SUPPORTING INFORMATION

Goal-oriented evaluation of species distribution models' accuracy and precision: True Skill Statistic profile and uncertainty maps

Authors: Alejandro Ruete[1*], Gerardo C. Leynaud[2]

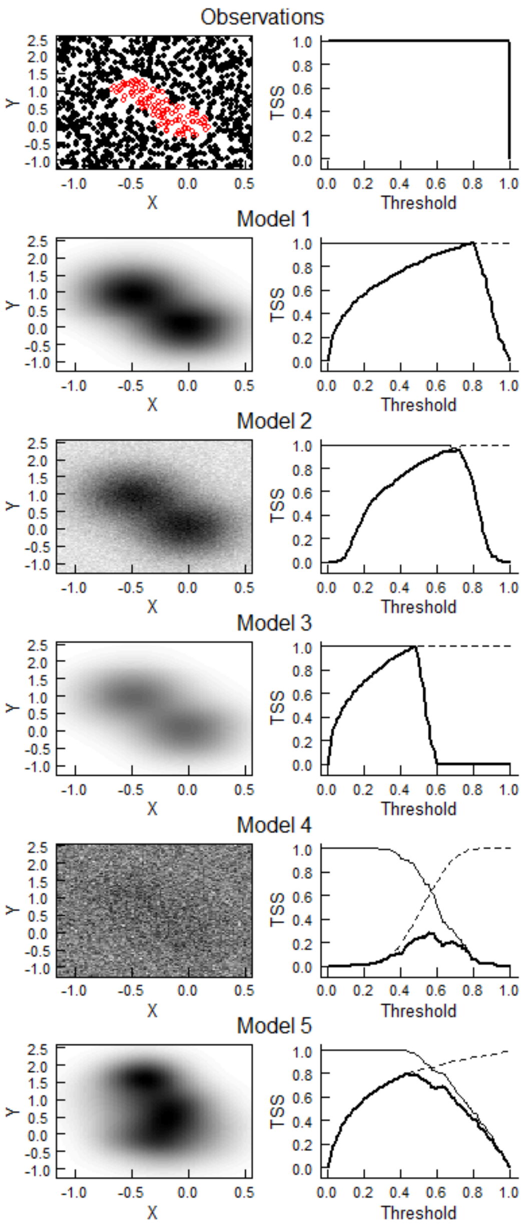

Figure S1: SDM's Sensitivity and Specificity. left panels: simulated observations (open circles = 1; filled circles = 0) and species distribution models 1 to 5 (probabilities in linear scale black = 0 to white = 1). Right panels: TSS profiles (solid bold lines) for simulated SDM predictions compared to 1000 validation data points. Models' sensitivity (i.e. proportion of accurately predicted presences) is shown with a thin solid line, and specificity (i.e. proportion of accurately predicted absences) is shown with a dashed line.

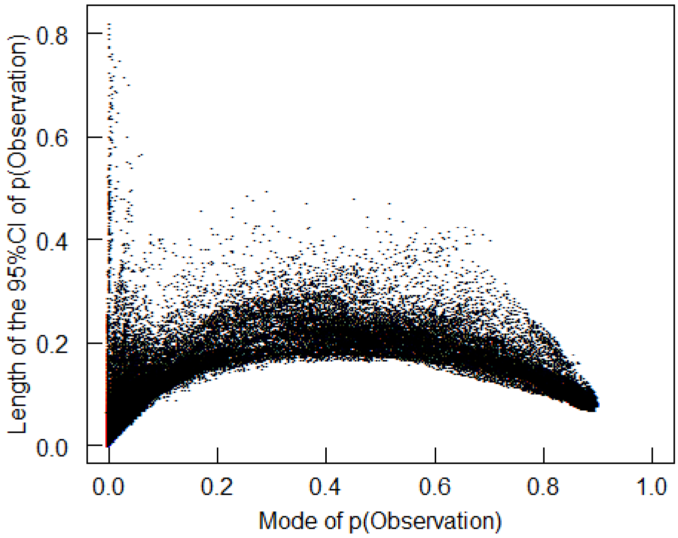

Figure S2: BSEL model uncertainty. Mode of probability of observation and length of the 95% CI over the study area, for the final BSEL model.

