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Supplemental Information

Environmental and anthropogenic factors synergistically affect space use of jaguars

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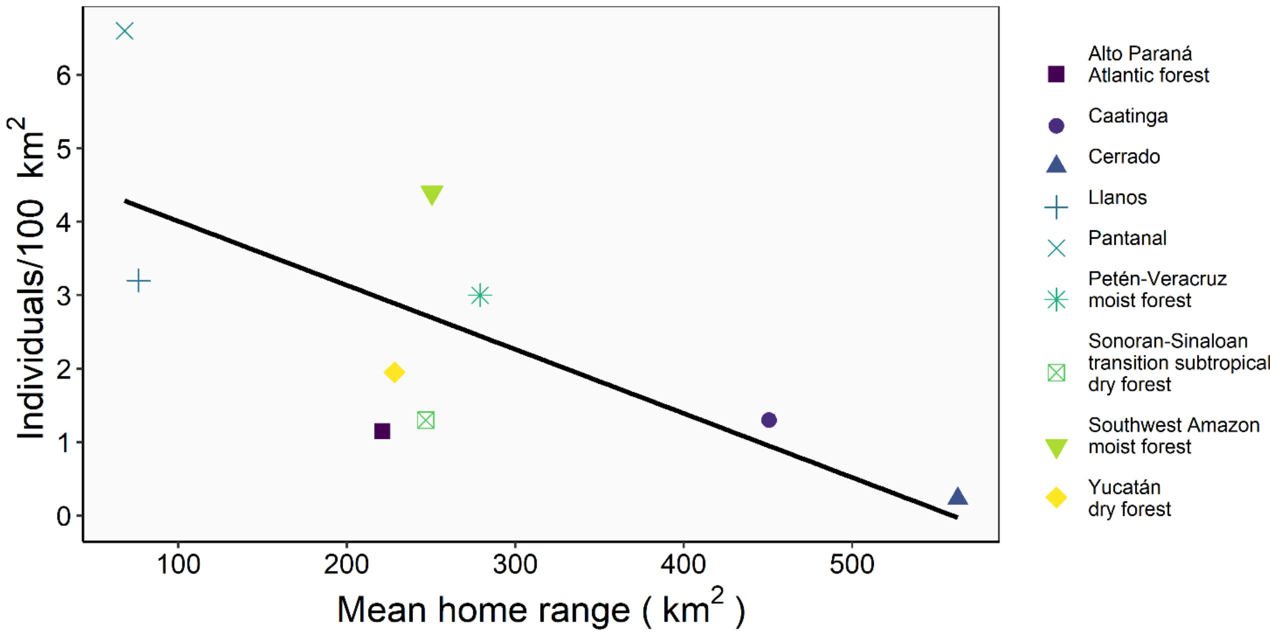

Figure S1. Home range size versus density estimates by ecoregion. Related to Figure 2, Table S4 and Table S5. Comparison of estimated mean home range size and mean density estimates for 9 ecoregions in this analysis[17,18,20–28].

