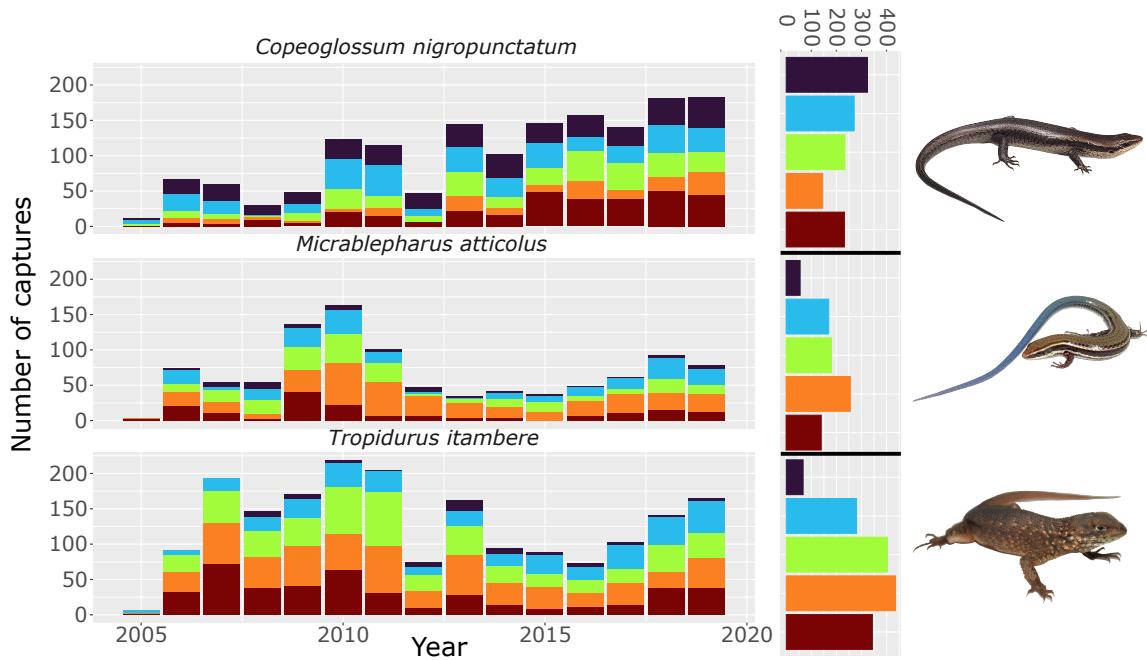


## Apêndice 5

### Study species

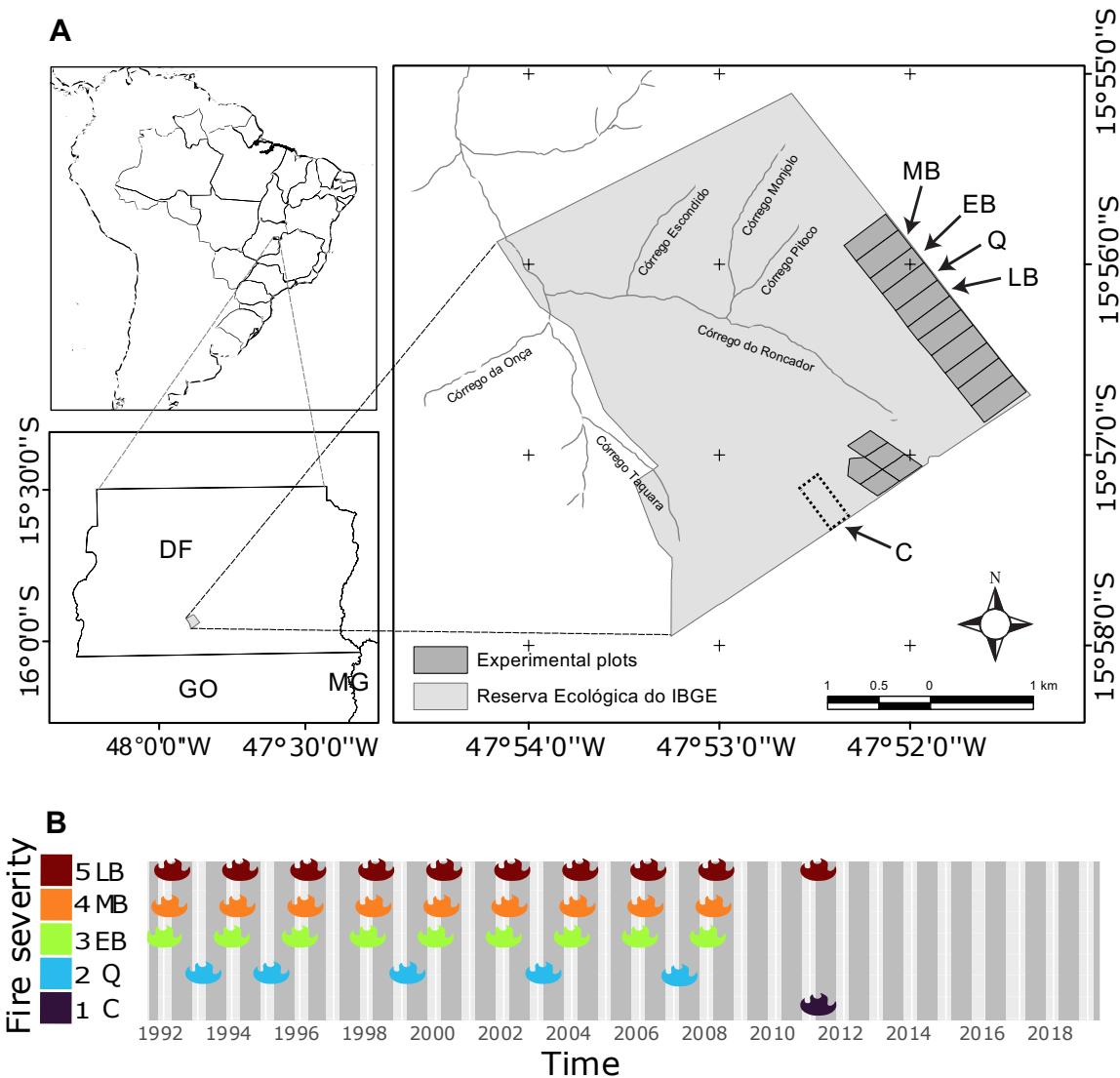


**Fig. S1.** Number of captures of three species of lizards (*Copeoglossum nigropunctatum*, *Micrablepharus atticolus*, and *Tropidurus itambere*) from the Brazilian Cerrado savannas in fire regimes of varying fire severity over the years of study and beside the total captures in each plot. Photos: *C. nigropunctatum* and *M. atticolus* (Nicolás Pelegrin); *T. itambere* (Carlos Moraes).

### Study area

We conducted this study at Reserva Ecológica do IBGE, RECOR ( $15^{\circ}56'41''$  S,  $47^{\circ}53'07''$  W; 1,141 m above sea level; Fig. S2), situated approximately 15 km south of Brasília, Distrito Federal, Brazil, in the core of the Cerrado biome. The climate there corresponds to the Aw (tropical with dry winter) type in Köppen's classification and has a high intra-annual predictability (Alvares *et al.* 2013). Mean temperatures are mild year-round ( $20.6 \pm 1.4$  °C S.D.), varying between 18.0–22.4 °C. Conversely,

precipitation is markedly seasonal, with a wet season between October and April, when ~94% of the 1417.0 mm mean annual occurs. The vegetation consists of a complex mosaic of savannas, grasslands, and gallery forests (Eiten 1972).

