SUPPLEMENTARY MATERIAL

Impacts of climate changes on spatio-temporal diversity patterns of Atlantic Forest primates

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Study area

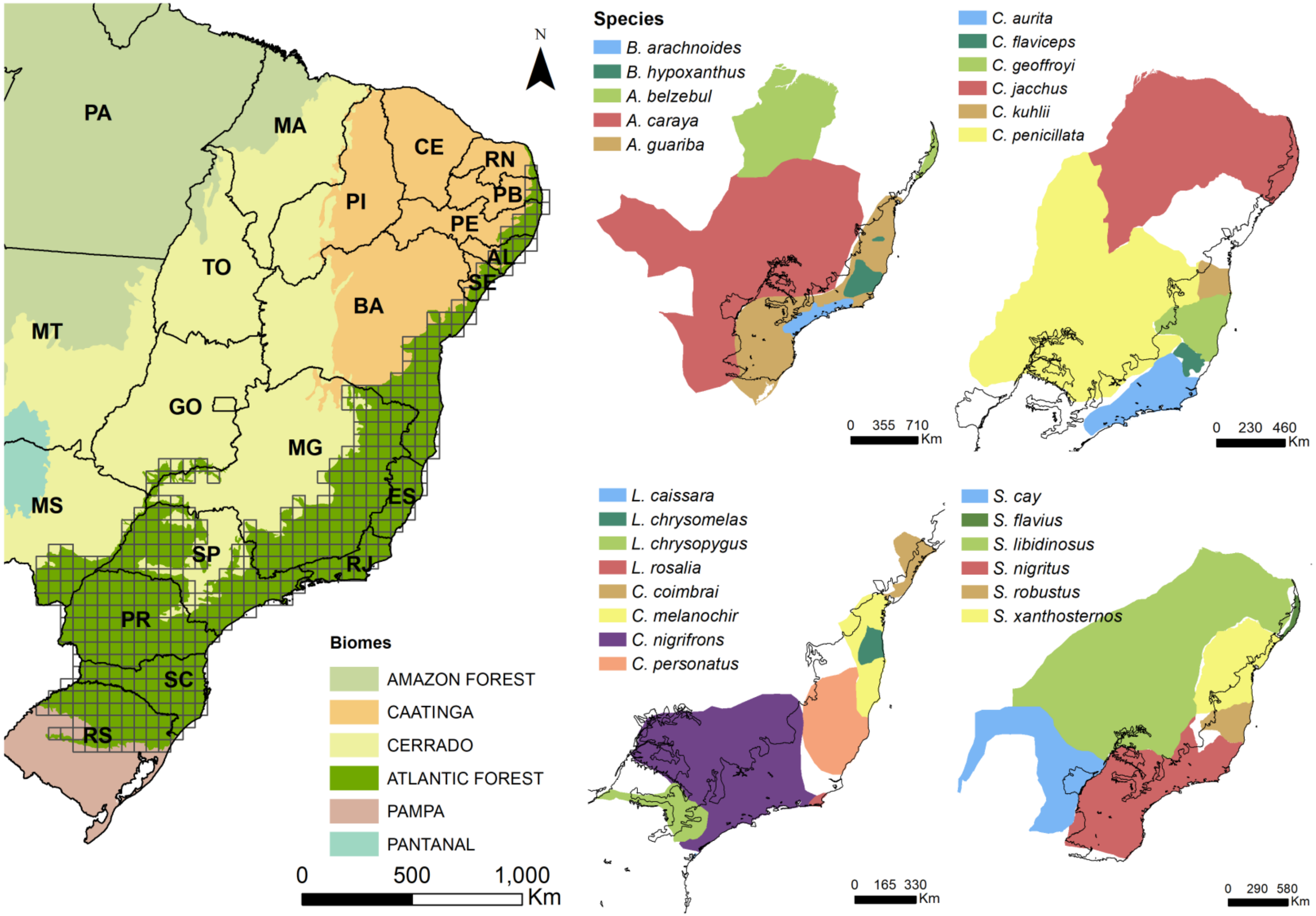
Tropical forests will suffer the effects of changes in climate, such as precipitation and temperature patterns (Chow et al., 2013), and this has recently given the title to the Atlantic Forest as the third hotspot of high vulnerability to climate change (Bellard et al., 2014). Our study area is the Brazilian Atlantic Forest (Fig. S1). The Atlantic Forest is the second largest forest domain in South America, extending from the Brazilian northeast to the east of Argentina and Paraguay (Câmara, 2003; Huang et al., 2007). It is a biodiversity hotspot (Myers et al., 2000) and has approximately 1 to 8% of all known fauna and flora species in the world (Silva & Casteleti, 2003). The large latitudinal, longitudinal (5°S-31°S, 35°W-58°W) and altitudinal (0 to 2 700 m) ranges provide different climatic conditions along its length and a wide variety of phytophysiognomies and associated ecosystems (Pinto & Brito, 2003). The Atlantic Forest has an original area of approximately 112 million ha and covers 15 Brazilian states, and there are about 28% of Atlantic Forest remaining in the country (Rezende et al. 2018). For the delimitation of the study area, we used the Brazilian biomes map (IBGE - http://downloads.ibge.gov.br/downloads_geociencias.htm).

Geographic distribution and occurrence records

In this study, we used the distributional ranges of 25 primate species to calculate, for each species, the total distribution area and the area inside the biome (Table S1). We then obtained the proportion of the distribution of each species within the biome. We considered all species that have more than 3 million ha and/or more than 50% of the area of their distribution within the Brazilian Atlantic Forest (Figure S1).

The primate occurrence records used to construct habitat suitability models were compiled from published literature indexed in *Web of Science* and *SciELO* and published in the specialised journals *Neotropical Primates* and *Checklist*, from January 2000 to December 2015. These occurrences records complemented another database described and used by Pinto & Grelle (2009). We used genus name (*Alouatta*, *Brachyteles*, *Callicebus*, *Callithrix* and *Leontopithecus*) as the keyword in Web of Science and SciELO searches. Specifically for the genus *Sapajus* we used the keywords *Cebus* and *Sapajus*, considering the recent taxonomic update for *Cebus* (Alfaro et al., 2012). In order to stimulate the *Open Science* philosophy, we made all these data available for the entire scientific and non-scientific community at ATLANTIC SERIES data paper (Culot et al., 2019).

We performed the taxonomic reclassification when necessary, following IUCN (2016) and Rylands & Mittermeier (2009). Subsequently, all occurrence records data were examined for spatial location. Records located within the geographical distribution of the species (IUCN, 2016) were considered valid. Occurrence records located outside the geographic distribution of the species (IUCN, 2016) were considered valid only if: a) were reported in more than one publication with at least one direct record (capture or visualization) with the primate as study object; or b) the authors explicitly reported a geographic expansion of the species distribution.



N
PA
MA
CE
RN
PB
PI
PE
AL
SE
TO
BA
MT
GO
MG
MS
ES
SP
RJ
PR
SC
RS
Biomes
AMAZON FOREST
CAATINGA
CERRADO
ATLANTIC FOREST
PAMPA
PANTANAL
0 500 1,000
Km
Species
B. arachnoides
B. hypoxanthus
A. belzebul
A. caraya
A. guariba
0 355 710
Km
C. aurita
C. flaviceps
C. geoffroyi
C. jacchus
C. kuhlii
C. penicillata
0 230 460
Km
L. caissara
L. chrysomelas
L. chrysopygus
L. rosalia
C. coimbrai
C. melanochir
C. nigrifrons
C. personatus
0 165 330
Km
S. cay
S. flavius
S. libidinosus
S. nigritus
S. robustus
S. xanthosternos
0 290 580
Km

Fig. S1 Grid with 0.5° latitude/longitude grains over the Brazilian Atlantic Forest and primates distribution according to IUCN (2016). Atlantic Forest according to IBGE biomes map. Limits of the Brazilian states: MT – Mato Grosso, PA - Pará, TO – Tocantins, MA – Maranhão, PI – Piauí, CE – Ceará, RN – Rio Grande do Norte, PB – Paraíba, PE – Pernambuco, AL – Alagoas, SE – Sergipe, BA – Bahia, GO – Goiás, MG – Minas Gerais, ES – Espírito Santo, RJ – Rio de Janeiro, SP – São Paulo, MS – Mato Grosso do Sul, PR – Paraná, SC – Santa Catarina, and RS – Rio Grande do Sul.

Table S1 Primate species included in this study. Name of species (Species); total area of species' extent of occurrence according to IUCN shapefile (Total area (ha)); area and proportion of species extent of occurrence that intersects with the Atlantic Forest biome (this biome was defined according to the map of application of the Atlantic Forest Law - Law - or according to the Brazilian biome boundary map - IBGE); criteria for inclusion of the species in the study (inclusion criteria: > 3 thousand - species that has more than 3 million ha of its distribution in the biome, and/or > 50% - species with more than 50% of its distribution in the biome); IUCN status of each species.