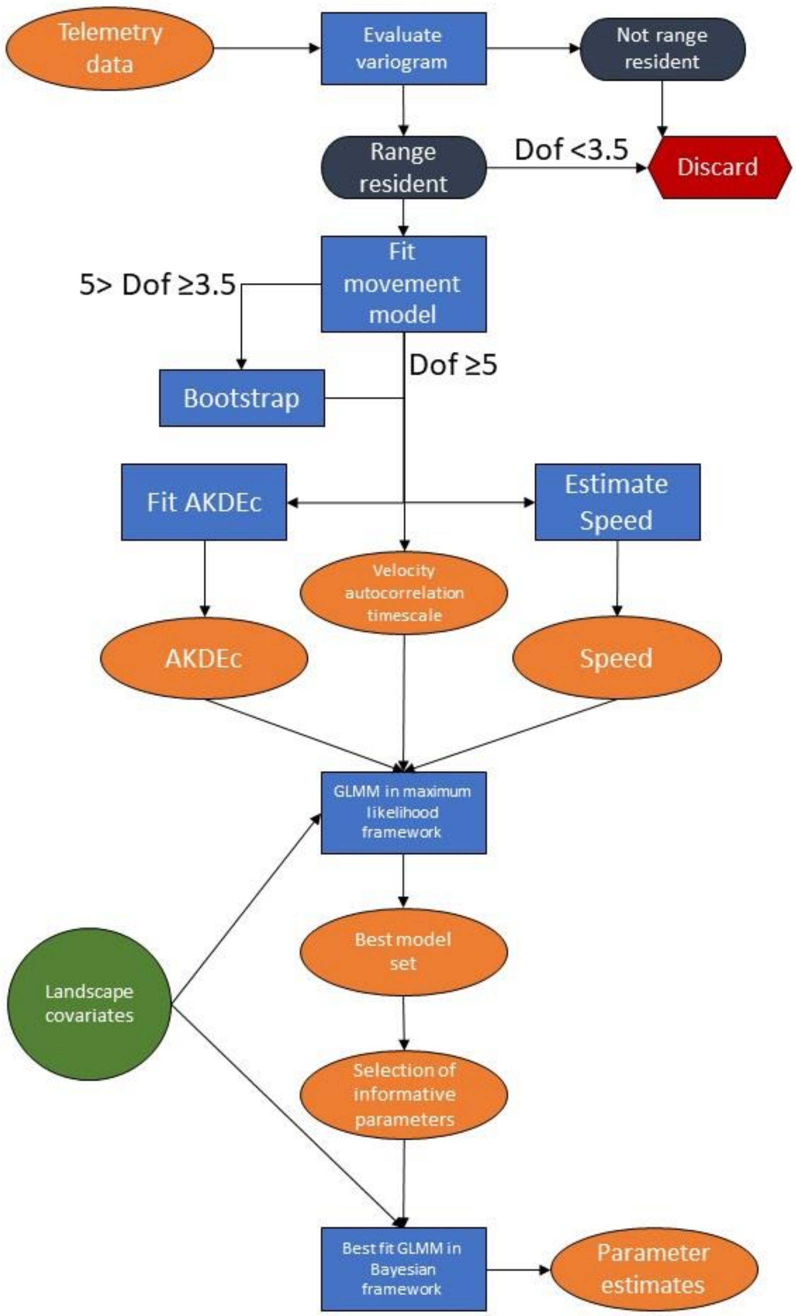

Figure S2. Analysis work flow. Related to STAR Methods. Work flow of the analysis showing the steps for home range size and movement parameter estimation, fitting of generalized linear mixed models GLMM) and model selection, and the estimation of landscape-level covariate effects on home range and movement parameters from the best-fit GLMM in a Bayesian framework. Dof = degrees of freedom[123].

