when nocturnal activity was at its minimum—delimited the start and end of spring and autumn seasons (see supplementary R script). We calculated the mean activity level in the 30 days surrounding these winter and summer boundary dates as a measure of baseline (i.e. non-migratory) activity. For a given bird, we only analysed migration periods with at least 90 days of activity data.

*Changepoint Analysis for Identifying and Characterising Periods of Zugunruhe:* For changepoint analysis, we applied the pruned exact linear time (PELT, Killick et al. 2012) algorithm implemented in the "cpt.meanvar" function, with a Poisson test statistic. A changepoint is identified if its addition to the model sufficiently improves the log-likelihood enough to overcome a penalty value used to prevent overfitting (i.e. to prevent too many changepoints from being identified). The Bayesian Information Criterion (BIC) is often used as such a penalty value, and it is proportional to the natural logarithm of the number of data points (= 2*ln(n), where n is the number of data points). Because bird activity usually varied considerably, this default penalty value (BIC) often resulted in over 10 changepoints identified per half-year period. Although these corresponded to clear changes in bird activity, we adjusted the default settings and used a more conservative penalty value to select the ~2-3 greatest points of change in activity level during a period, corresponding to the onset and end of *Zugunruhe* and any substantive within-period changes. By trial and error, we determined that multiplying BIC by 18 was appropriate and generally identified the expected number of changes (supplementary Figure 1). Finally, because we expected bouts of *Zugunruhe* to be weeks in duration, we used the "minseglen" argument to prevent successive changepoints from being identified within 15 days of one another. Such settings are flexible and can be adjusted in our script to fit patterns of any focal study species (for details, see supplementary script). For further details, see supplementary R script. In about 1% of migration periods, the