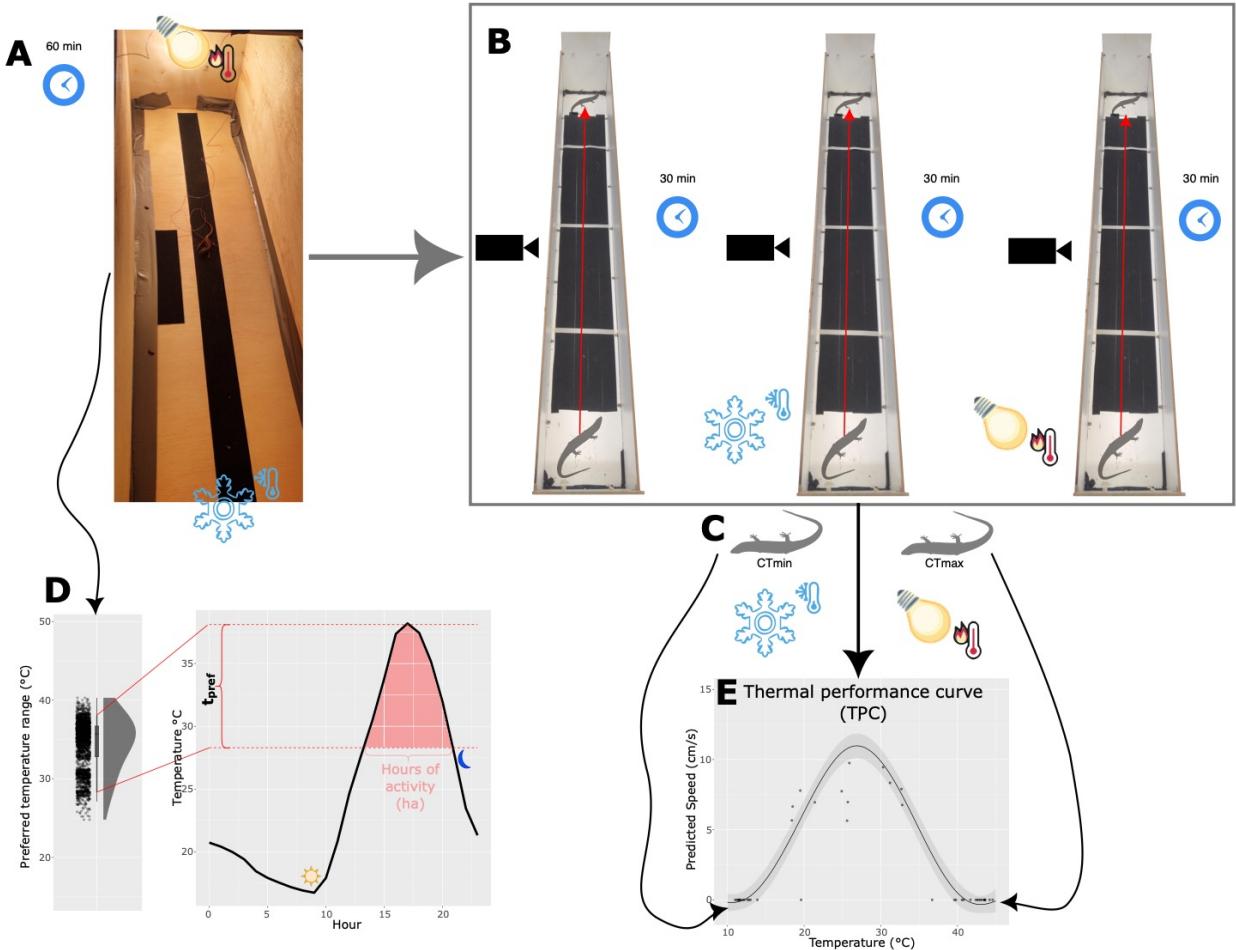


**Fig. S2.** In this study, we investigated the demographic resilience components (resistance, compensation, and recovery time) to different fire timings and frequencies of three lizard species (*Copeoglossum nigropunctatum*, *Micrablepharus atticolus*, and *Tropidurus itambere*) characterized by distinct life-history strategies. (A) Map with location of the studied plots, each exerted to different fire timings and frequencies: late biennial (LB), middle biennial (MB), early biennial (EB), quadrennial (Q), and the control (C), which only experienced fire once in 2011. (B) Fire history depicting the months when prescribed bushfires occurred at each plot. Fire severity (thus habitat openness) increases in the following order C < Q < EB < MB < LB.

## Ecophysiological measurements

We estimated thermal performance curves (TPC) and preferred temperature ranges ( $t_{\text{pref}}$ ) for each lizard species (Fig. S3). First, to determine the preferred temperatures ( $t_{\text{pref}}$ ), we placed the individuals in a ~15–50 °C temperature gradient made of MDF plywood (0.15 m wide × 0.3 m high × 1.0 m long). We placed a 60 W incandescent lamp to generate heat in one corner and ice packs to cool in the other. We left lizards in the gradient for 1 h and recorded their body temperatures every minute with a 1 mm thermocouple attached with tape to their abdomen and connected to a data logger. With the  $t_{\text{pref}}$  we can estimate the hours of activity, based on the microclimate temperature estimates (Fig. S3D). We used the range between the 5<sup>th</sup> and 95<sup>th</sup> temperature percentiles as the preferred temperature range for each species (Figs. S3 and S5). Then, we submit the individuals to different temperatures and stimulate them to run while videorecording it (Fig. S3B). Individuals ran twice in three temperatures: at ambient temperature (25–28°C), at 5°C below and 5°C above said ambient temperature. We recorded the runs with a Casio® EX-FH25 digital camera and calculated their velocity with the Tracker software (<https://physlets.org/tracker/>). To build the thermal performance curves (TPCs), we also determined the minimum and maximum critical temperatures by submitting individuals to cold and hot temperatures until we observed no righting response (Fig. S3C), *i.e.* complex muscular movements in response to a stimulus (Taylor *et al.* 2021). Next, we built generalized additive mixed models (GAMMs) with package GAMM4 (Wood & Scheipl 2017) for each species relating maximum speed with body temperature, including individuals as a random factor (Figs. S3E and S4). With the hourly microclimate temperature estimates at 10 cm height, we predicted monthly mean locomotor performance (*perf*) and the hours of activity (*ha*). To predict *perf*, we used the GAMMs for each species. We considered the hours of activity (*ha*) as the hours when microclimate temperatures were within the preferred temperature ranges from each species

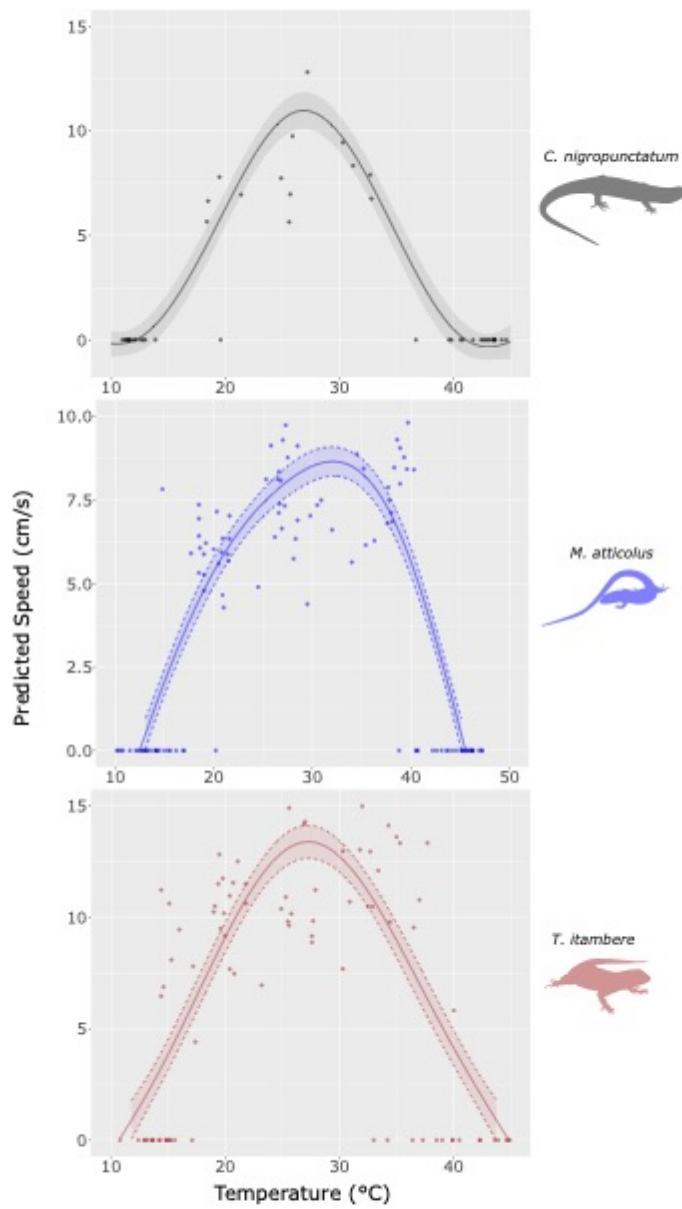
(Figs. S3 and S5). As the three species are diurnal, we only considered hours of activity when insolation was greater than zero. After the experiments, we returned the individuals to their sites.



**Fig. S3.** Description of the ecophysiological experiments protocol and examples of the final ecophysiological traits (hours of activity—ha and thermal performance curve—TPC). (A) Measurement of preferred temperature range in a gradient of ~15–50 °C. Lizards acclimate during 15 min and we record 60 temperature measures every minute. (B) After, we videorecorded the sprint runs of the lizard in three different temperatures: at ambient temperature (25–28°C), at 5°C below and 5°C above said ambient temperature. Lizards rest during 30 min between the runs. (C) Finally, we measured the minimum and maximum critical temperatures (CT<sub>min</sub> and CT<sub>max</sub>, respectively). (D) We used the range between the 5<sup>th</sup> and 95<sup>th</sup> temperature percentiles as the preferred temperature range (t<sub>pref</sub>) for each species. We considered the hours of activity (ha) as the hours when microclimate temperatures were within the preferred temperature ranges from each species. As the three species are diurnal, we only considered hours of activity when

insolation was greater than zero. (E) With the maximum speed records from the sprint runs and the critical temperatures ( $CT_{min}$  and  $CT_{max}$ ) we built thermal performance curves (TPCs) using generalized additive mixed-effects models.

