

IMPACTS OF POWER LINES ON BROWN BEAR MOVEMENT IN CENTRAL SWEDEN

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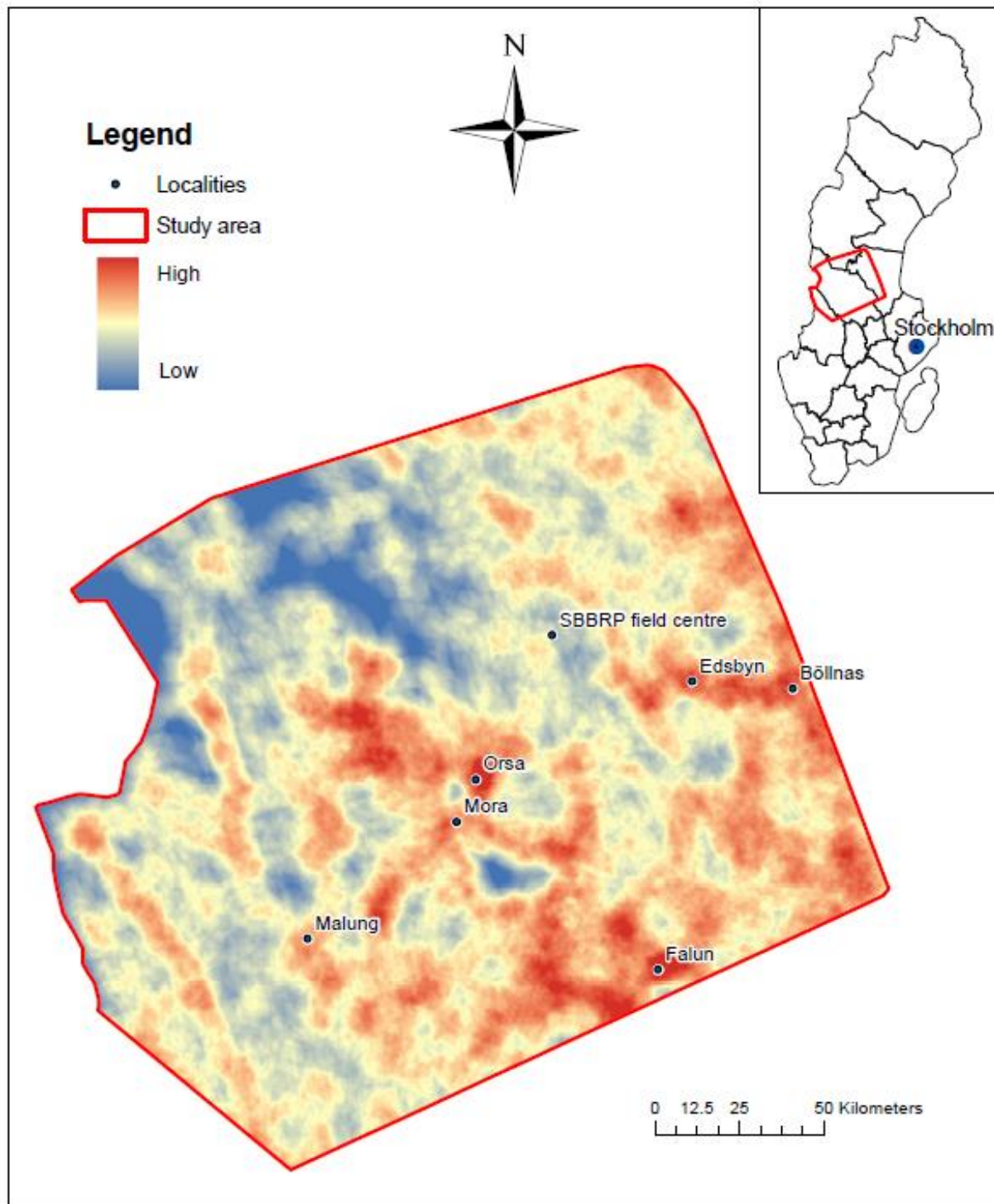
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7. Appendices

7.1. Maps of the study area



Roads density map of the study area

Created using data from GSD Landmäteriet

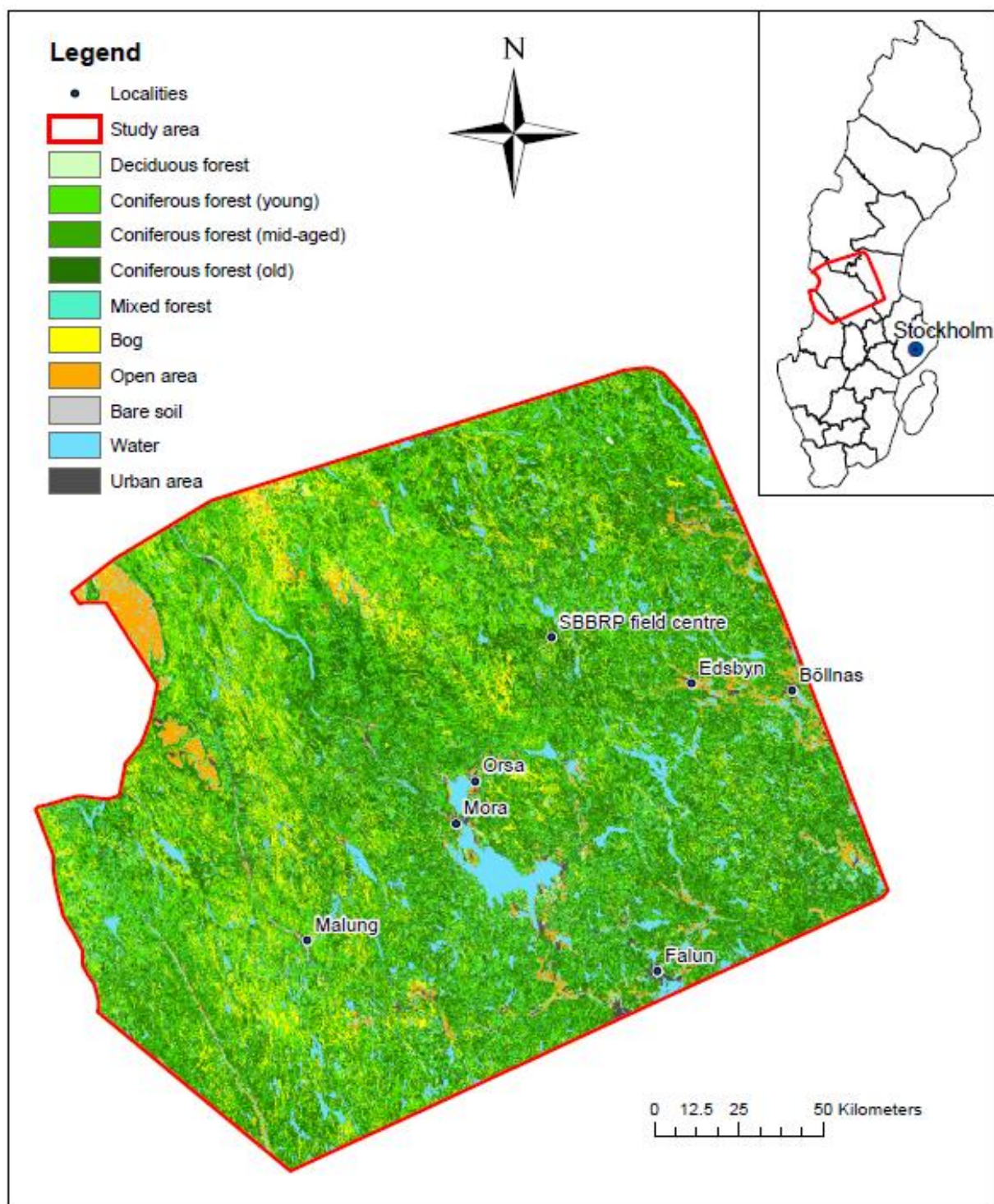
Coordinate system : SWEREF 99

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Björnprojektet



Land cover map of the study area

Created using data from GSD Landmateriet

Coordinate system : SWEREF 99

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7.2. Bear movements' graphs per reproductive status and time of the year

