**Supplementary Material**

Identifying migration routes and non-breeding staging sites of adult males of the globally threatened Aquatic Warbler*Acrocephalus paludicola*

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Table S1. Detailed results of the geolocator analysis for all individuals.

Table S1: Detailed results of the geolocator analysis for all individuals. The CALIB1 column refers to the reference sun elevation angle that was calculated using post-deployment recordings from the breeding site. CALIB2 refers to the sun elevation angle estimated using the Hill-Ekstrom Method (described in Lisovski *et al.* 2015 and Hiemer *et al.* 2017). The number in brackets or the individual indicates the site that has been used to estimate the sun elevation angle or from which individual we transferred the sun elevation angle since no data for reliable calibration was available. Arrival and departure dates should be treated with caution and are only rough estimates. LONB/LATB are location estimates using the CALIB1 sun elevation angle (from the breeding site) whereas all other locations were estimated using CALIB2 (wintering site calibration). The LONL/LATL and LONU/LATU locations were estimated using CALIB1 ± 1 degree).

CALIB1 = Breeding site calibration

CALIB2 = Hill-Eckstrom calibration (site of calibration)

B = Estimate with breeding site calibration

L = Estimate – 1 degree

MED = Mean site estimate

U = Estimate +1 degree

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *ID* | *PopUL.* | *Calib1* | *Calib2* | *Site* | *Arrival* | *Departure* | *LonB* | *LonL* | *LonMed* | *LonU* | *LatB* | *LatL* | *LatMed* | *LatU* |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **HK** | Dzikoje | -3 | -5.5 (3) |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Breeding |  | **Unknown** |  |  | **24.21** |  |  |  | **52.73** |  |
|  |  |  |  | 1 | **Unknown** | **2012.08.12** | -2.5 | -2 | **-2** | -2 | 46 | 43 | **40.5** | 38.5 |
|  |  |  |  | 2 | **2012.08.13** | **2012.09.01** | -10.5 | -10.5 | **-10** | -10 | 40 | 35.5 | **32** | 29 |
|  |  |  |  | 3 | **2012.09.02** | **2012.10.22** |  |  | **-6** | -6.5 |  |  | **15** | 14 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **EN** | Dzikoje | -3.5 | -6.2 (6) |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Breeding |  | **2012.07.09** |  |  | **24.21** |  |  |  | **52.73** |  |
|  |  |  |  | 1 | **2012.07.19** | **2012.07.22** | 9.5 | 10 | **9.5** | 9.5 | 49 | 46.5 | **44.5** | 43 |
|  |  |  |  | 2 | **2012.07.25** | **2012.07.29** | 0 | 0 | **0** | 0 | 42 | 38.5 | **36.5** | 34.5 |
|  |  |  |  | 3 | **2012.07.30** | **2012.08.02** | -5.5 | -5.5 | **-5.5** | -5.5 | 41 | 37.5 | **35.5** | 33.5 |
|  |  |  |  | 4 | **2012.08.03** | **2012.08.12** | -8.5 | -8.5 | **-8.5** | -8.5 | 37 | 33 | **30** | 27.5 |
|  |  |  |  | 5 | **2012.08.13** | **2012.08.25** | -11.5 | -11.5 | **-11.5** | -11.5 | 26 | 20.5 | **17** | 13.5 |
|  |  |  |  | 6 | **2012.08.26** | **2012.11.06** |  |  | **-5** | -5 |  |  | **17.5** | 20 |
|  |  |  |  | 7 | **2012.11.07** | **2013.04.10** |  |  | **-4** | -4 |  |  | **14.5** | 22.5 |
|  |  |  |  | 8 | **2013.04.19** | **2013.04.23** | 22.5 | 22.5 | **22.5** | 22.5 | 49 | 45 | **42** | 39.5 |
|  |  |  |  | Breeding | **2013.04.28** |  |  |  | **24.21** |  |  |  | **52.73** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **OY** | Supii | -2.5 | -4 (4) | Breeding |  | **2012.07.21** |  |  | **31.73** |  |  |  | **50.4** |  |
