

## Gleanings from the Northumberland Bird Database

### GLOBAL WARMING II

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Last May I discussed global warming, and presented an analysis showing a pattern of earlier arrivals in a small group of bird species over the four most recent decades of the database, using the average arrival date for each decade. It was a rather complicated exercise, and the information it revealed certainly wasn't obvious from a simple examination of the records.

At the time I was also starting to look at breakouts of records by month and year, as part of a revision of the Birds of Northumberland County website. It wasn't long before I found clear evidence of warming in front of me, without any additional manipulation needed, among the very species that I'd concluded would not give reliable results for average arrivals.

American Robins, for example, had been dismissed because they winter in small numbers; so a robin in, say, February was as likely to be one of the wintering birds as a newly arrived migrant. But when all the records are shown broken down by year and month, an inescapable pattern emerges:

	'93	'94	'95	'96	'97	'98	'03	'04	'05	'06	'07	'08
Jan.	19	2	108	20	12	101	399	2	40	12	38	156
Feb.	21	1	4	0	14	6	226	121	148	13	152	91
Mar.	343	32	272	189	1086	984	887	225	263	399	324	214
Apr.	143	157	323	655	976	708	981	523	612	678	347	645
May	244	242	350	340	378	484	533	253	170	347	510	514

#### **Totals of Late Winter and Spring American Robins by Month: 1993-98 and 2003-08**

In the extract above the full picture can only be partly displayed; but note the two months of January and February. In both 1993-8 and 2003-8 robins displayed their traditional winter pattern, of few in some years and quite numerous in others; but in the 90's birds became more scarce in February, presumably as food became more difficult to find and wintering birds failed to survive or moved away. This is a typical pattern for birds wintering towards the northern limits of their winter ranges.

In the 2000's the picture is quite different: in three of the years shown there is a marked increase in February, and even in the two high wintering years numbers in February were still almost 60% of those in January. The 21 birds in 1993 were the highest total ever to that date, and in only two other years did it reach double figures; yet since 1999 all totals have been higher than 10, and in 2009 [not shown, but with a fairly harsh winter] a new high of 301 was achieved. It appears robins are arriving earlier in some numbers.

Robins are not alone. A dozen other species show similar patterns, and a different suite of species show patterns of later departure in fall. It might be argued that the better coverage of recent years could account for these patterns, but some of the species involved, like the Tree Swallow, have declined in recent years, so more birds were being seen in, say, the 1980's, yet not appearing earlier in those years.

But certainly the larger numbers of recent years do confuse the issue for many species. Song Sparrows *look* as though they're arriving earlier, leaving later and wintering more often, but there's always variation from year to year, and the higher figures in the key months may be no more than a composite of that plus the enhanced coverage. The story is the same for several other species: conceivably someone using more sophisticated analyses might find clearer support but that's not what I set out to do: I was looking for clear evidence from the tables themselves.

On the other hand, a wintering species should not display a pattern of arriving earlier and leaving later. We should expect that, with global warming, a bird that winters here would leave earlier and arrive later, because conditions would be more hospitable on its nesting grounds. Depending on just where in a species' wintering range we are situated we might also have more birds wintering here or fewer, but the point is that global warming would mean fewer birds in some months rather than more.

My numbers problem would not necessarily go away, because higher counts could still conceal the pattern, and indeed that's exactly what does seem to be the case with the first two birds I looked at, American Tree Sparrow and Snow Bunting. But then, enter the Dark-eyed Junco!

Mo.	'93	'94	'95	'96	'97	'98	'03	'04	'05	'06	'07	'08
J.	79	10	28	56	63	40	210	321	135	78	105	421
F.	47	8	7	1	38	41	291	273	173	191	89	0
M.	70	7	37	20	26	135	137	70	107	107	97	19
A.	113	110	67	248	2659	791	78	59	114	265	323	87
M.	1	8	3	14	121	8	2	3	8	7	3	6
J.	0	0	0	0	0	0	0	0	0	2	0	0
J.	0	0	0	0	0	0	0	0	0	0	0	0
A.	50	1	0	0	1	0	0	0	4	0	0	0
S.	17	10	47	3	35	92	0	4	44	2	21	2
O.	1020	76	186	91	2065	1927	481	265	1593	197	381	73
N.	101	37	116	24	374	922	256	178	307	132	49	55
D.	97	320	605	515	517	450	1509	1014	2446	771	1439	1501

**Totals of Dark-eyed Juncos by Month: 1993-98 and 2003-08**

...And reveal a quite fascinating set of comparisons! In January and February the pattern is the familiar one with many species: higher numbers in the 2000's, likely reflecting the better coverage in this period. The differences are less striking in March, but still there, but then both April and May reveal some reversal, with higher counts in the '90's. The birds are, as expected, almost absent in June and July; but then August, September and

October again have higher counts in the 1990's, with November slightly higher as well; and it is not until December that the 2000 decade is again unequivocally higher, and in fact dramatically so. When one considers that the counts for most species are consistently higher in the current decade, the pattern revealed above is even more striking. It suggests excellent numbers in December followed in the New Year by a steady decline [a gradual movement north?], with an analogous return pattern in fall. But whatever the actual junco movements are, there is clear support for the 'leave earlier and arrive later' scenario of a warming climate.

So, for some species at least, the database itself, with only minor manipulation, can show evidence of birds' responses to this relatively new, and worrisome, phenomenon of global warming.