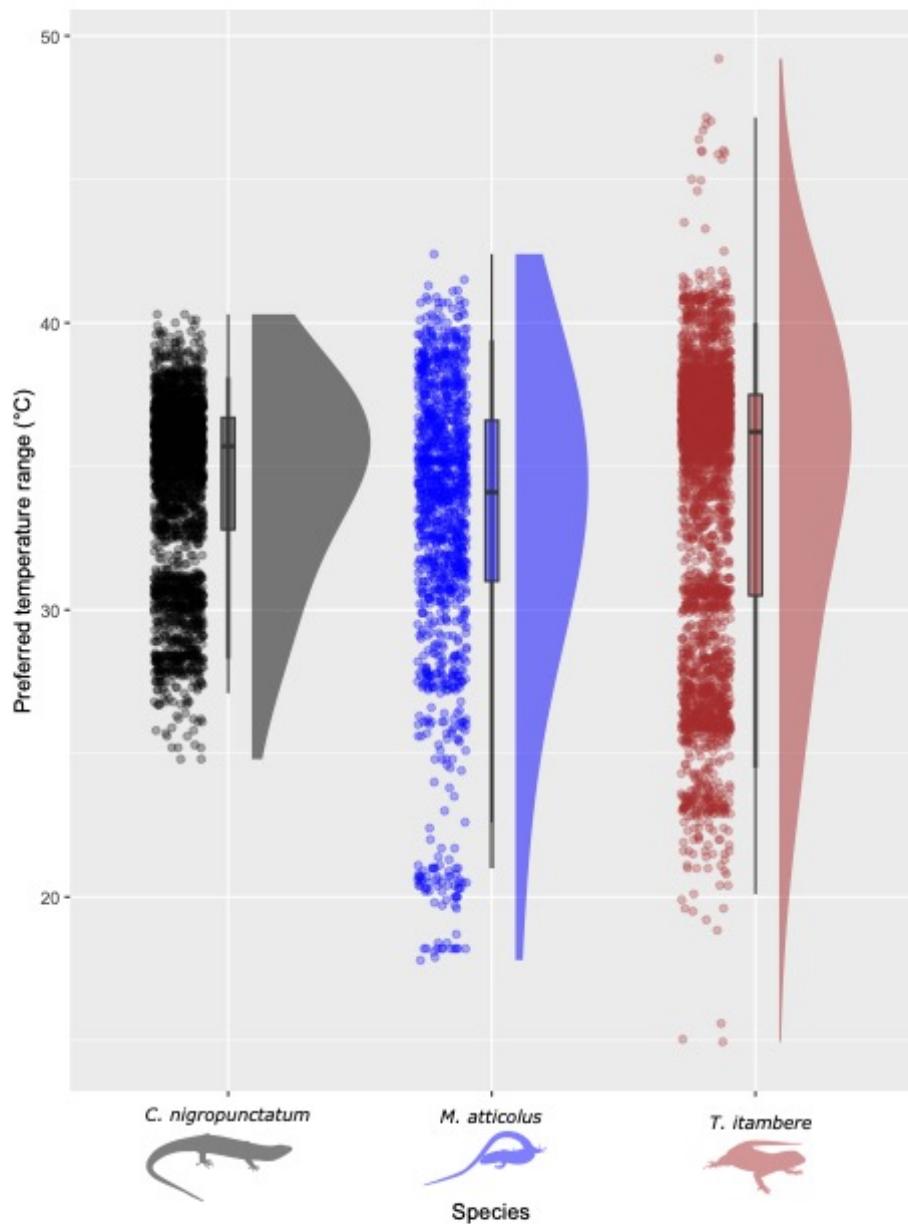
Despite some differences in the thermal performance curves of the species, all three species have optimal locomotor performances between 25 and 32 °C (Fig. S4).



**Fig. S4.** Locomotor thermal performance curves (TPCs) from three species of lizards (*Copeoglossum nigropunctatum*, *Micrablepharus atticolus*, and *Tropidurus itambere*) from the Brazilian Cerrado savannas. Lines and shades represent mean estimates and 95% confidence intervals, respectively.

The species have different thermal preference ranges (5<sup>th</sup> and 95<sup>th</sup> temperature percentiles).

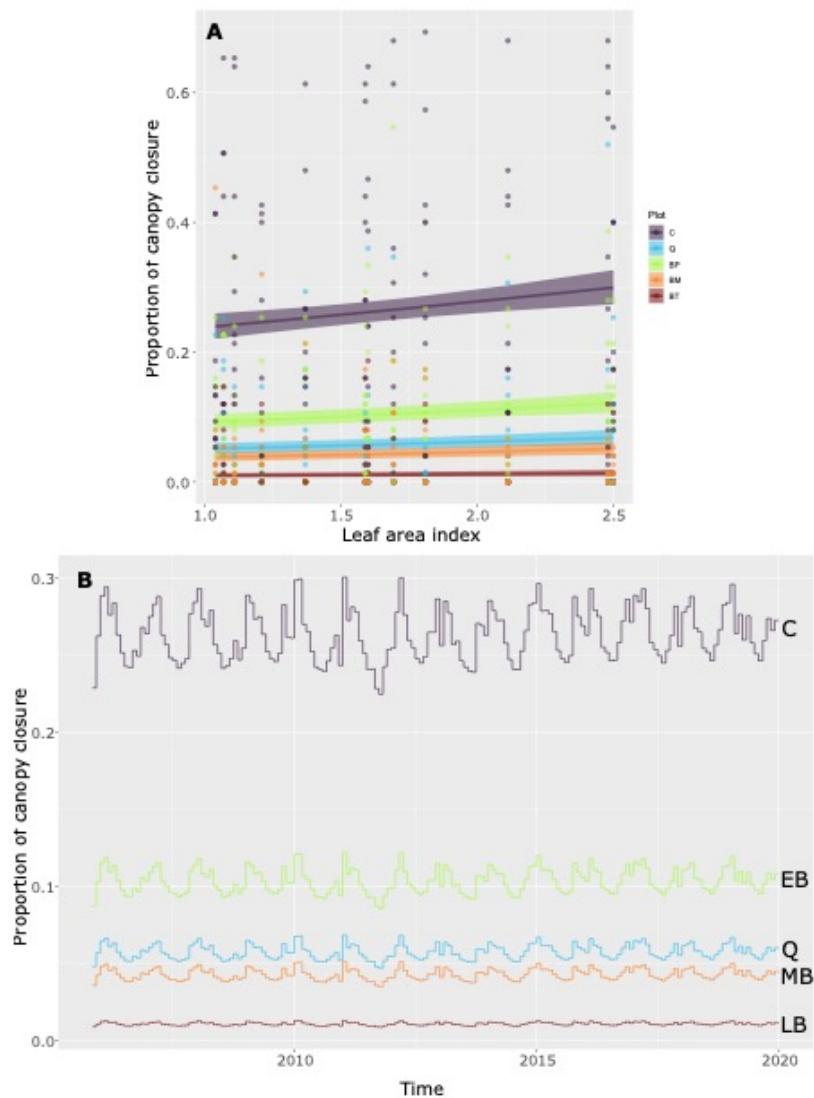
Preferred temperature of *C. nigropunctatum* ranges between 28.3 and 38.1 °C, *M. atticolus* between 21.0 and 39.4 °C, and *T. itambere* between 24.5 and 40.0 °C (Fig. S5).



**Fig. S5.** Preferred temperature ranges ( $t_{\text{pref}}$ ) from three species of lizards (*Copeoglossum nigropunctatum*, *Micrablepharus atticolus*, and *Tropidurus itambere*) from the Brazilian Cerrado savannas. Boxplots depicts median (solid horizontal bars) and interquartile range (boxes). Whiskers extend as far as 1.5x the interquartile range or to minimum and maximum  $t_{\text{pref}}$ . The vertical solid horizontal bars indicate the 90<sup>th</sup> temperature percentiles.

