

Ecography

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Supplementary material

Appendix 1

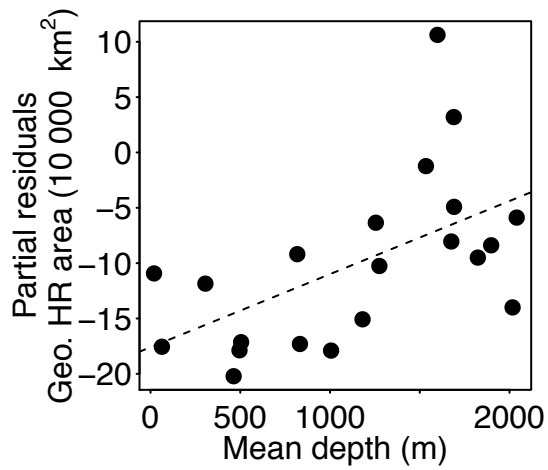


Figure A1. Relationships between the geographic home range and mean depth, the only variable for which the model-averaged CI excluded 0. The points represent the partial residuals of the final averaged model and the dashed line represents the component (i.e., the modeled relationship).

Table A1. Relative and absolute fit of the best models ($\Delta\text{AICc} \leq 4$) explaining the area of the geographic home range. The intrinsic and extrinsic variables were first considered separately. For each separate analysis, only the models that outperformed the null model and with an Akaike weight greater than 0.001 were retained for the final analysis. None of the combinations of intrinsic covariates outperformed the null model and thus only models with extrinsic covariates are presented.

Covariates included	df	ΔAICc	Akaike weight	R^2
depth + best ice	4	0.00	0.310	0.54
depth + land	4	0.62	0.227	0.53
depth	3	1.02	0.186	0.44
depth + drift	4	2.57	0.086	0.48
depth + best ice + drift	5	2.82	0.076	0.55
depth + best ice + land	5	3.07	0.067	0.55
depth + land + drift	5	3.74	0.048	0.53

Table A2. Estimates of the covariates' coefficient and relative importance in the geographic home range models. The average coefficients and associated CIs are based only on covariate combinations retained by the final analysis. In contrast, the AICc-based importance weight relies on all possible combinations of the pre-selected covariates (see Methods). The non-normalised random forest importance scores are also presented for the pre-selected covariates. Note that the values of the two importance measures are not directly comparable but the ordering is similar. The variable for which the CI excluded 0 is bolded.

Covariate	Coef	CI	Importance	
			AICc-based	Random forest-based
depth	0.008	0.003-0.013	0.98	13.60
drift	1.12	-1.59-3.83	0.23	2.93
best ice	24.09	-6.73-54.90	0.46	5.31
land (True)	-5.67	-14.82-3.48	0.35	2.86

Table A3. Relative and absolute fit of the best models ($\Delta\text{AICc} \leq 4$) explaining the total voluntary displacement. The intrinsic and extrinsic variables were first considered separately. For each separate analysis, only the models that outperformed the null model and with an Akaike weight greater than 0.001 were retained for the final analysis.

Covariates included	df	ΔAICc	Akaike weight	R^2
drift + land	4	0.00	0.327	0.78
drift + land + age	5	1.43	0.160	0.80
drift + land + sex	5	1.54	0.151	0.80
drift + land + depth	5	2.24	0.106	0.80
drift + land + depth + sex	6	3.09	0.070	0.82
drift + land + iceNA	5	3.09	0.070	0.78
drift + land + best ice	5	3.44	0.058	0.78
drift + land + depth + age	6	3.45	0.058	0.82

Table A4. Relative fit of covariates and their coefficient for post-hoc analysis of total voluntary displacement. The average coefficients and associated CIs are based only on covariate combinations retained by the final analysis. In contrast, the AICc-based importance weight relies on all possible combinations of the pre-selected covariates (see Methods). The non-normalised random forest importance scores are also presented for the pre-selected covariates. Note that the values of the two importance measures are not directly comparable but the ordering is similar. The variables for which the CI excluded 0 are bolded..

Covariate	Coef	CI	Importance	
			AIC-based	Random forest-based
age (Subadult)	549.3	-265.6-1364.3	0.29	5.19
cub (True)	153.5	-641.6-948.6	0.13	-0.60
depth	0.35	-0.23-0.92	0.28	3.33
drift	374.5	107.8-641.2	0.91	9.03
best ice	1216	-3626-6059	0.15	5.91
iceNA	-3.16	-13.31-6.99	0.15	1.75
land (True)	-1974	-2936- -1012	0.99	10.57
sex (Male)	583.9	-280.9-1448.7	0.28	-0.17