Ecoregion	Sex	95% AKDE home range (km²)	Home crossing time (day)	Autocorrelation timescale (hours)	Speed (km/day)	Days/ locations
Alto Paraná Atlantic forest	F	104.1 (81.9–128.8)	2.5 (1.5–4.0)	3.62 (1.39–9.4)	5.1 (4.0–6.5)	505/150
Alto Paraná Atlantic forest	F	150.3 (107.7–200.1)	6.3 (4.1–9.8)	0.73 (0.0–1.53)	8.7 (5.2–13.8)	260/5590
Alto Paraná Atlantic forest	F	68.1 (38.2–106.5)	5.9 (2.4–14.3)	—	—	99/133
Alto Paraná Atlantic forest	F	138.1 (76.5–217.7)	1.1 (0.1–16.7)	—	3.7 (1.6–9.3)	142/92
Alto Paraná Atlantic forest	F	268.2 (165.8–394.8)	10.5 (1.6–70.2)	8.05 (0.1–17.19)	2.8 (1.8–4.5)	1466/32
Alto Paraná Atlantic forest	F	169.9 (108.8–244.4)	4.7 (2.7–8.3)	—	—	138/211
Alto Paraná Atlantic forest	F	270.2 (132.8–455.6)	0.8 (0–1.8)	—	—	19/18
Alto Paraná Atlantic forest	F	343.9 (254.0–447.3)	7.6 (5.2–11)	—	—	1141/326
Alto Paraná Atlantic forest	F	1008.2 (327.5–2064.8)	22.7 (2.4–212.4)	—	—	244/1010
Alto Paraná Atlantic forest	F	159.6 (105.5–224.7)	2.6 (1.3–5.5)	—	—	326/1376
Alto Paraná Atlantic forest	F	241.5 (170.5–324.7)	8.3 (5.5–12.5)	1.56 (1.22–1.98)	6.8 (6.4–7.1)	179/799
Alto Paraná Atlantic forest	F	131.5 (106.8–158.8)	1.6 (1.2–2.2)	2.18 (1.48–3.2)	8.7 (8.1–9.2)	364/540
Alto Paraná Atlantic forest	M	180.5 (139.6–226.7)	4.6 (3.3–6.3)	2.09 (1.62–2.7)	6.3 (5.8–6.8)	88/109
Alto Paraná Atlantic forest	M	147.3 (115.3–183)	1.6 (1.1–2.3)	—	—	71/109
Alto Paraná Atlantic forest	M	969.4 (720.4–1254.9)	2.2 (1.5–3.4)	—	—	171/156
Alto Paraná Atlantic forest	M	542.5 (426.7–672)	4.7 (3.5–6.3)	0.88 (0.23–3.3)	19.5 (14.0–27)	128/2300
Alto Paraná Atlantic forest	M	207.2 (59.8–444.4)	13.3 (0.6–278.8)	0.59 (0.44–0.8)	7.5 (6.9–8.2)	583/1335
Alto Paraná Atlantic forest	M	943.2 (258.8–2062)	8 (0.0–16.1)	—	—	477/17
Caatinga	M	2534.2 (663.0–5636.5)	74.2 (0.1–148.7)	0.81 (0.77–0.84)	9.5 (9.4–9.6)	73/741
Central America dry forest	F	83.7 (71.8–96.5)	3.1 (2.7–3.7)	0.73 (0.68–0.78)	10.0 (9.8–10.2)	127/2343
Cerrado	F	1154.8 (638.8–1821.1)	15.8 (7.6–32.9)	0.37 (0.28–0.48)	20.9 (18.8–23.1)	365/1616