Species	Total area (ha)	Area in the Atlantic Forest				Inclusion criteria		IUCN status
		Law (ha)	% Law	IBGE (ha)	%IBGE	> 3 thousand	> 50 %	
Alouatta belzebul	86,670,802	3,455,937	4	3,647,687	4	Law/IBGE		VU
Alouatta caraya	306,416,453	27,165,167	9	17,566,815	6	Law/IBGE		NT
Alouatta guariba	107,659,621	91,113,861	85	89,717,964	83	Law/IBGE	Law/IBGE	NT
Brachyteles arachnoides	8,627,440	8,315,073	96*	8,521,713	99*	Law/IBGE	Law/IBGE	EN
Brachyteles hypoxanthus	9,665,731	9,602,523	99*	9,657,511	100	Law/IBGE	Law/IBGE	CR
Callicebus coimbrai	3,858,502	1,896,609	49	2,043,057	53		IBGE	EN
Callicebus melanochir	9,986,641	8,575,852	86	8,845,902	89	Law/IBGE	Law/IBGE	VU
Callicebus nigrifrons	49,058,140	25,377,625	52	24,913,369	51	Law/IBGE	Law/IBGE	NT
Callicebus personatus	14,297,270	13,902,012	97	13,980,314	98	Law/IBGE	Law/IBGE	VU
Callithrix aurita	15,961,278	15,619,146	98	15,908,611	100	Law/IBGE	Law/IBGE	VU
Callithrix flaviceps	2,473,247	2,473,247	100	2,473,247	100		Law/IBGE	EN
Callithrix geoffroyi	12,496,725	11,058,322	88	11,198,295	90	Law/IBGE	Law/IBGE	LC
Callithrix jacchus	94,336,346	8,384,616	9	3,995,691	4	Law/IBGE		LC
Callithrix kuhlii	4,570,134	4,066,651	89	4,132,885	90	Law/IBGE	Law/IBGE	NT
Callithrix penicillata	130,979,641	20,973,384	16	14,770,473	11	Law/IBGE		LC
Leontopithecus caissara	33,496	24,827	74*	32,611	97*		Law/IBGE	CR
Leontopithecus chrysomelas	2,018,963	1,968,710	98*	2,018,878	100		Law/IBGE	EN
Leontopithecus chrysopygus	6,367,099	3,828,615	60	3,800,176	60	Law/IBGE	Law/IBGE	EN

Leontopithecus rosalia	399,052	337,307	85*	393,699	99*		Law/IBGE	EN
Sapajus cay	62,090,538	5,710,266	9	4,806,174	8	Law/IBGE		LC
Sapajus flavius	3,891,765	3,508,166	90	3,777,984	97	Law/IBGE	Law/IBGE	CR
Sapajus libidinosus	261,254,845	10,890,264	4	3,149,014	1	Law/IBGE		LC
Sapajus nigritus	87,980,012	72,453,624	82	72,732,782	83	Law/IBGE	Law/IBGE	NT
Sapajus robustus	11,992,192	10,565,957	88	10,699,244	89	Law/IBGE	Law/IBGE	EN
Sapajus xanthosternos	46,659,595	17,588,623	38	12,018,094	26	Law/IBGE		CR

* These species are endemic to the Atlantic Forest. Due to the spatial congruence of the shapefiles used (IUCN distributions and Atlantic Forest limits), species' area in the biome was different from the species' total area. All shapefiles were in the same spatial projection.

LC – Least concern; NT – Near Threatened; VU – Vulnerable; EN – Endangered; CR – Critically Endangered.

Environmental data

A total of 19 bioclimatic temperature and precipitation variables and altitude were obtained from WorldClim - Global Climate Data database (Hijmans et al., 2005) (Table S2). These bioclimatic data for the current time were constructed using the average of the data collected between 1960 and 1990, and for 2050 considered the average estimates of the time interval between 2041 and 2060. The climate and precipitation variables were obtained in the resolution of 2.5 minutes (~ 5km²). The original altitude resolution is 30 seconds (~ 1km²), and it was resized to the same resolution of the bioclimatic variables for modelling purposes.

Bioclimatic data for the future are available considering different Global Climate Model (GCM) associated with the Representative Concentration Pathways (RCPs, which were built on different scenarios of greenhouse gas emissions). Greenhouse gas emissions is expected to be reduced in two optimistic scenarios. RCP 2.6 considers the greenhouse gas emissions peak between 2010 and 2020, and it subsequently declines substantially, and RCP 4.5 predicts the greenhouse gas emissions peak in 2040, and it is expected to decline soon (IPCC, 2014). Pessimistic scenarios are also expected. RCP 6.0 is a scenario with high greenhouse gas emissions emission with a peak occurring in 2080 and only then should emissions be reduced, while the more catastrophic RCP 8.5 scenario predicts greenhouse gas emissions increase throughout 21st century (IPCC, 2014). In this study, we used these four RCPs associated with eight different GCMs: BCC-CSM1-1, CCSM4, GISS-E2-R, HadGEM2-AO, HadGEM2-ES, IPSL-CM5A-LR, MRI-CGCM3 and NorESM1-M.

Table S2 Bioclimatic variables of temperature and precipitation, and altitude, obtained from the database Worldclim - Global Climate Data (http://www.worldclim.com). Variable Code (Cod.) and variable name (Variables).

Cod.	Variables
Alt	Altitude
bio1	Annual Mean Temperature
bio2	Mean Diurnal Range (Mean of monthly (max temp - min temp))
bio3	Isothermality (BIO2/BIO7) (* 100)
bio4	Temperature Seasonality (standard deviation * 100)
bio5	Max Temperature of Warmest Month
bio6	Min Temperature of Coldest Month
bio7	Temperature Annual Range (BIO5-BIO6)
bio8	Mean Temperature of Wettest Quarter
bio9	Mean Temperature of Driest Quarter
bio10	Mean Temperature of Warmest Quarter
bio11	Mean Temperature of Coldest Quarter
bio12	Annual Precipitation
bio13	Precipitation of Wettest Month
bio14	Precipitation of Driest Month
bio15	Precipitation Seasonality (Coefficient of Variation)
bio16	Precipitation of Wettest Quarter
bio17	Precipitation of Driest Quarter
bio18	Precipitation of Warmest Quarter
bio19	Precipitation of Coldest Quarter

Current and future primate suitability models

The modelling background area to build the habitat suitability models was defined based on the coverage of occurrence records of all species used in the study. We randomly selected 10,000 pixels to calculate the variance inflation factor (VIF; Quinn & Keough, 2002) of variables and removed those with VIF higher than three (Zuur et al., 2010). The following variables were maintained: mean diurnal range (bio2), isothermality (bio3), mean temperature of wettest quarter (bio8), precipitation of wettest month (bio13), precipitation seasonality (bio15) precipitation of warmest quarter (bio18) and precipitation of coldest quarter (bio19). For each species, only one occurrence record in each pixel of the environmental layer was maintained, to minimize overfitting due to sampling bias.

We used the maximum entropy algorithm Maxent 3.3.3k (Elith et al., 2011; Phillips et al., 2006) to generate habitat suitability models (Table S3). In the construction of habitat suitability models, we used 10 values of regularization multiplier (RM - between 0.5 and 5, in increments of 0.5) and six types of feature class (FC - L, LQ, H, LQH, LQHP and LQHPT, where L = linear, Q = quadratic, H = hinge, P = product and T = threshold). For each species we compared the performance of 60 models, using the Akaike Information Criterion corrected (AICc) associated with acceptable values of the area under the ROC curve (AUC - Area Under the ROC Curve, > 0.75). AIC reflects the complexity and model fit, and lower values of AIC are expected to the best models (Burnham and Anderson, 2004; Muscarella et al., 2014). The AIC has demonstrated better performance when compared to AUC in selection of models (Warren and Seifert, 2011). The best model for each species, according to those criteria, is represented in the Table S3. The data partition method of test and training data depended on the number of occurrence data. 'block' was used for species with more than 25 event locations and 'k-1 Jackknife' for species with less than 25 points (Muscarella et al., 2014; Pearson et al., 2007; Shcheglovitova and Anderson, 2013; Wenger and Olden, 2012).

The models adjusted in the present were spatially projected into the future (2050), generating surfaces of environmental suitability of each species in the future. For each greenhouse gas emissions scenario (RCP: 2.6, 4.5, 6.0 and 8.5) a consensus average model was generated from the eight different GCMs (BCC-CSM1-1, CCSM4, GISS-E2-R, HadGEM2-AO, HadGEM2-ES, IPSL-CM5A-LR, MRI-CGCM3 and NorESM1-M). The consensus models and its variability can be observed in Fig. S2. For each species, we joined the IUCN extent with 50 km buffer around occurrence data, and clipped the models in this space.

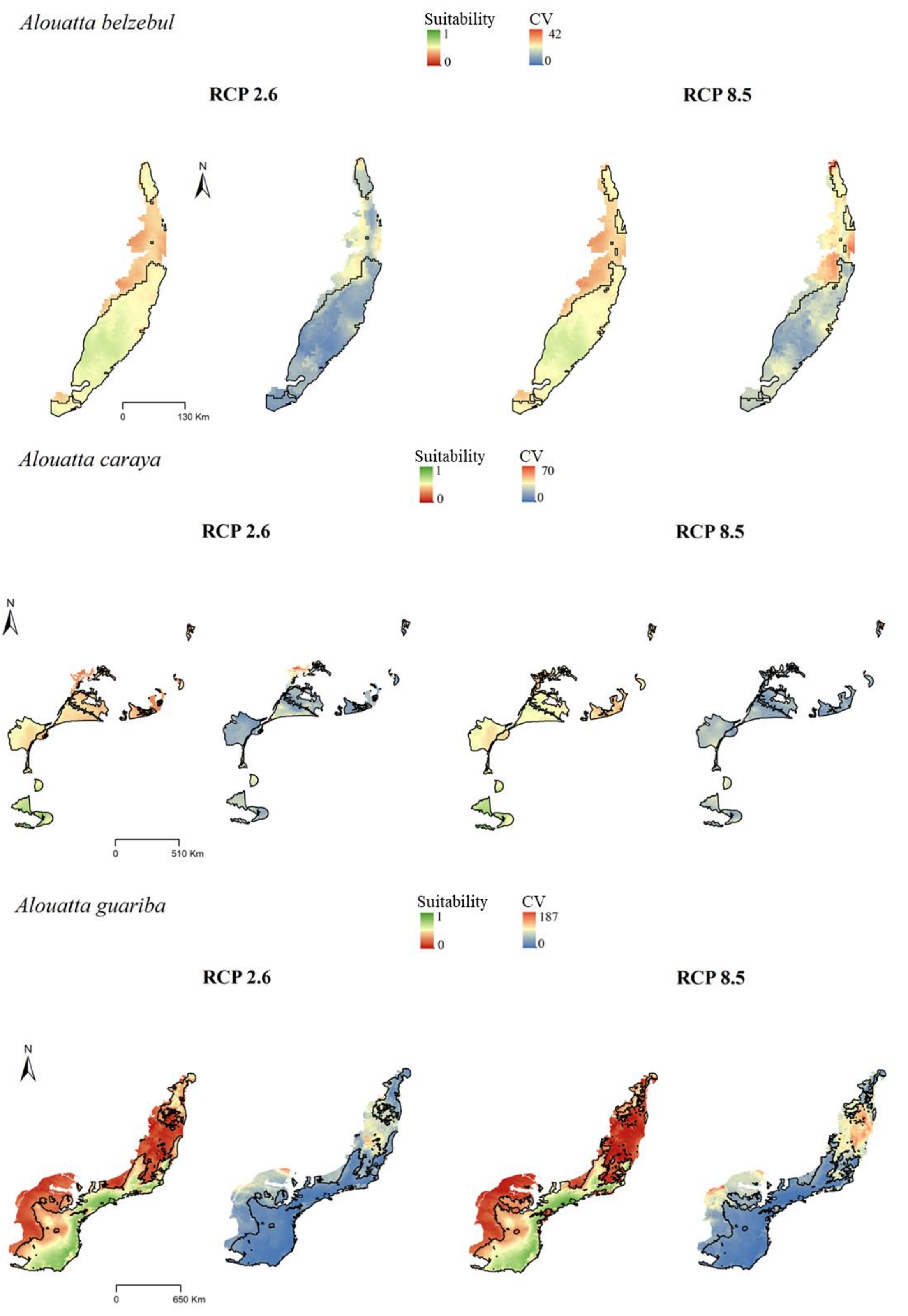
The five final suitability maps for each species, one current and four future scenarios, were converted into binary maps using the 10 percentile training presence threshold, which is indicated when using different data sources, due to possible inaccuracies of georeferencing (Barros et al., 2012).

