Appendix 1. Distinguishing between travel and stopover days

Daily travel speeds (in km/d) of migrating marsh harriers *Circus aeruginosus* were calculated for segments that were defined by ‘best of duty cycle locations’ (see main text). The frequency distribution of (log-transformed) daily travel speeds revealed two peaks; i.e. this distribution was bi-modal (Fig. A).

The fit of the sum of two normal distributions with a probability density of \( q \cdot N(\mu_1, \sigma_1) + (1 - q) \cdot N(\mu_2, \sigma_2) \), where \( q \) is a scaling coefficient between 0 and 1, was compared with that of a single normal distribution \( N(\mu, \sigma) \), with mean \( \mu \) and standard deviation \( \sigma \). Taking the difference between the number of estimated parameters into account, the bi-normal distribution indeed fitted significantly better than the single normal distribution (log-likelihood ratio test, \( X^2 = 148.5, P < 0.001 \); Sokal and Rohlf 1995).

The first distribution (green curve in Fig. A) has a mean of 8.9 km/d (back-transformed value), and is thought to be related to stopover days, and days with slow progress due to intensive fly-and-forage migration (Strandberg and Alerstam 2007). The second distribution (red dashed curve in Fig. A) has a mean of 183.7 km/d, and is thought to be related to travel days. The intercept of these curves (50.3 km/d) can be seen as a threshold value that distinguishes between travel days (daily speeds > 50.3) and stopover days (daily speeds < 50.3).

References
