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Wildlife Research

Supplementary Material

Invasive axis deer and wild boar in a protected area in Argentina, controlled hunting, and Taylor's law

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Appendix S1. Code used for analysis in Stata 15.1.

See WR20119_Appendix_S1.rar

Table S1. Database used for analysis (coded PCMEI_R1)

Catch, catch per hunting-session; Stand., standardized; *CPUE*, catch per unit effort; Het., heteroskedasticity; IM, information matrix

See Excel file WR20119_Table_S1.xls

Table S2. Linear regression estimates (by ordinary least squares) of the parameters of the spatial Taylor's law (TL) $\log_{10} v = a + b \times \log_{10} m$, with m = spatial sample mean, v = spatial sample variance of various metrics of the relative abundance of wild boar, axis deer and both species combined (including killed and wounded specimens, or excluding wounded prey) computed for monthly periods at El Palmar National Park, 2006-2015. Key as in Table 2

Catch, catch per hunting-session; Stand., standardized; *CPUE*, catch per unit effort; Het., heteroskedasticity; IM, information matrix

Species	Metric	Min Log Mean	Max Log Mean	Range Log Mean	Intercept _a	SE_a	Slope _b	SE_b	Curva-ture_c	SE_c	Adj. R^2	df	Test _a_0	Test _c_0	Swilk	Het.	IM
Wild boar	1. Crude catch	-1.230	0.125	1.355	0.088	0.029	1.009	0.046	-0.280	0.130	0.824	103	0.003	0.034	0.080	<0.001	0.005
	2. Stand. catch	-1.771	0.125	1.896	0.141	0.030	1.070	0.037	-0.148	0.067	0.890	103	<0.001	0.003	0.004	0.001	0.022
	3. Crude *CPUE*	-1.937	-0.411	1.526	-0.251	0.133	1.266	0.100	0	-	0.605	103	0.062	-	<0.001	<0.001	<0.001
	3. Crude *CPUE*	-1.937	-0.411	1.526	0.862	0.337	3.137	0.534	0.755	0.212	0.645	102	0.012	0.001	<0.001	0.002	0.003
	4. Stand. *CPUE*	-2.424	-0.529	1.895	-0.344	0.069	1.127	0.049	-0.077	0.091	0.838	103	<0.001	0.398	0.156	0.035	0.125
Axis deer	1. Crude catch	-1.152	0.058	1.210	0.256	0.032	1.217	0.060	0.217	0.194	0.798	103	<0.001	0.267	<0.001	0.316	0.185
	2. Stand. catch	-1.851	-0.196	1.655	0.204	0.033	1.087	0.044	-0.086	0.101	0.856	102	<0.001	0.396	<0.001	0.206	0.049
	3. Crude *CPUE*	-2.116	-0.854	1.262	0.011	0.083	1.452	0.066	-0.323	0.182	0.822	103	0.894	0.079	0.056	0.497	0.035
	4. Stand. *CPUE*	-2.550	-0.774	1.776	-0.250	0.076	1.167	0.056	-0.018	0.119	0.808	102	0.001	0.877	<0.001	0.004	<0.001
Both sp. including wounded	1. Crude catch	-0.550	0.286	0.837	0.131	0.015	1.275	0.064	0.400	0.270	0.791	103	<0.001	0.141	0.088	0.036	0.050
	2. Crude *CPUE*	-1.306	-0.314	0.991	0.061	0.102	1.721	0.113	0.646	0.387	0.691	103	0.550	0.098	0.055	0.058	<0.001
Both sp. excluding wounded	1. Crude *CPUE*	-1.326	-0.314	1.011	0.100	0.108	1.723	0.114	0.641	0.381	0.685	103	0.357	0.095	0.427	0.079	<0.001

Table S3. Linear regression estimates (by ordinary least squares) of the parameters of the spatial Taylor's law (TL) $\log_{10} v = a + b \times \log_{10} m$, with m = spatial sample mean, v = spatial sample variance of various metrics of the relative abundance of wild boar and axis deer computed for monthly periods at El Palmar National Park, 2006-2015, according to hunting zone and hunting shift. Key as in Table 2

