

Table 1S: Validation results for logistic tree mortality models. Models are ordered from lowest to highest AIC values. In the left portion of the table, columns correspond to Likelihood values (logLik), Akaike Information Critirion (AIC), Bayes Information Critirion (BIC), Area Under the Cirve (AUC), and p-values. For Internal Validation at the Paso Córdoba (PC) site, the middle section shows average percentage (mean %) of correctly classified dead, living and total trees for each model and the standard deviation (sd %) of % correctly classified among the 200 models calibrated on bootstrap-resampled data. The section on the right provides external validation statistics for the Challhuaco and Perito Moreno sites: percentage of correctly classified dead, living and total trees corresponding to each model. See main text for references.

Model	logLik	AIC	BIC	AUC	p-value 1st var	p-value 2nd var	Internal Validation (200 repetitions) Paso Córdoba						External Validation					
							Dead		Live		Total		Challhuaco			Perito Moreno		
							mean %	sd %	mean %	sd %	mean %	sd %	Dead %	Live %	Total %	Dead %	Live %	Total %
bai6 + locreg40	-34.973	76	84.2	0.94	6.20e-07***	0.0484*	92.9	3.3	84.7	4.9	88.6	3.0	70	90	80	100	75	87.5
bai6 + locreg35	-35.05	76.1	84.3	0.94	5.64e-07***	0.0514	92.8	3.6	84.8	5.0	88.3	3.1	70	90	80	100	75	87.5
bai6 + locreg30	-35.414	76.8	85.0	0.94	5.33e-07***	0.069	92.4	3.4	84.9	4.7	88.6	2.9	70	90	80	100	75	87.5
bai6 + locreg45	-35.739	77.5	85.7	0.93	4.34e-07***	0.0939	92.9	3.5	82.9	5.1	87.6	3.1	70	90	80	100	75	87.5
bai6	-37.34	78.7	84.2	0.92	1.65e-07***		93.1	3.8	81.0	5.1	87.1	3.2	75	90	82.5	100	70	85
bai5 + locreg40	-36.856	79.7	87.9	0.93	5.79e-07***	0.0446*	91.0	3.9	81.2	5.4	85.6	3.0	70	90	80	95	80	87.5
bai5 + locreg35	-37.015	80	88.2	0.93	5.21e-07***	0.0502	91.1	4.2	83.1	5.2	87.0	3.0	70	90	80	95	80	87.5
logbai6+locreg40	-37.159	80.3	88.5	0.93	5.55e-08***	0.0141*	88.5	4.4	86.5	4.4	88.0	3.1	65	95	80	90	80	85
logbai6 + locreg35	-37.328	80.7	88.9	0.93	4.86e-08***	0.0154*	87.1	4.3	86.5	4.5	86.7	3.2	65	95	80	90	80	85
bai5 + locreg30	-37.516	81	89.2	0.93	4.48e-07***	0.0773	90.6	3.9	83.0	5.5	86.9	3.3	70	90	80	100	80	90
bai5 + locreg45	-37.661	81.3	89.5	0.92	3.87e-07***	0.0892	90.9	3.4	81.0	5.5	85.8	3.2	70	90	80	95	80	87.5
logbai6+locreg30	-37.838	81.7	89.9	0.93	4.24e-08***	0.0219*	89.4	4.6	85.2	4.8	87.0	3.2	65	95	80	95	80	87.5
logbai6+locreg45	-38.174	82.4	90.6	0.93	3.31e-08***	0.0302*	89.1	4.1	86.2	4.5	87.3	3.3	65	95	80	90	80	85
bai5	-39.309	82.6	88.1	0.91	1.20e-07***		89.2	4.3	83.1	5.2	85.9	3.4	75	90	82.5	100	70	85
bai7 + locreg40	-38.309	82.6	90.8	0.92	4.06e-07***	0.0341*	90.9	4.4	83.0	4.9	87.0	3.4	70	90	80	100	75	87.5
bai7 + locreg35	-38.424	82.9	91.1	0.92	3.46e-07***	0.0374*	90.9	3.9	83.5	5.1	86.5	3.1	70	90	80	100	75	87.5
bai7 + locreg30	-38.808	83.6	91.8	0.92	3.09e-07***	0.0509	91.4	4.1	81.8	5.2	86.0	3.5	70	90	80	100	75	87.5
logbai5+locreg40	-39.019	84	92.2	0.92	4.35e-08***	0.0114	87.4	4.5	83.3	5.0	85.2	3.4	65	95	80	85	85	85
bai7 + locreg45	-39.229	84.6	92.7	0.92	2.57e-07***	0.0754	92.3	3.7	83.3	4.9	87.8	3.2	70	90	80	100	75	87.5
logbai5+locreg35	-39.281	84.6	92.8	0.92	3.77e-08***	0.0131*	87.5	4.9	82.5	4.8	85.0	3.1	65	95	80	90	85	87.5
bai3 + locreg40	-39.814	85.6	93.8	0.92	9.84e-07***	0.097775	91.1	3.5	78.5	5.2	84.2	3.3	80	95	87.5	95	75	85