Appendix S1. Bayesian spatially expanded logistic (BSEL) model and model selection procedure

We developed a Bayesian spatially expanded logistic (BSEL) model (Casetti 1997; Congdon 2003) to obtain the probability of observation at non-visited locations. Non-visited locations were randomly located with the same density as the observed locations (~0.0004/km^2). Given the nature of presence-only data, predicted probabilities combine the probability of the species being at the location, the probability of an observer being at the same location, and the probability of the observer finding the species (Lobo *et al.* 2010). We assume that observations at every non-visited location *i* are distributed according to a Bernoulli distribution Obs_i ~ Bernoulli(p^*_i), where p^*_i is an *a priori* probability distribution generated from confirmed observations (Fig. 2b). We generated the *a priori* probability distribution as a quadratic density kernel raster layer using the R package "*splancs*" (Rowlingson *et al.* 2013). By generating a prior distribution from the observations, we assume that the entire study region has been sampled with the same intensity.

We then modelled observations Obs_i according to a logistic model, Obs_i ~ Bernoulli(p_i), and logit(p_i) = $\varphi + \alpha_v \cdot \mathrm{V} + \beta_{v,i} \cdot \mathrm{V}$, where p_i is the probability of observing the species at location *i*, logit the logistic link function, φ is the regression intercept, and $\mathbf{V}_{\mathrm{v\times i}}$ is a matrix for the environmental variables *v*. The spatially expanded model (Casetti 1997; Congdon 2003) assumes that the effect of an explanatory variable *v* on the response variable p_i varies among the observed locations. This assumption is particularly convenient when fitting species distribution model along large ranges, where the species can be locally adapted to e.g. temperature ranges (Turchin & Hanski 1997; Nilsson-Örtman *et al.* 2013). The model allows estimating fixed parameters (α_v; i.e. without spatial variability) and flexible parameters ($\beta_{v,i}$) that correct for the spatial variation of the effect parameter α_v, as well as for spatial autocorrelation on the observations. The parameter $\beta_{v,i}$ is further modelled as $\beta_{v,i} = x_i \cdot \gamma_{xv} + y_i \cdot \gamma_{yv}$, where γ_{xv} y γ_{yv} are correction parameters for coordinates x_i and y_i. The combined effect (fixed and flexible) of variable v varies for every location, and is described as $\delta_{v,i} = \alpha_v + \beta_{v,i}$, with an average of $\bar{\delta}_v = \alpha_v + \bar{\beta}_v$.

The final model presented (Table 1) is the result of a selection procedure based on the deviance information criterion (DIC), an information-theoretic criterion that is appropriate for Bayesian hierarchical modelling (Spiegelhalter et al. 2002). The lower the DIC, the better the model is able to predict a new data set, and thus, the DIC penalizes for increasing model complexity just as the commonly used Akaike's information criterion (AIC; Burnham & Anderson 2002). First, we compared models for each independent environmental variable with a null model (i.e. only including the intercept parameter φ). Then, we built the final model with a forward stepwise procedure, following the DIC ranking of the variables (Tables S2). We used a threshold of 10 DIC units to consider model improvement. A model could include correlated variables if the later added variable improved the model fit, according to the over-parameterized models criterion (Reichert & Omlin 1997).

References

Casetti, E. (1997). The expansion method, mathematical modeling, and spatial econometrics. *International Regional Science Review*, **20**, 9–33. Retrieved August 18, 2012,

Congdon, P. (2003). *Applied Bayesian modelling*. John Wiley and Sons, West Sussex, England.

