

Appendix C

Table S2 Identification of the best model for describing dispersal of *Pterostichus melanarius* in a mark-release-recapture experiment in Triticale undersown with grass/clover. Results of model selection using Akaike's Information Criterion (AIC) on three sets of models (models 1-4, 5&6 and 7&8). For the models 1-4 the catches of male and female beetles were added. The purpose of this model selection was to find the best model with respect to the boundary condition and error distribution. For models 5-6 and models 7-8 the model was optimized for the catches of only male or only female beetles, respectively to determine the support of data for the loss of beetles due to mark-wear and mortality. Parameter values in bold were fixed values during the optimization process.

Model	Boundary condition	Error dist.	NLL	AIC	Δ AIC	Model parameters				
						μ_{crop} $\text{m}^2 \text{d}^{-1}$	ξ d^{-1}	ω m^{-2}	μ_{srb} $\text{m}^2 \text{d}^{-1}$	k -
1	Reflective	NB	320.2	648.5	0	17.9	0.107	0.253		4.4
2	Absorbing	NB	320.7	649.5	1.0	20.4	0.005	0.164		6.4
3	Reflective	Poisson	321.9	649.9	1.4	17.8	0.096	0.224		
4	Slow-release	NB	319.9	649.9	1.4	17.0	0.114	0.282	295	4.3
5	Reflective	NB	239.0	484.0	0	19.3	0.104	0.286		4.4
6	Reflective	NB	248.4	500.9	16.9	22.5		0.099		4.4
7	Reflective	NB	178.5	363.0	0	15.5	0.096	0.204		4.4
8	Reflective	NB	183.2	370.4	7.4	17.4		0.080		4.4

μ_{crop} : motility inside the plot; ξ : relative loss rate due to mark wear, mortality and settlement; ω : trapping efficiency; μ_{srb} : motility in the slow-release boundary around the plot; k : dimensionless dispersion parameter of the negative binomial (NB) error distribution; NLL = negative log likelihood.

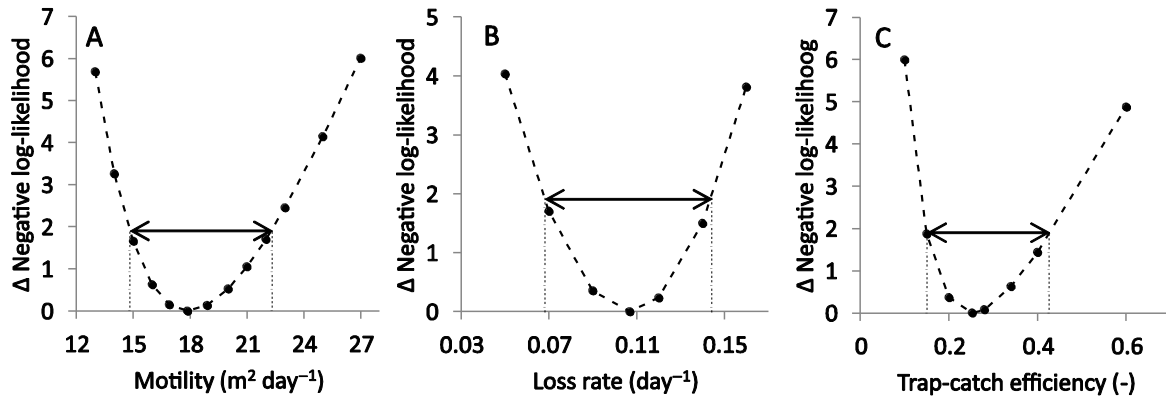


Fig. S1 Likelihood profile for the motility parameter μ (A), loss rate ξ (B) and trapping efficiency ω (C) for males and females *P. melanarius* combined (model 1, Table S2, Supplementary materials). The arrows indicate the 95% confidence interval for the estimated parameter values.

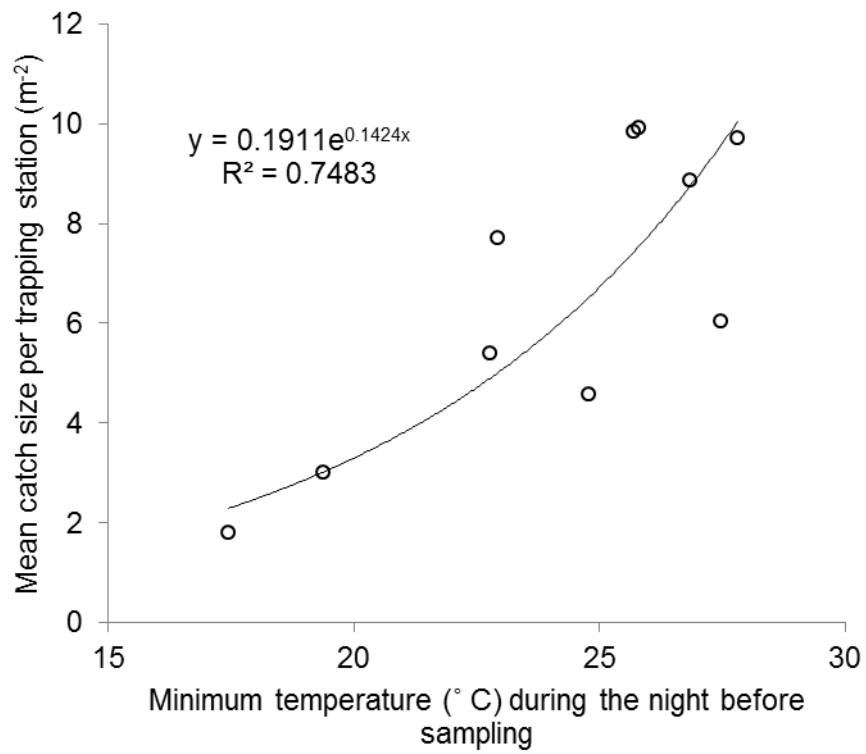


Fig. S2 Relationship between mean catch size of beetles per trapping station and the minimum temperature during the night before sampling. The solid line represents an exponential function fitted through the data.