Table 1S: *Cont.*

Model	logLik	AIC	BIC	AUC	p-value	1st var	p-value	2nd var	Internal Validation (200 repetitions)						External Validation					
									Paso Córdova						Challhuaco			Perito Moreno		
									Dead		Live		Total		Dead	Live	Total	Dead	Live	Total
									mean %	sd %	mean %	sd %	mean %	sd %	%	%	%	%	%	%
logbai6	-40.886	85.8	91.2	0.92	9.42e-09***				83.9	5.5	83.1	5.2	83.5	3.7	70	90	80	100	75	87.5
logbai5+locreg30	-39.952	85.9	94.1	0.92	3.07e-08***	0.0214*			88.9	4.3	84.7	4.6	86.6	3.3	65	95	80	95	80	87.5
bai7	-41.032	86.1	91.5	0.91	9.25e-08***				87.2	4.7	79.9	5.9	83.5	3.4	70	90	80	100	70	85
bai3 + locreg35	-40.142	86.3	94.5	0.92	8.76e-07***	0.134			90.5	4.1	78.2	5.6	84.3	3.7	80	95	87.5	100	70	85
logbai5+locreg45	-40.123	86.3	94.5	0.91	2.52e-08***	0.0256*			89.5	4.4	85.0	4.5	87.2	3.0	65	95	80	95	85	90
bai3	-41.435	86.9	92.3	0.91	2.90e-07***				90.6	4.0	77.7	5.2	84.2	3.4	85	90	87.5	100	65	82.5
bai3 + locreg45	-40.467	86.9	95.1	0.91	6.58e-07***	0.188			91.9	4.0	79.1	5.5	84.6	3.3	80	100	90	100	75	87.5
logrelBAI6+locreg45	-40.476	87	92.7	0.92	7.44e-08***	0.0117*			82.2	5.6	85.2	4.6	83.6	3.7	75	90	82.5	100	90	95
bai3 + locreg30	-40.662	87.3	95.5	0.91	7.18e-07***	0.236			93.1	3.8	79.6	5.6	85.8	3.1	80	100	90	100	65	82.5
logbai5	-43.013	90	95.5	0.91	6.08e-09***				81.8	5.0	86.2	4.9	84.0	3.7	70	95	82.5	100	80	90
logrelBAI6+locreg40	-42.601	91.4	95.2	0.91	9.92e-08***	0.0928			83.1	4.4	84.6	4.7	84.0	3.7	80	90	85	100	90	95
logrelBAI5+locreg45	-42.882	91.8	100.0	0.92	1.14e-07***	0.0228*			80.3	5.5	83.3	4.8	81.5	3.9	85	90	87.5	100	90	95
logrelBAI6	-44.034	92.1	100.1	0.91	4.40e-09***				83.5	4.9	85.0	5.0	84.3	3.7	65	90	77.5	90	90	90
logrelBAI6+locreg30	-42.957	92.1	100.1	0.91	4.44e-08***	0.141			85.1	4.8	83.2	5.2	84.0	3.8	80	90	85	90	90	90
logrelBAI6+locreg35	-42.932	92.1	99.4	0.90	6.37e-08***	0.137			85.7	5.0	85.1	4.4	84.9	3.3	80	90	85	100	90	95
relBAI6+locreg45	-43.872	93.8	102.0	0.92	3.23e-07***	0.0225*			87.4	4.7	80.8	5.3	84.0	3.5	90	90	90	100	80	90
logrelBAI5	-45.69	95.4	100.9	0.90	9.08e-09***				85.7	4.8	83.5	4.8	84.8	3.3	75	95	85	80	90	85
logrelBAI5+locreg40	-44.673	95.4	103.6	0.90	1.87e-07***	0.154			83.9	5.3	84.9	4.9	84.2	3.8	85	95	90	95	90	92.5
logrelBAI5+locreg30	-44.814	95.6	103.8	0.90	8.66e-08***	0.184			85.8	4.6	83.3	4.7	84.2	3.7	85	90	87.5	90	90	90
logrelBAI7+locreg45	-44.788	95.6	103.8	0.90	1.01e-07***	0.0245*			81.6	4.9	84.6	4.8	83.2	3.7	70	90	80	100	90	95
logrelBAI5+locreg35	-44.878	95.8	104.0	0.90	1.21e-07***	0.2			85.3	5.2	83.3	5.1	83.9	3.6	80	95	87.5	90	90	90
relBAI6+locreg40	-45.266	96.5	104.7	0.92	6.39e-07***	0.11			89.5	4.4	79.9	5.9	84.2	3.5	90	90	90	100	85	92.5
relBAI6+locreg30	-45.381	96.8	105.0	0.91	3.23e-07***	0.127			90.8	3.6	80.9	5.3	85.8	3.5	90	90	90	100	85	92.5
relBAI6+locreg35	-45.445	96.9	105.1	0.91	4.59e-07***	0.137			90.9	4.2	81.6	5.3	86.4	3.2	90	90	90	100	85	92.5