|  |  |  |  | 1 | **2012.07.26** | **2012.07.31** | 10 | 10 | **10** | 10 | 47.5 | 46.5 | **44.5** | 42.5 |
|  |  |  |  | 2 | **2012.08.01** | **2012.08.07** | -0.5 | -0.5 | **0** | 0 | 48 | 47 | **45** | 43 |
|  |  |  |  | 3 | **2012.08.08** | **2012.09.10** | -9.5 | -9.5 | **-9** | -9 | 48.5 | 46.5 | **43.5** | 40.5 |
|  |  |  |  | 4 | **2012.09.11** | **2012.10.24** |  |  | **-6.5** | -6.5 |  |  | **10.5** | 19 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **PE** | Dzikoje | -2.5 | -4 (OY) | Breeding |  | **2012.07.10** |  |  | **24.2** |  |  |  | **52.73** |  |
|  |  |  |  | 1 | **2012.07.11** | **2012.07.16** | 25 | 25 | **25** | 25 | 48 | 47.5 | **45.5** | 44 |
|  |  |  |  | 2 | **2012.07.17** | **2012.07.20** | 20 | 20 | **20** | 20 | 43 | 42 | **40.5** | 38.5 |
|  |  |  |  | 3 | **2012.07.24** | **2012.08.17** | -1 | -1 | **-1** | -1 | 46 | 45 | **43** | 41 |
|  |  |  |  | 4 | **2012.08.18** | **2012.08.30** | -6 | -6 | **-5.5** | -5.5 | 46.5 | 45 | **42** | 39 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **PO** | Supii | -1.5 | -4.25 (4) | Breeding |  | **2012.07.16** |  |  | **31.73** |  |  |  | **50.4** |  |
|  |  |  |  | 1 | **2012.07.30** | **2012.08.07** | 1.5 | 1.5 | **1.5** | 1.5 | 46.5 | 43 | **41** | 38.5 |
|  |  |  |  | 2 | **2012.08.08** | **2012.08.22** | -9 | -9 | **-9** | -9 | 45 | 43 | **40.5** | 37.5 |
|  |  |  |  | 3 | **2012.08.23** | **2012.09.02** | -11.5 | -11.5 | **-12** | -12 | 29.5 | 26 | **21.5** | 16 |
|  |  |  |  | 4 | **2012.09.03** | **2012.10.15** |  |  | **-7.5** | -7.5 |  |  | **15** | 11.5 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **QX1** | Supii | -1.5 | -3.5 (RB) | Breeding |  | **2010.07.23** |  |  | 31.73 |  |  |  | 52.42 |  |
|  |  |  |  | 1 | **2010.07.24** | **2010.07.30** | 26.5 | 26.5 | 26.5 | 26.5 | 45.5 | 43.5 | 41.5 | 39.5 |
|  |  |  |  | 2 | **2010.08.02** | **2010.08.14** | 2.5 | 2.5 | 2.5 | 2.5 | 47.5 | 45.5 | 43 | 41 |
|  |  |  |  | 3 | **2010.08.16** | **2010.08.26** |  |  |  |  | 22.5 | 18.5 | 14 | 9.5 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **RR1** | Supii | -1.5 | -3.5 (RB) | Breeding |  | **2010.07.23** |  |  | **31.73** |  |  |  | **52.42** |  |
|  |  |  |  | 1 | **2010.07.24** | **2010.07.30** | 17 | 17 | **17** | 17 | 47 | 45 | **43** | 41 |
|  |  |  |  | 2 | **2010.08.03** | **2010.08.05** | 4 | 4 | **4** | 4 | 48 | 46 | **43.5** | 41.5 |
|  |  |  |  | 3 | **2010.08.12** | **2010.08.19** | -7 | -7 | **-7** | -7 | 46.5 | 43.5 | **41** | 38 |
|  |  |  |  | 4 | **2010.08.20** | **2010.08.30** | -16 | -16 | **-16** | -16 | 24 | 20 | **15.5** | 11 |
|  |  |  |  | 5 | **2010.08.31** |  | -5 | -5 | **-5** | -5.5 | 28 | 21 | **15** | 6 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **RB1** | Supii | -1.5 | -3.5 (5) | Breeding |  | **2010.07.24** |  |  | **31.73** |  |  |  | **52.42** |  |
|  |  |  |  | 1 | **2010.07.25** | **2010.07.31** | 18 | 18 | **18** | 18 | 47.5 | 45.5 | **43.5** | 41.5 |
|  |  |  |  | 2 | **2010.08.04** | **2010.08.06** | 4.5 | 4.5 | **4.5** | 4.5 | 49 | 47 | **44.5** | 42.5 |
|  |  |  |  | 3 | **2010.08.07** | **2010.08.26** | -4 | -3.5 | **-3.5** | -3.5 | 48.5 | 46 | **43** | 40.5 |
|  |  |  |  | 4 | **2010.08.27** | **2010.09.09** | -14.5 | -14.5 | **-15** | -15 | 37.5 | 32.5 | **26.5** | 21 |

1 Individuals considered already in Salewski *et al.* (2013).