We used the R software (R Core Team, 2017), the vif_func script (available at https://github.com/oliveirab/R-codes/blob/master/vif_func.R) to calculate VIF, the 'ENMeval' packages for selection of the parameters of the suitability models by AICc and AUC criteria, and 'dismo' package to implement MaxEnt algorithm.

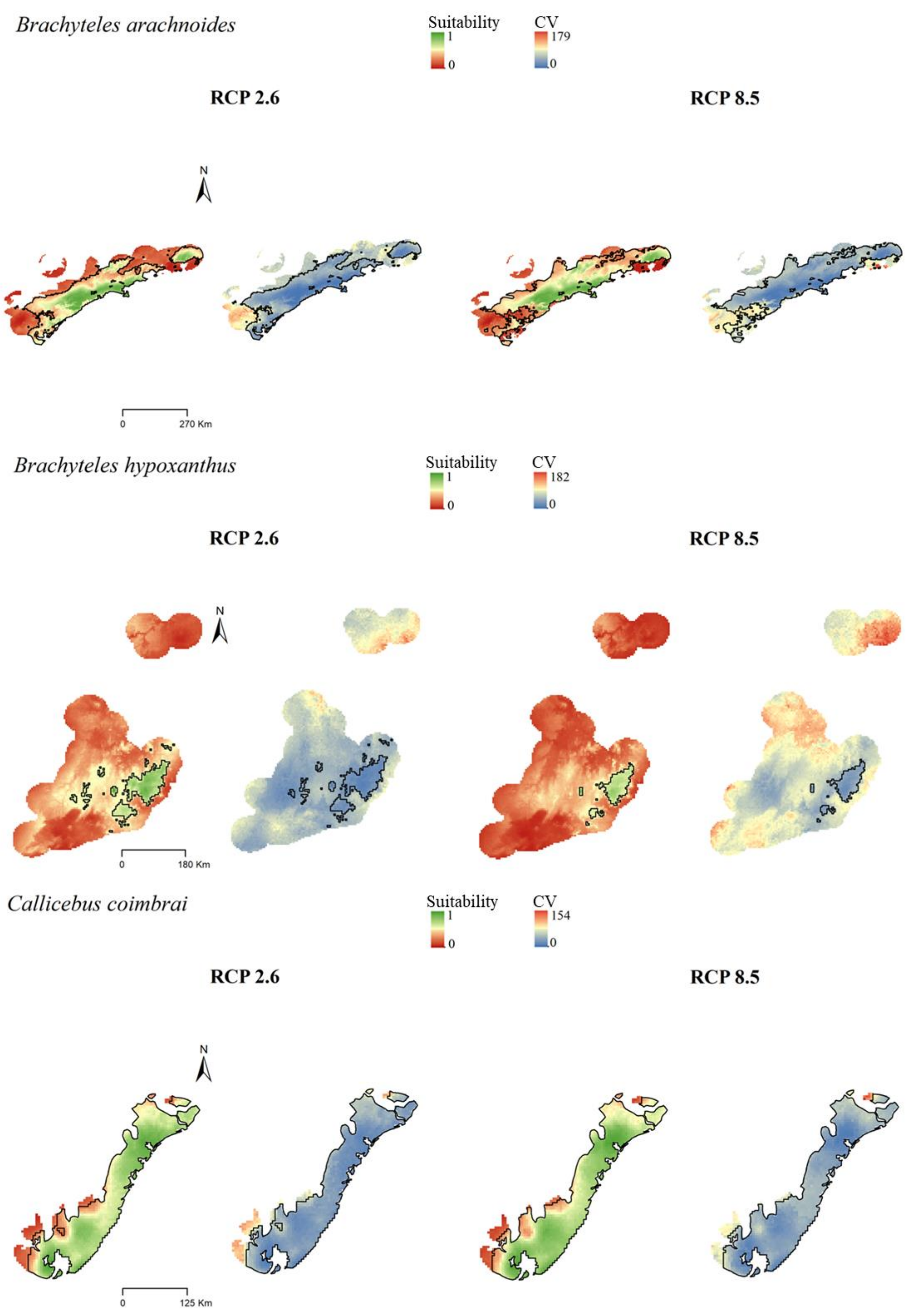
Table S3 Parameters used in the selection of suitability models: species name (Species), regularization multiplier (RM), feature classes (FC), the values area under the ROC curve (AUC), variables (Variables) and number of points (Nº. points). The name of the variables can be observed in Table S2.

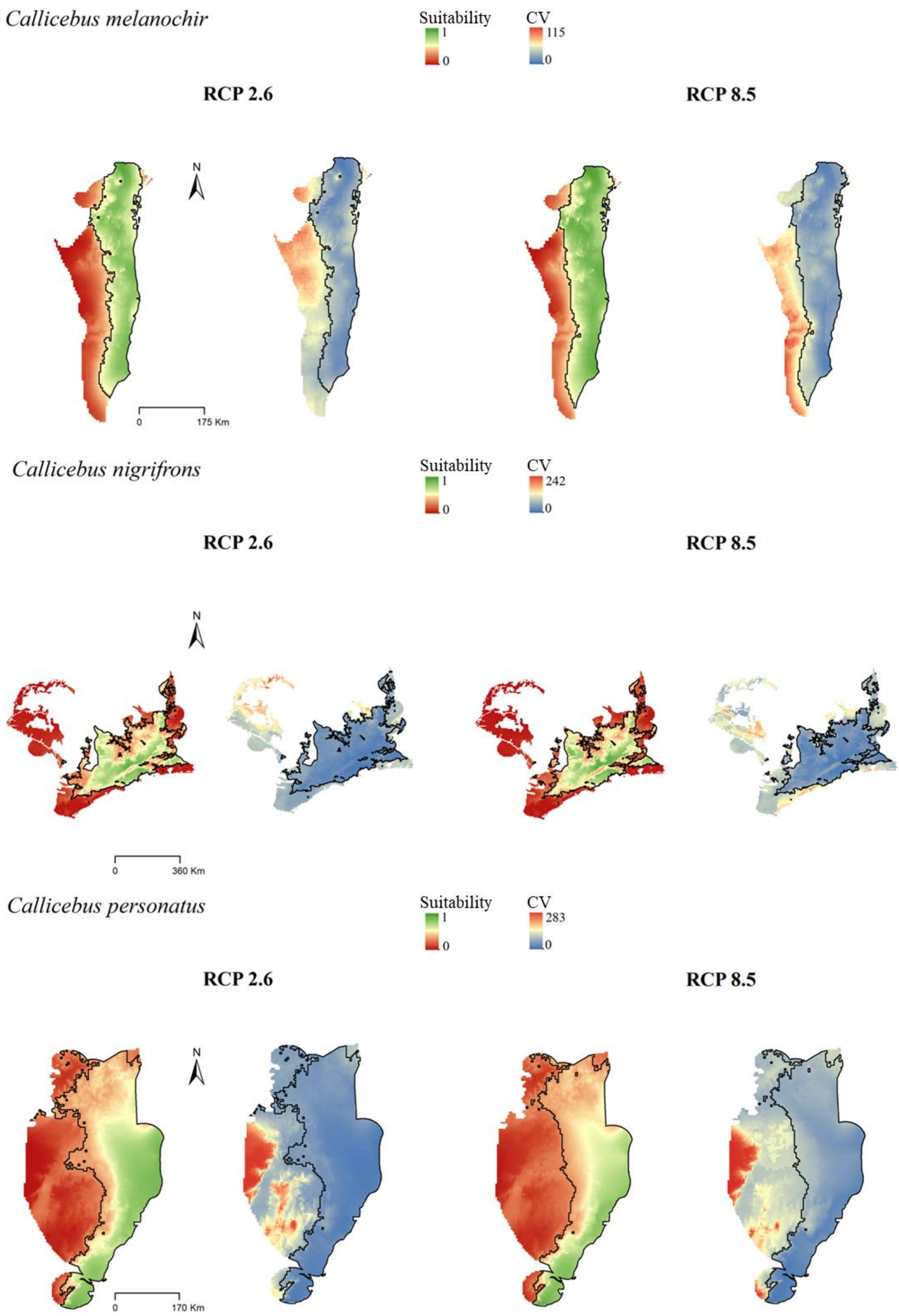
Species	RM	FC	AUC	Variables	Nº points
Alouatta belzebul	4	LQHP	0.93	Bio2, Bio3, Bio15, Bio18, Bio19	24
Alouatta caraya	1.5	LQHP	0.82	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	74
Alouatta guariba	3	LQH	0.93	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	250
Brachyteles arachnoides	1.5	H	0.98	Bio2, Bio3, Bio8, Bio15, Bio18, Bio19	47
Brachyteles hypoxanthus	1.5	LQHP	0.98	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	37
Callicebus coimbrai	1.5	LQ	0.97	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	78
Callicebus melanochir	1.5	LQ	0.99	Bio2, Bio3, Bio8, Bio13, Bio15, Bio19	12
Callicebus nigrifrons	1.5	LQHP	0.99	Bio2, Bio3, Bio8, Bio15, Bio18, Bio19	47
Callicebus personatus	0.5	LQ	0.98	Bio2, Bio3, Bio13, Bio15, Bio18, Bio19	22
Callithrix aurita	1	LQ	0.98	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	62
Callithrix flaviceps	1	LQ	0.99	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	22
Callithrix geoffroyi	0.5	LQ	0.91	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	54
Callithrix jacchus	0.5	LQ	0.87	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	31
Callithrix kuhlii	0.5	L	0.99	Bio2, Bio3, Bio8, Bio13, Bio15, Bio19	17
Callithrix penicillata	0.5	LQ	0.93	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	25
Leontopithecus caissara	4	H	1.00	Bio2, Bio3, Bio8, Bio13, Bio18	14
Leontopithecus chrysomelas	4.5	LQHPT	0.95	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	107
Leontopithecus chrysopygus	0.5	LQ	0.97	Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	32
Leontopithecus rosalia	4	LQHP	0.97	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	37
Sapajus cay	1.5	LQ	0.96	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	17
Sapajus flavius	1.5	LQ	0.99	Bio2, Bio13, Bio15, Bio18, Bio19	12
Sapajus libidinosus	4.5	LQ	0.78	Bio3, Bio15, Bio19	29
Sapajus nigritus	2	LQH	0.93	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	225