Lobo, J.M., Jiménez-Valverde, A. & Hortal, J. (2010). The uncertain nature of absences and their importance in species distribution modelling. *Ecography*, **33**, 103–114. Retrieved September 23, 2013,

Nilsson-Örtman, V., Stoks, R., De Block, M., Johansson, H. & Johansson, F. (2013). Latitudinally structured variation in the temperature dependence of damselfly growth rates. *Ecology Letters*, **16**, 64–71. Retrieved March 15, 2013, Reichert, P. & Omlin, M. (1997). On the usefulness of overparameterized ecological models. *Ecological Modelling*, **95**, 289–299. Retrieved January 11, 2010,

Rowlingson, B., Diggle, P., Bivand, R., Petris, G. & Eglen, S. (2013). *splancs: Spatial and space-time point pattern analysis*. Retrieved from http://CRAN.R-project.org/package=splancs

Turchin, P. & Hanski, I. (1997). An empirically based model for latitudinal gradient in vole population dynamics. *The American Naturalist*, **149**, 842–874. Retrieved May 23, 2012,

Table S1. Complete list of observations

ID	Source	X	Y
1	1	-62.883	-38.483
2	4	-60.283	-22.350
3	1	-62.618	-39.810
4	2	-64.250	-27.733
5	4	-64.760	-40.600
6	4	-62.453	-23.467
7	4	-65.541	-41.042
8	1	-66.669	-37.155
9	9	-67.615	-37.353
10	9	-64.564	-37.285
11	1	-62.816	-41.030
12	3	-60.000	-22.500
13	3	-62.980	-40.800
14	3	-62.680	-39.480
15	3	-65.470	-28.050
16	3	-61.200	-27.220
17	4	-60.450	-26.780
18	4	-60.430	-26.350
19	3	-61.170	-26.520
20	9	-60.620	-25.950
21	3	-61.280	-27.320
22	3	-60.220	-26.870
23	3	-64.230	-31.480
24	3	-63.970	-31.620
25	4	-63.930	-31.650
26	3	-64.570	-31.480
27	2	-63.430	-30.750
28	4	-63.620	-31.330
29	3	-63.580	-30.350
30	3	-63.580	-30.400
31	3	-58.680	-32.470
32	3	-67.500	-30.000
33	3	-63.580	-30.150
34	3	-67.680	-37.800
35	3	-67.620	-37.370
36	3	-66.930	-36.250
37	3	-66.230	-37.550
38	3	-65.920	-38.150
39	3	-66.400	-38.720
40	3	-65.650	-37.320
41	3	-64.600	-37.380
42	3	-66.820	-28.550
43	3	-68.000	-33.470
44	3	-68.070	-33.580
45	3	-68.000	-33.850
46	3	-67.970	-34.050
47	3	-68.400	-34.580
48	3	-67.900	-34.830
49	3	-67.900	-34.830
50	3	-68.250	-34.830
51	3	-67.920	-34.220
52	3	-67.880	-34.480
53	3	-67.900	-34.600
54	3	-68.780	-32.970
55	3	-68.100	-38.030
56	3	-65.680	-39.270
57	3	-65.480	-39.100