A. Solitary bears during the mating season

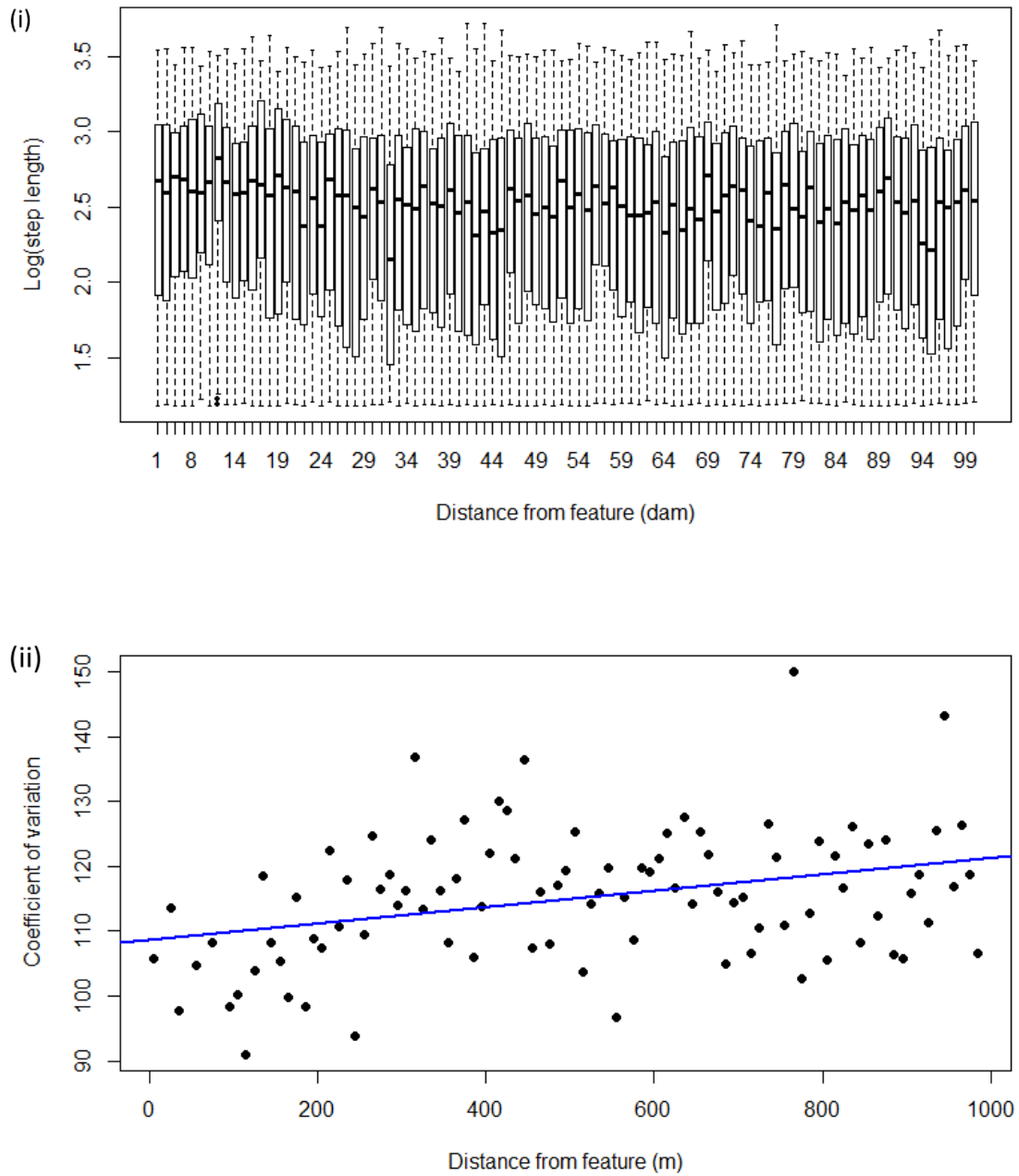


Figure 7. (i) Distribution of step length by distance lag relative to power line for solitary bears during the mating season. (ii) The movement parameters in each lag are summarized to a single value using the coefficient of variation and a regression line is fit to the data to approximate the spatial dependence structure relative to the disturbance feature.

B. Mothers with cub(s) during the mating season

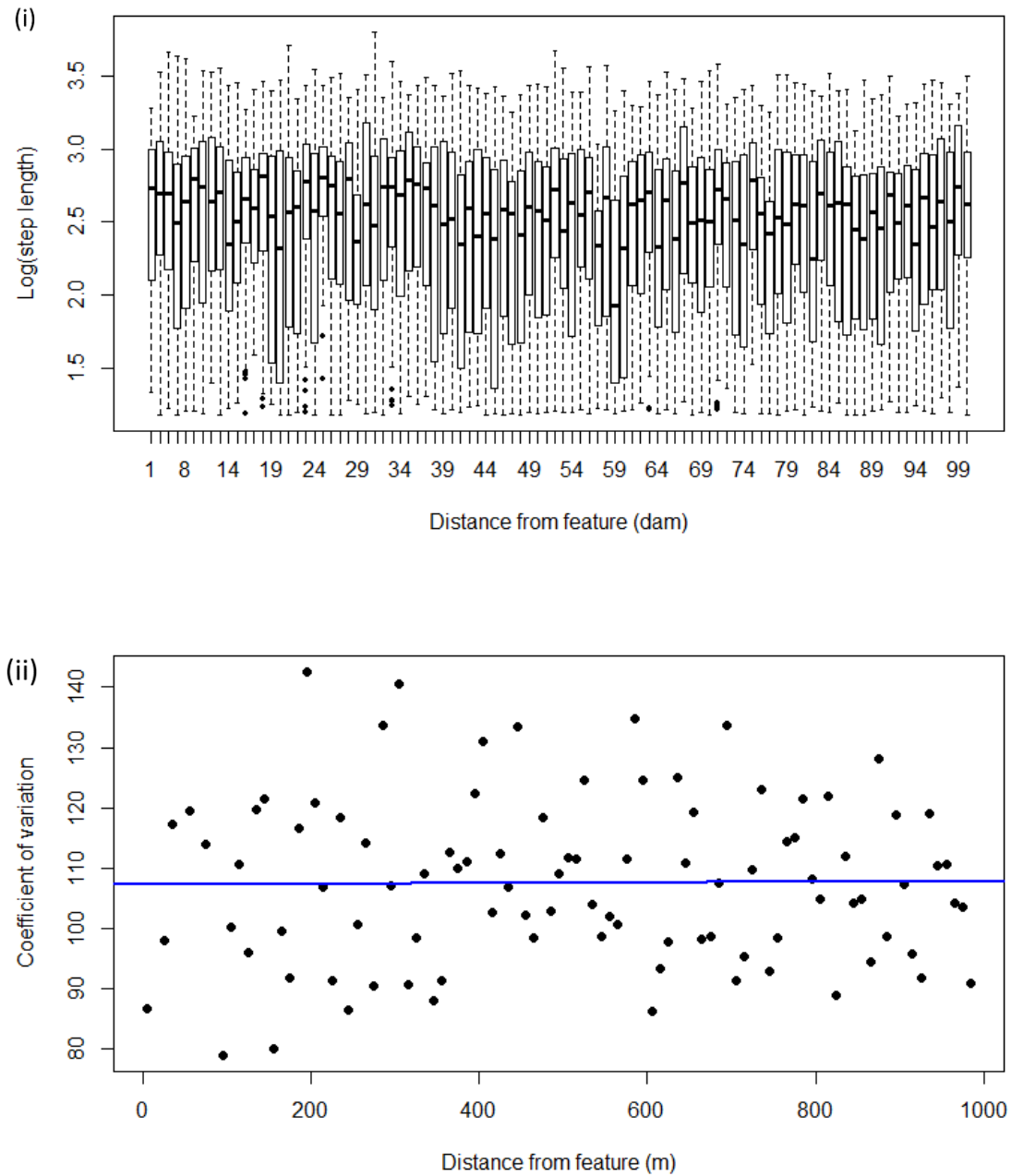


Figure 8. (i) Distribution of step length by distance lag relative to power line for mothers with cub(s) during the mating season. (ii) The movement parameters in each lag are summarized to a single value using the coefficient of variation and a regression line is fit to the data to approximate the spatial dependence structure relative to the disturbance feature.

