

Supplementary material

Table S1. Environmental variables considered for use in modelling claylick distribution using Maxent, indicating their original spatial resolution or scale, if they were ultimately used, and the final percent contribution to the model. AVHRR is Advanced Very High Resolution Radiometer; MODIS VCF is MODerate Resolution Imaging Spectroradiometer Vegetation Continuous Field. Bio1 to Bio19 are Bioclim variables (Nix 1986).

Environmental variable	Original spatial resolution/scale	Used (yes/no)	% contribution in Maxent model	Data source
Elevation	~1 km	Yes	3.0	<edc.usgs.gov/products/elevation/gtopo30/hydro/index.html>
Slope (degrees)	~1 km	Yes	0.2	Same as above
Northness (cos(aspect))	~1 km	Yes	3.3	Generated from Aspect from <edc.usgs.gov/products/elevation/gtopo30/hydro/index.html>
Eastness (sin(aspect))	~1 km	Yes	0.6	Generated from Aspect from <edc.usgs.gov/products/elevation/gtopo30/hydro/index.html>
Compound topographic index	~1 km	Yes	4.5	<edc.usgs.gov/products/elevation/gtopo30/hydro/index.html>
Flow accumulation	~1 km	Yes	–	Same as above
Flow direction	~1 km	Yes	0.1	Same as above
Distance from Pacific and Atlantic oceans	1 km	Yes	7.2	Generated in GIS
Soil types	1 × 1 degree	No	–	<www.sage.wisc.edu/atlas/maps.php>
Soil pH	0.5 × 0.5 degree	No	–	Same as above
Soil Carbon	0.5 × 0.5 degree	No	–	Same as above
Soil moisture	0.5 × 0.5 degree	Yes	2.3	Same as above
Growing degree days	0.5 × 0.5 degree	No	–	Same as above
Evapotranspiration	0.5 × 0.5 degree	Yes	1.8	Same as above
Potential Evapotranspiration	0.5 × 0.5 degree	Yes	0.0	Same as above
Geology	1:1 million	No	–	Hearn et al. (2000)
Geological age	1:1 million	No	–	Hearn et al. (2000)
AVHRR land use land cover types	1km	Yes	20.4	Hansen et al. (2000); available at <glcf.umiaccs.umd.edu/data/>
MODIS VCF – Bare cover	500 m	Yes	3.0	Hansen et al. (2003); available at <glcf.umiaccs.umd.edu/data/>
MODIS VCF – tree cover	500 m	Yes	0.1	Same as above
MODIS VCF – herb cover	500 m	Yes	4.8	Same as above
Annual mean temperature (Bio1)	~1 km	No	–	Hijmans et al. (2005); available at <www.worldclim.org/>
Mean diurnal range in temperature (Bio2)	~1 km	Yes	0.0	Same as above
Isothermality (Bio3)	~1 km	Yes	0.0	Same as above
Temperature seasonality (SD × 100) (Bio4)	~1 km	Yes	12.1	Same as above
Maximum temperature of warmest month (Bio5)	~1 km	No	–	Same as above

Minimum temperature of coldest month (Bio6)	-1 km	No	-	Same as above
Temperature annual range (Bio7)	-1 km	Yes	0.0	Same as above
Mean temperature of wettest quarter (Bio8)	-1 km	No	-	Same as above
Mean temperature of driest quarter (Bio9)	-1 km	No	-	Same as above
Mean temperature of warmest quarter (Bio10)	-1 km	No	-	Same as above
Mean temperature of coldest quarter (Bio11)	-1 km	No	-	Same as above
Mean annual precipitation (Bio12)	-1 km	Yes	0.2	Same as above
Precipitation of wettest month (Bio13)	-1 km	No	-	Same as above
Precipitation of driest month (Bio14)	-1 km	Yes	3.2	Same as above
Precipitation seasonality (CV) (Bio15)	-1 km	Yes	0.6	Same as above
Precipitation of wettest quarter (Bio16)	-1 km	No	-	Same as above
Precipitation of driest quarter (Bio17)	-1 km	No	-	Same as above
Precipitation of warmest quarter (Bio18)	-1 km	Yes	31.3	Same as above
Precipitation of coldest quarter (Bio19)	-1 km	Yes	1.0	Same as above

Table S2. The characteristics of South American parrot species whose range overlaps with at least one of claylick.

