

Research Article

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Perez G. 2022: Role of bank vole (*Myodes glareolus*) personality on tick burden (*Ixodes* spp.). Folia Parasitol. 69: 014. doi 10.14411/fp.2022.014

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Supporting information 1. Dataset with description of the variables used in the study.

Date	Hour	Minute	Trap	Genus	Species	Code	Sex	Repro	Weight	Ticks_L	Ticks_N	Ticks_F	Other	Comment	Num_capture	NumTest	Tot_dist_pl	Dist_in_pl	Dist_out_pl	Time_in_pl	N_entries	plTime_out_pl	Tot_freez_pl
26/06/2018	14	43	K04	Myodes	Myodes glareolus	Mygl03	Female	A	33.5	5	0	0	no	pregnant	1.1	R1.1.02	21.527	2.541	18.985	17.68	22	259.92	155.32
01/07/2018	14	24	B05	Myodes	Myodes glareolus	Mygl18	Male	A	33	11	0	0	mites	none	1.2	R1.6.01	48.745	8.818	39.927	54.12	41	236.8	112.24
01/07/2018	14	38	C06	Myodes	Myodes glareolus	Mygl05	Female	A	24.5	4	0	0	mites	pregnant	1.4	R1.6.02	29.634	3.254	26.38	12.36	23	272.72	132
01/07/2018	14	53	I01	Myodes	Myodes glareolus	Mygl14	Male	N	8	2	0	0	no	young_marked_neck	1.2	R1.6.03	9.752	0.909	8.843	8.6	5	273.44	229.76
01/07/2018	15	10	J02	Myodes	Myodes glareolus	Mygl09	Male	N	9	6	0	0	no	young	1.2	R1.6.04	27.871	6.939	20.932	59	32	229.16	79.4
01/07/2018	15	29	C01	Myodes	Myodes glareolus	Mygl06	Male	A	25	11	0	0	mites	legpL_broken	1.3	R1.6.05	26.963	8.311	18.652	71.56	67	228.4	117.24
01/07/2018	15	46	D06	Myodes	Myodes glareolus	Mygl11	Male	A	26	5	0	0	mites	none	1.4	R1.6.06	3.136	0.181	2.956	3.68	1	296.2	271.6
01/07/2018	16	10	E02	Myodes	Myodes glareolus	Mygl15	Male	A	29	6	1	0	mites	none	1.3	R1.6.07	2.012	1.375	0.637	208.56	2	6.84	277.6
01/07/2018	16	44	F10	Myodes	Myodes glareolus	Mygl17	Female	N	18.5	2	0	0	no	none	1.2	R1.6.08	10.753	2.741	8.012	49.96	12	246.68	228.12
01/07/2018	17	4	F11	Myodes	Myodes glareolus	Mygl12	Male	A	23.5	1	0	0	mites	none	1.3	R1.6.09	3.677	0.645	3.032	36.84	4	263.08	271.96
01/07/2018	17	18	G02	Myodes	Myodes glareolus	Mygl04	Female	N	17.5	2	0	0	no	none	1.4	R1.6.10	31.855	2.85	29.004	10.48	18	265.6	117.32
01/07/2018	17	37	G07	Myodes	Myodes glareolus	Mygl07	Female	N	18	0	0	0	mites	none	1.4	R1.6.11	31.812	2.222	29.59	18	16	256.48	141.2
01/07/2018	18	0	J01	Myodes	Myodes glareolus	Mygl21	Male	A	28.5	2	0	0	mites	none	1.1	R1.6.12	42.366	13.899	28.468	74.8	80	219.08	86.12
01/07/2018	18	25	K02	Myodes	Myodes glareolus	Mygl13	Female	N	21	0	0	0	no	none	1.3	R1.6.13	30.735	4.865	25.87	19.88	29	277.36	166.64
11/07/2018	14	34	K03	Myodes	Myodes glareolus	Mygl02	Female	A	32.5	0	0	0	no	marked_FlegpL	2.1	R2.1.01	12.23	1.48	10.75	16.64	13	283.08	196.92
12/07/2018	18	58	D08	Myodes	Myodes glareolus	MyglhM	Male	A	29	20	1	0	no	marked_FlegpRail	2.1	R2.2.07	6.461	1.604	4.857	7.96	8	256.68	254.2