C. Subadult bears during the mating season

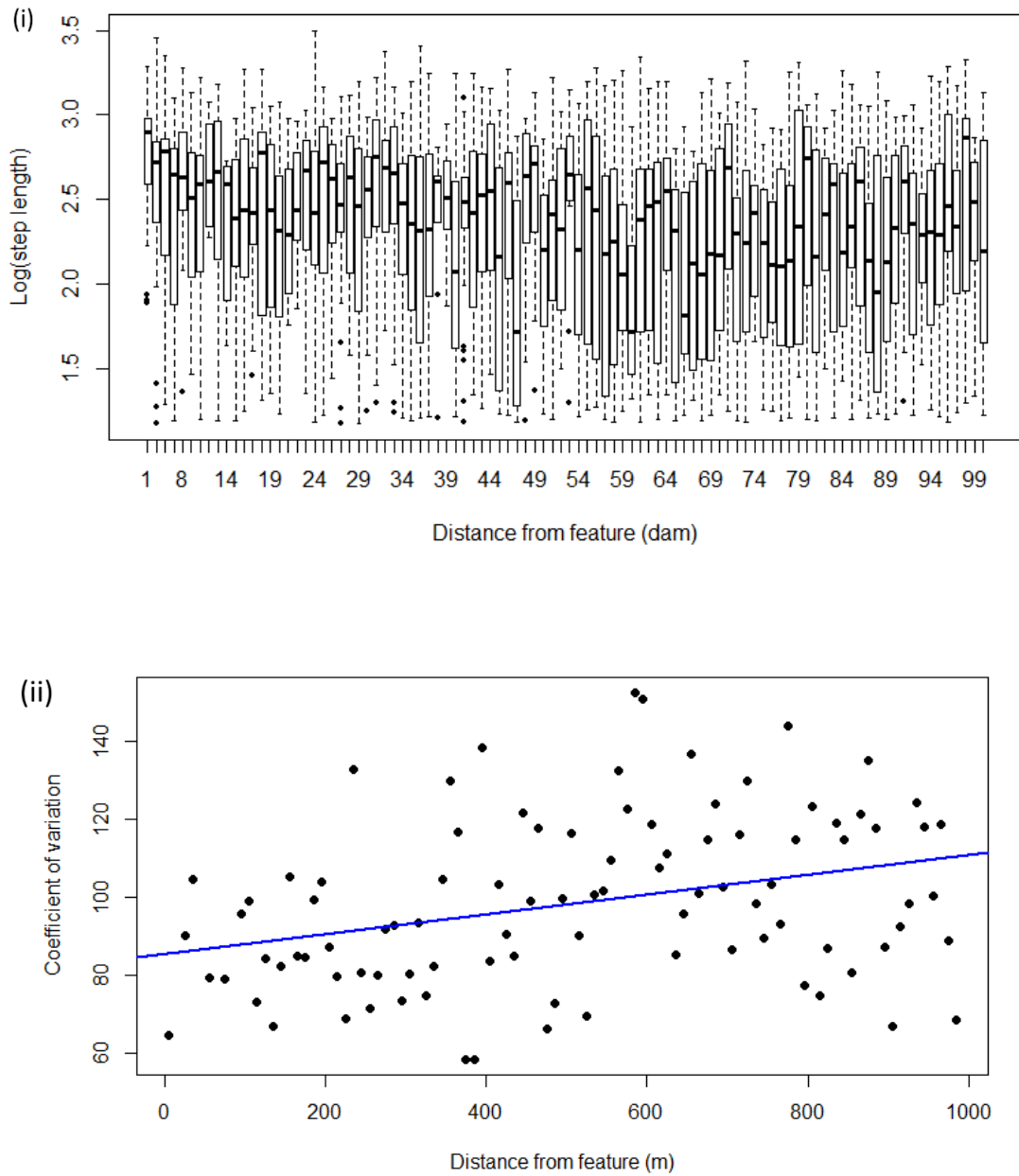


Figure 9. (i) Distribution of step length by distance lag relative to power line for subadult bears during the mating season. (ii) The movement parameters in each lag are summarized to a single value using the coefficient of variation and a regression line is fit to the data to approximate the spatial dependence structure relative to the disturbance feature.

D. Solitary bears during the berry season

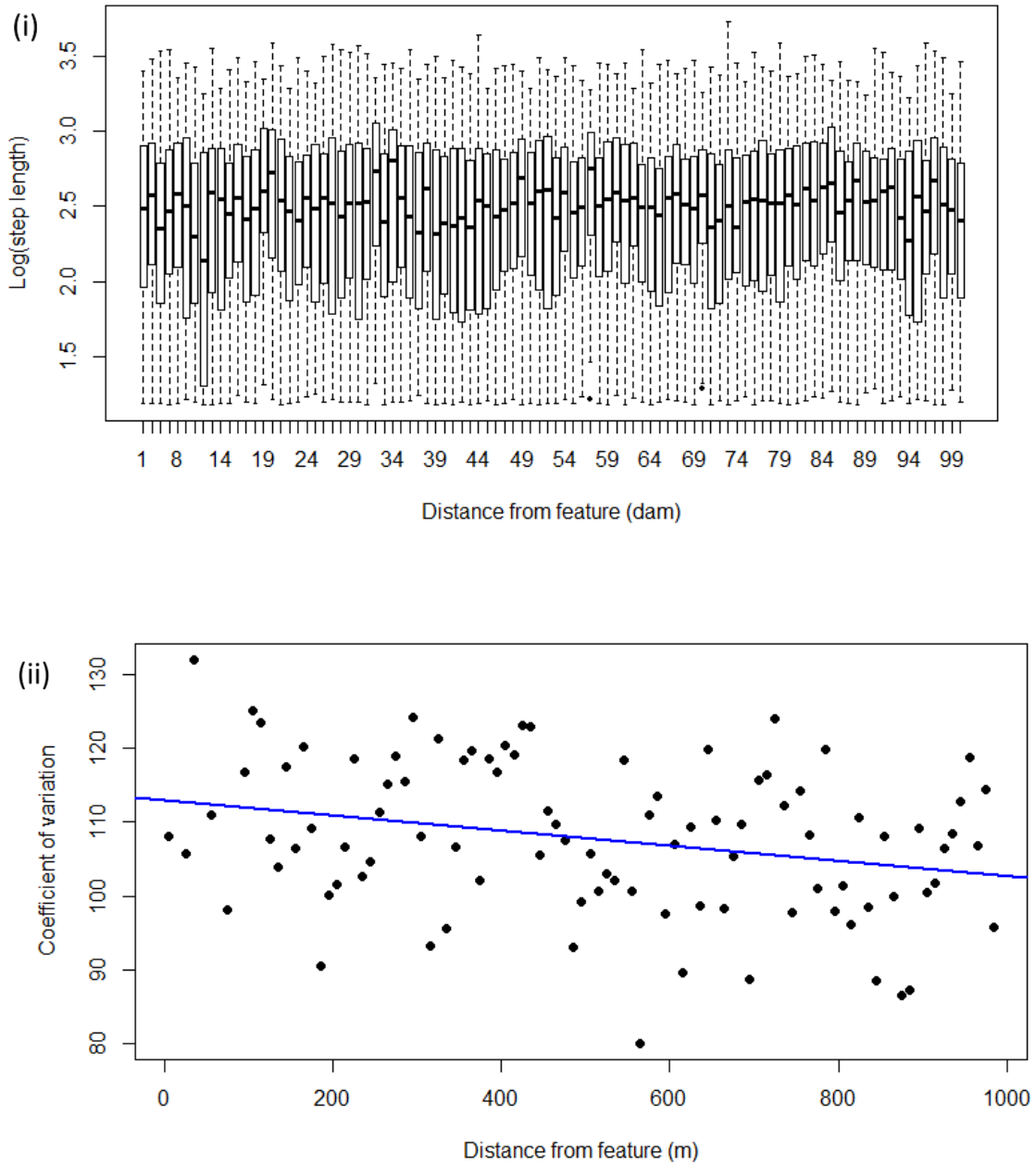


Figure 10. (i) Distribution of step length by distance lag relative to power line for solitary bears during the berry season. (ii) The movement parameters in each lag are summarized to a single value using the coefficient of variation and a regression line is fit to the data to approximate the spatial dependence structure relative to the disturbance feature.

E. Mothers with cub(s) during the berry season

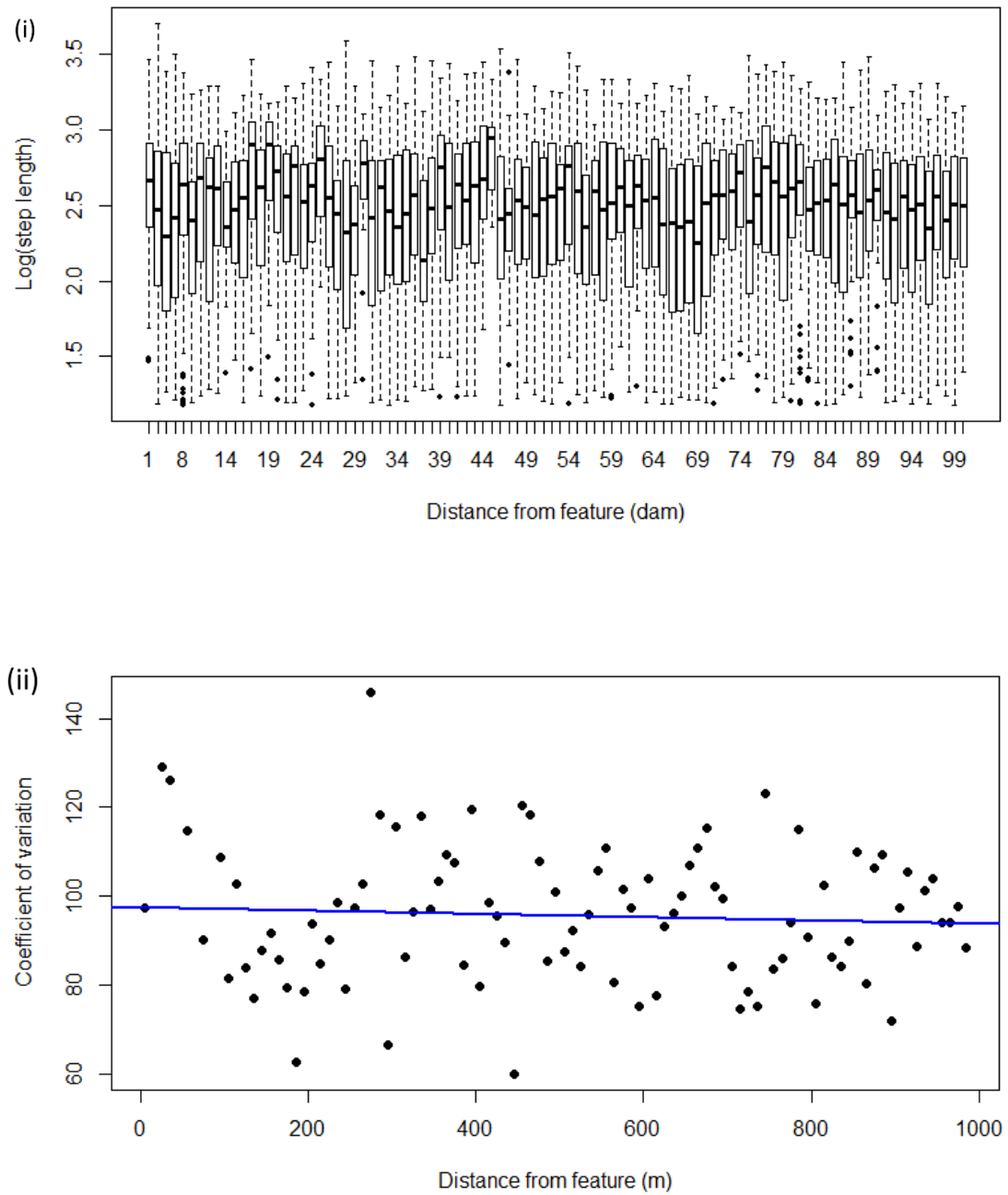


Figure 11. (i) Distribution of step length by distance lag relative to power line for mothers with cub(s) during the berry season. (ii) The movement parameters in each lag are summarized to a single value using the coefficient of variation and a regression line is fit to the data to approximate the spatial dependence structure relative to the disturbance feature.