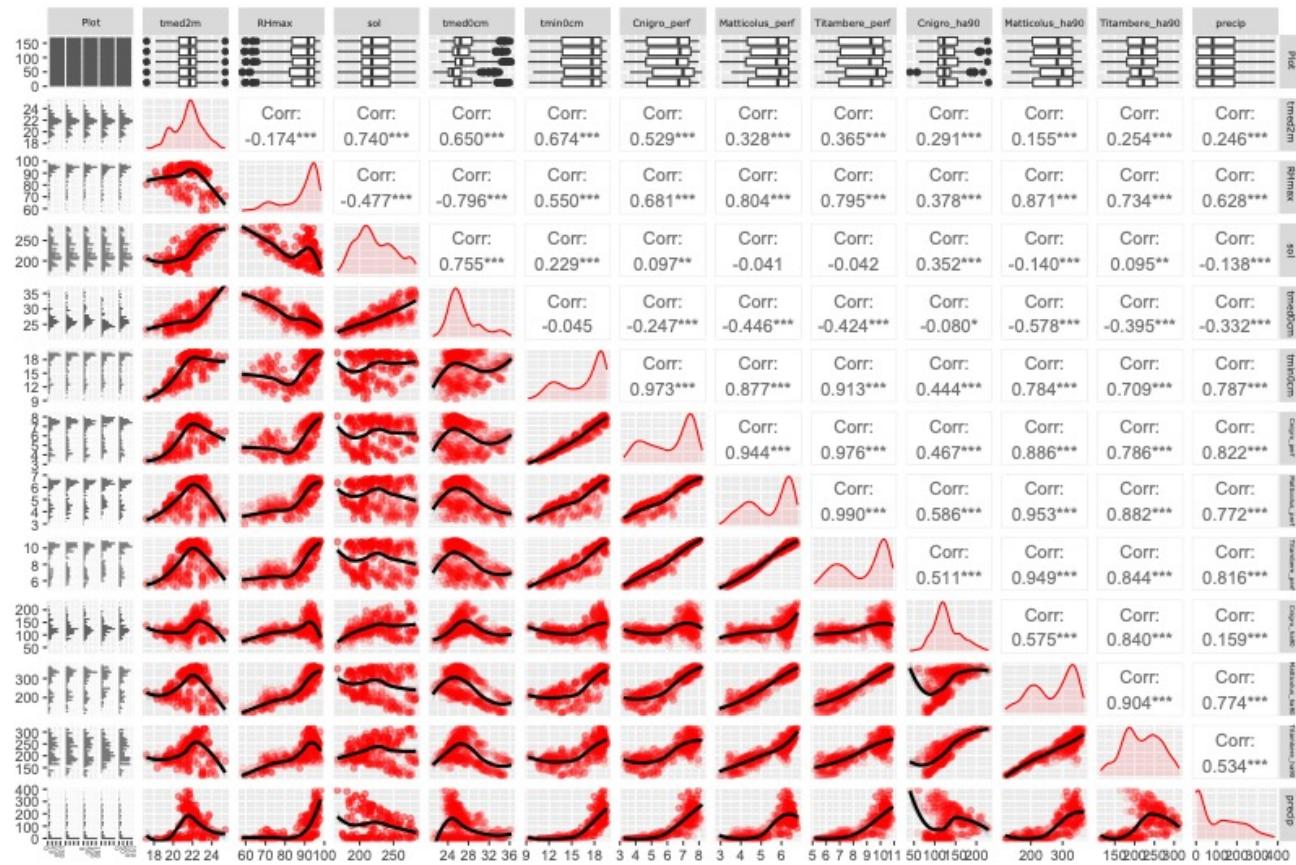
## **Microclimate estimates**

To estimate temperature and air humidity in the different fire regimes, we used a mechanistic model using the ERA-5 dataset from the European Center for Medium-Range Weather Forecasts (ECMWF) (Hersbach *et al.* 2018) following Kearney *et al.* (2020). We included the canopy closure estimates in the model to account for the microclimatic differences among the different fire regimes (see SI for details on the canopy closure estimates). To account for differences among fire regimes (plots) and for temporal variation (including vegetation succession) in the microclimate model, we used previous measures of canopy closure from one year and related with the leaf area index (LAI) using a generalized linear model with binomial errors (Fig. S6-A). For details on the method of measuring the canopy closure, see (Costa *et al.* 2021). We extracted LAI values from the MODIS product MCD15A2H v006(Myneni *et al.* 2015) using the package MODISTOOLS. With this model, we predicted the canopy closures for the missing months, ultimately considering for the vegetation succession and differences among fire regimes (Fig. S6-B).



**Fig. S6.** Relationship between the proportion of canopy closure and leaf area index from a generalized linear model (GLM), including differences among plots, each exerted to different fire timings and frequencies (A). Lines and shades represent mean estimates and 95% confidence intervals, respectively. Predictions of canopy closure for the study timeframe (November 2005 to December 2019) using the GLM and leaf area index values. C = control, Q = quadrennial, EB = early biennial, MB = mid biennial, LB = late biennial.

## Environmental covariates correlations



**Fig. S7.** Correlations and relationships among monthly weather/microclimatic/ecophysiological variables used in the mark-recapture models to estimate the effects of environmental covariates on vital rates of three species of lizards (*Copeoglossum nigropunctatum*, *Micrablepharus atticolus*, and *Tropidurus itambere*) from the Brazilian Cerrado savannas in fire regimes of varying fire severity. *tmed2m* = mean air temperature at 200 cm height; *tmin0cm* = minimum air temperature at 0 cm height; *tmed0cm* = mean air temperature at 0 cm height; *RHmax* = maximum relative air humidity; *sol* = solar radiation; *precip* = accumulated precipitation; *perf* = mean locomotor performance (one for each species); *ha* = hours of activity (one for each species).

## Models' parameterizations

First, we compared and selected models using the Deviation Information Criteria (DIC) with linear and quadratic relationships between the individuals' SVL with the vital rates (survival, growth, probability of reproduction, and number of newborns) (Table S1).

**Table S1.** Models' comparison using Deviation Information Criteria (DIC) to assess the performance of linear and quadratic relationships between the individuals' snout-vent length (SVL) and the vital rates (survival, growth, probability of reproduction— $p_{rep}$ , and number of newborns  $n_b$ ) of three different species from the Brazilian Cerrado savannas. We highlighted with bold letters the lowest DIC.

Species	Vital rate	SVL	SVL <sup>2</sup>
CJS / Von			
	Bertalanffy	71718.11	<b>68525.63</b>
<i>C. nigropunctatum</i> (Survival/Growth)			
	$p_{rep}$	171.08	<b>170.73</b>
	$n_b$	<b>425.61</b>	428.07
CJS / Von			
	Bertalanffy	<b>34511.86</b>	56410.47
<i>M. atticolus</i> (Survival/Growth)			
	$p_{rep}$	<b>230.97</b>	231.69
	$n_b$	-	-
CJS / Von			
<i>T. itambere</i>	Bertalanffy	<b>131779.40</b>	196867.00
(Survival/Growth)			

$p_{rep}$	<b>100.23</b>	101.06
$n_b$	203.58	<b>202.98</b>

The Cormack-Jolly-Seber (CJS) model (eq. S1) related the individuals' survival for the individuals'  $SVL_i$  and the Pradel Jolly-Seber (PJS) model (eq. S2) included the environmental stochasticity from the microclimate and weather (the following equation notations group these variables to only *weather*), ecophysiological (*perf* and *ha*), fire regime (*plot*), fire occurrence (*fire*) and time since the last fire (*TSLF*). We also included a monthly random variation  $\epsilon(plot, t)$  to account for unexplained stochastic temporal variation. We used the same approach for capture parameters ( $p_{CJS}$  and  $\overline{p_{PJS}}$ , respectively). To estimate the variable importance for each environmental variable we used the indicator variable selection, where each indicator had a Bernoulli (0.5) prior probability (Kuo & Mallick 1998; O'Hara & Sillanpää 2009).

$$\text{logit}(\phi_{CJS}(SVL_{it})) \sim \overline{\sigma_{PJS}(plot, t)} + b_{SVL_{it}} \cdot SVL_{it} + b_{SVL_{it}^2} \cdot SVL_{it}^2 \quad (\text{Eq. S1})$$

$$\begin{aligned} \text{logit}(\overline{\sigma_{PJS}(plot, t)}) &\sim \alpha\sigma(plot) + \beta_{perf} \cdot perf(plot, t) + \beta_{ha} \cdot ha(plot, t) + \beta_{weather} \cdot \\ &weather(t) + \beta_{fire} \cdot fire(plot, t) + \beta_{TSLF} \cdot TSLF(plot, t) + \epsilon(plot, t) \quad (\text{Eq. S2}) \end{aligned}$$

For the transition of the body size through time, we combined a Von Bertalanffy body growth function with the individuals' records of SVL and capture history (eq. S3). The body size of individual  $i$  at time  $t$  ( $SVL_{it}$ ) is determined by:

$$SVL_{it} = SVL0_i + (SVLI - SVL0_i) \cdot (1 - K_i(plot))^{(AFC_i + \Delta_{it})} \quad (\text{Eq. S3})$$

where  $AFC_i$  is the age of the individual at first capture, and  $\Delta_{it}$  is the number of months since first capture (Schofield *et al.* 2013; Reinke *et al.* 2020). The sum of these parameters is the age of the individual  $i$  at time  $t$ . The initial size at age 0 for individual  $i$  is denoted as  $SVL0_i$ , the asymptotic size as  $SVLI$ , and  $K_i$  is the growth constant (measured in amounts of time to reach asymptotic size). All variables were allowed to vary through individuals, but  $K_i$  also varied with different means among the plots.