Cerrado	M	2326.2 (565.1–5309.8)	46.7 (0.0–95.5)	1.05 (0.86–1.28)	9.7 (9.1–10.5)	479/3462
Cerrado	M	986.9 (819.9–1169.2)	3.4 (2.8–4.2)	0.76 (0.66–0.88)	30.6 (29.4–31.6)	591/10988
Cerrado	M	2914.9 (1054–5705.7)	43 (7.9–233.6)	0.71 (0.59–0.86)	14.0 (13.3–15.2)	275/4860
Cerrado	M	1342.6 (768.3–2074.6)	7.5 (3.8–14.9)	0.83 (0.76–0.91)	22.9 (22.7–23.5)	193/1296
Cerrado	M	1212.2 (844.7–1645)	4.7 (3.1–7.2)	1.91 (1.61–2.26)	17.7 (17.3–18.7)	152/1633
Dry Chaco	F	524.6 (362.7–716)	10 (6.5–15.4)	1.72 (1.49–1.99)	8.6 (8.3–8.9)	372/1094
Dry Chaco	F	608.2 (409.2–845.9)	12.2 (7.7–19.3)	1.09 (0.89–1.34)	10.5 (10.0–11.4)	375/1694
Dry Chaco	M	448.5 (382.8–519.4)	2.7 (2.3–3.3)	1.37 (1.27–1.48)	15.1 (14.9–15.3)	76/1323
Dry Chaco	M	2207.4 (1570.8–2950.7)	8.4 (5.7–12.4)	1.15 (0.96–1.37)	25.3 (24.5–26.3)	198/3464
Dry Chaco	M	437.2 (288–617.2)	12.2 (7.4–20)	1.77 (1.5–2.09)	7 .0 (6.7–7.4)	379/921
Dry Chaco	M	578.1 (346–868.9)	3.8 (2.0–7.3)	1.92 (1.64–2.24)	13.4 (12.8–13.9)	363/722
Dry Chaco	M	1079.8 (825.1–1368.3)	4.9 (3.6–6.7)	2.15 (1.9–2.43)	16.7 (16.2–17.2)	386/1610
Humid Chaco	F	278.1 (187.5–386.3)	6.6 (4.0–10.9)	1.50 (0.92–2.47)	10.4 (10–10.8)	265/288
Humid Chaco	F	92.7 (75.7–111.4)	1.2 (0.9–1.7)	0.46 (0–0.92)	19.3 (13.4–27.8)	149/500
Humid Chaco	F	84.5 (33.1–159.5)	6.7 (1.6–29.2)	—	—	54/280
Humid Chaco	F	126.6 (69.8–199.9)	11.0 (5.2–23)	0.16 (0.09–0.28)	12.7 (10.6–15.4)	185/1018
Humid Chaco	F	252.1 (171.8–347.6)	9.7 (6.2–15)	0.14 (0.09–0.23)	20.6 (17.3–23.5)	324/1668
Humid Chaco	F	119.2 (81.4–164.1)	9.9 (6.4–15.4)	0.03 (0.06–0.42)	13.1 (10.1–18.7)	361/913
Humid Chaco	M	1039.5 (526.8–1723.5)	6.3 (2.4–16.8)	0.36 (0–1.3)	33.2 (9.8–113.5)	88/148
Humid Chaco	M	440.5 (290.7–620.9)	4.7 (2.9–7.7)	1.42 (1.21–1.67)	13.1 (12.8–13.4)	143/983
Humid Chaco	M	340.9 (208.6–505.1)	5.8 (3.2–10.5)	1.58 (0.59–1.22)	11.8 (10.9–12.7)	125/621
Llanos	F	35.0 (19.9–54.2)	1.7 (0.8–3.7)	0.30 (0.13–0.7)	17.3 (14.7–21.1)	126/2820