Common name	Number of licks visited	Number of licks in range	Proportion of licks visited	Range (1000 km ²)	Abundance	IUCN ranking	Habitat breadth	Diet breadth	Ave weight (g)	Average ranked abundance on licks	n	Average ranked perceived abundance	n
Maroon-bellied parakeet	1	1	1.00	1600	3	5	3	5	88	1	1		
Blue-headed parrot	19	24	0.79	8300	4	5	5	4	251	2.4	18	1.8	18
Yellow-crowned parrot	16	24	0.67	6700	3	5	6	2	440	1.7	15	1.67	15
Peach-fronted parakeet	2	3	0.67	5700	3	5	3	5	86.5	2	2	1	2
Red-and-green macaw	16	25	0.64	8100	3	5	3	2	1214	1.6	16	2	19
Mealy parrot	15	24	0.63	7200	3	5	5	3	626	2.4	15	2.53	15
Dusky-headed parakeet	15	24	0.63	2300	3	5	3	5	108	2.3	15	1.56	16
Orange-cheeked parrot	13	22	0.59	3500	3	5	1	3	140	1.3	12	1.08	13
Chestnut-fronted macaw	14	24	0.58	5800	3	5	2	2	343	2	14	2	18
Cobalt-winged parakeet	11	20	0.55	2600	3	5	3	3	56	2.4	11	2.47	15
Military macaw	1	2	0.50	298	1	4	3	3	1134	1.5	2	1.5	2
Golden-winged parakeet	1	2	0.50	3100	3	5	3	4	54.5				
White-eyed parakeet	12	25	0.48	10000	3	5	4	2	158	1.7	12	1.8	15
Black-capped parakeet	6	14	0.43	550	3	5	2	3	75	1.5	6	2	9
Scarlet macaw	10	24	0.42	6700	3	5	3	3	1015	1.4	10	1.69	16
Blue-headed macaw	6	16	0.38	373	2	2	2	2	250	1.3	6	1.08	12
Crimson-bellied parakeet	1	3	0.33	1100	3	5	2	2	75	1	1	3	1
Blue-and-yellow macaw	7	24	0.29	7800	3	5	3	4	1125	1.4	7	1.69	16
Amazonian parrotlet	4	14	0.29	200	1	4	1	2	41.5	1	4	1	8
White-bellied parrot	4	19	0.21	3600	3	5	2		155	1	4	1.83	12
Dusky-billed parrotlet	4	21	0.19	2900	3	5	2	3	27.2	1	4	1.18	11
Red-bellied macaw	4	24	0.17	7200	3	5	4	1	372	1.7	3	1.38	13
Painted parakeet	3	19	0.16	4000	3	5	3	5	62.1	1	1	1.33	3
Orange-winged parrot	1	8	0.13	7400	4	5	5	3	370	1	1	.	
Tui parakeet	1	19	0.05	1700	4	5	1	2	59	2	1	1	2
Scarlet-shouldered parrotlet	1	22	0.05	1800	2	5	1		60	1	1	1	4
Festive parrot	0	4	0.00	860	3	5	4		430				
Black-headed parrot	0	4	0.00	2900	3	5	2	5	157				
Maroon-tailed parakeet	0	4	0.00	1500	3	5	2		67.9				
Sapphire-rumped parrotlet	0	4	0.00	3800	2	5	2	1	59.7				
Blue-fronted parrot	0	3	0.00	4200	4	5	5	2	451				
Red-shouldered macaw	0	3	0.00	4300	3	5	5	3	156				
Monk parakeet	0	3	0.00	2800	3	5	4	5	120				
Canary-winged parakeet	0	3	0.00	3400	3	5	3	3	74.6				
Red-fan parrot	0	2	0.00	4300	3	5	1	2	246				
Scarlet-fronted parakeet	0	2	0.00	420	4	5	2	3	194				
Blue-crowned parakeet	0	2	0.00	2300	3	5	4	3	171				
Green-cheeked parakeet	0	2	0.00	680	3	5	5		77.1				
Scaly-headed parrot	0	1	0.00	4500	3	5	1	2	293				
Yellow-faced amazon	0	1	0.00	1500	2	4	2	2	260				
Blue-winged macaw	0	1	0.00		3	4	3		256				

Vinaceous amazon	0	1	0.00	106	1	3	2	3	254
Yellow-collared macaw	0	1	0.00	600	3	5	5	4	245
Pileated parrot	0	1	0.00	730	3	5	2	2	119
Grey-hooded parakeet	0	1	0.00	600	3	5	3	2	33.6
Kawall's parrot	0	1	0.00	720		5	1	2	