For reproduction, we considered three different processes: the probability of reproduction ( $p_{rep}$ ), the production of newborns (clutch size;  $n_b$ ), and the probability of recruitment ( $p_{rec}$ ). To estimate the probability of reproduction, we used the records of reproductive and non-reproductive females we captured in the field and related with the individual's  $SVL_i$  using a Bernoulli distribution (eq. S4).

$$\text{logit} (p_{rep}(SVL_i)) \sim \text{beroulli}(m_0 + \beta_{prepsVL_i} \cdot SVL_i + \beta_{prepsVL_i^2} \cdot SVL_i^2) \quad (\text{Eq. S4})$$

To estimate the production of newborns  $n_b$ , we used a Poisson distribution relating the number of eggs or embryos produced per female to the individual's  $SVL_i$  (eq. S5).

$$\log(n_b(SVL_i)) \sim \text{poisson}(n_0 + \beta_{nbsVL_i} \cdot SVL_i + \beta_{nbsVL_i^2} \cdot SVL_i^2) \quad (\text{Eq. S5})$$

Due to logistical limitations, data on the number of eggs or embryos came from *ex situ* locations, mainly specimens deposited in the Herpetological Collection of the University of Brasília (CHUNB).

We derived  $p_{rec}$  from the PJS model. The PJS model is a time-symmetric open model that estimates survival ( $\sigma$ ) and recruitment per-capita rates ( $f$ ) (Pradel 1996). We estimated the *per capita*

recruitment ( $f$ ) using the PJS model with the same predictors and indicator variable selection used for  $\overline{\sigma_{PJS}}$  and  $\overline{p_{PJS}}$  (eq. S6).

$$\log(f(plot, t)) \sim f_0 + \beta_{perf} \cdot perf(plot, t) + \beta_{ha} \cdot ha(t) + \beta_{weather} \cdot weather(t) + \beta_{fire} \cdot fire + \beta_{TSLF} \cdot TSLF(t) + \epsilon(plot, t) \quad (\text{Eq. S6})$$

And then estimated the probability of recruitment ( $p_{rec}$ ) as:

$$p_{rec}(plot, t) = 1 - \frac{f(plot, t)}{\left(\overline{\sigma_{PJS}}(plot, t) + f(plot, t)\right)} \quad (\text{Eq. S7}).$$

In our IPMs, the  $P$  sub-kernel was determined by the  $\text{logit}\left(\sigma_{CJS}(SVL_i)\right)$  and the growth function by  $g(x, y) \sim N(SVL_{it}, \tau^2)$ , where  $\tau^2$  is the standard deviation of  $SVL_{it}$ , considering the parameter samples of the Von Bertalanffy function from the hierarchical Bayesian model. The  $F$  sub-kernel was determined by:

$$F(x, y) = \left(p_{rec}(plot, t) + p_{rep}(SVL_i)\right) \cdot n_b(SVL_i) \cdot dSVL_{nb} \quad (\text{Eq. S8})$$

Where  $dSVL_{nb}$  is the normal size distribution of newborns, with mean and standard deviations measured with the newborn individuals we captured in the field.

We implemented the models for each species with JAGS in R, using the packages JAGSUI, RUNJAGS, and RJAGS (Kellner 2019; Plummer 2019). We initially used four Markov chains of 50,000 iterations in the JAGS adaptive phase, discarded 50,000 iterations as burn-in, and sampled 10,000 estimates by a thinning rate of 10. We assessed convergence within and between MCMC sequences with trace and density plots and the potential scale reduction factor ( $\hat{R}$ ), considering that convergence

was satisfactorily approached when  $\hat{R}$  was smaller than 1.1 for all parameters (Gelman *et al.* 2014). However, we experienced convergence issues with some parameters in the CJS and PJS models of *C. nigropunctatum* (specifically, for  $\overline{\sigma_{PJS}}$ ) and *T. itambere* (for  $f$ ). We ran these models with different parameterizations and MCMC settings to improve convergence (see vital rates estimates section below).

## Mark-recapture statistics

Over the 14 years, we made 1,557 captures from 1,207 individuals of *Copeoglossum nigropunctatum*, 1,025 from 803 individuals of *Micrablepharus atticolus*, and 1,932 from 1528 individuals of *Tropidurus itambere*. The maximum number of recaptures between months for one individual was four for *C. nigropunctatum*, six for *M. atticolus*, and five for *T. itambere*. In average, individuals were recaptured through  $7.82 \pm 9.01$  SD months in *C. nigropunctatum*,  $6.00 \pm 8.99$  SD in *M. atticolus*, and  $11.30 \pm 22.83$  SD in *T. itambere*. Maximum period between first and last recapture of one individual was 55 months in *C. nigropunctatum*, 40 months in *M. atticolus*, and 38 months in *T. itambere*.

## Vital rates estimates

In this section we present the results and diagnostics from the Bayesian hierarchical models of the vital rates we estimated. When some parameters have not converged, we ran each model separately, increased the number of iterations, or reparametrized it.

### *Survival/Growth models*

The CJS and Von Bertalanffy integrated models converged for *M. atticolus* and *T. itambere* with the initial MCMC settings, but not for *C. nigropunctatum*. Therefore, we ran the CJS model separately for *C. nigropunctatum* with four Markov chains of 50,000 iterations in the JAGS adaptive phase, discarded 100,000 iterations as burn-in, and sampled 500,000 estimates with no thinning. The Table S2 presents the results of the CJS/Von Bertalanffy models for the three species.

**Table S2.** Cormack-Jolly-Seber (CJS) and Von Bertalanffy models estimates (*Mean*  $\pm$  *SD*) and confidence interval (2.5% and 97.5%) of the relationship between individuals' snout-vent length (SVL) and survival ( $\sigma$ ), capture ( $p$ ), and body growth parameters of three lizard species from the Brazilian Cerrado savannas. Survival and capture probabilities, and body growth constants are in the logit scale. Values of  $\hat{R}$  closer to 1.00 indicate model convergence.  $\alpha$  = intercept;  $\mu$  = mean;  $K$  = body growth constant; SVLI = asymptotic size.

Parameter	Vital rate	Mean	SD	2.5%	97.5%	$\hat{R}$	sample size	Effective
<b><i>Copeoglossum nigropunctatum</i></b>								
$\alpha_\sigma$	Individuals' survival	-3.310	1.478	-6.233	-0.483	1.081	148	
$\beta_{\sigma SVL}$	Individuals' survival	0.125	0.042	0.047	0.208	1.087	106	
$\beta_{\sigma SVL}^2$	Individuals' survival	-0.001	0.000	-0.001	0.000	1.089	119	
$\alpha_p$	Individuals' capture	-2.751	1.899	-6.364	0.986	1.066	199	

Parameter	Vital rate	Mean	SD	2.5%	97.5%	$\hat{R}$	Effective sample size
$\beta_{pSVL}$	Individuals' capture	0.013	0.054	-0.094	0.113	1.066	172
$\beta_{pSVL}^2$	Individuals' capture	0.000	0.000	-0.001	0.001	1.064	182
$\mu_K(C)$	Individuals' body growth	3.640	0.042	3.557	3.722	1.000	2690
$\mu_K(Q)$	Individuals' body growth	3.799	0.039	3.720	3.873	1.001	3961
$\mu_K(EB)$	Individuals' body growth	3.465	0.051	3.364	3.562	1.001	3259
$\mu_K(MB)$	Individuals' body growth	3.293	0.072	3.154	3.434	1.001	3267
$\mu_K(LB)$	Individuals' body growth	3.522	0.049	3.426	3.618	1.000	4111
$\mu_{SVLI}$	Individuals' body growth	109.953	0.223	109.515	110.381	1.002	4623
<i>Micrablepharus atticolus</i>							
$\beta_{\sigma SVL}$	Individual survival	0.000	0.004	-0.007	0.008	1.020	693
$\beta_{pSVL}$	Individual capture	-0.002	0.004	-0.010	0.006	1.000	898

Parameter	Vital rate	Mean	SD	2.5%	97.5%	$\hat{R}$	Effective	
							sample	size
$\mu_K(C)$	Individual							
	Body growth	0.564	0.323	0.042	1.239	1.010	2059	
$\mu_K(Q)$	Individual							
	Body growth	1.152	0.230	0.679	1.579	1.020	1217	
$\mu_K(EB)$	Individual							
	Body growth	0.447	0.229	0.048	0.909	1.020	801	
$\mu_K(MB)$	Individual							
	Body growth	0.084	0.076	0.002	0.284	1.000	2147	
$\mu_K(LB)$	Individual							
	Body growth	1.110	0.211	0.673	1.504	1.010	1890	
$\mu_{SVL}$	Individual							
	Body growth	39.731	0.212	39.354	40.176	1.070	323	
<i>Tropidurus itambere</i>								
$\beta_{\sigma SVL}$	Individual							
	survival	0.004	0.002	0.000	0.009	1.050	857	
$\beta_{p SVL}$	Individual							
	capture	-0.004	0.003	-0.009	0.001	1.030	1706	
$\mu_K(C)$	Individual							
	body growth	4.340	0.222	3.909	4.780	1.000	3783	
$\mu_K(Q)$	Individual							
	body growth	4.467	0.125	4.220	4.716	1.030	2794	