Llanos	M	100.3 (71.4–134)	2 (1.3–3.2)	1.31 (0.58–2.97)	9.7 (8.1–11.4)	71/257
Pantanal	F	34.8 (26.1–44.7)	21.2 (15.1–29.8)	0.3 (0.26–0.36)	17.5 (16.6–18.2)	135/2314
Pantanal	F	43.5 (29.9–59.4)	1.4 (0.9–2.1)	0.08 (0.05–0.13)	30.9 (27.2–36.9)	252/4709
Pantanal	F	37.4 (28.4–47.6)	2.1 (1.5–2.8)	0.07 (0.06–0.09)	23.9 (22.4–26.5)	53/876
Pantanal	F	13.4 (11.0–16.0)	1.2 (1.0–1.6)	—	—	576/5924
Pantanal	F	33.2 (23.8–44.2)	2.1 (1.4–3.1)	—	—	1160/560
Pantanal	F	37 (24.4–52.2)	1.7 (0.8–3.9)	2.8 (0.63–12.49)	4.3 (3.5–5.7)	97/205
Pantanal	F	60.9 (50.6–72.1)	2.9 (2.3–3.6)	—	—	84/67
Pantanal	F	39.7 (27.4–54.3)	2.2 (1.3–3.8)	—	—	402/581
Pantanal	F	100 (80.7–121.4)	1.3 (0.9–1.7)	—	—	102/103
Pantanal	F	88.8 (58.3–125.6)	2.9 (1.6–5)	—	—	180/240
Pantanal	F	20.0 (15.3–25.3)	3.8 (0.3–0.4)	0.33 (18.4–21.62)	6.4 (6.2–6.5)	209/183
Pantanal	F	19.0 (7.3–36.1)	3.6 (0.8–16.4)	0.27 (0.19–0.36)	6.9 (6.1–7.5)	193/727
Pantanal	F	118.1 (89.9–150)	3.2 (2.4–4.3)	0.23 (0.21–0.26)	21.1 (20.5–21.8)	52/1003
Pantanal	F	75.4 (61.3–91)	2.6 (2.1–3.3)	—	—	82/620
Pantanal	F	90.8 (71.4–112.5)	4.4 (3.4–5.8)	1.12 (0.94–1.34)	6.9 (6.5–7.4)	270/1300
Pantanal	F	61.0 (43.0–82.2)	3.2 (2.2–4.8)	0.24 (0.21–0.28)	13.5 (13–14)	341/798
Pantanal	F	61.5 (50.2–73.9)	2.6 (2.1–3.2)	0.19 (0.17–0.22)	17 (16.2–17.4)	46/112
Pantanal	F	148.5 (91.2–219.4)	3.9 (2.2–7)	0.07 (0.05–0.09)	36.2 (31.7–42)	337/780
Pantanal	F	27.4 (18.0–38.7)	20.8 (12.6–34.3)	0.05 (0.03–0.09)	43.9 (38.1–46.4)	87/1391
Pantanal	F	55.2 (33.3–82.4)	8.6 (4.7–15.6)	0.04 (0.01–0.2)	22.5 (15.4–33.2)	34/413
Pantanal	F	523.9 (159–1102.4)	12.2 (0.8–182.3)	1.07 (0.61–1.85)	9.3 (8.3–11)	216/404
Pantanal	F	105.3 (90.5–121.2)	2.4 (2.0–2.9)	—	—	307/134
Pantanal	F	55 (42.9–68.7)	15.4 (10.9–21.8)	—	—	104/481
Pantanal	F	58.4 (47.7–70.1)	4.5 (3.6–5.7)	—	—	100/166
Pantanal	F	119.2 (55.9–205.9)	7.5 (2.6–21.3)	—	—	1014/1758
Pantanal	F	40.6 (217.2–254.4)	1.2 (7.9–9.9)	—	—	90/202
Pantanal	F	235.5 (92.7–155.5)	8.9 (2.8–5.4)	—	—	338/709
Pantanal	F	122.1 (102.8–392.9)	3.9 (6.3–52.8)	0.87 (0.36–0.43)	8.7 (8.7–9.1)	388/1645
Pantanal	F	38.9 (25.2–55.5)	4.5 (2.7–7.5)	0.39 (0.36–0.43)	7.3 (7.2–7.5)	189/3340
Pantanal	M	38.8 (30.2–48.5)	3.4 (2.5–4.4)	0.3 (0.28–0.33)	10.8 (10.4–11)	135/2681
Pantanal	M	293.2 (168.3–452)	4.2 (2.1–8.3)	0.39 (0.34–0.45)	20.9 (20.2–21.4)	260/5040
Pantanal	M	108.0 (68.7–156.1)	5.2 (3.1–8.9)	0.33 (0.29–0.37)	12.2 (11.7–12.5)	146/537
Pantanal	M	95.2 (59.7–139)	10 (5.8–17.4)	0.32 (0.3–0.35)	8.3 (8.2–8.6)	305/327
Pantanal	M	576.2 (393.3–793.3)	6.5 (4.2–10.1)	0.54 (0.52–0.56)	19.2 (19–19.4)	255/4952
Pantanal	M	437.2 (321.9–569.8)	3.6 (2.5–5.1)	1.38 (1.13–1.7)	14.7 (13.8–15.5)	691/979
Pantanal	M	61.8 (42.7–84.3)	1.1 (0.6–2)	0.58 (0–1.37)	14.8 (8.6–26)	27/615
Pantanal	M	251.1 (163.9–356.6)	4 (2.3–6.9)	—	—	46/133
Pantanal	M	35.2 (12.2–70.2)	7.3 (1.1–51.2)	0.1 (0.0–0.32)	11.3 (3.8–32.1)	125/167
Pantanal	M	91.8 (65–123)	1.9 (1.1–3.2)	—	—	45/129
Pantanal	M	59.4 (39.5–83.3)	2.3 (1.2–4.5)	1.36 (0.0–2.77)	7.0 (4.7–10.5)	125/141
Pantanal	M	88.1 (70.9–107.1)	22 (13–37.2)	1.66 (0.08–33.02)	12.1 (8.5–16.6)	159/159
Pantanal	M	174.3 (134.5–219.2)	2.2 (1.6–3.1)	2.08 (1.32–3.27)	10.4 (9.3–11.1)	212/133
Pantanal	M	88.4 (77.4–100.0)	1.2 (1–1.4)	—	—	185/301
Pantanal	M	309.8 (138.5–548.8)	7 (1.9–25.1)	2.31 (1.16–4.59)	6.8 (5.9–8.1)	379/705