Catch, catch per hunting-session; Stand., standardized; *CPUE*, catch per unit effort; Het., heteroskedasticity; IM, information matrix

Species	Metric	Modifier	Levels	Min Log Mean	Max Log Mean	Range Log Mean	Inter-cept_a	SE_a	Slope_b	SE_b	Curva-ture_c	SE_c	Adj. R^2	df	Test_a_0	Test_c_0	Swilk	Het.	IM
Wild boar	1. Crude catch	Zone	Public-use	-1.426	0.477	1.903	0.106	0.033	1.037	0.044	-0.115	0.098	0.850	98	0.002	0.243	<0.001	0.007	0.076
	1. Crude catch		Restricted	-1.176	0.125	1.301	0.088	0.032	1.077	0.058	-0.166	0.172	0.774	98	0.007	0.335	<0.001	<0.001	0.003
	2. Stand. catch		Public-use	-1.756	0.477	2.233	0.179	0.033	1.109	0.037	-0.034	0.067	0.902	96	<0.001	0.609	<0.001	0.015	0.058
	2. Stand. catch		Restricted	-1.342	0.125	1.467	0.125	0.034	1.124	0.052	-0.087	0.134	0.838	89	<0.001	0.520	<0.001	<0.001	0.004
	3. Crude *CPUE*		Public-use	-2.278	-0.395	1.882	0.314	0.259	2.100	0.372	0.314	0.133	0.745	98	0.021	0.020	<0.001	<0.001	<0.001
	3. Crude *CPUE*		Restricted	-1.960	-0.485	1.475	-0.246	0.105	1.356	0.084	0.256	0.187	0.724	98	<0.001	0.174	<0.001	0.306	0.034
	4. Stand. *CPUE*		Public-use	-2.455	-0.176	2.279	-0.345	0.189	1.177	0.049	-0.043	0.088	0.855	96	0.001	0.628	0.064	0.023	0.104
	4. Stand. *CPUE*		Restricted	-2.041	-0.465	1.577	-0.314	0.073	1.215	0.058	0.087	0.136	0.829	89	<0.001	0.525	0.189	0.002	0.006
Axis deer	1. Crude catch		Public-use	-1.477	0.699	2.176	0.181	0.024	1.128	0.043	0.046	0.105	0.875	96	<0.001	0.661	<0.001	0.194	0.044
	1. Crude catch		Restricted	-1.398	0.058	1.456	0.282	0.033	1.293	0.051	0.341	0.134	0.874	93	<0.001	0.013	0.004	<0.001	<0.001
	2. Stand. catch		Public-use	-1.544	0.699	2.243	0.149	0.027	1.055	0.037	-0.052	0.103	0.898	91	<0.001	0.615	<0.001	0.096	0.031
	2. Stand. catch		Restricted	-1.519	-0.051	1.467	0.256	0.038	1.208	0.048	0.089	0.125	0.882	85	<0.001	0.476	<0.001	<0.001	<0.001
	3. Crude *CPUE*		Public-use	-2.348	-0.477	1.871	-0.280	0.258	1.315	0.061	-0.073	0.136	0.827	96	0.049	0.592	0.014	0.149	0.002
	3. Crude *CPUE*		Restricted	-2.193	-0.710	1.483	-0.162	0.083	1.370	0.060	-0.066	0.150	0.849	93	0.055	0.662	0.020	0.935	<0.101
	4. Stand. *CPUE*		Public-use	-2.197	-0.079	2.118	-0.488	0.271	1.110	0.052	-0.076	0.140	0.831	91	<0.001	0.588	0.189	0.002	0.006
	4. Stand. *CPUE*		Restricted	-2.217	-0.458	1.759	-0.151	0.077	1.290	0.053	0.267	0.113	0.872	85	0.052	0.020	<0.001	<0.001	<0.001
Wild boar	1. Crude catch	Hunting shift	Diurnal	-1.230	0.030	1.260	0.158	0.037	1.102	0.055	-0.081	0.160	0.825	84	<0.001	0.614	0.150	0.085	0.243
	1. Crude catch		Overnight	-1.322	0.125	1.447	0.063	0.046	1.020	0.081	-0.120	0.217	0.812	35	0.177	0.582	0.015	0.022	0.004
	2. Stand. catch		Diurnal	-1.613	-0.067	1.546	0.219	0.034	1.156	0.040	0.046	0.085	0.910	84	<0.001	0.592	0.004	0.247	0.276
	2. Stand. catch		Overnight	-1.491	0.125	1.616	0.098	0.060	1.052	0.084	-0.229	0.188	0.853	26	0.116	0.233	<0.001	0.055	0.051
	3. Crude *CPUE*		Diurnal	-1.937	-0.411	1.526	0.018	0.098	1.422	0.073	0	-	0.815	84	0.852	-	<0.001	<0.001	<0.001
	3. Crude *CPUE*		Diurnal	-1.937	-0.411	1.526	0.714	0.235	2.619	0.378	0.491	0.152	0.834	83	0.003	0.002	<0.001	<0.001	0.010
	3. Crude *CPUE*		Overnight	-2.284	-0.932	1.353	-0.752	0.186	1.079	0.131	-0.150	0.337	0.649	35	<0.001	0.659	<0.001	0.112	0.659
	4. Stand. *CPUE*		Diurnal	-2.244	-0.529	1.715	-0.164	0.072	1.249	0.049	0.163	0.097	0.883	84	0.026	0.097	0.783	0.680	0.166
	4. Stand. *CPUE*		Overnight	-1.968	-0.556	1.412	-0.526	0.154	1.000	0.124	-0.337	0.311	0.705	27	0.002	0.289	0.002	0.891	0.126