Parameter	Vital rate	Mean	SD	2.5%	97.5%	$\hat{R}$	Effective	
							sample	size
$\mu_K(EB)$	Individual body growth	4.271	0.096	4.083	4.463	1.000	1577	
$\mu_K(MB)$	Individual body growth	3.046	0.096	2.861	3.237	1.030	1038	
$\mu_K(LB)$	Individual body growth	4.329	0.106	4.125	4.537	1.030	1406	
$\mu_{SVLI}$	Individual body growth	79.814	0.222	79.383	80.247	1.000	2026	

#### *Probability of reproduction and production of newborns*

The parameters from the generalized linear models of the  $p_{rep}$  and  $n_b$  converged with the initial MCMC settings, excepting for the  $n_b$  in *T. itambere*. For this vital rate, we ran four Markov chains of 100,000 iterations in the JAGS adaptive phase, discarded 1,800,000 iterations as burn-in, and sampled 200,000 estimates by a thinning rate of 100. The Table S3 presents the results of the CJS/Von Bertalanffy models for the three species.

**Table S3.** Generalized linear models estimates ( $Mean \pm SD$ ) and confidence interval (2.5% and 97.5%) of the relationship between individuals' snout-vent length (SVL) and number of newborns ( $n_b$ ) and probability of reproduction ( $p_{rep}$ ) of three lizard species from the Brazilian Cerrado savannas. Probability of reproduction is in the logit scale and number of newborns is the log scale. Values of  $\hat{R}$  closer to 1.00 indicate model convergence.  $\alpha$  = intercept coefficient;  $\beta$  = slope coefficient.

Parameter	Vital rate	Mean	SD	2.5%	97.5%	$\hat{R}$	Effective sample size
<b><i>Copeoglossum nigropunctatum</i></b>							
$\alpha_{nb}$	Number of newborns	-0.792	0.493	-1.739	0.204	1.002	969
$\beta_{nbSVL}$	Number of newborns	0.025	0.005	0.015	0.035	1.002	973
$\alpha_{prep}$	Probability of reproduction	-6.392	2.858	-10.000	-0.900	1.010	208
$\beta_{prepSVL}$	Probability of reproduction	0.014	0.066	-0.116	0.117	1.010	201
$\beta_{prepSVL}^2$	Probability of reproduction	0.000	0.000	0.000	0.001	1.009	246
<b><i>Micrablepharus atticolus</i></b>							
$\alpha_{prep}$	Probability of reproduction	-8.139	1.385	-9.926	-4.875	1.000	1656
$\beta_{prepSVL}$	Probability of reproduction	0.151	0.034	0.070	0.196	1.000	1652
<b><i>Tropidurus itambere</i></b>							
$\alpha_{nb}$	Number of newborns	-11.299	6.804	-24.712	1.910	1.000	40416
$\beta_{nbSVL}$	Number of newborns	0.310	0.199	-0.080	0.696	1.000	40485

Parameter	Vital rate	Mean	SD	2.5%	97.5%	$\hat{R}$	Effective sample size
$\beta_{\text{nbSVL}^2}$	Number of newborns	-0.002	0.001	-0.005	0.001	1.000	40552
$\alpha_{\text{prep}}$	Probability of reproduction	-8.194	1.277	-9.920	-5.208	1.000	5111
$\beta_{\text{prepSVL}}$	Probability of reproduction	0.087	0.020	0.040	0.116	1.000	5159

#### Pradel Jolly-Seber models

The PJS model only converged with the initial MCMC settings for *M. atticolus*. For *C. nigropunctatum*, we reran the model with four Markov chains of 50,000 iterations in the JAGS adaptive phase, discarded 200,000 iterations as burn-in, and sampled 100,000 estimates with no thinning to achieve convergence. For the recruitment rate of *T. itambere*, we had bad mixing for the parameters  $\beta_{\text{ftmin0cm}}$  and  $\beta_{\text{fperf}}$ , probably related to collinearity with other two important climatic variables: solar radiation (*sol*) and mean air temperature at 200 cm (*tmed2m*). The parameters  $\beta_{\text{fftmin0cm}}$  and  $\beta_{\text{fperf}}$  also were probably confounding the effects of the fire regimes ( $\alpha_{\text{f(plot)}}$ ). Therefore, we fixed the importance for the climatic and microclimatic variables (Table S4). We reran the reparametrized model with four Markov chains of 50,000 iterations in the JAGS adaptive phase, discarded 400,000 iterations as burn-in, and sampled 100,000 estimates with no thinning to achieve convergence.

**Table S4.** Model-averaged estimates ( $\beta$  - Mean  $\pm$  SD) and confidence interval (2.5% and 97.5%) of the demographic parameters – survival ( $\sigma$ ), capture ( $p$ ), and recruitment ( $f$ ) – of three lizard species

from the Brazilian Cerrado savannas. Survival and capture probabilities are in the logit scale, while recruitment is in the log scale. Values of  $\hat{R}$  closer to 1.00 indicate model convergence. Importance values greater than 0.5 (prior) indicate a higher degree of importance in predicting the demographic parameter.  $\alpha$  = intercept;  $\epsilon$  = monthly random variation;  $tmed2m$  = mean air temperature at 200 cm height;  $tmin0cm$  = minimum air temperature at 0 cm height;  $tmed0cm$  = mean air temperature at 0 cm height;  $RHmax$  = maximum relative air humidity;  $sol$  = solar radiation;  $precip$  = accumulated precipitation;  $perf$  = mean locomotor performance;  $ha$  = hours of activity;  $fire$  = fire occurrence;  $TSLF$  = time since last fire.

Parameter	Vital rate	Mean	SD	2.50%	97.50%	$\hat{R}$	sample size	Effective	
								Mean importance	SD importance
<i>Copeoglossum nigropunctatum</i>									
$\alpha_{\sigma(C)}$	Population survival	2.421	0.266	1.983	3.012	1.020	345	-	-
$\alpha_{\sigma(Q)}$	Population survival	2.412	0.250	1.999	2.970	1.020	476	-	-
$\alpha_{\sigma(EB)}$	Population survival	2.294	0.266	1.847	2.868	1.010	492	-	-
$\alpha_{\sigma(MB)}$	Population survival	2.512	0.344	1.900	3.236	1.010	525	-	-
$\alpha_{\sigma(LB)}$	Population survival	2.580	0.261	2.142	3.154	1.020	740	-	-
$\epsilon_{\sigma(\text{plot},t)}$	Population survival	0.852	0.300	0.209	1.436	1.020	194	-	-
$\beta_{\sigma tmed2m}$	Population survival	0.015	0.079	-0.062	0.177	1.040	1950	0.503	0.500
$\beta_{\sigma RHmax}$	Population survival	0.011	0.049	-0.058	0.138	1.000	8613	0.508	0.500

Parameter	Vital rate	Effective						Mean importance	SD importance
		Mean	SD	2.50%	97.50%	$\hat{R}$	sample size		
$\beta_{\sigma\text{sol}}$	Population survival	-0.038	0.131	-0.434	0.046	1.020	801	0.548	0.498
$\beta_{\sigma\text{med0cm}}$	Population survival	-0.005	0.043	-0.106	0.071	1.000	9968	0.492	0.500
$\beta_{\sigma\text{min0cm}}$	Population survival	0.017	0.070	-0.054	0.186	1.000	3027	0.515	0.500
$\beta_{\sigma\text{precip}}$	Population survival	-0.006	0.067	-0.127	0.081	1.000	3083	0.496	0.500
$\beta_{\sigma\text{perf}}$	Population survival	0.013	0.061	-0.059	0.166	1.010	4857	0.510	0.500
$\beta_{\sigma\text{ha}}$	Population survival	0.004	0.040	-0.068	0.098	1.000	21231	0.483	0.500
$\beta_{\sigma\text{fire}}$	Population survival	-0.003	0.070	-0.116	0.094	1.000	28086	0.501	0.500
$\beta_{\sigma\text{TSLF}}$	Population survival	0.004	0.026	-0.043	0.072	1.000	8592	0.440	0.496
$\alpha_{f(C)}$	Population recruitment	-2.290	0.189	-2.703	-1.963	1.010	415	-	-
$\alpha_{f(Q)}$	Population recruitment	-2.255	0.179	-2.675	-1.960	1.010	543	-	-
$\alpha_{f(EB)}$	Population recruitment	-2.127	0.182	-2.520	-1.812	1.010	563	-	-
$\alpha_{f(MB)}$	Population recruitment	-2.311	0.258	-2.855	-1.851	1.000	588	-	-
$\alpha_{f(LB)}$	Population recruitment	-2.293	0.166	-2.651	-2.003	1.010	1057	-	-