13/07/2018	18	18	D08	Myodes	Myodes glareolus	MyglMFb	Male	A	29	8	0	0	chiggers	neck_wound_R	2.1	R2.3.05	0.304	0.126	0.178	0.56	0	0.64	298.88
13/07/2018	19	4	K06	Myodes	Myodes glareolus	MyglM-Fbg	Male	A	20.5	4	0	0	no	none	2.1	R2.3.08	15.481	1.057	14.424	28.68	7	185.72	200.04
13/07/2018	16	11	G01	Myodes	Myodes glareolus	MyglMFy	Male	A	30	16	3	1	chiggers	none	2.1	R2.3.02	7.274	0.405	6.869	0.24	1	183.48	267.68
14/07/2018	17	46	J02	Myodes	Myodes glareolus	MyglX18	Female	N	21	6	1	1	no	none	2.1	R2.4.01	19.777	3.884	15.893	10.52	29	215.48	190.04
14/07/2018	18	3	D08	Myodes	Myodes glareolus	MyglX16	Male	A	19.5	1	0	0	no	none	2.1	R2.4.02	5.916	1.631	4.285	7.56	11	290.56	254.24
14/07/2018	18	44	K05	Myodes	Myodes glareolus	MyglX17	Male	A	16.5	1	0	0	no	none	2.1	R2.4.05	4.078	0.863	3.215	111.72	7	115.32	265.24
14/07/2018	19	13	B05	Myodes	Myodes glareolus	MyglX15	Male	N	12	2	0	0	no	none	2.1	R2.4.07	30.443	6.512	23.931	28.44	37	256.56	135
14/07/2018	19	25	A03	Myodes	Myodes glareolus	MyglX14	Male	N	13	2	0	0	no	none	2.1	R2.4.08	12.896	2.427	10.47	27.72	17	255.6	218.6
14/07/2018	19	54	A01	Myodes	Myodes glareolus	MyglX13	Male	N	13	0	0	0	no	none	2.1	R2.4.09	1.769	0.131	1.639	11.08	0	279.6	279.2
12/07/2018	13	16	K04	Myodes	Myodes glareolus	Mygl01	Male	A	25	7	0	0	no	cheeksR_wound	2.1	R2.2.02	8.252	1.148	7.104	4.44	5	160.48	237.52
13/07/2018	19	19	J01	Myodes	Myodes glareolus	Mygl12	Male	A	20	3	0	0	no	none	2.1	R2.3.09	4.008	1.825	2.183	259.12	10	40.84	269.08
14/07/2018	18	59	E02	Myodes	Myodes glareolus	MyglMFy	Male	A	29	17	3	1	no	none	2.2	R2.4.06	10.828	2.05	8.778	11.12	15	269.04	224.04
11/07/2018	15	26	E05	Myodes	Myodes glareolus	Mygl14	Male	N	10	3	0	0	no	marked_Fuail	2.1	R2.1.04	11.389	1.96	9.429	10.6	10	148.76	242.68
12/07/2018	15	46	D07	Myodes	Myodes glareolus	Mygl15	Male	A	29.5	17	1	0	no	tail_broken_marked_FlegaR	2.1	R2.1.05	0.231	0	0.231	0	0	299.96	293.44
12/07/2018	18	30	C06	Myodes	Myodes glareolus	Mygl05	Female	A	23	7	1	0	no	none	2.2	R2.2.06	12.855	3.47	9.385	28.96	15	212.36	212.12
12/07/2018	15	35	D06	Myodes	Myodes glareolus	Mygl18	Male	A	31	16	0	0	no	none	2.1	R2.2.04	6.079	2.211	3.867	7.84	8	278.08	248.04
13/07/2018	17	51	K04	Myodes	Myodes glareolus	Mygl11	Male	A	27.5	10	0	0	chiggers	legpD_toe_broken	2.2	R2.3.03	2.168	0.147	2.021	1.16	0	236.64	272.44
13/07/2018	18	33	I05	Myodes	Myodes glareolus	Mygl01	Male	A	25	1	0	0	chiggers	cheeksR_wound	2.2	R2.3.06	1.02	0.128	0.892	4.8	0	280.92	278.56
14/07/2018	18	17	F02	Myodes	Myodes glareolus	Mygl04	Female	N	20	0	0	0	no	none	2.3	R2.4.03	5.6	0.196	5.404	0.4	2	478.92	449.04
14/07/2018	18	32	K01	Myodes	Myodes glareolus	Mygl13	Female	N	22.5	0	0	1	no	none	2.2	R2.4.04	2.268	0.231	2.036	0.72	1	292.6	272.68