Pantanal	M	198.3 (92.1–344.5)	4.5 (1.6–12.9)	0.08 (0.06–0.11)	35.2 (32.6–39)	128/53
Pantanal	M	517.1 (207.2–966.4)	71.9 (18.4–280.6)	0.20 (0.18–0.22)	9.4 (9.2–9.7)	59/479
Pantanal	M	256.2 (203–315.5)	2.1 (1.6–2.8)	1.19 (0.88–1.6)	15.7 (14.4–17)	190/42
Pantanal	M	354.7 (200.4–552.3)	3.3 (1.6–7.2)	0.65 (0.33–1.28)	21.4 (17.4–26.2)	55/151
Pantanal	M	181 (133.5–235.7)	1 (0.6–1.6)	1.37 (0.82–2.28)	19.3 (17.4–21.5)	474/2113
Pantanal	M	96.9 (59.1–144)	3.8 (2.0–7.3)	0.78 (0.4–1.52)	9.1 (7.7–11.4)	58/225
Pantanal	M	121.4 (95.1–151)	1.3 (1.0–1.8)	0.32 (0–0.69)	27.6 (16.4–46.7)	132/287
Pantanal	M	265.9 (199.7–341.4)	1.1 (0.7–1.6)	—	—	79/165
Pantanal	M	224.5 (25.2–55.5)	18.3 (2.7–7.5)	0.4 (0.36–0.43)	8.9 (7.2–7.5)	263/952
Petén–Veracruz moist forest	F	670.1 (354–1085.3)	26.8 (9.9–72.2)	0.92 (0–2.3)	8.2 (4–16.3)	365/577
Petén–Veracruz moist forest	F	271.2 (197–357.1)	6.2 (4.2–9.2)	2.89 (2.23–3.75)	6.1 (5.7–6.5)	606/104
Petén–Veracruz moist forest	M	385 (303.3–476.4)	4.6 (3.5–6.2)	4.25 (3.54–5.11)	7.2 (6.8–7.5)	442/443
Petén–Veracruz moist forest	M	751.1 (409.3–1194.8)	5.3 (1.8–15.2)	5.15 (2.91–9.13)	8.3 (7.3–9.2)	413/636
Purus várzeá	F	105.6 (47.7–186.2)	11.4 (3.5–36.6)	2.51 (1.95–3.23)	2.9 (2.8–3.1)	251/61
Purus várzeá	F	51.9 (39.4–66.2)	5 (3.6–7)	0.87 (0.37–2.02)	5.2 (4–6.7)	383/295
Purus várzeá	F	75.6 (55.3–98.9)	8 (5.7–11.4)	1.03 (0.96–1.11)	4.8 (4.8–5)	333/784
Purus várzeá	F	265 (74.2–575)	28.7 (0.0–59.1)	2.58 (0.4–16.7)	2.9 (2.1–3.7)	428/3698
Purus várzeá	M	210.8 (157.8–271.3)	7.1 (5.0–9.9)	2.61 (2.21–3.08)	5.5 (5.2–5.8)	225/322
Purus várzeá	M	269.9 (174.3–386.1)	6.3 (3.7–10.9)	3.34 (2.71–4.12)	5.8 (5.4–6)	507/1024
Purus várzeá	M	77.6 (41.1–125.6)	3.8 (1.0–13.8)	1.84 (1.01–3.36)	5.4 (4.6–6.2)	190/516
Purus várzeá	M	399.3 (209–650.1)	22.6 (9.8–52.2)	—	—	151/491
Sonoran–Sinaloan subtropical dry forest	F	597.6 (281.6–1030.4)	11.1 (4.0–30.8)	—	—	220/7668
Sonoran–Sinaloan subtropical dry forest	M	1011.6 (874.9–1158)	1.8 (1.5–2.1)	—	—	384/797
Southwest Amazon moist forest	M	351.3 (262.7–452.7)	3.8 (2.8–5.3)	0.37 (0.35–0.39)	23.8 (23.4–24.1)	92/287
Southwest Amazon moist forest	M	305.4 (165.7–487.1)	3.8 (1.6–9.1)	1.83 (1.25–2.68)	9.8 (9.2–10.6)	219/406
Southwest Amazon moist forest	M	201.9 (157.7–276)	4.3 (3.2–5.7)	0.46 (0.42–0.5)	15.3 (15.1–15.7)	86/189
Yucatán dry forest	M	309.4 (241.7–385.2)	2.9 (2.1–3.8)	0.57 (0.45–0.71)	22.1 (21.5–23.3)	132/72

