

**SUPPLEMENTARY ELECTRONIC MATERIAL (APPENDIX 1)**

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THE MIGRATION SYSTEM OF BARN SWALLOWS *HIRUNDO*  
*RUSTICA* BREEDING IN SOUTHWESTERN SPAIN AND  
WINTERING ACROSS WEST AFRICA

EL SISTEMA MIGRATORIO DE LA GOLONDRINA COMÚN *HIRUNDO*  
*RUSTICA* REPRODUCTORA EN ESPAÑA E INVERNANTE EN ÁFRICA  
OCCIDENTAL

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## Additional information on light data quality

[Información adicional sobre la calidad de los registros de luz.]

The performance of *FLightR* strongly depends on the quality of raw light records, as explained by Lisovski *et al.* (2020). Thus, if light data quality is poor, *FLightR* is not recommended and any threshold method should be used instead (simply because there are not enough light measurements during the twilight to fit the calibration template). Fortunately, our light records were of high quality; consequently our *FLightR* simulations performed adequately and they were repeatable.

The lower the quality of light measurements, the greater the number of twilights excluded in the prior data filtering. Out of the 38 migratory tracks, we excluded 3-10% of twilights in 12 tracks; 11-20% of twilights in 16 tracks; 21-33% of twilights in six tracks and 39-51% of twilights in four tracks. These last four tracks presented much lower light data quality compared to the others and thus their inferred migratory routes must be considered with caution (i.e. individuals ringed 1Y83562, Y65845.b, 5L49565 and 1Y83585). Nevertheless, all our tracks can be clearly classified as having high-quality light data according to Lisovski *et al.*, 2020 (see Figure 2 of that study). As examples, figures below show the raw light records along three migratory tracks: individual ringed 2L12365 (10% of twilights excluded after manual data filtering), 2L12590 (20% of twilights excluded) and 1Y83556 (32% of twilights excluded), respectively.