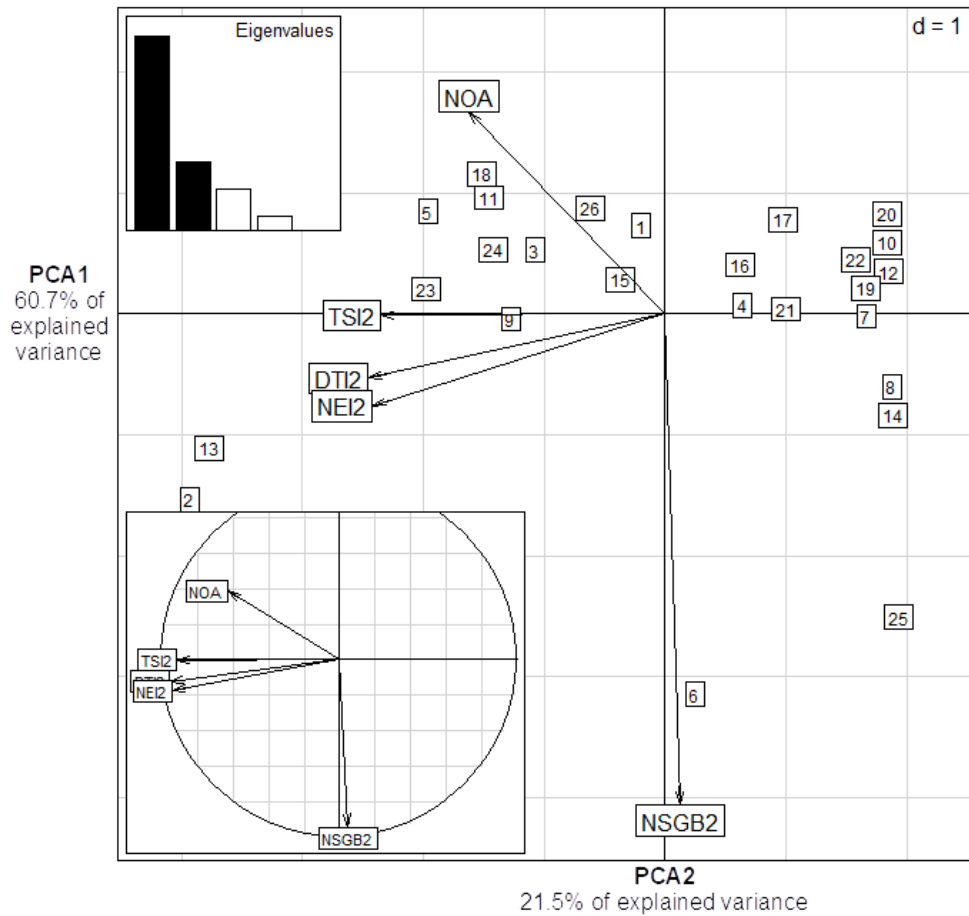
Supporting information 1. Dataset with description of the variables used in the study - continued from previous page