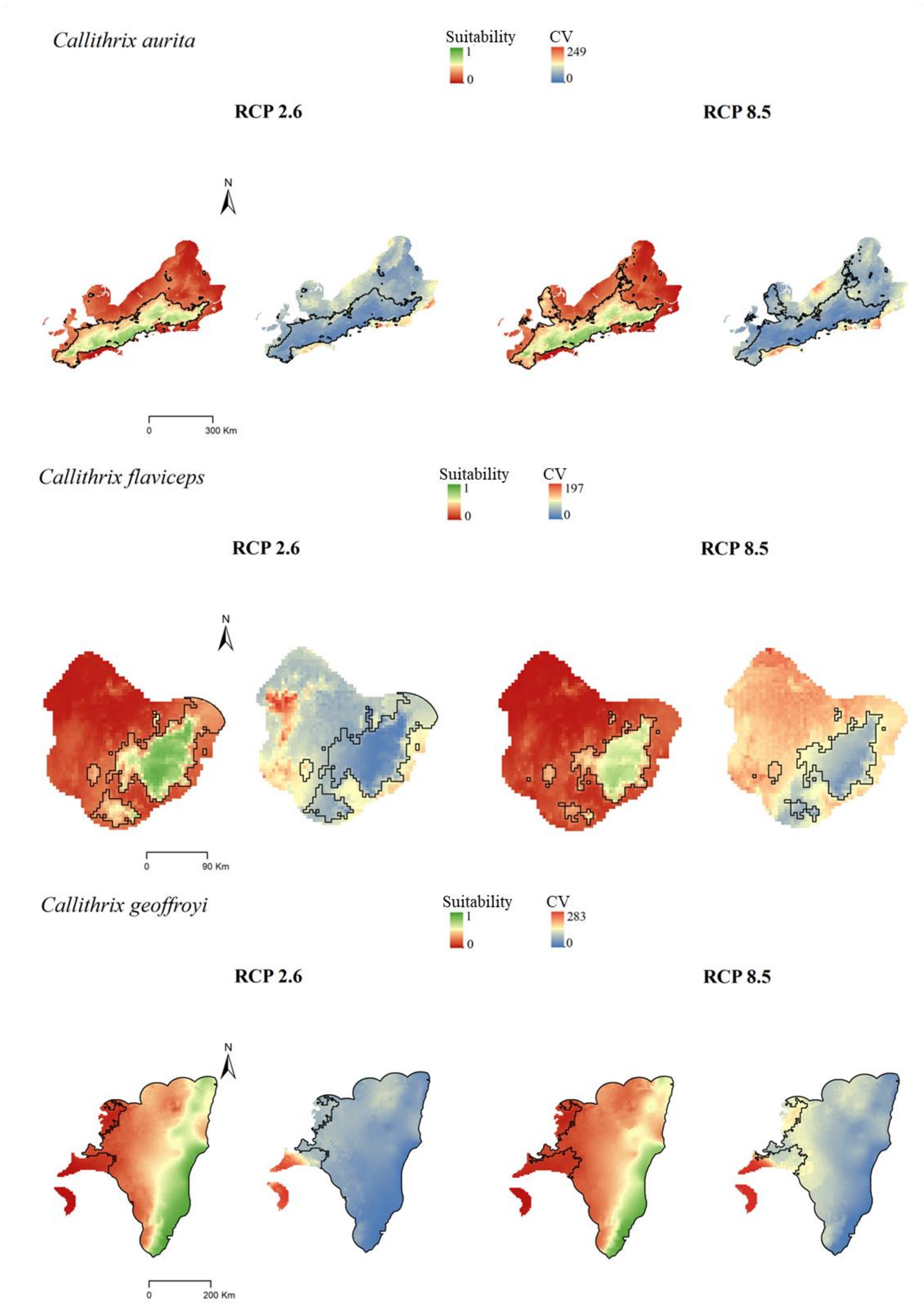
Sapajus robustus	0.5	LQ	0.96	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	28
Sapajus xanthosternos	2.5	LQH	0.87	Bio2, Bio3, Bio8, Bio13, Bio15, Bio18, Bio19	52