58	3	-64.430	-40.100
59	3	-65.250	-40.400
60	3	-65.250	-40.400
61	3	-63.970	-24.870
62	3	-67.330	-31.480
63	3	-67.780	-32.200
64	3	-65.370	-32.770
65	3	-62.830	-28.470
66	2	-63.000	-28.470
67	2	-63.470	-29.370
68	3	-64.500	-27.400
69	3	-63.450	-29.550
70	3	-63.700	-29.520
71	3	-63.950	-29.050
72	3	-64.900	-27.520
73	3	-62.850	-26.580
74	3	-64.830	-28.000
75	3	-65.280	-26.220
76	3	-57.920	-22.330
77	1	-62.580	-39.770
78	3	-64.250	-27.730
79	3	-64.480	-30.200
80	9	-60.620	-25.980
81	2	-64.270	-27.780
82	3	-58.680	-32.470
83	3	-64.970	-40.750
84	3	-64.080	-38.970
85	4	-63.000	-40.750
86	3	-64.630	-37.420
87	3	-68.080	-38.920
88	3	-64.230	-27.730
89	3	-64.080	-39.100
90	3	-68.770	-33.000
91	3	-64.180	-31.400
92	3	-58.500	-34.670
93	3	-68.400	-34.580
94	3	-65.500	-40.500
95	3	-60.670	-32.950
96	4	-59.300	-23.100
97	4	-57.880	-22.600
98	3	-60.000	-22.500
99	4	-65.006	-40.616
100	5	-65.373	-41.565
101	1	-62.249	-40.555
102	1	-67.085	-39.623
103	1	-64.692	-40.088
104	8	-62.646	-40.184
105	8	-63.006	-39.587
106	8	-63.677	-38.879
107	8	-65.169	-39.227
108	8	-65.405	-39.500
109	8	-64.535	-40.171
110	8	-65.367	-43.291
111	8	-64.883	-42.322
112	8	-65.430	-41.688
113	8	-65.367	-40.992
114	8	-63.777	-40.880
115	8	-62.820	-40.743
116	8	-64.684	-40.631
117	8	-64.932	-40.457
118	8	-65.206	-40.333

119	8	-65.492	-40.495
120	8	-65.827	-40.606
121	8	-66.623	-39.786
122	8	-66.536	-39.277
123	8	-67.170	-39.214
124	8	-66.349	-38.605
125	8	-65.840	-38.146
126	8	-65.541	-38.046
127	8	-65.343	-37.425
128	8	-64.423	-37.400
129	8	-66.026	-37.412
130	8	-67.766	-37.885
131	8	-68.239	-37.822
132	8	-67.393	-37.773
133	8	-67.530	-37.251
134	8	-66.660	-36.343
135	8	-68.189	-36.244
136	8	-67.431	-35.772
137	8	-67.915	-35.809
138	8	-67.741	-35.548
139	8	-67.990	-35.424
140	8	-68.276	-35.299
141	8	-68.089	-35.063
142	8	-67.766	-34.902
143	8	-68.189	-34.765
144	8	-68.015	-37.524
145	8	-67.688	-34.380
146	8	-67.436	-34.068
147	8	-67.791	-34.157
148	8	-67.643	-33.950
149	8	-67.836	-33.757
150	8	-68.192	-33.638
151	8	-68.563	-33.401
152	8	-67.851	-33.505
153	8	-67.658	-33.253
154	8	-67.050	-33.460
155	8	-66.575	-33.223
156	8	-67.169	-33.104
157	8	-67.539	-32.912
158	8	-67.228	-32.778
159	8	-66.739	-33.015
160	8	-67.361	-32.585
161	8	-67.495	-32.422
162	8	-67.791	-32.467
163	8	-67.895	-32.274
164	8	-67.213	-32.348
165	8	-66.783	-32.511
166	8	-66.546	-32.852
167	8	-66.457	-32.556
168	8	-65.315	-32.363
169	8	-66.442	-32.096
170	8	-67.035	-31.696
171	8	-67.080	-31.236
172	8	-67.124	-30.880
173	8	-67.510	-30.376
174	8	-67.777	-30.138
175	8	-66.709	-29.501
176	8	-66.724	-28.922
177	8	-66.620	-28.655
178	8	-66.397	-28.922
179	8	-66.071	-29.634