Axis deer	1. Crude catch	Diurnal	-1.152	-0.169	0.983	0.190	0.032	1.125	0.060	-0.068	0.222	0.801	85	<0.001	0.759	<0.001	0.646	0.715
	1. Crude catch	Overnight	-1.000	0.142	1.142	0.257	0.052	1.211	0.100	-0.203	0.360	0.806	34	<0.001	0.576	<0.001	0.422	0.243
	2. Stand. catch	Diurnal	-1.851	-0.196	1.655	0.167	0.031	1.053	0.044	-0.092	0.090	0.870	84	<0.001	0.307	<0.001	0.132	0.020
	2. Stand. catch	Overnight	-1.591	-0.281	1.310	0.407	0.096	1.299	0.098	0.230	0.307	0.858	28	<0.001	0.462	<0.001	0.001	0.006
	3. Crude *CPUE*	Diurnal	-2.550	-0.774	1.777	-0.139	0.104	1.303	0.089	0.065	0.298	0.883	85	0.185	0.828	0.037	0.007	0.030
	3. Crude *CPUE*	Overnight	-2.051	-0.883	1.168	-0.404	0.138	1.262	0.099	-0.577	0.270	0.821	34	0.006	0.040	0.025	0.794	0.551
	4. Stand. *CPUE*	Diurnal	-1.889	-0.838	1.050	-0.282	0.077	1.163	0.059	-0.027	0.117	0.818	84	<0.001	0.821	<0.001	0.045	0.011
	4. Stand. *CPUE*	Overnight	-2.116	-0.761	1.355	0.079	0.225	1.359	0.148	-0.053	0.479	0.747	27	0.728	0.913	<0.001	0.100	0.200

Fig. S1. The spatial TL described the relationship between $y = \log_{10} v$ and $x = \log_{10} m$ of the relative abundance of prey (i.e., wounded or killed boar or deer) using controlled shooting from a fixed hunting blind. Each point represents the spatial mean and spatial variance of crude catch per hunting party-session (A) and crude catch per unit effort (B) across El Palmar National Park at one trimester over 2006-2015. Key as in Fig. 1.