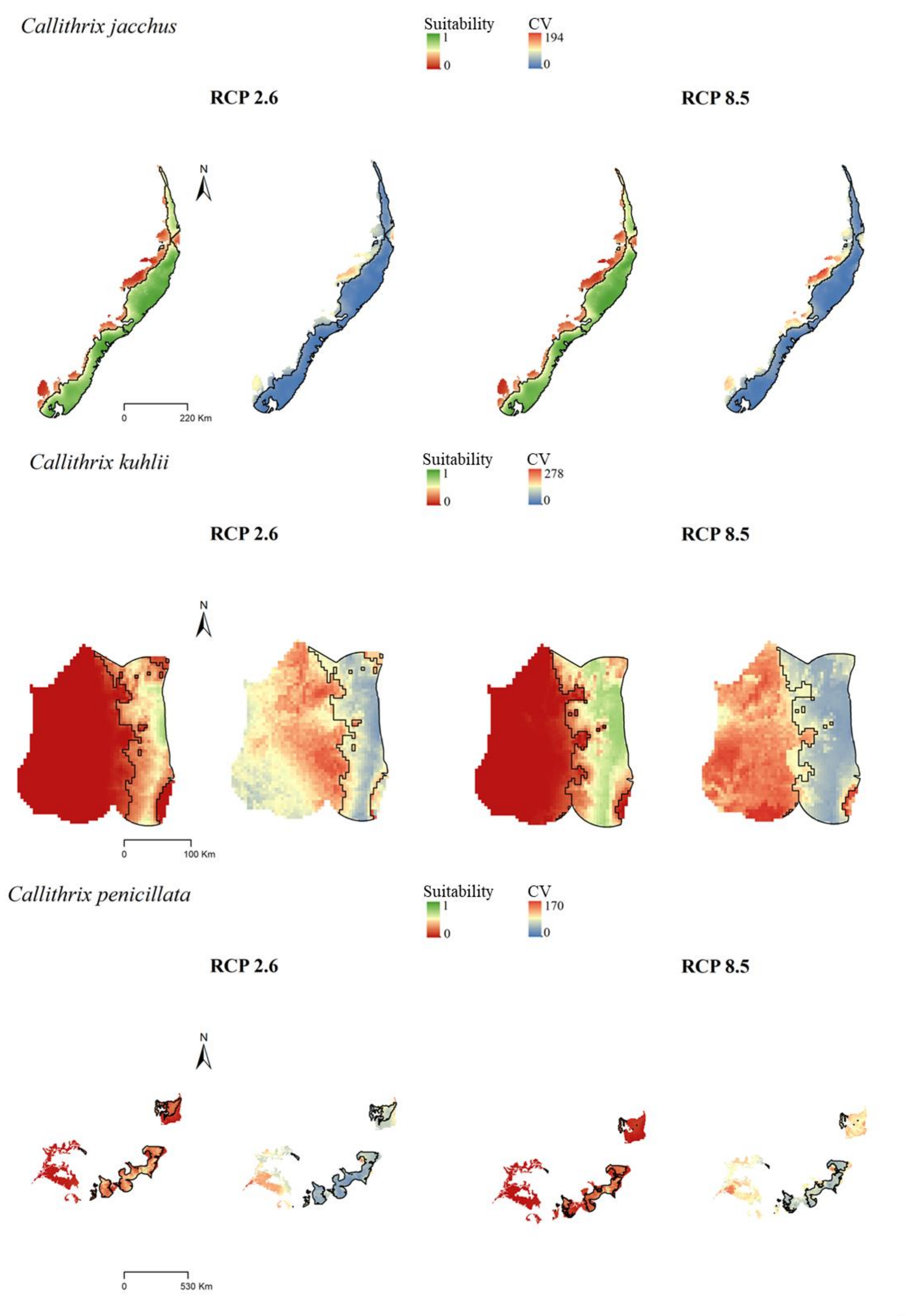


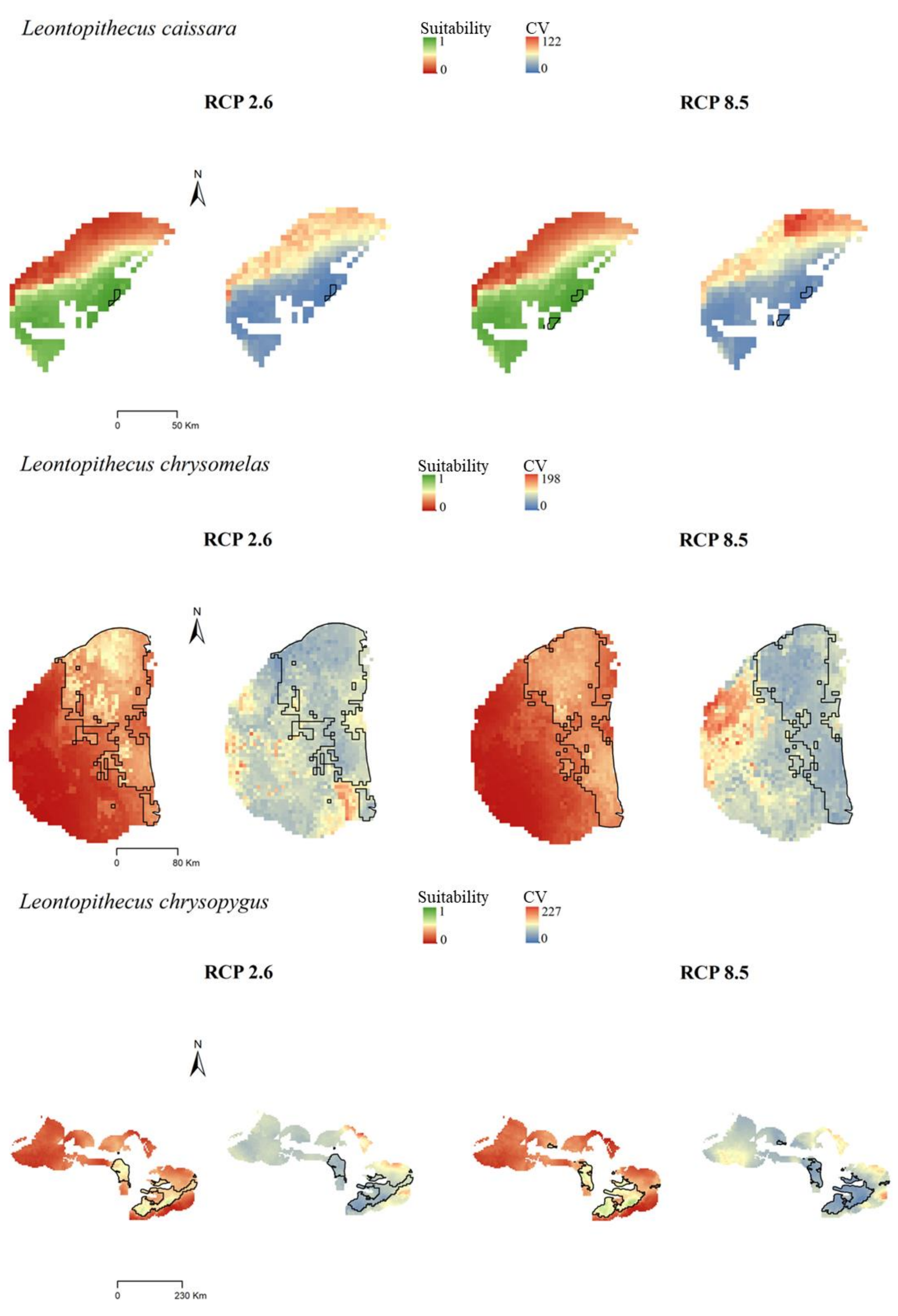
Alouatta belzebul
Suitability
1
0
CV
42
0
RCP 2.6
RCP 8.5
N
0
130 Km
Alouatta caraya
Suitability
1
0
CV
70
0
RCP 2.6
RCP 8.5
N
0
510 Km
Alouatta guariba
Suitability
1
0
CV
187
0
RCP 2.6
RCP 8.5
N
0
650 Km


Brachyteles arachnoides
Suitability
1
0
CV
179
0
RCP 2.6
RCP 8.5
N
0
270 Km
Brachyteles hypoxanthus
Suitability
1
0
CV
182
0
RCP 2.6
RCP 8.5
N
0
180 Km
Callicebus coimbrai
Suitability
1
0
CV
154
0
RCP 2.6
RCP 8.5
N
0
125 Km

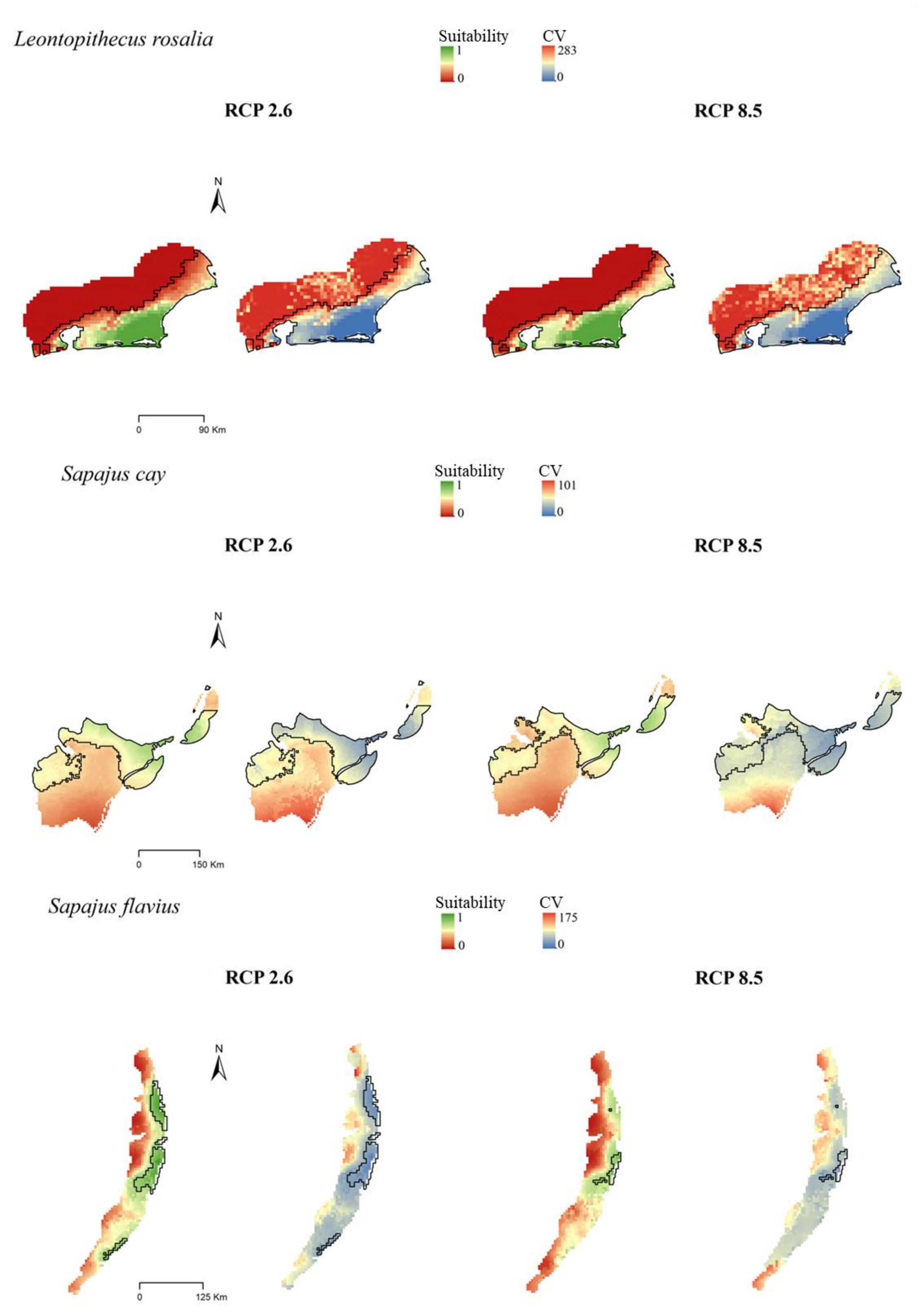

Callicebus melanochir
Suitability
1
0
CV
115
0
RCP 2.6
RCP 8.5
N
0
175 Km
Callicebus nigrifrons
Suitability
1
0
CV
242
0
RCP 2.6
RCP 8.5
N
0
360 Km
Callicebus personatus
Suitability
1
0
CV
283
0
RCP 2.6
RCP 8.5
N
0
170 Km


Callithrix aurita
Suitability
1
0
CV
249
0
RCP 2.6
RCP 8.5
N
0
300 Km
Callithrix flaviceps
Suitability
1
0
CV
197
0
RCP 2.6
RCP 8.5
N
0
90 Km
Callithrix geoffroyi
Suitability
1
0
CV
283
0
RCP 2.6
RCP 8.5
N
0
200 Km