180	8	-65.211	-31.518
181	8	-64.143	-31.547
182	8	-63.669	-31.710
183	8	-63.832	-31.577
184	8	-63.965	-31.206
185	8	-63.165	-30.761
186	8	-63.150	-30.539
187	8	-63.135	-30.302
188	8	-63.016	-30.020
189	8	-63.209	-29.723
190	8	-64.025	-30.420
191	8	-64.929	-30.435
192	8	-64.470	-30.213
193	8	-65.048	-29.649
194	8	-63.565	-29.530
195	8	-63.076	-29.530
196	8	-62.764	-29.100
197	8	-62.616	-28.567
198	8	-63.995	-28.507
199	8	-64.677	-28.285
200	8	-65.389	-28.240
201	8	-64.484	-27.647
202	8	-64.811	-27.528
203	8	-63.728	-27.603
204	8	-64.484	-26.802
205	8	-63.921	-26.105
206	8	-62.838	-26.120
207	8	-62.571	-26.639
208	8	-61.296	-27.617
209	8	-61.163	-27.410
210	8	-60.169	-27.054
211	8	-60.347	-26.965
212	8	-60.406	-26.520
213	8	-59.383	-26.223
214	8	-61.326	-26.550
215	8	-60.584	-25.897
216	8	-60.733	-25.526
217	8	-61.459	-25.215
218	8	-62.735	-24.310
219	8	-63.639	-25.586
220	8	-64.054	-25.289
221	8	-64.292	-25.171
222	8	-64.069	-24.652
223	8	-64.025	-24.385
224	8	-63.965	-24.103
225	8	-63.951	-23.762
226	8	-62.067	-23.065
227	8	-59.442	-23.213
228	8	-58.612	-22.160
229	8	-59.027	-21.908
230	2	-63.491	-24.358
231	2	-67.400	-32.450
232	2	-68.217	-32.134
233	2	-68.751	-33.304
234	2	-68.066	-33.300
235	2	-64.427	-39.363
236	7	-62.462	-21.651
237	4	-62.084	-18.472
238	4	-61.248	-20.546
239	6	-60.034	-20.489
240	5	-68.796	-37.162

241	5	-68.478	-37.480
242	5	-67.835	-30.863
243	5	-66.660	-31.837
244	9	-69.916	-40.029

Sources

1: Buskirk (1993)

2: Cabrera (1998)

3: The EMYSystem (http://emys.geo.orst.edu/cgi-bin/emysmap?tn=138&cf=ijklmno)

4: Ernst (1998)

5: Fritz et al. (2012)

6: Gonzales et al. (2006)

7: Ergueta & Morales (1996)

8: Richard (1999)

9: Waller (1986)

Table S2. Explanatory variables and model selection

Explanatory variables included in the analysis. Each row belongs to an independent model, showing the deviance information criterion (DIC), and its difference (Δ) with the DIC of a null model (i.e. a model with only intercept parameters). Color shades are a visual help to order ΔDIC from gratest (red) to smallest (green).

Variable		**DIC**	**ΔDIC**
Null		1487.2	0.0
bio1	Annual Mean Temperature	851.2	636.0
bio2	Mean Diurnal Range[1]	1253.6	233.6
bio3	Isothermality [2]	1186.0	301.2
bio4	Temperature Seasonality[3]	1019.0	468.3
bio5	Max Temperature of Warmest Month	891.5	595.7
bio6	Min Temperature of Coldest Month	1163.4	323.8
bio7	Temperature Annual Range [4]	1113.5	373.8
bio8	Mean Temperature of Wettest Quarter	1002.9	484.3
bio9	Mean Temperature of Driest Quarter	1385.8	101.4
bio10	Mean Temperature of Warmest Quarter	945.0	542.2
bio11	Mean Temperature of Coldest Quarter	988.5	498.7
bio12	Annual Precipitation	1304.1	183.1
bio13	Precipitation of Wettest Month	1321.9	165.3
bio14	Precipitation of Driest Month	1274.6	212.6
bio15	Precipitation Seasonality [5]	1281.8	205.5
bio16	Precipitation of Wettest Quarter	1293.4	193.8
bio17	Precipitation of Driest Quarter	1291.1	196.1
bio18	Precipitation of Warmest Quarter	1213.4	273.8
bio19	Precipitation of Coldest Quarter	1251.5	235.8
himpact	Areas of human impacto over the biosfere[6]	1368.6	118.6
globedem	Altitude	1406.2	81.0
LAIm	Leaf Area Index	1296.2	191.0
iflworld	World intact forest	1479.4	7.8

[1] Mean of monthly (max temp - min temp)
[2] (bio2/bio7) * 100
[3] standard deviation *100.
[4] bio5-bio6
[5] coefficient of variation
[6] binomial

104 **Table S3.** Presence of *Chelonoidis chilensis* on protected areas in Argentina and Bolivia.