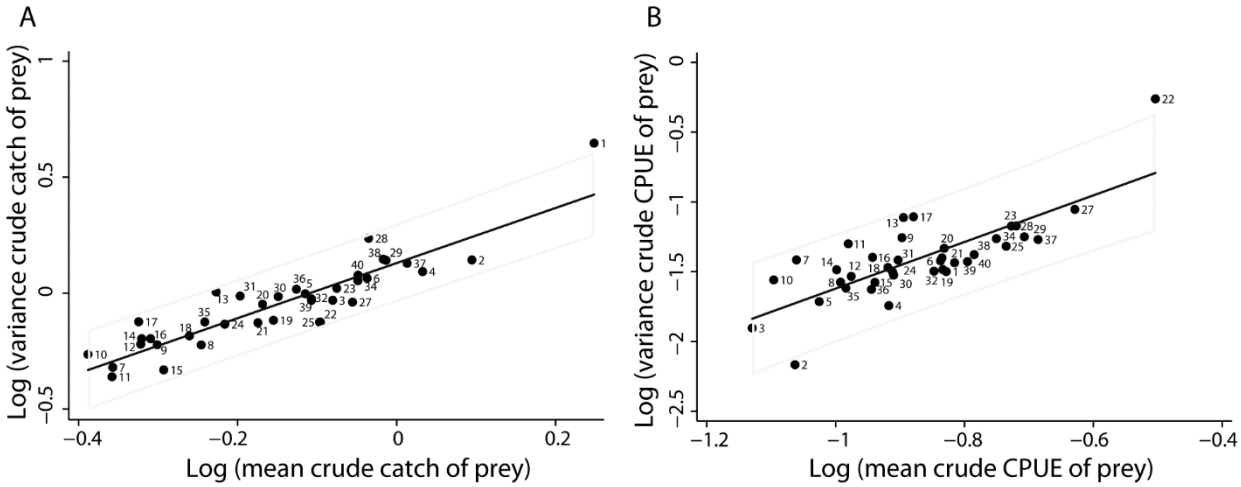
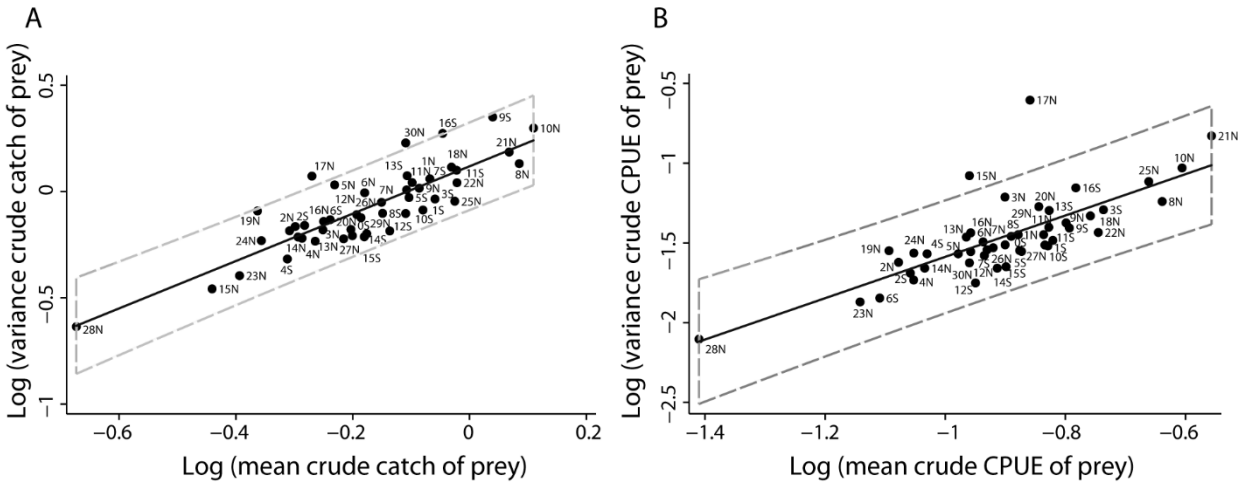
Fig. S2. The temporal TL described the relationship between $y = \log_{10} v$ and $x = \log_{10} m$ of the relative abundance of prey (i.e., wounded or killed boar or deer) using controlled shooting from a fixed hunting blind. Each point represents the temporal mean and temporal variance of crude catch per hunting party-session (A) and crude catch per unit effort (B) across El Palmar National Park at one hunting blind over 2006-2015. Key as in Fig. 1.