**Table S1** Migratory data of three females *O. t. dybowskii* from Kessler et al. 2013

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bird | Body mass  (kg) | Year | Season | Start date | End date | Duration  (days) | Distance  (km) | Total speed  (km/day) | Flying speed  (km/h) |
| 01 | 3.40 | 2007 | Autumn | 13-16 Oct | 4-12 Dec | 49-60 | 1954 | 33-40 | 59 ± 2 |
|  |  | 2008 | Spring | 24-26 Mar | 28-31 May | 63-68 | 1966 | 29-31 | 62 |
|  |  |  | Autumn | 17-19 Oct | 4-6 Nov | 16-20 | 1852 | 93-116 | 59 ± 6 |
|  |  | 2009 | Spring | 12-14 Mar | 1 Jun | 79-81 | 1932 | 24 |  |
| 02 | 3.50 | 2008 | Autumn | 12 Oct | 31 Oct | 19 | 1836 | 97 | 87 ± 10 |
|  |  | 2009 | Spring | 5 Apr | 9-13 May | 34-38 | 1860 | 49-55 | 80 ± 6 |
| 03 | 3.60 | 2008 | Autumn | 17 Oct | 18-20 Dec | 62-64 | 2044 | 32-33 | 76 ± 12 |
|  |  | 2009 | Spring | 5 Apr | 9 Jun | 65 | 2100 | 32 | 60 ± 9 |

**Table S2** Seasonal differences in great bustard by sex. The tests used were Mann–Whitney U-tests or t test.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Sex** | **Spring migration**  **( ± SD)** | **n** | **Autumn migration**  **( ± SD)** | **n** | **Test value** | ***p* value** |
| Distance (km) | Male | 981.00 ± 83.14 | 6 | 903.28 ± 46.42 | 11 | *t* = -1.37 | *p* = 0.203 |
| Female | 1939.62 ± 87.32 | 6 | 1906.13 ± 91.57 | 6 | *t* = -0.648 | *p* = 0.532 |
| Duration (days) | Male | 13.42 ± 10.57 | 6 | 14.60 ± 16.02 | 11 | W = 34 | *p* = 0.961 |
| Female | 61.69 ± 15.38 | 6 | 36.99 ± 19.84 | 6 | *t* = -2.4097 | ***p* = 0.038** |
| Total speed (km/day) | Male | 114.65 ± 66.03 | 6 | 124.79 ± 112.76 | 11 | W = 30 | *p* = 0.808 |
| Female | 33.44 ± 9.40 | 6 | 65.82 ± 32.51 | 6 | W = 31.5 | ***p* = 0.037** |
| Flight speed (km/h) | Male | 65.69 ± 5.65 | 6 | 69.56 ± 9.09 | 11 | *t* = 1.082 | *p* = 0.297 |
| Female | 65.23 ± 9.68 | 5 | 68.64 ±11.94 | 6 | *t* = 0.523 | *p =* 0.613 |
| Travel speed (km/day) | Male | 208.63 ± 97.28 | 6 | 173.75 ± 107.45 | 11 | *t* = -0.681 | *p* = 0.510 |
| Female | 207.30 ± 66.58 | 2 | 212.82 ± 50.22 | 2 |  | |
| Stopover numbers | Male | 1.33 ± 0.82 | 6 | 1.64 ± 1.50 | 11 | *t* = 0.539 | *p* = 0.598 |
| Female | 2.50 ± 0.71 | 2 | 4.50 ±3.54 | 2 |  | |
| Stopover duration (days) | Male | 6.01 ± 5.84 | 8 | 3.10 ± 5.54 | 18 | W = 63.5 | *p* = 0.816 |
| Female | 20.77 ± 14.95 | 5 | 5.41 ± 5.81 | 9 |  |  |

P-values ≤ 0.05 are presented in bold

**Table S3** Areas of 95% KDE home range (km²) of *O. t. dybowskii*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **2018 winter** | **2019 summer** | **2019 winter** | **2020 summer** |
| NO.1 | 1261.21 | 816.48 | 177.38 | 645.53 |
| NO.2 | 14.90 | 237.33 | 19.42 | 138.65 |
| NO.3 | 96.08 | 649.47 | 26.50 | 1377.80 |
| NO.4 | 19.36 | 841.79 | 27.05 | 2110.22 |



**Figure S1.** The largest male Great bustard (NO.6) trapped in Dashbalbar in 2019 (Photo by Gankhuyag Purev-Ochir).