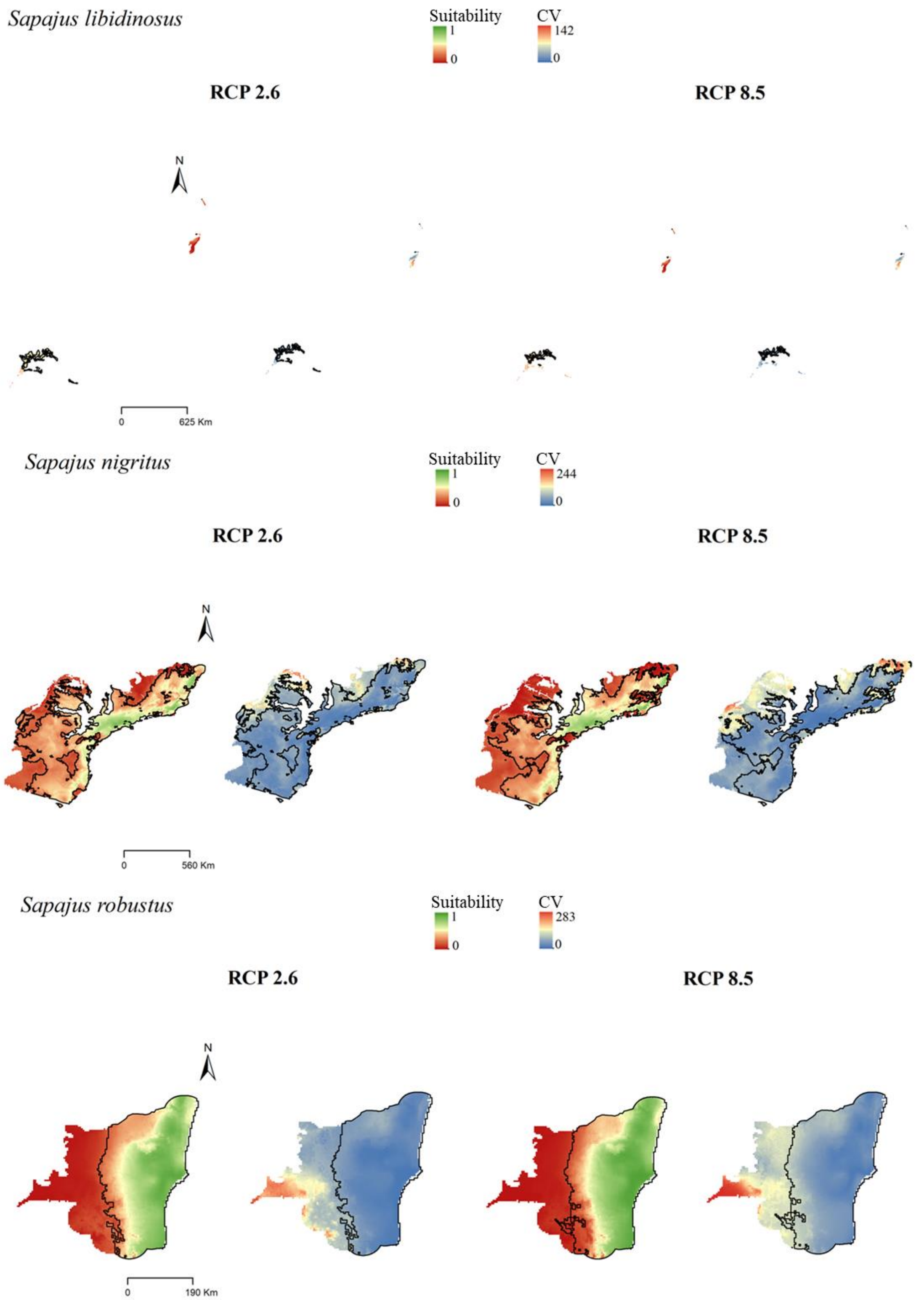

Callithrix jacchus
Suitability
1
0
CV
194
0
RCP 2.6
RCP 8.5
N
0
220 Km
Callithrix kuhlii
Suitability
1
0
CV
278
0
RCP 2.6
RCP 8.5
N
0
100 Km
Callithrix penicillata
Suitability
1
0
CV
170
0
RCP 2.6
RCP 8.5
N
0
530 Km



Leontopithecus caissara
Suitability
1
0
CV
122
0
RCP 2.6
RCP 8.5
N
0
50 Km
Leontopithecus chrysomelas
Suitability
1
0
CV
198
0
RCP 2.6
RCP 8.5
N
0
80 Km
Leontopithecus chrysopygus
Suitability
1
0
CV
227
0
RCP 2.6
RCP 8.5
N
0
230 Km



Leontopithecus rosalia
Suitability
1
0
CV
283
0
RCP 2.6
RCP 8.5
N
0
90 Km
Sapajus cay
Suitability
1
0
CV
101
0
RCP 2.6
RCP 8.5
N
0
150 Km
Sapajus flavius
Suitability
1
0
CV
175
0
RCP 2.6
RCP 8.5
N
0
125 Km


Sapajus libidinosus
Suitability
1
0
CV
142
0
RCP 2.6
RCP 8.5
N
0
625 Km
Sapajus nigritus
Suitability
1
0
CV
244
0
RCP 2.6
RCP 8.5
N
0
560 Km
Sapajus robustus
Suitability
1
0
CV
283
0
RCP 2.6
RCP 8.5
N
0
190 Km

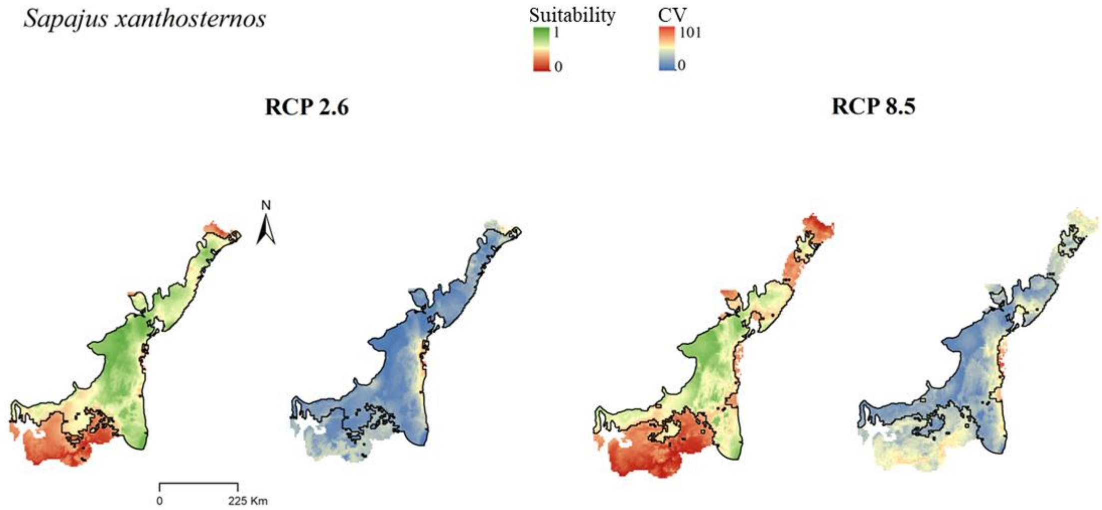


Fig. S2 Habitat suitability consensus models of each species of primate of the Atlantic Forest in the optimistic (RCP 2.6) and pessimistic (RCP 8.5) scenarios of greenhouse gases emissions. Suitability maps represents the average and CV represents coefficient of variation among models. The black polygon represents the '10 percentile training presence threshold', used to determine the distribution range of the species.

Spatial and temporal primate diversity

Spatial and temporal patterns of alpha and beta diversity were calculated for the present and future of the distribution of the Atlantic Forest primates.

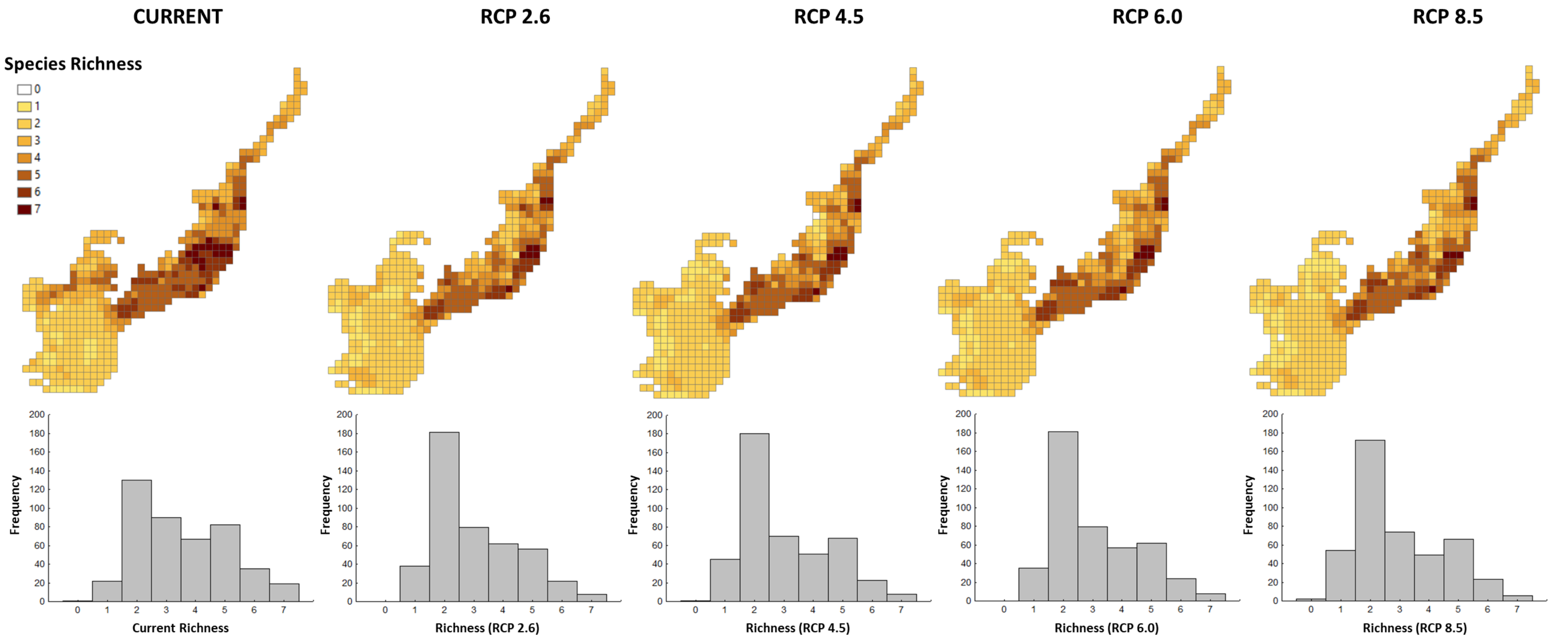


Fig. S3 Primate richness in current (CURRENT) and future scenarios of climate changes in the Brazilian Atlantic Forest. Optimistic (RCP 2.6), optimistic stabilisation (RCP 4.5), pessimistic stabilisation (RCP 6.0) and pessimistic (8.5 PCR) scenarios.