Table 1S: *Cont.*

Model	logLik	AIC	BIC	AUC	p-value 1st var	p-value 2nd var	Internal Validation (200 repetitions)						External Validation					
							Paso Córdova						Challhuaco			Perito Moreno		
							Dead		Live		Total		Dead	Live	Total	Dead	Live	Total
							mean %	sd %	mean %	sd %	mean %	sd %	%	%	%	%	%	%
relBAI6	-46.531	97.1	102.5	0.90	2.41e-07***		90.5	4.1	78.4	5.5	84.3	3.5	90	90	90	100	90	95
logrelBAI3+locreg45	-45.866	97.7	105.9	0.90	1.64e-07***	0.0737	85.4	4.9	82.8	5.1	84.1	3.5	85	85	85	90	80	85
logrelBAI3	-47.504	99	104.5	0.89	1.92e-08***		87.7	4.6	80.3	5.7	82.9	3.7	85	85	85	90	90	90
logrelBAI7	-47.538	99.1	104.5	0.89	8.67e-09***		82.1	5.6	83.4	5.2	82.2	3.8	65	90	77.5	90	90	90
logrelBAI7+locreg40	-46.63	99.3	107.5	0.89	2.04e-07***	0.178	82.4	5.2	84.7	4.8	83.4	3.5	75	90	82.5	100	90	95
logrelBAI3+locreg30	-46.868	99.7	107.9	0.89	1.47e-07***	0.256	87.2	4.2	81.6	5.5	84.2	3.3	85	85	85	90	85	87.5
logrelBAI7+locreg30	-46.863	99.7	107.9	0.89	8.91e-08***	0.243	83.9	5.6	81.6	5.4	82.3	3.5	75	90	82.5	95	90	92.5
logrelBAI7+locreg35	-46.856	99.7	107.9	0.90	1.32e-07***	0.24	83.3	5.0	82.8	5.2	83.4	3.7	75	90	82.5	100	90	95
logrelBAI3+locreg35	-47.049	100.1	108.3	0.89	2.02e-07***	0.335	87.0	4.9	79.4	5.5	83.5	3.4	85	85	85	90	85	87.5
logrelBAI3+locreg40	-47.027	100.1	108.3	0.89	2.95e-07***	0.323	85.3	4.9	81.1	5.1	83.3	3.5	85	85	85	90	85	87.5
locreg40	-69.589	143.2		0.75	2.10e-04***		67.4	6.6	72.3	6.2	69.3	4.7	45	90	67.5	10	90	50
locreg35	-70.464	144.9		0.75	3.82e-04***		70.2	6.4	65.9	6.2	67.6	4.3	40	90	65	15	90	52.5
locreg30	-71.646	147.3		0.73	7.99e-04***		62.0	6.9	67.9	6.5	65.2	4.5	35	95	65	25	90	57.5
locreg45	-72.463	148.9		0.72	1.26e-03***		61.4	6.6	69.5	6.4	66.2	4.2	40	95	67.5	5	100	52.5