time.