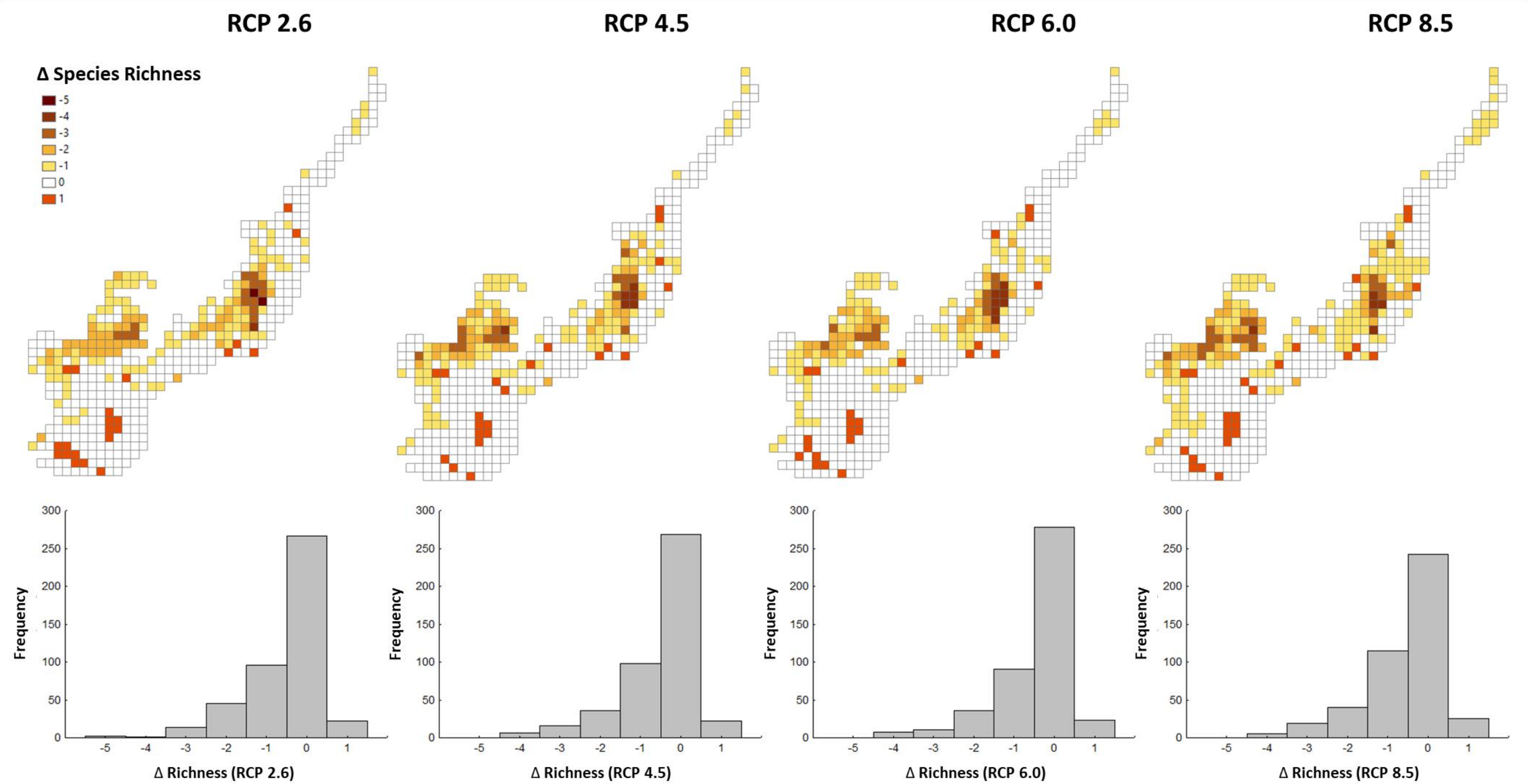


Fig. S4 Difference between the future and current primate richness in the Atlantic Forest. Optimistic (RCP 2.6), stabilisation optimistic (RCP 4.5), stabilisation pessimistic (RCP 6.0) and pessimistic (RCP 8.5) scenarios. Negative and positive values represent loss and gain of species, respectively.

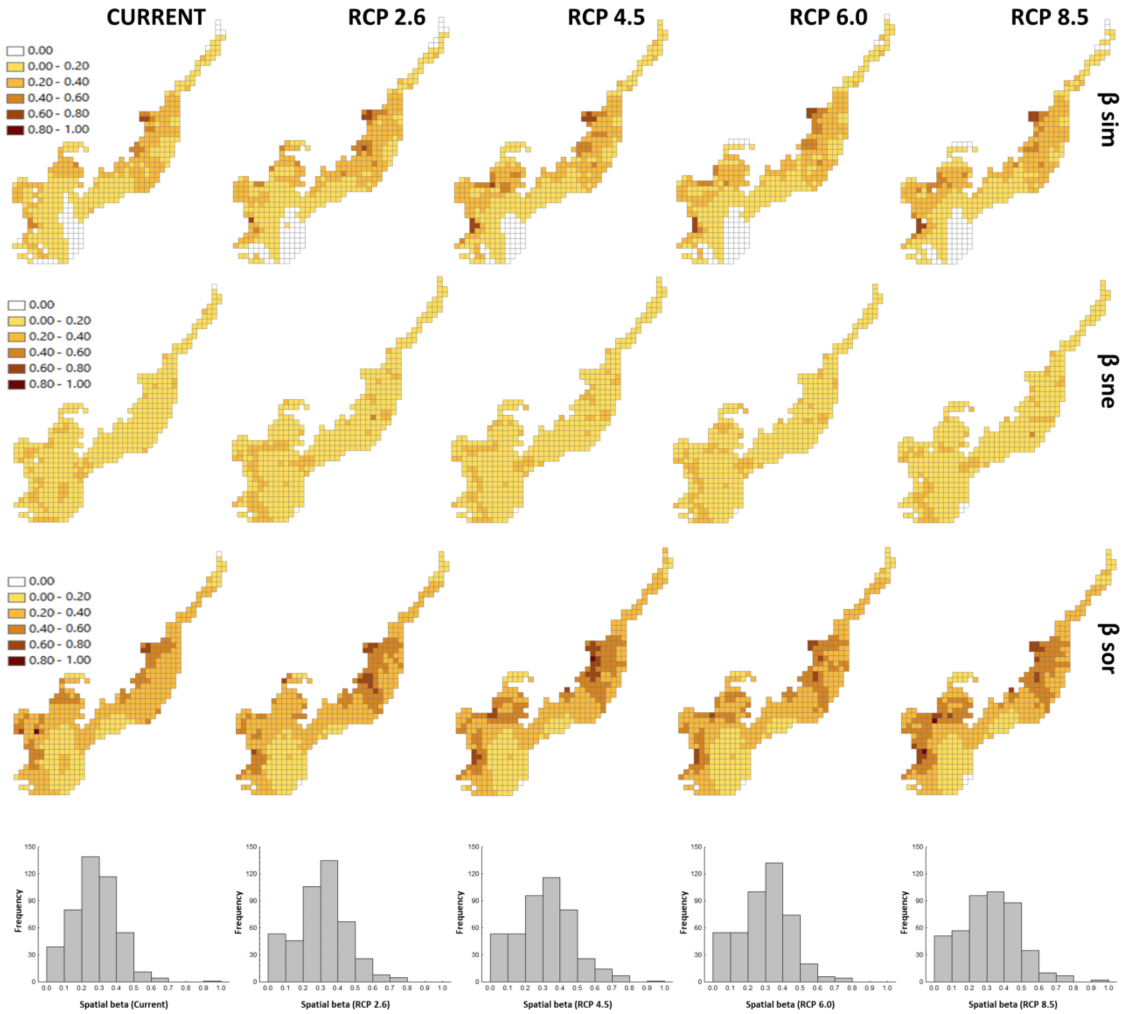


Fig. S5 Spatial beta diversity of primates in the Atlantic Forest in current and future scenarios. Optimistic (RCP 2.6), optimistically stabilisation (RCP 4.5), pessimistic stabilizsation (RCP 6.0) and pessimistic (RCP 8.5) scenarios. The beta diversity (β sor) was fractionated in turnover (β sim) and nestedness (β sne). Histograms represent the frequency values of β sor for each scenario.