F. Subadult bears during the berry season

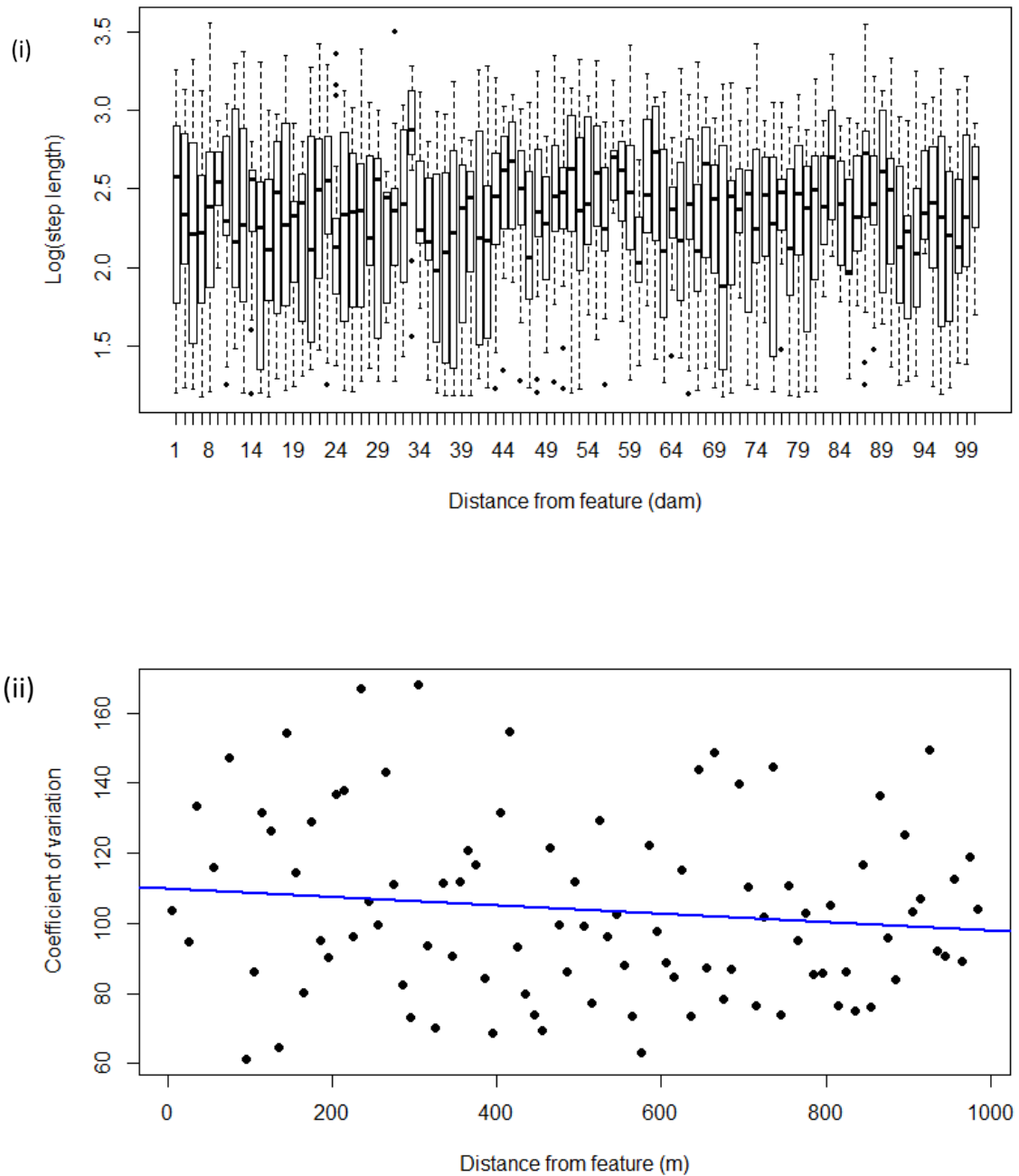


Figure 12. (i) Distribution of step length by distance lag relative to power line for subadult bears during the berry season. (ii) The movement parameters in each lag are summarized to a single value using the coefficient of variation and a regression line is fit to the data to approximate the spatial dependence structure relative to the disturbance feature.

G. Solitary bears during the hunting season

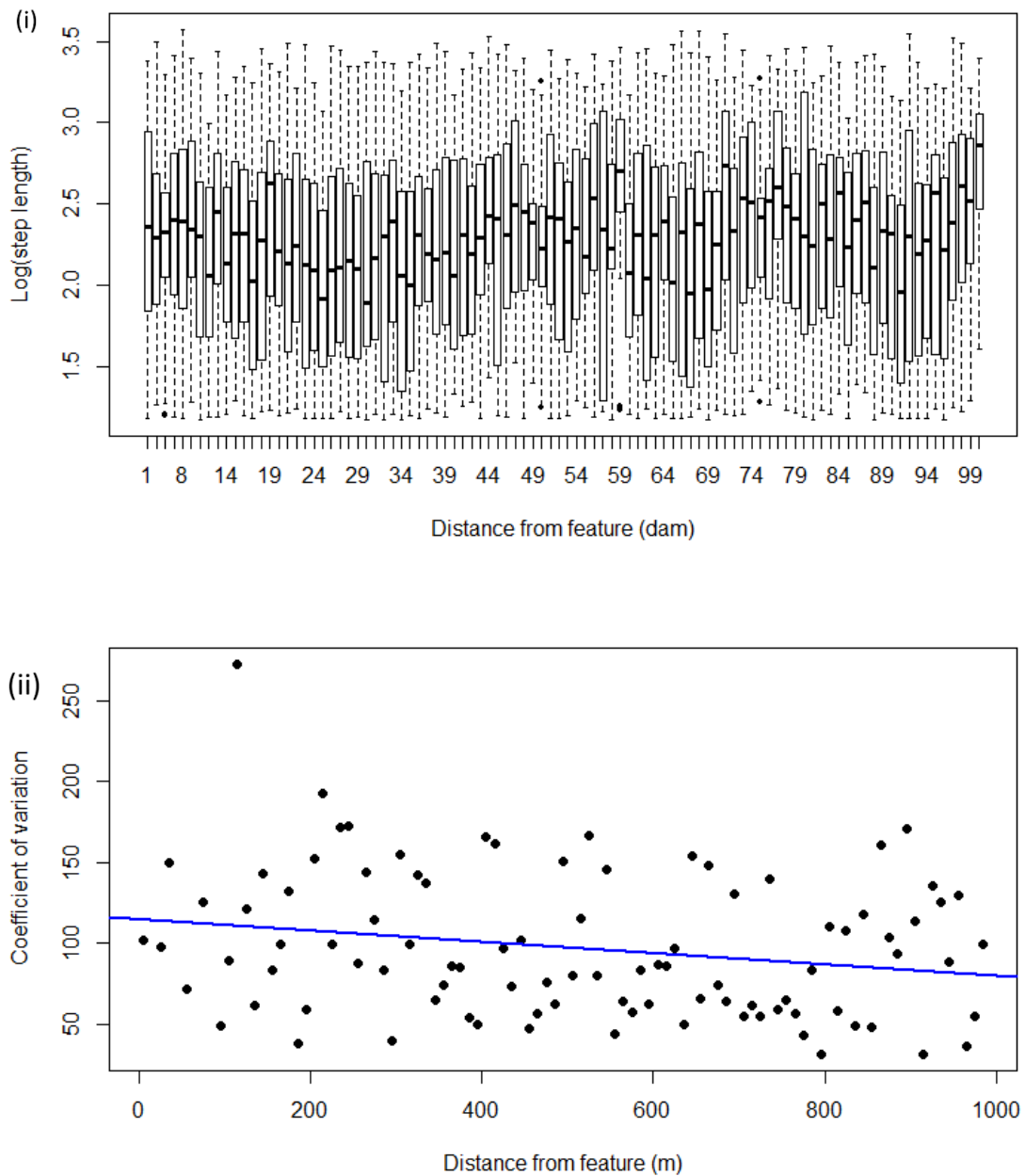


Figure 13. (i) Distribution of step length by distance lag relative to power line for solitary bears during the hunting season. (ii) The movement parameters in each lag are summarized to a single value using the coefficient of variation and a regression line is fit to the data to approximate the spatial dependence structure relative to the disturbance feature.

