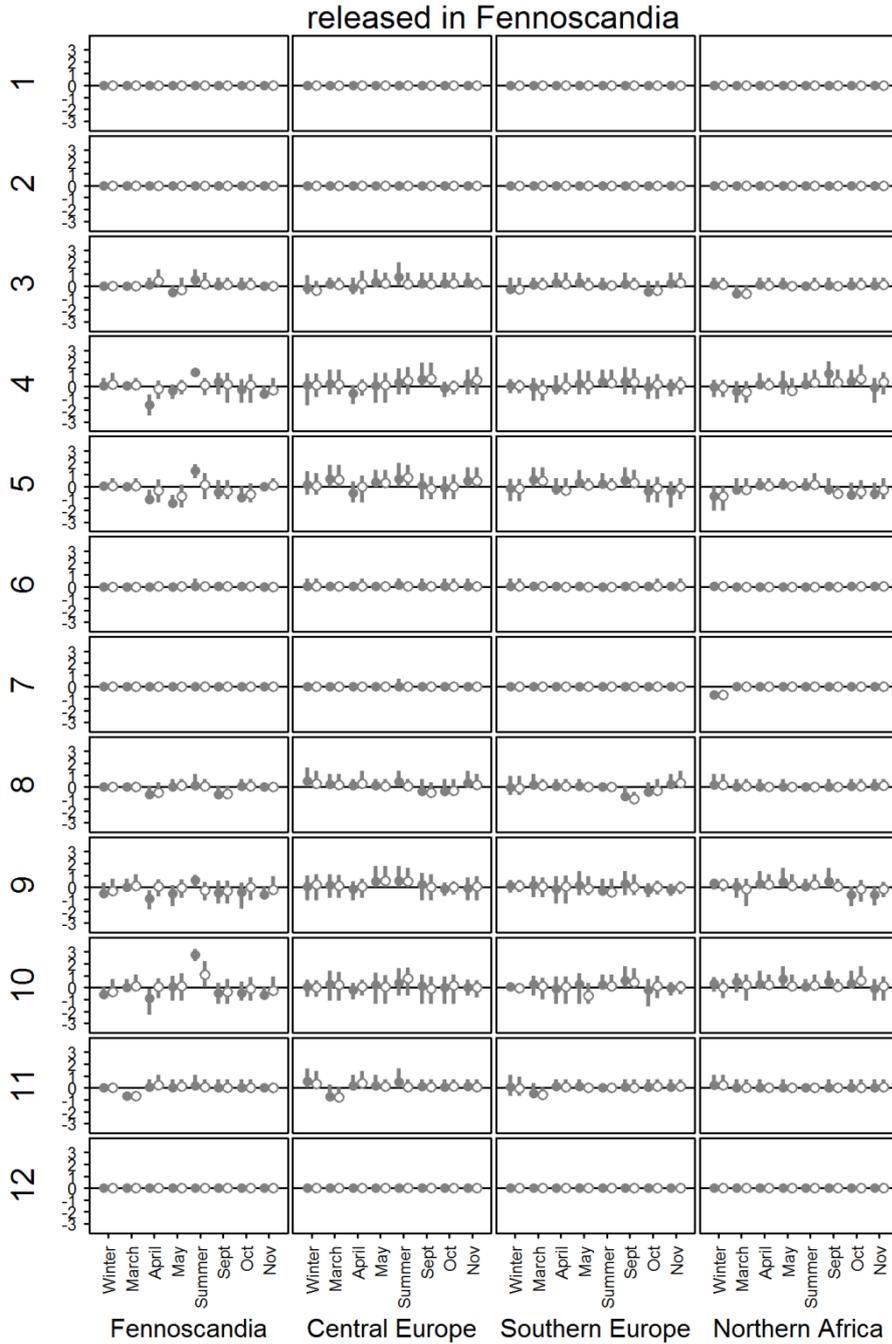


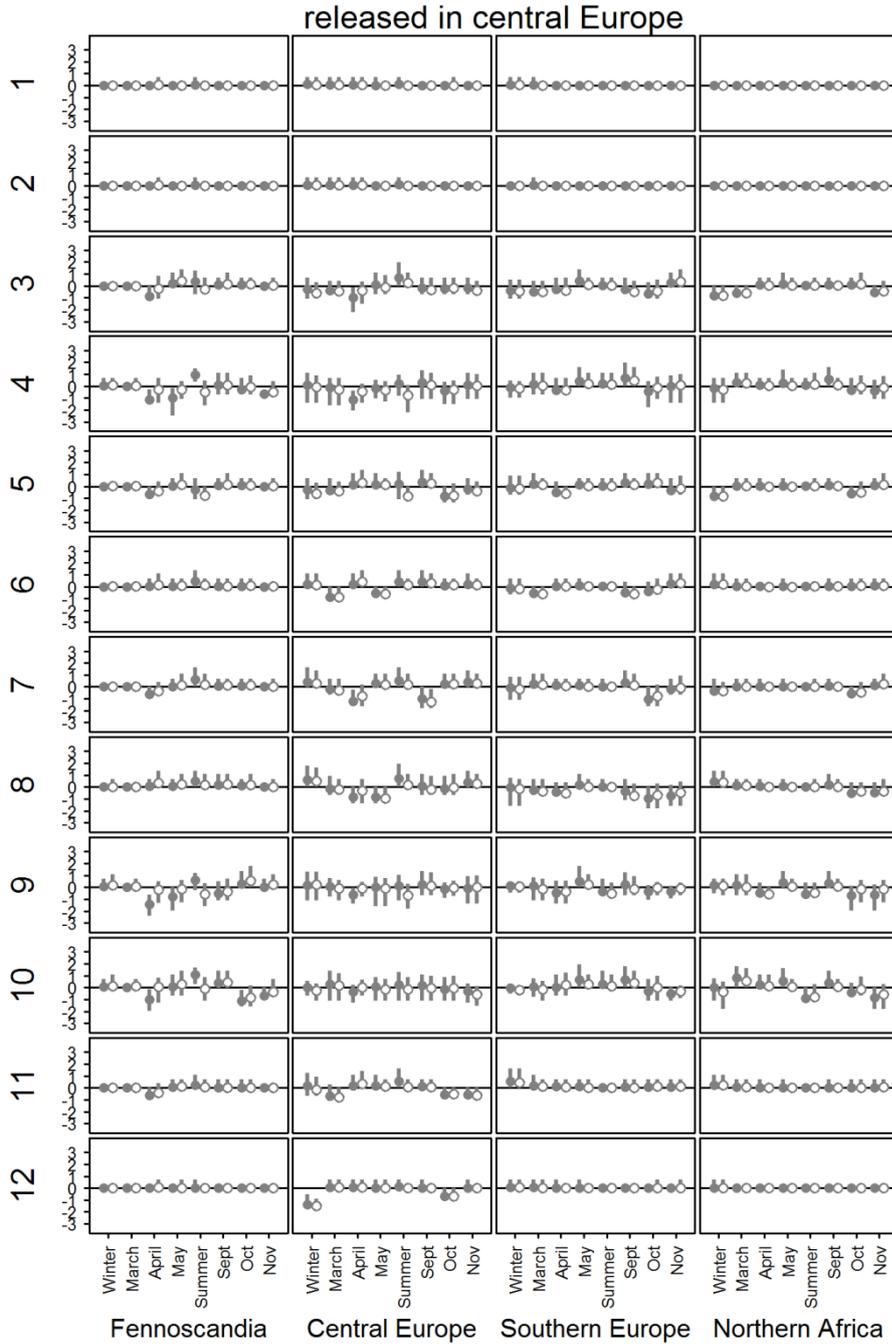
## **Supplementary information 4**

Korner-Nievergelt, Liechti, Thorup (2013): “A bird distribution model for ring recovery data: Where do the European robins go?”

Diagnostic figures from posterior predictive model checking for two models: 1) model assuming constant recovery probability over time (not presented in the main text), 2) model assuming season-dependent recovery probability (as presented in the main text). At the end, we shortly discuss why we favored the model with season-dependent recovery probabilities.



**Fig. S1. Mean and 95% interval of the posterior predictive distributions of the number of recoveries ( $\log(R^{new}_{ijkq}+1)$ ) centred around the observed number of recoveries in each region for each season (bottom axis) for birds ringed in Fennoscandia during a specific month (left outer axis). Filled grey = model with constant recovery probability, open grey = model with season-dependent recovery probability.**



**Fig. S2. Legend as in Fig. S1 but for birds ringed in central Europe.**

The two models we fitted differed in the number of parameters used to describe recovery probability. The season-constant recovery probability model included four different parameters for recovery probability, one for each region. In this model we assumed that recovery probability was constant during the year. The season-dependent recovery probability

model included 24 parameters for recovery probability, for each of the four regions 8 different probabilities for each season. We clearly favor the season-dependent recovery probability model, since recovery circumstances changes along the course of a year: during migration robins may be more prone to collide with human made structures than during the breeding season (e.g. Liechti, Guélat & Komenda-Zehnder 2013), or hunting pressure is clearly enhanced during hunting seasons. Also the DIC favors the season-dependent recovery probability model ( $\Delta\text{DIC} = 384$ , Spiegelhalter *et al.* 2002).

Liechti, F., J. Guélat, and S. Komenda-Zehnder. 2013. Modelling the spatial concentrations of bird migration to assess conflicts with wind turbines. *Biological Conservation* 162:24-32.

Spiegelhalter, D. J., N. G. Best, B. P. Carlin, and A. van der Linde. 2002. Bayesian measures of model complexity and fit. *Journal of the Royal Statistical Society, Series B* 64:1-34.