Table S3.1: Argentinean protected areas and probabilities of observation (p) of *Chelonoidis chilensis* predicted by the Bayesian Spatially Expanded Logistic (BSEL) model and by MaxEnt. For BSEL the length of the 95% credible interval is (L 95% CI) shown.

	Protected Area	p(BSEL)	L 95% CI	p(MaxEnt)	Independent Observation
1	Monte de las Barrancas	0.89	0.08	0.68	0
2	**Sierra de las Quijadas**	**0.88**	**0.11**	**0.63**	**1**
3	**Valle Fértil**	**0.87**	**0.27**	**0.64**	**1**
4	**Telteca**	**0.86**	**0.13**	**0.65**	**1**
5	Quebracho de la Legua	0.85	0.09	0.57	0
6	Chancani	0.84	0.15	0.6	0
7	**Copo**	**0.82**	**0.16**	**0.48**	**1**
8	Guasamayo	0.74	0.16	0.46	0
9	**Limay Mahuida**	**0.71**	**0.2**	**0.67**	**1**
10	**La Reforma (Univ.)**	**0.7**	**0.18**	**0.66**	**1**
11	Bahía de San Antonio	0.7	0.24	0.59	0
12	La Humada	0.69	0.18	0.63	0
13	La Reforma	0.69	0.19	0.66	0
14	**Talampaya**	**0.68**	**0.32**	**0.46**	**1**
15	**Pichi Mahuida**	**0.67**	**0.19**	**0.68**	**1**
16	Punta Delgada	0.66	0.43	0	0
17	**Ischigualasto (o Valle de La Luna)**	**0.65**	**0.27**	**0.45**	**1**
18	Salitral Levalle	0.64	0.2	0.66	0
19	Caleta Valdés	0.63	0.22	0.28	0
20	**Auca Mahuida**	**0.61**	**0.28**	**0.26**	**1**
21	**Lihué Calel**	**0.61**	**0.2**	**0.65**	**1**
22	Meseta de Somuncurá	0.59	0.19	0.59	0
23	**Formosa**	**0.59**	**0.18**	**0.43**	**1**
24	**El Payén**	**0.56**	**0.26**	**0.02**	**1**
25	Mar Chiquita	0.56	0.19	0.67	0
26	Santa Ana	0.52	0.2	0.2	0
27	Parque Luro	0.45	0.2	0.61	0
28	**Pampa del Indio**	**0.45**	**0.2**	**0.42**	**1**
29	Los Palmares	0.45	0.18	0.68	0
30	Laguna La Felipa	0.43	0.2	0.64	0
31	Laguna Guatrache	0.42	0.23	0.59	0
32	Agua Dulce	0.41	0.24	0.13	0
33	El Mangrullo	0.4	0.32	0.34	0
34	Vaquerías	0.39	0.23	0.53	0
35	Laguna de Llancanelo	0.39	0.25	0	0
36	Lagunas y Palmares	0.37	0.2	0.31	0
37	La Florida P.	0.35	0.23	0.08	0
38	Presidencia de la Plaza	0.3	0.18	0.33	0
39	Chaco	0.29	0.18	0.31	0
40	La Quebrada	0.26	0.23	0.54	0
41	Don Guillermo	0.26	0.19	0	0