Freez_in_p1	Freez_out_p1	Avg_speed_p1	Grooming_score_p1	Tot_dist_p2	Dist_in_p2	Dist_out_p2	Time_in_p2	N_entries_p2	Time_out_p2	Tot_freez_p2	Freez_in_p2	Freez_out_p2	Avg_speed_p2	Grooming_score_p2	Object_approaches	N_test_repeat	mean_quest-ing_L_05m	mean_quest-ing_L_10m	mean_quest-ing_L_15m	mean_quest-ing_L_20m
2.36	152.96	0.166	1	14.533	2.663	11.871	28.44	12	262.88	173.24	8	165.24	0.055	2	5	1	0.000	15.400	15.818	13.800
21.2	91.04	0.17	5	30.11	10.405	19.705	83.04	67	211.08	170.32	40.92	129.4	0.107	6	1	1	0.000	0.000	0.000	0.048
1.4	130.6	0.108	1	19.169	4.451	14.718	34.56	26	262	170.92	10.68	160.24	0.068	2	5	1	0.000	0.000	0.067	0.042
1.84	227.92	0.038	3	11.082	1.715	9.367	11.92	10	153.12	215.8	3.04	212.76	0.071	4	3	1	4.000	6.250	8.455	8.056
12.72	66.68	0.1	4	25.748	5.242	20.506	51.44	27	238	95.32	20.4	74.92	0.092	2	8	1	15.250	12.571	11.077	8.529
21.68	95.56	0.095	20	18.374	2.873	15.501	13.36	18	270.92	152.48	2.08	150.4	0.071	17	3	1	0.000	0.000	0.091	0.067
1.36	270.24	0.017	7	3.473	0.134	3.339	1.08	1	297.96	278.04	0.36	277.68	0.018	4	1	1	0.000	0.125	0.050	3.308
189.44	88.16	0.014	6	1.625	0	1.625	0	0	278.64	56.8	0	256.8	0.014	6	0	1	0.333	0.111	2.385	2.095
38.24	189.88	0.04	1	11.71	2.136	9.574	72.68	20	224.92	226.72	63.28	163.44	0.043	5	5	1	1.250	1.143	5.923	4.529
32.84	239.12	0.016	2	0.041	0	0.041	0	0	297.96	297.04	0	297.04	0.003	1	0	1	2.500	1.333	1.000	5.133
0.56	116.76	0.119	1	27.893	4.651	23.242	33.96	30	256.64	116.04	9.52	106.52	0.1	1	7	1	1.250	4.000	3.400	5.789
5.44	135.76	0.119	1	0.88	0	0.88	0	0	298.12	286.08	0	286.08	0.008	2	0	1	23.000	11.000	7.294	6.967
5.96	160.68	0.107	3	32.363	11.828	20.535	52.24	67	240.04	117.84	7.6	110.24	0.115	5	3	1	2.667	13.143	9.200	8.529
3.64	193.28	0.045	5	17.917	3.245	14.673	27.52	19	217.76	232.88	0	232.88	0.026	7	0	1	14.000	12.200	12.727	10.286
1.2	253	0.032	5	6.612	2.006	4.606	13.96	11	138.24	260.88	3.64	257.24	0.051	2	2	1	0.000	0.000	0.375	3.850
0.04	298.84	0.254	5	4.775	1.634	3.141	5.44	11	35.92	283.16	0.44	282.72	0.121	0	1	1	0.000	0.000	0.375	3.850
20.72	179.32	0.077	1	26.382	4.564	21.818	42.88	22	236.12	108.44	12.68	95.76	0.099	1	8	1	1.333	0.857	3.900	3.000
0	267.68	0.047	4	4.675	0.227	4.448	0.08	1	41.88	279.52	0	279.52	0.118	3	1	1	15.250	12.571	11.077	8.529
0.36	189.68	0.094	5	1.138	0	1.138	0	0	283.88	279.8	0	279.8	0.009	0	0	1	0.000	0.000	0.375	3.850
1.72	252.52	0.025	5	10.381	1.044	9.338	4.12	4	244.36	235.88	0.6	235.28	0.049	5	4	1	0.000	0.000	18.000	11.800
105.16	160.08	0.023	3	2.839	0.311	2.528	3.12	1	277.6	266.52	1	265.52	0.017	2	1	1	0.000	5.833	18.000	11.800
7.24	127.76	0.111	8	24.44	5.711	18.729	39.28	30	248.04	156.16	16.44	139.72	0.09	5	9	1	0.000	0.000	0.000	0.048
16.84	201.76	0.049	3	20.917	3.973	16.944	54.48	15	209.72	148.36	27.76	120.6	0.083	4	8	1	0.000	0.000	0.000	0.000
10.24	268.96	0.011	15	1.483	0	1.483	0	0	299.84	283.08	0	283.08	0.009	14	0	1	0.000	0.000	0.000	0.000
1.68	235.84	0.056	6	15.706	3.593	12.113	8.8	19	189.52	208.68	0.52	208.16	0.084	3	9	1	0.000	15.400	15.818	13.800
242.04	27.04	0.017	0	0.225	0	0.225	0	0	299.96	294.76	0	294.76	0.004	0	0	2	NA	NA	NA	NA
4.32	219.72	0.045	11	6.223	0.379	5.844	4.96	3	279.4	243.04	3.84	239.2	0.026	5	1	2	NA	NA	NA	NA
3.6	239.08	0.055	5	3.828	0.663	3.165	0.84	2	101.36	281.04	0	281.04	0.031	0	2	2	NA	NA	NA	NA
0	293.44	0.007	5	0.448	0	0.448	0	0	299.96	285.36	0	285.36	0.007	0	0	2	NA	NA	NA	NA
13	199.12	0.063	4	10.502	2.148	8.354	11.8	9	232.08	236.28	3.92	232.36	0.05	2	6	2	NA	NA	NA	NA
0.96	247.08	0.026	3	12.623	3.872	8.751	25.68	22	240.08	226.92	9.12	217.8	0.053	5	1	2	NA	NA	NA	NA
0.04	272.4	0.006	3	12.685	0.741	11.944	8.8	6	237.28	183.4	4.12	179.28	0.06	3	2	2	NA	NA	NA	NA
4.4	274.16	0	4	14.555	1.707	12.848	9.8	11	267.88	202.44	2.64	199.8	0.058	4	4	2	NA	NA	NA	NA
0	449.04	0.022	0	0.16	0	0.16	0	0	291.68	289.96	0	289.96	0.004	0	0	2	NA	NA	NA	NA
0	272.68	0.013	6	3.001	0.088	2.913	0.48	1	275.08	274.52	0.04	274.48	0.017	5	1	2	NA	NA	NA	NA