Table S1. Estimated movement parameters for individual jaguars in the analysis. Related to Figure 4. Autocorrelated kernel density estimated home ranges and movement parameters for jaguars used in the analysis.

Model	**df**	**log-Likelihood**	***AICc***	**Δ*AICc***
Home range				
Roads + Sex	5	-133	276.6	0
NPP + Roads + Sex	6	-132.194	277.2	0.61
Forest + Roads + Sex	6	-132.276	277.3	0.78
Forest + NPP + Roads + Sex	7	-131.584	278.2	1.66
Speed				
Forest	4	-58.627	125.8	0
NULL	3	-60.309	126.9	1.14
Velocity autocorrelation timescale				
Sex	4	-115.875	240.3	0

Table S2. Highest ranking model sets. Related to Figure 1 and Table S3. Generalized linear mixed model sets within 2 AIC vales of the highest ranking model describing home range, speed, and velocity autocorrelation timescale with ecoregion as a random intercept. *Forest* = percent forest cover, *NPP* = net primary productivity, *Roads* = road density.

Random intercept	$\alpha \sim Normal(mean_{ecoregion}, var_{ecoregion})$
Home range	$log(home\ range_i) = \alpha_{ecoregion_i} + \beta_1(forest_i) + \beta_2(net\ primary\ productivity_i) + \beta_3(road\ density_i) + \beta_4(sex_i)$
Speed	$log(speed_i) = \alpha_{ecoregion_i} + \beta_1(forest_i)$
Velocity autocorrelation timescale	$\log(Velocity\ autocorrelation\ timescale_i) = \alpha_{ecoregion_i} + \beta_1(sex_i)$

Table S3. Bayesian GLMMs used to test movement parameters with landscape covariates. Related to Figure 1, Table S5, and Table S5. Best fit generalized linear mixed models for home range size, speed, and autocorrelation timescale with ecoregion as a random effect. Models were derived from the best fit model sets so to include all informative parameters.

Parameter	Log home range km^2		Log speed km/day		Log velocity autocorrelation timescale h	
	mean	95% CRI	mean	95% CRI	mean	95% CRI
Percent forest cover	-0.17	-0.34–0.00	-0.20	-0.35–-0.05	–	–
Net primary productivity	-0.32	-0.80–0.17	–	–	–	–
Road density	0.24	0.09–0.38	–	–	–	–
Mean annual precipitation	–	–	–	–	–	–
Sex	0.89	0.63–1.15	–	–	0.22	-0.29–0.73
Ecoregion intercepts						
Alto Paraná Atlantic forest	5.01	3.62–6.37	2.04	1.89–2.51	0.24	-1.35–0.6
Caatinga	5.81	4.42–7.27	2.13	1.86–2.95	-0.27	-1.99–0.59
Central American dry forest	4.62	2.97–6.21	2.22	1.83–2.92	-0.12	-2.58–0.16
Cerrado	5.75	4.51–6.99	2.13	2.13–2.88	-0.03	-2.28–0.09
Dry Chaco	5.36	4.53–6.21	2.24	2.31–2.96	0.31	-1.88–0.26
Humid Chaco	4.84	3.85–5.82	2.33	2.31–2.95	-0.58	-2.05–-0.06
Llanos	3.74	2.20–5.20	2.20	1.89–2.82	-0.21	-1.91–0.44
Pantanal	3.93	2.88–4.97	2.30	2.35–2.67	-0.23	-1.65–0.08
Peten–Veracruz moist forest	5.42	4.15–6.70	2.01	1.88–2.67	0.87	-1.47–0.99
Purus várzeá	4.81	3.53–6.08	2.00	1.68–2.44	0.46	-1.4–0.63
Sonoran–Sinaloan subtropical dry forest	4.95	3.81–6.09	2.20	1.69–3.17	-0.01	-1.72–0.65
Southwest Amazon moist forests	5.17	3.60–6.73	2.49	2.33–3.26	-0.36	-2.07–0.32
Yucatán dry forest	5.10	3.49–6.70	2.35	1.7–3.16	-0.18	-1.63–1.16
Ecoregion hyperparameter	4.96	3.76–6.14	2.43	1.70–3.16	-0.7	-1.61-0.22

Table S4. Model parameter estimates. Related to Figure 1. Covariate parameter estimates and 95% credibility intervals (CRI) for the Bayesian form of the best fit generalized linear mixed models.