H. Mothers with cub(s) during the hunting season

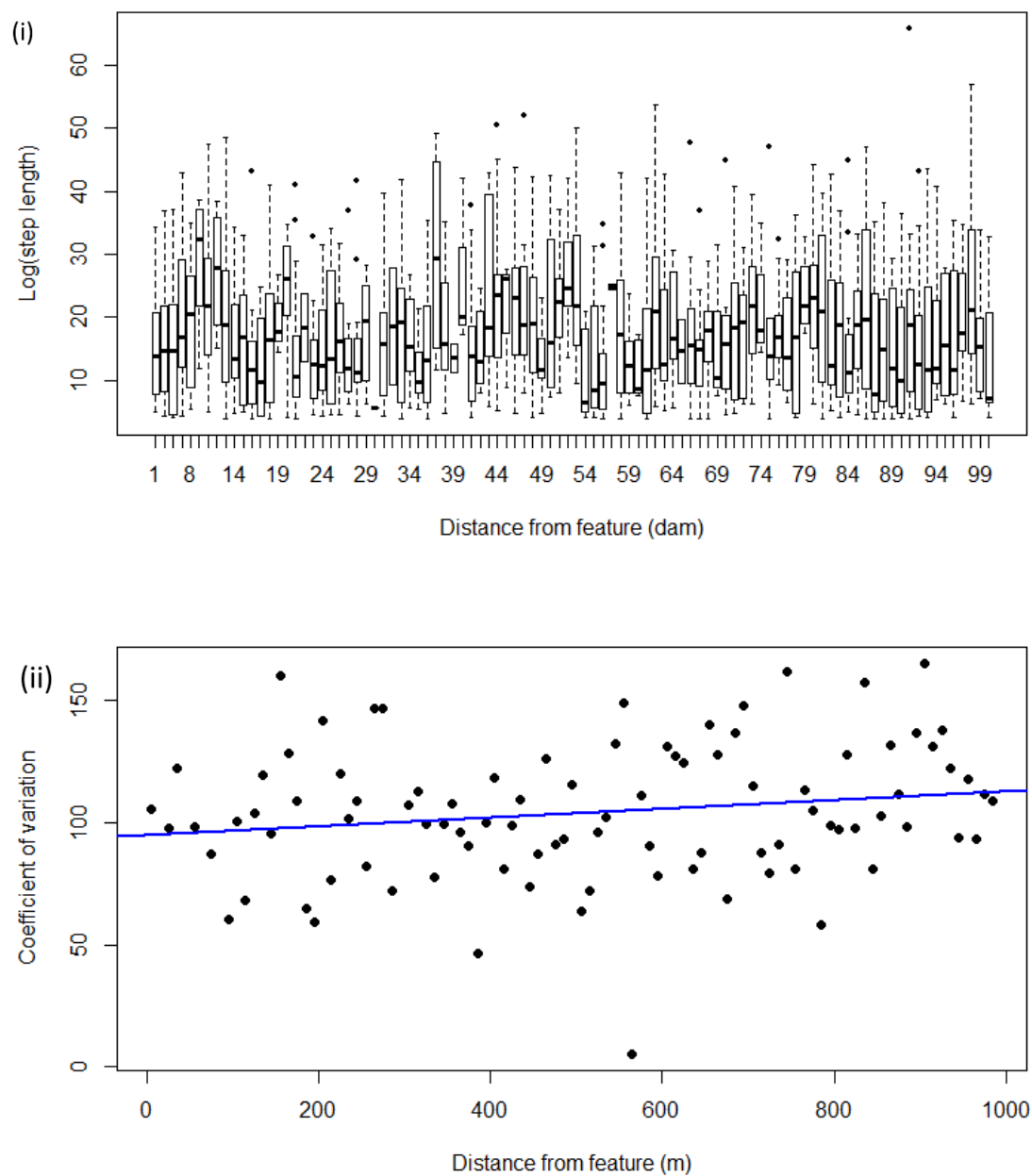


Figure 14. (i) Distribution of step length by distance lag relative to power line for mothers with cub(s) during the hunting season. (ii) The movement parameters in each lag are summarized to a single value using the coefficient of variation and a regression line is fit to the data to approximate the spatial dependence structure relative to the disturbance feature.

I. Subadult bears during the hunting season

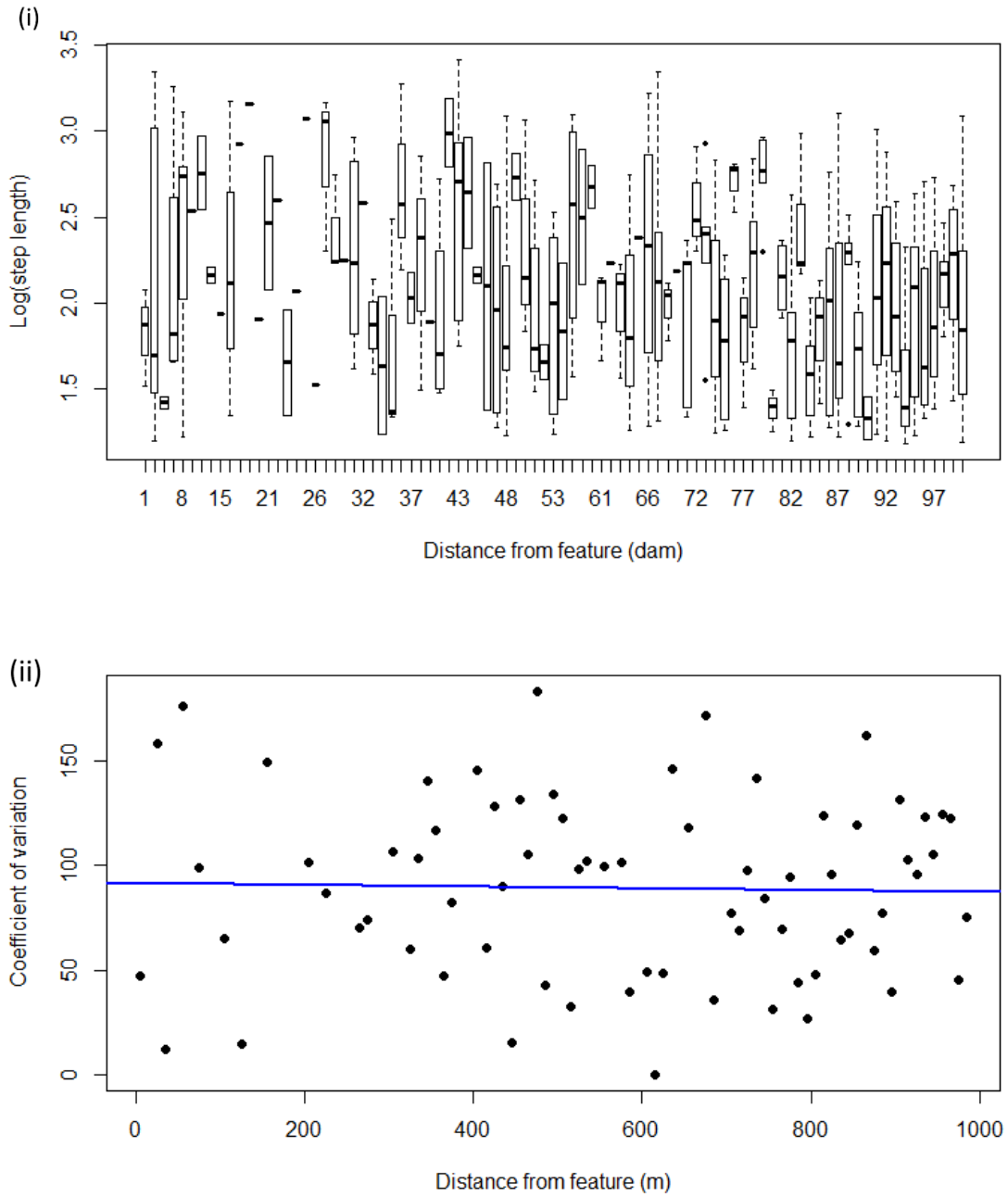


Figure 15. (i) Distribution of step length by distance lag relative to power line for subadult bears during the hunting season. (ii) The movement parameters in each lag are summarized to a single value using the coefficient of variation and a regression line is fit to the data to approximate the spatial dependence structure relative to the disturbance feature.