Supporting information 2. Explanatory variables of bank vole behavioural profiling and repeatability evaluation with intraclass correlation coefficient (ICC) tests.

Variable name	Code	ICC	P-value
in the first 5 minutes			
Total travelled distance	TTD1	0.122	0.360
Distance travelled in the central zone	DTI1	0.167	0.312
Distance travelled outside the central zone	DTO1	0.117	0.366
Time spent in the central zone	TSI1	-0.026	0.530
Number of entries in the central zone	NEI1	0.053	0.439
Time spent outside the central zone	TSO1	-0.190	0.712
Freezing time in the central zone	TFI1	0.027	0.468
Freezing time outside the central zone	TFO1	-0.377	0.874
Average speed	AVS1	0.155	0.324
Number of self-grooming boots	NSGB1	-0.132	0.349
in the last 5 minutes			
Total travelled distance	TTD2	0.269	0.211
Distance travelled in the central zone	DTI2	0.568	0.034
Distance travelled outside the central zone	DTO2	0.144	0.337
Time spent in the central zone	TSI2	0.443	0.086
Number of entries in the central zone	NEI2	0.484	0.066
Time spent outside the central zone	TSO2	0.248	0.231
Freezing time in the central zone	TFI2	0.341	0.152
Freezing time outside the central zone	TFO2	0.005	0.475
Average speed	AVS2	0.227	0.251
Number of self-grooming boots	NSGB2	0.444	0.086
Number of object approaches	NOA	0.470	0.072

Variables in bold are those keep for the subsequent analyses (p-value ≤ 0.10), n = 10.