42	La Norma	0.25	0.18	0.21	0
43	Quebrada del Portugués	0.23	0.23	0.08	0
44	El Rey	0.22	0.21	0.36	0
45	Potrero 7-B (Los Quebrachales)	0.22	0.18	0.17	0
46	Aguas Chiquitas	0.22	0.21	0.38	0
47	La Loca	0.21	0.18	0.25	0
48	Iberá	0.2	0.18	0.06	0
49	Del Medio - Los Caballos	0.19	0.16	0.22	0
50	Río Pilcomayo	0.18	0.17	0.14	0
51	Calilegua	0.17	0.17	0.49	0
52	Laguna Hu	0.17	0.12	0.11	0
53	Quebrada del Condorito	0.14	0.21	0	0
54	Mburucuyá	0.12	0.15	0.04	0
55	General Obligado	0.12	0.12	0.21	0
56	El Leoncito	0.12	0.21	0	0
57	Baritú	0.1	0.23	0.04	0
58	Campo General Belgrano	0.1	0.18	0.15	0
59	Bosques Petrificados de Jaramillo	0.09	0.12	0.01	0
60	Sierra de San Javier	0.08	0.19	0.01	0
61	Acambuco	0.08	0.11	0.01	0
62	Campo Salas	0.08	0.1	0.19	0
63	Pre Delta Diamante	0.079	0.1	0.31	0
64	Virá Pitá	0.06	0.09	0	0
65	Potrero de Yala	0.06	0.11	0.03	0
66	Los Cardones	0.06	0.13	0	0
67	Lago Urugua-í	0.05	0.18	0	0
68	Bosque Petrificado Sarmiento	0.05	0.09	0.01	0
69	Iguazú	0.05	0.16	0	0
70	Otamendi	0.04	0.07	0.06	0
71	El Tromen	0.04	0.13	0	0
72	Laguna Blanca (Neuquén)	0.04	0.12	0	0
73	Laguna Blanca	0.04	0.11	0	0
74	Litoral Chaqueño	0.03	0.07	0.12	0
75	Cabo Blanco	0.03	0.09	0	0
76	Cerro Currumahuida	0.02	0.09	0	0
77	Laguna Aleusco	0.02	0.05	0	0
78	Los Andes	0.02	0.07	0.01	0
79	Volcán Tupungato	0.02	0.09	0	0
80	Laguna de los Pozuelos BioRes (National)	0.02	0.16	0	0
81	Campo de los Alisos	0.02	0.14	0.08	0
82	Lago Puelo	0.01	0.06	0	0
83	Olaroz-Cauchari	0.01	0.04	0	0
84	Salto Encantado del Valle del Cuñá Pirú	0.01	0.03	0	0
85	Apipé Grande	0.01	0.05	0.01	0
86	Esperanza	0.01	0.12	0	0

87	Saltito	0.01	0.03	0	0
88	Laguna Los Juncos	0.01	0.03	0	0
89	Punta Lara	0.01	0.03	0.08	0
90	Nahuel Huapi Par1	0.01	0.07	0	0
91	Rio Limay	0.01	0.04	0	0
92	Lanín	0.01	0.11	0	0
93	Los Alerces	0.01	0.06	0	0
94	Copahue-Caviahue	0.01	0.17	0	0
95	El Destino (P. Costero del Sur)	0.01	0.03	0.05	0
96	Urugua-í	0.01	0.09	0	0
97	Nahuel Huapi Parque	0.01	0.04	0	0
98	Nahuel Huapi Reserva	0.01	0.05	0	0
99	Selva Marginal de Hudson	0.01	0.03	0.08	0
100	Divisadero Largo	0	0	0	0
101	El Manzano Histórico	0	0	0	0
102	Lago Baggilt	0	0	0	0
103	Aconcagua	0	0.03	0	0
104	Cañada Molina	0	0	0	0
105	Nant y Fall (Arroyo Las Caídas)	0	0	0	0
106	Papel Misionero	0	0	0	0
107	Laguna Brava	0	0.03	0	0
108	Alto Andina de la Chinchilla	0	0.03	0	0
109	Colonia Benítez	0	0	0	0
110	Laguna La Salada	0	0	0	0
111	La Loma del Cristal	0	0	0	0
112	Moconá	0	0	0	0
113	Yacuy	0	0	0	0
114	Florencio de Basaldua	0	0	0	0
115	Carpincho	0	0	0	0
116	Los Sosa	0	0	0	0
117	Guaraní	0	0.02	0	0
118	Cruce Caballero	0	0	0	0
119	Cerro Azul (E.E.A.)	0	0	0	0
120	E.E.A. Anexo Cuartel Río Victoria	0	0	0	0
121	De la Sierra Crovetto	0	0	0	0
122	Guardaparque Horacio Foerster	0	0.02	0	0
123	Piñalito	0	0.01	0	0
124	General Belgrano	0	0.01	0	0
125	Los Arrayanes	0	0	0	0
126	Isla Botija	0	0	0.07	0
127	Sierra del Tigre	0	0	0	0
128	Punta Márquez	0	0	0	0
129	Lago Guacho	0	0	0	0
130	Punta Norte	0	0	0	0
131	Cerro Alcazar	0	0	0.01	0
132	La Florida R.	0	0	0	0
133	El Estero	0	0	0	0