7.3. Multiple linear regression: results per reproductive status and season

> summary (ALL BEARS x ALL SEASONS)

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom [lmerMod]

Formula: log10(speed) ~ poly(epl_distance, 2) + poly(road_distance, 2) + as.factor(soil_occup) + poly(slope) + poly(urban_density) + (1 | bearyear)

REML criterion at convergence: 130513.3

Scaled residuals:				
Min	1Q	Median	3Q	Max
-2.6745	-0.8127	0.14	0.8029	2.8008

Random effects:		
Groups	Name	Variance
	bearyear (Intercept)	0.04036
	Residual	0.3793
Standard deviation		0.6159
Number of observations: 69 452		groups: bearyear (n=265)

Fixed effects:						
	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	2.38E+00	2.61E-02	2.89E+03	91.321	2.00E-16	***
poly(epl_distance,2)1	-2.70E+00	6.49E-01	6.94E+04	-4.157	3.23E-05	***
poly(epl_distance,2)2	-9.18E-01	6.33E-01	6.94E+04	-1.448	0.14751	
poly(road_distance,2)1	-1.17E+01	6.52E-01	6.94E+04	-17.873	2.00E-16	***
poly(road_distance,2)2	1.20E+01	6.31E-01	6.94E+04	19.027	2.00E-16	***
as.factor(soil_occup)2	1.10E-02	2.28E-02	6.93E+04	0.482	0.62956	
as.factor(soil_occup)3	-1.69E-02	2.29E-02	6.93E+04	-0.738	0.46036	
as.factor(soil_occup)4	-2.46E-02	2.29E-02	6.93E+04	-1.074	0.28281	
as.factor(soil_occup)5	-7.07E-02	2.68E-02	6.93E+04	-2.642	0.00824	**
as.factor(soil_occup)6	1.92E-01	2.53E-02	6.93E+04	7.597	3.06E-14	***
as.factor(soil_occup)7	-1.30E-01	3.11E-02	6.93E+04	-4.178	2.94E-05	***
as.factor(soil_occup)9	1.35E-01	4.15E-02	6.92E+04	3.246	0.00117	**
as.factor(soil_occup)10	1.93E-01	2.53E-01	6.92E+04	0.762	0.44631	
poly(slope)	-6.17E+00	6.94E-01	6.89E+04	-8.881	2.00E-16	***
poly(urban_density)	2.22E+00	6.87E-01	6.88E+04	3.232	0.00123	**
Signification codes : 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						

> ANOVA (ALL BEARS x ALL SEASONS)

Analysis of Variance Table of type III with Satterthwaite approximation for degrees of freedom							
	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)	
poly(epl_distance,2)	0.3225	0.1612	2	3898.9	0.4443	0.641307	
poly(road_distance,2)	18.3638	9.1819	2	3893.2	25.2999	1.21E-11	***
as.factor(soil_occup)	7.6305	0.9538	8	3876.7	2.6282	0.007188	**
poly(slope)	0.1446	0.1446	1	3741.3	0.3983	0.527993	
poly(urban_density)	0.4704	0.4704	1	3556.9	1.2961	0.255000	
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 ' ' = 1							

> summary (MATING SOLITARY)

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom [lmerMod]

Formula: log10(speed) ~ poly(epl_distance, 2) + poly(road_distance, 2) + as.factor(soil_occup) + poly(slope) + poly(urban_density) + (1 | bearyear)

REML criterion at convergence: 29117.1

Scaled residuals:				
Min	1Q	Median	3Q	Max
-2.7079	-0.8105	0.2056	0.8117	2.2350

Random effects:		
Groups	Name	Variance
	bearyear (Intercept)	0.04035
	Residual	0.42354
Number of observations: 14 579		groups: bearyear (n=121)

Fixed effects:						
	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	2.465E+00	4.882E-02	2.684E+03	5.049E+01	2.000E-16	***
poly(epl_distance,2)1	-2.688E+00	6.684E-01	1.456E+04	-4.022E+00	5.810E-05	***
poly(epl_distance,2)2	1.846E+00	6.689E-01	1.454E+04	2.760E+00	5.790E-03	**
poly(road_distance,2)1	-4.334E+00	6.769E-01	1.456E+04	-6.403E+00	1.570E-10	***
poly(road_distance,2)2	5.570E+00	6.664E-01	1.453E+04	8.358E+00	2.000E-16	***
as.factor(soil_occup)2	3.398E-02	4.552E-02	1.450E+04	7.460E-01	4.554E-01	
as.factor(soil_occup)3	-1.108E-04	4.566E-02	1.450E+04	-2.000E-03	9.981E-01	
as.factor(soil_occup)4	-2.840E-02	4.558E-02	1.451E+04	-6.230E-01	5.333E-01	
as.factor(soil_occup)5	-3.741E-02	5.654E-02	1.450E+04	-6.620E-01	5.082E-01	
as.factor(soil_occup)6	2.365E-01	4.991E-02	1.450E+04	4.739E+00	2.170E-06	***
as.factor(soil_occup)7	1.607E-01	1.340E-01	1.450E+04	1.199E+00	2.305E-01	
as.factor(soil_occup)9	1.411E-02	7.479E-02	1.451E+04	1.890E-01	8.504E-01	
as.factor(soil_occup)10	8.114E-01	6.540E-01	1.445E+04	1.241E+00	2.148E-01	
poly(slope)	-1.446E+00	7.131E-01	1.448E+04	-2.028E+00	4.260E-02	*
poly(urban_density)	2.779E+00	7.035E-01	1.452E+04	3.950E+00	7.860E-05	***
Signification codes : 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1						

> ANOVA (MATING SOLITARY)

Analysis of Variance Table of type III with Satterthwaite approximation for degrees of freedom							
	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)	
poly(epl_distance,2)	10.071	50.356	2	14545	11.889	6,93E-06	***
poly(road_distance,2)	47.280	236.400	2	14547	55.815	2,20E-16	***
as.factor(soil_occup)	48.629	60.786	8	14515	14.352	2,20E-16	***
poly(slope)	1.742	17.416	1	14480	4.112	0,0426	*
poly(urban_density)	6.608	66.076	1	14523	15.601	7,86E-05	***
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 ' ' = 1							

> summary (MATING MOTHER)

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom [lmerMod]

Formula: log10(speed) ~ poly(epl_distance, 2) + poly(road_distance, 2) + as.factor(soil_occup) + poly(slope) + poly(urban_density) + (1 | bearyear)

REML criterion at convergence: 9838

Scaled residuals				
Min	1Q	Median	3Q	Max
-2.6404	-0.7256	0.2308	0.7695	2.2345

Random effects:		
Groups	Name	Variance
		Standard deviation
bearyear	(Intercept)	0.04302
		0.2074
	Residual	0.37803
		0.6148
Number of observations: 5 221		groups: bearyear (n=41)

Fixed effects :						
	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	2.2123	0.1191	1860	18.576	2.00E-16	***
poly(epl_distance,2)1	-0.8504	0.634	5194	-1.341	0.179889	
poly(epl_distance,2)2	2.8288	0.6312	5199	4.481	7.57E-06	***
poly(road_distance,2)1	-2.357	0.6514	5201	-3.618	0.000299	***
poly(road_distance,2)2	3.9979	0.6298	5179	6.348	2.37E-10	***
as.factor(soil_occup)2	0.314	0.1147	5179	2.738	0.006208	**
as.factor(soil_occup)3	0.3262	0.115	5179	2.837	0.00457	**
as.factor(soil_occup)4	0.2383	0.1152	5181	2.068	0.038645	*
as.factor(soil_occup)5	0.1648	0.1295	5181	1.272	0.203334	
as.factor(soil_occup)6	0.3616	0.1188	5183	3.045	0.002342	**
as.factor(soil_occup)7	-0.1216	0.2626	5207	-0.463	0.643309	
as.factor(soil_occup)9	0.6688	0.188	5182	3.557	0.000378	***
poly(slope)	-3.9503	0.7006	5091	-5.639	1.80E-08	***
poly(urban_density)	-0.9955	0.6658	5088	-1.495	0.134927	
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1						

> ANOVA (MATING MOTHER)

Analysis of Variance Table of type III with Satterthwaite approximation for degrees of freedom							
	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)	
poly(epl_distance,2)	8.2335	4.1168	2	5196.6	10.89	1.91E-05	***
poly(road_distance,2)	20.757	10.3785	2	5189.1	27.454	1.38E-12	***
as.factor(soil_occup)	15.3615	2.1945	7	5193.5	5.805	1.01E-06	***
poly(slope)	12.02	12.02	1	5091.1	31.796	1.81E-08	*
poly(urban_density)	0.8451	0.8451	1	5087.6	2.236	0.1349	***
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1							

> summary (MATING SUBADULT)

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom [lmerMod]

Formula: log10(speed) ~ poly(epl_distance, 2) + poly(road_distance, 2) + as.factor(soil_occup) + poly(slope) + poly(urban_density) + (1 | bearyear)

REML criterion at convergence: 3451.8

Scaled residual				
Min	1Q	Median	3Q	Max
-2.4247	-0.79	0.1726	0.7738	2.5671

Random effect:		
Groups	Name	Variance
	bearyear (Intercept)	0.005145
	Residual	0.303995
Number of observations: 2 083		groups: bearyear (n=10)