Parameter	Vital rate	Effective						Mean importance	SD importance
		Mean	SD	2.50%	97.50%	$\hat{R}$	sample size		
$\epsilon_{f(plot,t)}$	Population recruitment	0.616	0.242	0.076	1.060	1.030	209	-	-
$\beta_{ftmed2m}$	Population recruitment	0.018	0.052	-0.041	0.161	1.000	7019	0.532	0.499
$\beta_{fRHmax}$	Population recruitment	-0.001	0.035	-0.075	0.072	1.000	33757	0.487	0.500
$\beta_{fsol}$	Population recruitment	-0.006	0.046	-0.105	0.065	1.020	15397	0.500	0.500
$\beta_{ftmed0cm}$	Population recruitment	0.007	0.038	-0.058	0.104	1.010	11688	0.499	0.500
$\beta_{ftmin0cm}$	Population recruitment	0.008	0.044	-0.054	0.108	1.010	15768	0.501	0.500
$\beta_{fp precip}$	Population recruitment	0.001	0.038	-0.073	0.079	1.010	32064	0.490	0.500
$\beta_{fperf}$	Population recruitment	0.005	0.038	-0.061	0.094	1.000	18827	0.495	0.500
$\beta_{fha}$	Population recruitment	0.000	0.036	-0.076	0.077	1.000	21077	0.493	0.500
$\beta_{ffire}$	Population recruitment	-0.001	0.043	-0.089	0.078	1.000	119942	0.499	0.500
$\beta_{frSLF}$	Population recruitment	-0.014	0.028	-0.090	0.023	1.000	7174	0.512	0.500
$\alpha_{p(C)}$	Population capture	-3.541	0.191	-3.918	-3.167	1.000	3567	-	-
$\alpha_{p(Q)}$	Population capture	-3.071	0.147	-3.362	-2.788	1.000	6560	-	-

Parameter	Vital rate	Effective						Mean importance	SD importance
		Mean	SD	2.50%	97.50%	$\widehat{R}$	sample size		
<b>Population capture</b>									
$\alpha_{p(EB)}$	Population capture	-3.259	0.181	-3.621	-2.910	1.000	4713	-	-
$\alpha_{p(MB)}$	Population capture	-4.124	0.320	-4.772	-3.520	1.000	2617	-	-
$\alpha_{p(LB)}$	Population capture	-3.235	0.162	-3.558	-2.922	1.000	7213	-	-
$\epsilon_{p(plot,t)}$	Population capture	0.494	0.050	0.395	0.591	1.000	5806	-	-
$\beta_{ptmed2m}$	<b>Population capture</b>	<b>0.118</b>	<b>0.151</b>	<b>-0.033</b>	<b>0.475</b>	<b>1.000</b>	<b>1582</b>	<b>0.666</b>	<b>0.472</b>
$\beta_{pRHmax}$	<b>Population capture</b>	<b>0.128</b>	<b>0.144</b>	<b>-0.028</b>	<b>0.452</b>	<b>1.000</b>	<b>1851</b>	<b>0.714</b>	<b>0.452</b>
$\beta_{psol}$	<b>Population capture</b>	<b>0.055</b>	<b>0.065</b>	<b>-0.008</b>	<b>0.203</b>	<b>1.000</b>	<b>12028</b>	<b>0.619</b>	<b>0.486</b>
$\beta_{ptmed0cm}$	Population capture	-0.006	0.074	-0.211	0.132	1.010	5099	0.413	0.492
$\beta_{ptmin0cm}$	Population capture	-0.063	0.123	-0.402	0.080	1.000	3120	0.568	0.495
$\beta_{pprecip}$	<b>Population capture</b>	<b>-0.065</b>	<b>0.070</b>	<b>-0.210</b>	<b>0.011</b>	<b>1.000</b>	<b>5696</b>	<b>0.647</b>	<b>0.478</b>
$\beta_{pperf}$	<b>Population capture</b>	<b>-0.204</b>	<b>0.207</b>	<b>-0.691</b>	<b>0.002</b>	<b>1.000</b>	<b>1476</b>	<b>0.825</b>	<b>0.380</b>
$\beta_{pha}$	Population capture	0.038	0.048	-0.006	0.147	1.000	18681	0.559	0.497
$\beta_{pfire}$	Population capture	0.054	0.146	-0.124	0.488	1.000	15503	0.525	0.499

Parameter	Vital rate	Effective						Mean importance	SD importance
		Mean	SD	2.50%	97.50%	$\hat{R}$	sample size		
<b>Population capture</b>									
$\beta_{\text{PTSLF}}$		-0.029	0.053	-0.170	0.030	1.000	20646	0.451	0.498
<i>Micrablepharus atticolus</i>									
<b>Population survival</b>									
$\alpha_{\sigma(C)}$		2.873	0.526	1.919	3.970	1.110	208	-	-
$\alpha_{\sigma(Q)}$		2.645	0.326	2.091	3.342	1.070	279	-	-
$\alpha_{\sigma(EB)}$		2.128	0.306	1.584	2.749	1.060	214	-	-
$\alpha_{\sigma(MB)}$		2.291	0.271	1.817	2.877	1.080	265	-	-
$\alpha_{\sigma(LB)}$		1.369	0.331	0.742	2.059	1.090	142	-	-
$\epsilon_{\sigma(\text{plot}, t)}$		1.452	0.244	0.987	1.915	1.060	230	-	-
$\beta_{\sigma \text{med2m}}$		0.032	0.113	-0.165	0.325	1.010	1191	0.503	0.500
$\beta_{\sigma R \text{max}}$		-0.026	0.138	-0.430	0.175	1.020	1538	0.489	0.500
$\beta_{\sigma \text{sol}}$		0.055	0.135	-0.094	0.445	1.010	1052	0.515	0.500
$\beta_{\sigma \text{med0cm}}$		0.004	0.117	-0.237	0.275	1.000	1994	0.466	0.499
$\beta_{t \text{min0cm}}$		0.067	0.140	-0.093	0.454	1.010	810	0.563	0.496
<b><math>\beta_{\sigma \text{precip}}</math></b>	<b>Population survival</b>	<b>0.211</b>	<b>0.300</b>	<b>-0.029</b>	<b>1.005</b>	<b>1.050</b>	<b>285</b>	<b>0.736</b>	<b>0.441</b>

Parameter	Vital rate	Effective						Mean importance	SD importance
		Mean	SD	2.50%	97.50%	$\hat{R}$	sample size		
$\beta_{\sigma\text{perf}}$	Population survival	0.020	0.131	-0.297	0.302	1.020	1158	0.518	0.500
$\beta_{\sigma\text{ha}}$	Population survival	0.071	0.151	-0.096	0.503	1.010	709	0.560	0.496
$\beta_{\sigma\text{fire}}$	Population survival	0.029	0.185	-0.241	0.496	1.030	6718	0.504	0.500
$\beta_{\sigma\text{TSLF}}$	Population survival	-0.004	0.050	-0.133	0.100	1.000	2703	0.374	0.484
$\alpha_{f(C)}$	Population recruitment	-2.438	0.431	-3.321	-1.630	1.090	181	-	-
$\alpha_{f(Q)}$	Population recruitment	-2.282	0.227	-2.815	-1.908	1.080	184	-	-
$\alpha_{f(EB)}$	Population recruitment	-1.892	0.200	-2.345	-1.558	1.040	195	-	-
$\alpha_{f(MB)}$	Population recruitment	-2.045	0.211	-2.514	-1.696	1.030	162	-	-
$\alpha_{f(LB)}$	Population recruitment	-1.556	0.260	-2.100	-1.107	1.060	81	-	-
$\epsilon_{f(\text{plot},t)}$	Population recruitment	0.791	0.215	0.363	1.224	1.030	246	-	-
$\beta_{f\text{med2m}}$	Population recruitment	-0.002	0.209	-0.628	0.377	1.080	146	0.441	0.496
$\beta_{fRH\max}$	Population recruitment	-0.106	0.252	-0.819	0.237	1.060	408	0.491	0.500
$\beta_{fsol}$	Population recruitment	0.092	0.194	-0.192	0.580	1.040	228	0.500	0.500