	Home range km^2		Speed km/day		Velocity autocorrelation timescale hours	
Ecoregion	**Mean**	**CRI**	**Mean**	**CRI**	**Mean**	**CRI**
Alto Paraná Atlantic forest	190.4	37.5–582.3	11.0	6.6–12.4	1.33	0.26–1.82
Caatinga	438.5	83.0–1433.7	13.1	6.4–19.1	0.84	0.14–1.81
Central American dry forest	142.1	19.5–498.7	13.5	6.2–18.4	1.01	0.08–1.18
Cerrado	384.1	91.3–1089.0	12.9	8.4–17.7	1.01	0.10–1.1
Dry Chaco	233.5	92.6–495.7	14.4	10.1–19.4	1.43	0.15–1.29
Humid Chaco	143.8	46.9–338.0	14.8	10.1–19.1	0.59	0.13–0.94
Llanos	56.0	9.0–180.5	13.7	6.6–16.8	0.89	0.15–1.55
Pantanal	58.6	17.8–143.6	14.6	10.5–14.4	0.80	0.19–1.08
Peten-Veracruz moist forest	280.1	63.3–815.7	11.0	6.6–14.4	2.66	0.23–2.70
Purus várzeá	151.5	34.0–435.7	10.8	5.4–11.5	1.66	0.25–1.87
Sonoran–Sinaloan subtropical dry forest	167.6	45.3–439.7	14.3	5.4–23.8	1.28	0.18–1.91
Southwest Amazon moist forests	240.7	36.5–838.0	19.7	10.2–26.1	0.76	0.13–1.37
Yucatán dry forest	228.3	32.9–811.6	17.0	5.5–23.6	0.96	0.2–3.19

Table S5. Model estimates of jaguar home range size and movement parameters. Related to Figure 2, Figure S1, and Table S4. Estimated mean movement parameters and 95% credibility intervals (CRI) based on random intercept estimates from the Bayesian form of the best fit generalized linear mixed models.

Variable	Description	Year	Resolution	Institution	Reference
Forest cover	Mean percent forest cover for the year corresponding to the GPS data	Yearly data from 2000 to 2018	30m	University of Maryland; Global Forest Watch	[107]
Protected areas	Area in hectares	2019	Based on vector file	UN Environment Programme World Conservation Monitoring Centre	[108]
Annual precipitation	Annual precipitation corresponds to the BIO12 bioclimatic variable from WorldClim version 2	Average over 1970-2000	30s (~1km)	WorldClim v2	[109]
Seasonality in precipitation	Seasonality in precipitation corresponds to the BIO15 bioclimatic variable from WorldClim version 2	Average over 1970-2000	30s (~1km)	WorldClim v2	[109]
Net primary productivity	Net primary productivity (NPP) corresponds to average of NPP between 2000 to 2015. Measured in kg C/m^2	Average over 2000-2015	1km	Numerical Terradynamic Simulation Group (NTSG), University of Montana	[110]
Human population density	Human population, in individuals per km^2	2015	1km	NASA Socioeconomic Data and Applications Center (SEDAC) Documentation for Gridded Population of the World (GPW) v4	[111]
Human footprint index	Human footprint index, is a measure of the cumulative impact of direct pressures from human activities on nature. It includes eight inputs: the extent of built environments, crop land, pasture land, human population density, night-time lights, railways, roads, and navigable waterways.	2009	1km	Wildlife Conservation Society	[112]
Cattle density	Cattle density, in individuals per km^2	2006	1km	FAO, ILRI, the University of Oxford and the Université Libre de Bruxelles	[113]
Primary Roads	Road density, in km of roads per 100 km^2	2010	Based on vector file	Center for International Earth Science Information Network - CIESIN - Columbia University	[114]

Table S6. Description of environmental and anthropogenic covariates used as explanatory variables for home range and movement of jaguars. Related to Figure 2, Figure 3, Table S4, and Table S5. All variables were calculated or averaged based on the extent of each individual's 95% autocorrelated kernel density estimated home range isopleth.