Fixed effects :						
	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	2.51	0.11116	735.8	22.581	2.00E-16	***
poly(epl_distance,2)1	-3.50382	0.57555	2067.9	-6.088	1.36E-09	***
poly(epl_distance,2)2	1.76943	0.5727	2068.8	3.09	0.00203	**
poly(road_distance,2)1	0.23014	0.57976	2008.6	0.397	0.69144	
poly(road_distance,2)2	2.41451	0.56204	1987.7	4.296	1.82E-05	***
as.factor(soil_occup)2	-0.08585	0.11054	2047.2	-0.777	0.43746	
as.factor(soil_occup)3	-0.19114	0.11056	2008.6	-1.729	0.08397	.
as.factor(soil_occup)4	-0.25239	0.1114	1935.6	-2.266	0.02358	*
as.factor(soil_occup)5	-0.32755	0.12823	2039.6	-2.554	0.01071	*
as.factor(soil_occup)6	-0.01176	0.11957	2019.5	-0.098	0.92165	
as.factor(soil_occup)7	0.06558	0.56293	2065.7	0.116	0.90727	
as.factor(soil_occup)9	-0.0113	0.16469	2059.4	-0.069	0.94531	
poly(slope)	-3.56155	0.61977	2005	-5.747	1.05E-08	***
poly(urban_density)	-1.67713	0.61899	588	-2.709	0.00694	**
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1						

> ANOVA (MATING SUBADULT)

Analysis of Variance Table of type III with Satterthwaite approximation for degrees of freedom							
	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)	
poly(epl_distance,2)	14.2925	7.1462	2	2068.1	23.508	8,036E-11	***
poly(road_distance,2)	5.6263	2.8131	2	1956.5	9.254	1,000E-04	***
as.factor(soil_occup)	12.457	1.7796	7	1917.82	5.854	9,666E-07	***
poly(slope)	10.0387	10.0387	1	2005.01	33.023	1,051E-08	***
poly(urban_density)	2.2317	2.2317	1	588.05	7.341	6,936E-03	**
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1							

> summary (BERRY SOLITARY)

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom [lmerMod]

Formula: $\log_{10}(\text{speed}) \sim \text{poly}(\text{epl_distance}, 2) + \text{poly}(\text{road_distance}, 2) + \text{as.factor}(\text{soil_occup}) + \text{poly}(\text{slope}) + \text{poly}(\text{urban_density}) + (1 \mid \text{bearyear})$

REML criterion at convergence: 17343.6

Scaled residuals				
Min	1Q	Median	3Q	Max
-2.6950	-0.6821	0.1895	0.7758	2.3667

Random effects:		
Groups	Name	Variance
	bearyear (Intercept)	0.01612
	Residual	0.33975
Number of observations: 9 774		groups: bearyear (n=92)

Fixed effects :						
	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	2.400E+00	5.157E-02	4.175E+03	4.653E+01	2.000E-16	***
poly(epl_distance,2)1	-2.907E-01	6.134E-01	9.750E+03	-4.740E-01	6.356E-01	
poly(epl_distance,2)2	9.627E-01	6.021E-01	9.760E+03	1.599E+00	1.099E-01	
poly(road_distance,2)1	-3.283E+00	6.174E-01	9.745E+03	-5.318E+00	1.070E-07	***
poly(road_distance,2)2	3.628E+00	6.007E-01	9.759E+03	6.040E+00	1.600E-09	***
as.factor(soil_occup)2	1.687E-02	5.025E-02	9.746E+03	3.360E-01	7.372E-01	
as.factor(soil_occup)3	9.819E-02	5.083E-02	9.750E+03	1.932E+00	5.340E-02	.
as.factor(soil_occup)4	8.736E-02	5.070E-02	9.756E+03	1.723E+00	8.490E-02	.
as.factor(soil_occup)5	-5.629E-03	6.076E-02	9.729E+03	-9.300E-02	9.262E-01	
as.factor(soil_occup)6	2.612E-01	6.043E-02	9.744E+03	4.322E+00	1.560E-05	***
as.factor(soil_occup)7	-1.504E-01	6.708E-02	9.754E+03	-2.242E+00	2.500E-02	*
as.factor(soil_occup)9	3.362E-01	1.214E-01	9.722E+03	2.771E+00	5.600E-03	**
poly(slope)	-3.517E+00	6.504E-01	8.832E+03	-5.407E+00	6.560E-08	***
poly(urban_density)	3.474E-01	6.690E-01	8.807E+03	5.190E-01	6.036E-01	
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1						

> ANOVA (BERRY SOLITARY)

Analysis of Variance Table of type III with Satterthwaite approximation for degrees of freedom							
	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)	
poly(epl_distance,2)	0.935	0.4674	2	9753.2	1.376	0.2527	
poly(road_distance,2)	21.541	10.7705	2	9756.8	31.701	1.89E-14	***
as.factor(soil_occup)	31.993	4.5704	7	9724.5	13.452	2.20E-16	***
poly(slope)	9.934	9.9342	1	8832	29.239	6.56E-08	***
poly(urban_density)	0.092	0.0916	1	8806.6	0.27	0.6036	
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1							

> summary (BERRY MOTHER)

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom [lmerMod]

Formula: $\log_{10}(\text{speed}) \sim \text{poly}(\text{epl_distance}, 2) + \text{poly}(\text{road_distance}, 2) + \text{as.factor}(\text{soil_occup}) + \text{poly}(\text{slope}) + \text{poly}(\text{urban_density}) + (1 \mid \text{bearyear})$

REML criterion at convergence: 6978

Scaled residuals				
Min	1Q	Median	3Q	Max
-2.6334	-0.6159	0.2061	0.7611	2.0577

Random effects		
Groups	Name	Variance
		Standard deviation
bearyear	(Intercept)	0.01143
		0.1069
	Residual	0.30361
		0.551
Number of observations: 4 201		groups: bearyear (n=37)

Fixed effects :						
	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	2.61086	0.18634	4130	14.011	<2e-16	***
poly(epl_distance,2)1	-0.82824	0.59176	4180	-1.4	0.1617	
poly(epl_distance,2)2	0.70147	0.57731	4185	1.215	0.2244	
poly(road_distance,2)1	-0.73725	0.59543	4105	-1.238	0.2157	
poly(road_distance,2)2	0.72014	0.57222	4183	1.258	0.2083	
as.factor(soil_occup)2	-0.17205	0.1859	4167	-0.926	0.3548	
as.factor(soil_occup)3	-0.15869	0.18622	4167	-0.852	0.3942	
as.factor(soil_occup)4	-0.12184	0.18611	4169	-0.655	0.5127	
as.factor(soil_occup)5	-0.25041	0.19188	4168	-1.305	0.192	
as.factor(soil_occup)6	0.00559	0.19308	4169	0.029	0.9769	
as.factor(soil_occup)7	-0.3702	0.19138	4164	-1.934	0.0531	.
as.factor(soil_occup)9	0.07225	0.24511	4175	0.295	0.7682	
poly(slope)	-1.04942	0.63669	3054	-1.648	0.0994	.
poly(urban_density)	0.86303	0.57278	4062	1.507	0.132	
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1						

> ANOVA (BERRY MOTHER)

Analysis of Variance Table of type III with Satterthwaite approximation for degrees of freedom							
	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)	
poly(epl_distance,2)	0.9889	0.49447	2	4183	1.6286	0.1963	
poly(road_distance,2)	0.9412	0.47061	2	4147.1	1.55	0.2124	
as.factor(soil_occup)	9.9664	1.42377	7	4164.1	4.6894	2.919E-05	***
poly(slope)	0.8248	0.82483	1	3054.1	2.7167	0.0994	.
poly(urban_density)	0.6893	0.68929	1	4061.9	2.2703	0.1320	
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1							

> summary (BERRY SUBADULT)

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom [lmerMod]

Formula: log10(speed) ~ poly(epl_distance, 2) + poly(road_distance, 2) + as.factor(soil_occup) + poly(slope) + poly(urban_density) + (1 | bearyear)

REML criterion at convergence: 2193.9

Scaled residual				
Min	1Q	Median	3Q	Max
-2.7989	-0.6731	0.1167	0.7667	2.3355

Random effect:		
Groups	Name	Variance
bearyear	(Intercept)	0.01657
Residual		0.2904
Number of observations: 1 356		groups: bearyear (n=10)

Fixed effects :						
	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	2.23846	0.10818	197.1	20.691	2.00E-16	***
poly(epl_distance,2)1	1.46505	0.56922	1341.8	2.574	0.010165	*
poly(epl_distance,2)2	-0.59273	0.55153	1341.3	-1.075	0.282701	
poly(road_distance,2)1	-1.11992	0.56581	1336	-1.979	0.047984	*
poly(road_distance,2)2	0.64338	0.54804	1338.3	1.174	0.240616	
as.factor(soil_occup)2	0.22083	0.10225	1339.2	2.16	0.030971	*
as.factor(soil_occup)3	0.08	0.10269	1338.6	0.779	0.436115	
as.factor(soil_occup)4	0.07892	0.10276	1340.4	0.768	0.442632	
as.factor(soil_occup)5	-0.05254	0.12461	1342	-0.422	0.673358	
as.factor(soil_occup)6	0.45238	0.1197	1336.6	3.779	0.000164	***
as.factor(soil_occup)7	0.47006	0.55063	1334.5	0.854	0.393434	
as.factor(soil_occup)9	0.42345	0.55408	1335.4	0.764	0.444859	
poly(slope)	-0.44572	0.61919	1217.8	-0.72	0.471758	
poly(urban_density)	1.1598	0.61177	1242.5	1.896	0.058217	.
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1						

> ANOVA (BERRY SUBADULT)