Supporting information 3.

Supporting information 4. Bayesian simulation parameter estimates of single and multiple explanatory variables negative binomial generalised models of *Ixodes* sp. larval tick burden of bank voles.

Single explanatory variable models simulations results

Model	Variable	Estimate [95%CI]	Rhat	Bulk ESS	Tail ESS
Body mass	Intercept	-0.17 [-1.43; 1.15]	1.00	14495	10860
	Body mass	0.07 [0.02; 0.12]	1.00	15355	10610
Sex	Intercept	0.89 [0.12; 1.76]	1.00	14027	10908
	Sex[Male]	0.88 [-0.11; 1.80]	1.00	14648	11520
Axis 1 of PCA	Intercept	1.59 [1.16; 2.05]	1.00	15598	11977
	Axis 1 of PCA	-0.02 [-0.29; 0.23]	1.00	16018	11543
Axis 2 of PCA	Intercept	1.59 [1.17; 2.06]	1.00	15975	11458
	Axis 2 of PCA	-0.08 [-0.53; 0.30]	1.00	13798	10303
Session	Intercept	1.42 [0.86; 2.06]	1.00	15862	12633
	Session[Session 2]	0.33 [-0.55; 1.21]	1.00	14425	12930
Date	Intercept	-349.05 [-1630.90; 910.07]	1.00	15550	12415
	Date	0.02 [-0.05; 0.09]	1.00	15551	12431
Parasites	Intercept	1.34 [0.81; 1.92]	1.00	14671	10570
	Parasites[Parasitised]	0.56 [-0.33; 1.46]	1.00	14173	11811
Questing larvae in 5 m	Intercept	1.31 [0.86; 1.80]	1.00	15257	13037
	Questing larvae in 5 m	0.05 [-0.00; 0.11]	1.00	14687	9748
Questing larvae in 10 m	Intercept	1.47 [0.91; 2.06]	1.00	15791	12959
	Questing larvae in 10 m	0.02 [-0.05; 0.10]	1.00	14484	11436
Questing larvae in 15 m	Intercept	1.66 [1.05; 2.35]	1.00	15476	11689
	Questing larvae in 15 m	-0.01 [-0.10; 0.07]	1.00	11987	10302
Questing larvae in 20 m	Intercept	1.72 [1.04; 2.49]	1.00	16269	10947
	Questing larvae in 20 m	-0.02 [-0.12; 0.07]	1.00	16105	13117

Multiple explanatory variables model simulation results for models selected in the AICc selection procedure only (delta < 2)

Model	Variable	Estimate [95%CI]	Rhat	Bulk ESS	Tail ESS
Model ranked 1st according to AICc	Intercept	-0.85 [-2.19; 0.53]	1.00	17541	13267
	Body mass	0.07 [0.02; 0.12]	1.00	17902	14069
	Sex	0.89 [-0.05; 1.70]	1.00	19318	13827
	Intercept	-0.81 [-2.12; 0.56]	1.00	20587	13201
Model ranked 2nd according to AICc	Body mass	0.07 [0.02; 0.12]	1.00	20898	13436
	Sex	0.83 [0.04; 1.64]	1.00	22312	13319
	Questing larvae in 5 m	0.03 [-0.01; 0.08]	1.00	19085	12612
Model ranked 3rd according to AICc	Intercept	-0.17 [-1.43; 1.15]	1.00	14495	10860
	Body mass	0.07 [0.02; 0.12]	1.00	15355	10610

Bayesian simulations were performed with 5.000 repetitions on 5 chains with a warm-up of 1.000 repetitions.