134	Isla Laguna Alsina	0	0	0	0
135	Yabotí	0	0.02	0	0
136	Golfo San José	0	0	0	0
137	Perito Moreno	0	0.01	0.01	0
138	Los Glaciares	0	0.03	0	0
139	Ira Hiti	0	0	0	0
140	Cabo dos Bahías	0	0	0.01	0
141	Cayastá	0	0	0	0
142	El Pozo	0	0	0	0
143	Punta Pirámides	0	0	0	0
144	Punta Loma	0	0	0	0

Table S3.2: Bolivian protected areas and probabilities of observation (p) of *Chelonoidis chilensis* predicted by the Bayesian Spatially Expanded Logistic (BSEL) model and by MaxEnt. For BSEL the length of the 95% credible interval is (L 95% CI) shown.

	Protected Area	**p(BSEL)**	**L 95% CI**	**p(MaxEnt)**	**Independent Observation**
1	Area de proteccion del Quebracho Colorado	0.28	0.27	0.38	0
2	**Kaa-iya del Gran Chaco**	**0.16**	**0.23**	**0.2**	**1**
3	Isiboro Securé	0.09	0.8	0	0
4	Tariquía	0.09	0.14	0.03	0
5	Madidi	0.05	0.35	0	0
6	Area de proteccion del Pino del Cerro	0.04	0.13	0	0
7	**Otuquis**	**0.04**	**0.08**	**0.14**	**1**
8	Pilón Lajas	0.04	0.35	0	0
9	Carrasco	0.03	0.3	0.01	0
10	Cordillera de Sama	0.03	0.19	0	0
11	**Iñao**	**0.03**	**0.04**	**0.05**	**1**
12	Apolobamba	0.02	0.28	0	0
13	Cotapata	0.02	0.12	0	0
14	Cotapata	0.02	0.12	0	0
15	Amboró	0.01	0.04	0	0
16	Amboró	0.01	0.05	0	0
17	El Palmar	0.01	0.02	0.02	0
18	Estancias San Rafael	0.01	0.03	0	0
19	Noel Kempff Mercado	0.01	0.02	0.02	0
20	Ríos Blanco y Negro	0.01	0.03	0.02	0
21	San Matías	0.01	0.01	0	0
22	Toro Toro	0.01	0.02	0.01	0
23	Tunari	0.01	0.05	0.01	0
24	Cavernas del Repechón	0	0	0	0
25	Cerro Tapilla	0	0	0	0
26	Eduardo Avaroa	0	0.02	0	0
27	Estación Biológica del Beni	0	0	0	0

28	Flavio Machicado Viscarra	0	0	0	0
29	Huancaroma	0	0	0	0
30	Incacasani Altamachi	0	0.04	0	0
31	Las Barrancas	0	0	0	0
32	Llica	0	0	0	0
33	Madidi	0	0	0	0
34	Mallasa	0	0	0	0
35	Mirikiri	0	0	0	0
36	Sajama	0	0.01	0	0
37	Tuni Condoriri	0	0.01	0	0
38	Yura	0	0.01	0	0

107