

MORNING AND EVENING SONG OF ROBINS IN DIFFERENT LATITUDES

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The singing of male robins (*Turdus migratorius*) in the breeding season occurs, in middle latitudes, intermittently throughout the day, but it is maximal in the early dawn, and it reaches a second though lesser peak in the evening shortly before the birds go to roost. These periods of concentrated singing are sufficiently well marked to be designated morning song and evening song, and they are regular enough to be predictable from day to day with an accuracy of from one to a very few minutes.

In the latter half of June, 1957, the writer made an automobile trip from Berkeley, California, to Fairbanks, Alaska. Since these localities represent a difference of about 27 degrees of latitude, it seemed worth while to make some observations en route of the times of morning and evening song of robins. The dates were propitious in that they represented a few days before and after the summer solstice, a period when the days are longest and when their length is changing very slowly. Between June 15 and 30, the time of sunrise at Berkeley changed only 3 minutes, and at Whitehorse, Yukon Territory, it changed only 5 minutes. Thus the differences observed in the times of morning and evening song are clearly due primarily to latitude.

For the observations recorded here, the end of evening song is the time at which the last robin song was heard. The beginning of morning song is the time at which the first robin song was heard. The end of morning song is not so easily determined, because it does not end abruptly but trails off into intermittent singing. Sometimes an individual robin will continue singing for some minutes after all others within hearing have ceased. Not infrequently birds which have become silent will resume singing for a short time. The end of morning song has been recorded as the time at which *all* or *most* of the robins in a given locality became silent for one or more minutes.

Since the time of the end of morning song is to some extent a matter of the observer's judgment, these data are regarded as the least reliable. However, both the magnitude and trend of the differences recorded suggest that in general they are outside the limits of error of observation. No attempt was made to record the beginning of evening song; this proved impracticable because of the logistic problem of finding food and lodging at the end of a day's travel.

Whitehorse, Yukon Territory, was the point farthest north at which data could be obtained on this trip. When I arrived at Fairbanks (65°N) on June 30, the season there was farther advanced, and robins had finished nesting and had ceased singing. On July 1, at 1:58 a.m., one robin sang for three or four seconds. This was the only robin heard in the course of two days spent in the vicinity of Fairbanks, although the birds were seen in abundance.

The question may arise as to whether robins were still nesting at Whitehorse on June 28-29. Evidence that they were is provided by their early morning singing, and by the fact that one robin was seen carrying something in its bill, presumably feeding young. There is some possibility that the lack of evening song may have been due to a tapering off of the nesting season, although that is not my present interpretation.

An inspection of the data in table 1 indicates certain overall trends, to which the observations at Hope and Williams Lake, British Columbia, pose certain anomalies. Although the difference in latitude between Bellingham, Washington, and Hope is minor (38'), evening song at Hope ended 11 minutes later than at Bellingham, while morning song was one minute shorter in duration. The latter difference is negligible; but both

Table 1

Morning and Evening Song of Robins at Different Latitudes
(All readings converted to mean local time)

Place	Date (1957)	Latitude	End of evening song	Beginning of morning song	End of morning song	Duration of morning song
Berkeley, Calif.	June 16	37°52'N	8:51 p.m.			
	June 18			3:40 a.m.	4:22 a.m.	42 min.
Bellingham, Wash.	June 21	48°45'N	8:36 p.m.			
	June 22			2:47 a.m.	3:44 a.m.	57 min.
Hope, B.C.	June 22	49°23'N	8:47 p.m.			
	June 23			2:43 a.m.	3:39 a.m.	56 min.
Williams Lake, B.C.	June 23	52°11'N	(None)			
	June 24			2:35 a.m.	3:30 a.m.	55 min.
Dawson Creek, B.C.	June 25	55°46'N	8:27 p.m.			
	June 26			(Before* 1:58 a.m.)	3:01 a.m.	(More than 63 min.)
	June 26					
Ft. Nelson, B.C.	June 26	58°49'N	7:51 p.m.			
	June 27			1:18 a.m.	2:38 a.m.	80 min.
Whitehorse, Yukon Ter.	June 28	60°43'N	(None)			
	June 29			0:58 a.m.	2:27 a.m.	89 min.

* Robins already singing when observations began.

differences are, when compared with the general trend of the data, in the wrong direction. This may be due to the location of Hope, which is surrounded on three sides by mountains but is wide open to the west, looking down the Fraser River valley. This situation would tend to shorten morning twilight and extend evening twilight.

Observations at Williams Lake were unsatisfactory because of a scarcity of robins in the vicinity. None was seen or heard in the evening. But at 2:35 a.m. two robins began singing and continued until 3:30 a.m., after which both were silent. At 3:31 a.m. a third robin, in a different place, began singing, continued for 14 minutes, and then ceased. On the basis of the criterion used at other localities (all or most robins silent for at least one minute), this last bird was excluded from the table, an admittedly arbitrary procedure. If there had been a dozen robins singing in the vicinity, it is highly likely that the one-minute silence would have been bridged and I would have recorded the duration of morning song as substantially longer. The behavior of this "lazy" robin raises an interesting point. Is morning song a continuous performance by individual birds, or do they, so to speak, sing in relays?

At Bellingham I was able to keep an individual robin under observation for 39 minutes, during which time it sang from three different perches, interrupting its song only briefly while flying from perch to perch. At Williams Lake two robins sang for 55 minutes, with only such pauses as are normal to the phrasing of the song. At Dawson Creek and farther north, however, I gained a definite impression that different birds were singing at different times, and that the lengthened time of morning song was due at least in part to the overlapping of the songs of different individuals. In latitudes where morning twilight is short, all robins become active at about the same time; but it seems likely that in northern latitudes, where the twilight is longer or the sky is light all night, the morning awakening and accompanying song is distributed over a longer period.

The singing behavior of robins in high latitudes that have perpetual daylight in June would be an interesting subject for investigation. The northerly distribution of robins extends well beyond the Arctic Circle. John E. Campbell (personal communication) noted robins singing at Bettles, Alaska, 25 miles north of the Arctic Circle, at midnight on June 8, 1957, and at Anaktuvuk Pass (lat. 68° 15' N) at 1:00 a.m. on June 11. In

each instance several robins were heard and their singing was continuous over a period of time—typical morning song.

In middle latitudes the evening song of robins is not as striking and well developed a type of behavior as morning song. The observed relation between the end of evening song and latitude is erratic, but on the whole it appears that evening song terminates earlier as one goes north. If morning and evening song were exact reciprocals, they would merge at some high latitude. This apparently does not occur.

Too much weight should not be given to the single observation at Whitehorse. But there is at least a suggestion that, in latitudes where morning song begins soon after midnight, evening song as a recognizable entity disappears.

From the data reported here, it can be concluded definitely that, between the latitudes of approximately 38°N and 61°N , in the latter half of June, the morning song of robins begins progressively earlier and ends progressively earlier, with increase of latitude. The evidence is also strong, with the exceptions noted, that the duration of morning song increases with latitude. It is provisionally suggested, subject to further investigation, that evening song tends to terminate earlier at higher latitudes, and that at some latitude north of 58°N it may disappear altogether as a distinct entity.

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