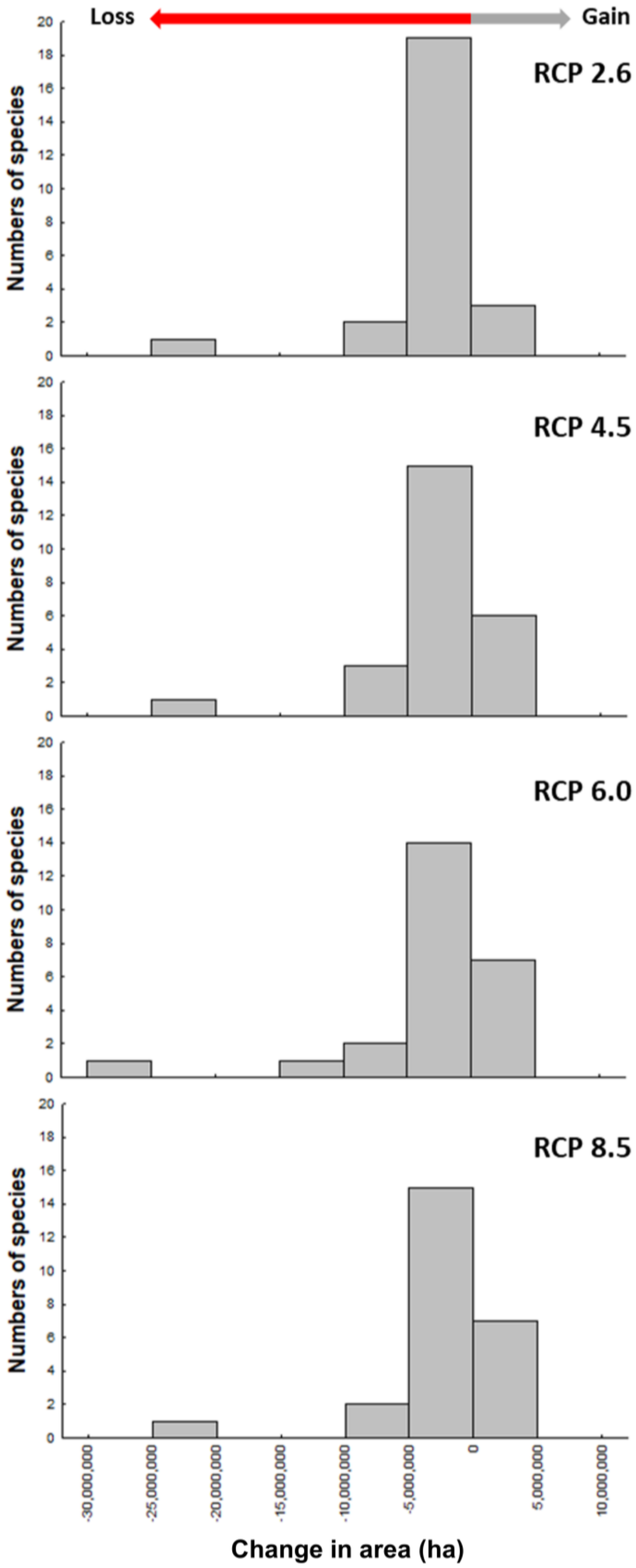


Fig. S6 Histogram of the difference in the distribution area (area of the future distribution - area of current distribution) of primate species in the Atlantic Forest in future scenarios. Optimistic (RCP 2.6), optimistic stabilisation (RCP 4.5), pessimistic stabilisation (RCP 6.0) and pessimistic (RCP 8.5) scenarios.

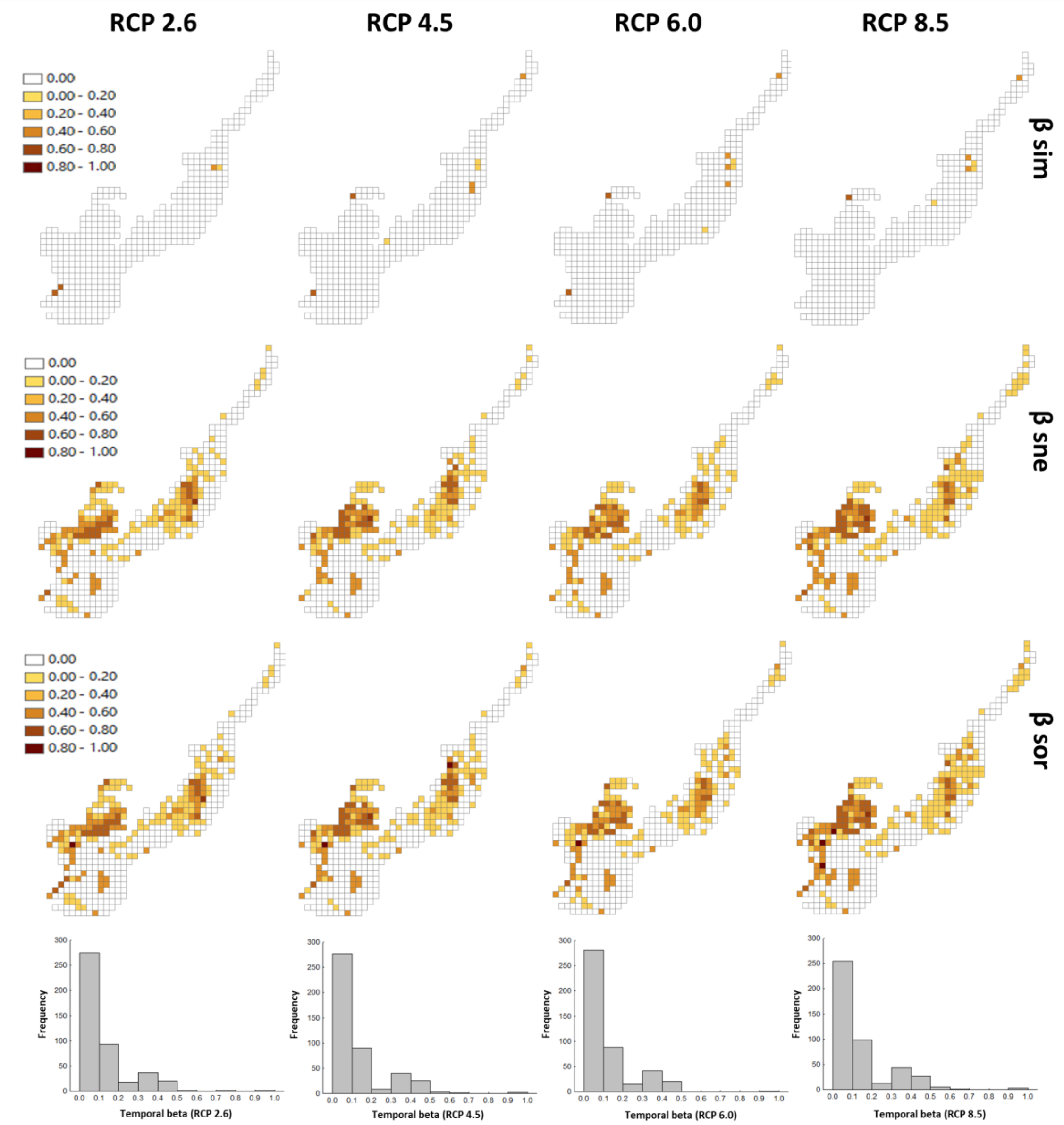


Fig. S7 Temporal beta diversity of primates in the Atlantic Forest. Optimistic (RCP 2.6), optimistic stabilisation (RCP 4.5), pessimistic stabilisation (RCP 6.0) and pessimistic (RCP 8.5) scenarios. The diversity beta (β sor) was fractionated on turnover (β sim) and nestedness (β sne). Histograms represent the frequency values of β sor for each scenario.

Friedman analysis - *post hoc* pairwise comparisons

Table S4 Primate richness *post hoc* pairwise comparisons among scenarios of climate change (CURRENT, RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5) in Brazilian Atlantic Forest. P values of pairwise comparisons and the ranks of each scenario are shown.

		CURRENT	RCP 2.6	RCP 4.5	RCP 6.0	RCP 8.5	Rank
+ optimistic ↑	CURRENT	-					3.61
	RCP 2.6	**< 0.01**	-				2.86
	RCP 4.5	**< 0.01**	1.00	-			2.85
	RCP 6.0	**< 0.01**	0.67	0.54	-		2.95
+ pessimistic ↓	RCP 8.5	**< 0.01**	0.13	0.20	**< 0.01**	-	2.72

Table S5 Primates spatial beta diversity *post hoc* pairwise comparisons among scenarios of climate change (CURRENT, RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5) in Brazilian Atlantic Forest. P values of pairwise comparisons and the ranks of each scenario are shown.

		CURRENT	RCP 2.6	RCP 4.5	RCP 6.0	RCP 8.5	Rank
+ optimistic ↑	CURRENT	-					2.40
	RCP 2.6	**< 0.01**	-				3.27
	RCP 4.5	**< 0.01**	0.94	-			3.36
	RCP 6.0	0.08	**< 0.01**	**< 0.01**	-		2.67
+ pessimistic ↓	RCP 8.5	**< 0.01**	1.00	0.99	**< 0.01**	-	3.31

Table S6 Area of primates distribution *post hoc* pairwise comparisons among scenarios of climate change (CURRENT, RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5). P values of pairwise comparisons and the ranks of each scenario are shown.

		CURRENT	RCP 2.6	RCP 4.5	RCP 6.0	RCP 8.5	Rank
+ optimistic ↑	CURRENT	-					102
	RCP 2.6	**0.03**	-				69
	RCP 4.5	**0.02**	1.00	-			68
	RCP 6.0	**< 0.01**	0.90	0.93	-		59
+ pessimistic ↓	RCP 8.5	0.17	0.95	0.93	0.49	-	77

Table S7 Temporal primates beta diversity *post hoc* pairwise comparisons among current (C) and future scenarios of climate change (C-RCP 2.6, C-RCP 4.5, C-RCP 6.0 and C-RCP 8.5). P values of pairwise comparisons and the ranks of each scenario are shown.

		C-RCP 2.6	C-RCP 4.5	C-RCP 6.0	C-RCP 8.5	Rank
+ optimistic ↑	C-RCP 2.6	-				2.46
	C-RCP 4.5	0.89	-			2.48
	C-RCP 6.0	0.98	0.68	-		2.44
+ pessimistic ↓	C-RCP 8.5	**< 0.01**	**< 0.01**	**< 0.01**	-	2.62

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