Analysis of Variance Table of type III with Satterthwaite approximation for degrees of freedom							
	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)	
poly(epl_distance,2)	2.2656	1.1328	2	1341.5	3.9008	0.02046	*
poly(road_distance,2)	1.5317	0.76586	2	1337.5	2.6372	0.07193	.
as.factor(soil_occup)	13.2868	1.89811	7	1333.9	6.5361	1.33E-07	***
poly(slope)	0.1505	0.15048	1	1217.8	0.5182	0.47176	
poly(urban_density)	1.0437	1.04374	1	1242.5	3.5941	0.05822	.
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1							

> summary (HUNTING SOLITARY)

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom [lmerMod]

Formula: $\log_{10}(\text{speed}) \sim \text{poly}(\text{epl_distance}, 2) + \text{poly}(\text{road_distance}, 2) + \text{as.factor}(\text{soil_occup}) + \text{poly}(\text{slope}) + \text{poly}(\text{urban_density}) + (1 \mid \text{bearyear})$

REML criterion at convergence: 7261.7

Scaled residuals				
Min	1Q	Median	3Q	Max
-2.31842	-0.79449	0.07656	0.79422	2.42009

Random effects:		
Groups	Name	Variance
	bearyear (Intercept)	0.05005
	Residual	0.36292
Number of observations: 3 916		groups: bearyear (n=61)

Fixed effects :						
	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	2.425E+00	7.547E-02	9.280E+02	32.1360	0.0000	***
poly(epl_distance,2)1	2.961E-02	6.938E-01	3.898E+03	0.0430	0.9660	
poly(epl_distance,2)2	6.083E-01	6.512E-01	3.899E+03	0.9340	0.3503	
poly(road_distance,2)1	-1.834E+00	6.875E-01	3.887E+03	-2.6680	0.0077	**
poly(road_distance,2)2	4.192E+00	6.364E-01	3.900E+03	6.5870	0.0000	***
as.factor(soil_occup)2	-1.099E-01	6.887E-02	3.851E+03	-1.5960	0.1106	
as.factor(soil_occup)3	-6.151E-03	7.169E-02	3.862E+03	-0.0860	0.9316	
as.factor(soil_occup)4	-2.620E-02	7.217E-02	3.868E+03	-0.3630	0.7166	
as.factor(soil_occup)5	-8.401E-02	8.538E-02	3.853E+03	-0.9840	0.3252	
as.factor(soil_occup)6	-1.319E-01	8.601E-02	3.857E+03	-1.5330	0.1254	
as.factor(soil_occup)7	-9.621E-02	8.252E-02	3.865E+03	-1.1660	0.2438	
as.factor(soil_occup)9	-1.337E-01	1.608E-01	3.882E+03	-0.8310	0.4058	
as.factor(soil_occup)10	8.399E-02	3.103E-01	3.864E+03	0.2710	0.7867	
poly(slope)	4.376E-01	6.933E-01	3.741E+03	0.6310	0.5280	
poly(urban_density)	-1.078E+00	9.469E-01	3.557E+03	-1.1380	0.2550	
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1						

> ANOVA (HUNTING SOLITARY)

Analysis of Variance Table of type III with Satterthwaite approximation for degrees of freedom							
	Sum Sq	Mean Sq	NumDF	DenDF	F.value	Pr(>F)	
poly(epl_distance,2)	0.3225	0.1612	2	3898.9	0.4443	0.641307	
poly(road_distance,2)	18.3638	9.1819	2	3893.2	25.2999	1.21E-11	***
as.factor(soil_occup)	7.6305	0.9538	8	3876.7	2.6282	0.007188	**
poly(slope)	0.1446	0.1446	1	3741.3	0.3983	0.527993	
poly(urban_density)	0.4704	0.4704	1	3556.9	1.2961	0.255000	
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1							

> summary (HUNTING MOTHER)

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom [lmerMod]

Formula: $\log_{10}(\text{speed}) \sim \text{poly}(\text{epl_distance}, 2) + \text{poly}(\text{road_distance}, 2) + \text{as.factor}(\text{soil_occup}) + \text{poly}(\text{slope}) + \text{poly}(\text{urban_density}) + (1 \mid \text{bearyear})$

REML criterion at convergence: 1938

Scaled residuals				
Min	1Q	Median	3Q	Max
-2.2620	-0.7533	0.1101	0.7762	2.2922

Random effects:		
Groups	Name	Variance
	bearyear (Intercept)	0.01429
	Residual	0.30691
Standard deviation		0.1195
		0.554
Number of observations: 1 155		groups: bearyear (n=22)

Fixed effects :						
	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	2.66099	0.39604	1140.6	6.719	2.88E-11	***
poly(epl_distance,2)1	-0.88255	0.59913	1132.2	-1.473	0.141	
poly(epl_distance,2)2	0.20472	0.58492	1140.7	0.35	0.7264	
poly(road_distance,2)1	-0.73608	0.60004	1096.7	-1.227	0.2202	
poly(road_distance,2)2	1.35474	0.5716	1139.8	2.37	0.018	*
as.factor(soil_occup)2	-0.26398	0.39617	1136.7	-0.666	0.5053	
as.factor(soil_occup)3	-0.37193	0.39717	1137.9	-0.936	0.3492	
as.factor(soil_occup)4	-0.36301	0.39616	1139.1	-0.916	0.3597	
as.factor(soil_occup)5	-0.05167	0.43002	1137.9	-0.12	0.9044	
as.factor(soil_occup)6	0.03058	0.41371	1134.9	0.074	0.9411	
as.factor(soil_occup)7	-0.55662	0.41705	1129.2	-1.335	0.1823	
as.factor(soil_occup)9	0.24427	0.45717	1139.7	0.534	0.5932	
poly(slope)	-1.40758	0.67699	362.9	-2.079	0.0383	*
poly(urban_density)	1.44911	0.58846	947.2	2.463	0.014	*
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1						

> ANOVA (HUNTING MOTHER)

Analysis of Variance Table of type III with Satterthwaite approximation for degrees of freedom							
	Sum Sq	Mean Sq	Num DF	Den DF	F.value	Pr(>F)	
poly(epl_distance,2)	0.6988	0.34938	2	1137.79	1.1384	0.3207018	
poly(road_distance,2)	2.188	1.09398	2	1117.66	3.5645	0.0286335	*
as.factor(soil_occup)	8.5634	1.22334	7	970.2	3.986	0.0002621	***
poly(slope)	1.3268	1.32675	1	362.93	4.3229	0.0383038	*
poly(urban_density)	1.8611	1.86114	1	947.18	6.0641	0.0139725	*
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1							

> summary (HUNTING SUBADULT)

Linear mixed model fit by REML

t-tests use Satterthwaite approximations to degrees of freedom [lmerMod]

Formula: log10(speed) ~ poly(epl_distance, 2) + poly(road_distance, 2) + as.factor(soil_occup) + poly(slope) + poly(urban_density) + (1 | bearyear)

REML criterion at convergence: 495.6

Scaled residuals				
Min	1Q	Median	3Q	Max
-2.18681	-0.78913	0.01319	0.64656	2.5619

Random effects:		
Groups	Name	Variance
	bearyear (Intercept)	0.08453
	Residual	0.27055
Number of observations: 320		groups: bearyear (n=5)

Fixed effects :						
	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	1.84884	0.4082	69.85	4.529	2.38E-05	***
poly(epl_distance,2)1	-1.89809	0.56149	305.28	-3.38	0.000818	***
poly(epl_distance,2)2	-1.68304	0.55281	306.09	-3.045	0.002533	**
poly(road_distance,2)1	-0.01054	0.60137	305.59	-0.018	0.986025	
poly(road_distance,2)2	-0.69352	0.56032	302.93	-1.238	0.216776	
as.factor(soil_occup)2	0.38826	0.38294	304.33	1.014	0.311435	
as.factor(soil_occup)3	0.459	0.38259	303.2	1.2	0.231185	
as.factor(soil_occup)4	0.32607	0.39094	306.6	0.834	0.404888	
as.factor(soil_occup)5	0.35546	0.41261	302.74	0.861	0.38965	
as.factor(soil_occup)6	0.97369	0.45237	304.02	2.152	0.032153	*
poly(slope)	-0.49287	0.61121	307.99	-0.806	0.420637	
poly(urban_density)	-1.30537	0.9613	15.69	-1.358	0.193698	
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1						

> ANOVA (HUNTING SOLITARY)

Analysis of Variance Table of type III with Satterthwaite approximation for degrees of freedom							
	Sum Sq	Mean Sq	Num DF	Den DF	F.value	Pr(>F)	
poly(epl_distance,2)	5.2034	2.60171	2	305.124	9.6165	8.91E-05	***
poly(road_distance,2)	0.4149	0.20743	2	304.195	0.7667	0.46543	
as.factor(soil_occup)	2.5726	0.51451	5	304.285	1.9017	0.09382	.
poly(slope)	0.1759	0.17593	1	307.989	0.6503	0.42064	
poly(urban_density)	0.4989	0.49888	1	15.688	1.8440	0.19370	
Signification codes: '***' = 0.001 '**' = 0.01 '*' = 0.05 '.' = 0.1 '' = 1							

Should you, the reader, have any further questions regarding this report, do not hesitate to contact me:

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