Parameter	Vital rate	Effective						Mean importance	SD importance
		Mean	SD	2.50%	97.50%	$\hat{R}$	sample size		
$\beta_{ftmed0cm}$	Population recruitment	0.501	0.436	0.000	1.475	1.090	58	0.825	0.380
$\beta_{ftmin0cm}$	Population recruitment	0.215	0.339	-0.118	1.169	1.070	182	0.593	0.491
$\beta_{fp precip}$	Population recruitment	0.189	0.262	-0.075	0.823	1.020	505	0.591	0.492
$\beta_{fperf}$	Population recruitment	-0.230	0.500	-1.703	0.307	1.050	188	0.553	0.497
$\beta_{fha}$	Population recruitment	0.439	0.680	-0.137	2.339	1.030	119	0.650	0.477
$\beta_{ffire}$	Population recruitment	0.195	0.524	-0.474	1.755	1.010	1979	0.548	0.498
$\beta_{fTSLF}$	Population recruitment	0.004	0.037	-0.070	0.112	1.020	1659	0.215	0.411
$\alpha_{p(C)}$	Population capture	-4.568	0.494	-5.540	-3.607	1.030	440	-	-
$\alpha_{p(Q)}$	Population capture	-3.361	0.174	-3.704	-3.024	1.010	1194	-	-
$\alpha_{p(EB)}$	Population capture	-3.131	0.190	-3.507	-2.763	1.010	1154	-	-
$\alpha_{p(MB)}$	Population capture	-2.820	0.154	-3.120	-2.517	1.000	1018	-	-
$\alpha_{p(LB)}$	Population capture	-3.360	0.280	-3.912	-2.814	1.010	780	-	-
$\epsilon_{p(plot,t)}$	Population capture	0.539	0.064	0.416	0.665	1.000	3449	-	-

Parameter	Vital rate	Effective						Mean importance	SD importance
		Mean	SD	2.50%	97.50%	$\widehat{R}$	sample size		
$\beta_{ptmed2m}$	Population capture	0.025	0.121	-0.212	0.357	1.000	3160	0.412	0.492
$\beta_{pRHmax}$	Population capture	-0.008	0.094	-0.253	0.204	1.000	7002	0.368	0.482
$\beta_{psol}$	Population capture	-0.022	0.059	-0.194	0.051	1.000	10287	0.312	0.463
$\beta_{ptmed0cm}$	Population capture	<b>-0.248</b>	<b>0.166</b>	<b>-0.589</b>	<b>0.000</b>	<b>1.000</b>	<b>2991</b>	<b>0.859</b>	<b>0.348</b>
$\beta_{ptmin0cm}$	Population capture	<b>-0.357</b>	<b>0.193</b>	<b>-0.773</b>	<b>0.000</b>	<b>1.010</b>	<b>2344</b>	<b>0.933</b>	<b>0.249</b>
$\beta_{pprecip}$	Population capture	<b>-0.415</b>	<b>0.106</b>	<b>-0.626</b>	<b>-0.211</b>	<b>1.010</b>	<b>2334</b>	<b>0.999</b>	<b>0.032</b>
$\beta_{pperf}$	Population capture	0.074	0.156	-0.138	0.491	1.010	2940	0.476	0.499
$\beta_{pha}$	Population capture	-0.065	0.128	-0.402	0.103	1.000	4912	0.459	0.498
$\beta_{pfire}$	Population capture	0.070	0.181	-0.224	0.549	1.000	38116	0.490	0.500
$\beta_{pTSLF}$	Population capture	<b>-0.097</b>	<b>0.118</b>	<b>-0.358</b>	<b>0.017</b>	<b>1.000</b>	<b>3976</b>	<b>0.576</b>	<b>0.494</b>

### *Tropidurus itambere*

$\alpha_{\sigma(C)}$	Population survival	1.670	0.451	0.849	2.616	1.020	411	-	-
$\alpha_{\sigma(Q)}$	Population survival	1.910	0.168	1.604	2.264	1.040	598	-	-
$\alpha_{\sigma(EB)}$	Population survival	1.521	0.149	1.256	1.853	1.020	363	-	-

Parameter	Vital rate	Effective						Mean importance	SD importance
		Mean	SD	2.50%	97.50%	$\hat{R}$	sample size		
$\alpha_{\sigma(MB)}$	Population survival	1.268	0.143	1.008	1.561	1.030	272	-	-
$\alpha_{\sigma(LB)}$	Population survival	1.430	0.158	1.156	1.769	1.020	276	-	-
$\epsilon_{\sigma(\text{plot},t)}$	Population survival	0.396	0.218	0.051	0.847	1.100	133	-	-
$\beta_{\sigma tmed2m}$	<b>Population survival</b>	<b>-0.165</b>	<b>0.262</b>	<b>-0.835</b>	<b>0.059</b>	<b>1.040</b>	<b>389</b>	<b>0.633</b>	<b>0.482</b>
$\beta_{\sigma RH_{\max}}$	Population survival	0.065	0.157	-0.076	0.538	1.010	774	0.519	0.500
$\beta_{\sigma sol}$	<b>Population survival</b>	<b>0.262</b>	<b>0.333</b>	<b>-0.028</b>	<b>1.033</b>	<b>1.030</b>	<b>308</b>	<b>0.730</b>	<b>0.444</b>
$\beta_{\sigma tmed0cm}$	Population survival	-0.027	0.115	-0.365	0.126	1.020	1124	0.453	0.498
$\beta_{tmin0cm}$	Population survival	-0.029	0.140	-0.490	0.146	1.010	569	0.475	0.499
$\beta_{\sigma precip}$	<b>Population survival</b>	<b>0.242</b>	<b>0.272</b>	<b>-0.014</b>	<b>0.864</b>	<b>1.040</b>	<b>253</b>	<b>0.790</b>	<b>0.408</b>
$\beta_{\sigma perf}$	Population survival	-0.006	0.133	-0.338	0.204	1.040	731	0.462	0.499
$\beta_{\sigma ha}$	Population survival	-0.007	0.092	-0.262	0.149	1.000	1403	0.431	0.495
$\beta_{\sigma fire}$	Population survival	-0.019	0.200	-0.567	0.349	1.010	20641	0.497	0.500
$\beta_{\sigma TSLF}$	Population survival	-0.002	0.028	-0.074	0.056	1.000	4803	0.318	0.466

Parameter	Vital rate	Effective						Mean importance	SD importance
		Mean	SD	2.50%	97.50%	$\hat{R}$	sample size		
$\alpha_{f(C)}$	Population recruitment	-2.182	0.520	-3.410	-1.360	1.020	278	-	-
$\alpha_{f(Q)}$	Population recruitment	-2.344	0.252	-2.887	-1.918	1.060	201	-	-
$\alpha_{f(EB)}$	Population recruitment	-2.019	0.231	-2.516	-1.625	1.040	108	-	-
$\alpha_{f(MB)}$	Population recruitment	-1.816	0.205	-2.270	-1.478	1.050	90	-	-
$\alpha_{f(LB)}$	Population recruitment	-1.969	0.237	-2.521	-1.568	1.020	88	-	-
$\epsilon_{f(plot,t)}$	Population recruitment	1.085	0.250	0.638	1.612	1.050	195	-	-
$\beta_{ftmed2m}$	<b>Population recruitment</b>	<b>0.437</b>	<b>0.225</b>	<b>0.011</b>	<b>0.896</b>	<b>1.010</b>	<b>536</b>	1*	0*
$\beta_{fRHmax}$	Population recruitment	0.000	0.000	0.000	0.000	NA	0	0*	0*
$\beta_{fsol}$	<b>Population recruitment</b>	<b>-0.218</b>	<b>0.290</b>	<b>-0.801</b>	<b>0.344</b>	<b>1.010</b>	<b>600</b>	1*	0*
$\beta_{ftimed0cm}$	Population recruitment	0.000	0.000	0.000	0.000	NA	0	0*	0*
$\beta_{ftmin0cm}$	Population recruitment	0.000	0.000	0.000	0.000	NA	0	0*	0*
$\beta_{fprecip}$	Population recruitment	0.000	0.000	0.000	0.000	NA	0	0*	0*
$\beta_{fperf}$	Population recruitment	0.000	0.000	0.000	0.000	NA	0	0*	0*

Parameter	Vital rate	Effective						Mean importance	SD importance
		Mean	SD	2.50%	97.50%	$\widehat{R}$	sample size		
$\beta_{fha}$	Population recruitment	0.000	0.000	0.000	0.000	NA	0	0*	0*
$\beta_{ffire}$	Population recruitment	0.000	0.000	0.000	0.000	NA	0	0*	0*
$\beta_{fTSLF}$	Population recruitment	0.000	0.000	0.000	0.000	NA	0	0*	0*
$\alpha_{p(C)}$	Population capture	-4.435	0.625	-5.735	-3.285	1.000	2704	-	-
$\alpha_{p(Q)}$	Population capture	-3.245	0.176	-3.597	-2.907	1.010	4541	-	-
$\alpha_{p(EB)}$	Population capture	-2.854	0.159	-3.170	-2.545	1.000	3633	-	-
$\alpha_{p(MB)}$	Population capture	-2.490	0.150	-2.789	-2.202	1.010	4049	-	-
$\alpha_{p(LB)}$	Population capture	-2.779	0.169	-3.118	-2.451	1.000	4239	-	-
$\epsilon_{p(plot,t)}$	Population capture	0.512	0.058	0.396	0.622	1.010	2996	-	-
$\beta_{ptmed2m}$	Population capture	<b>0.130</b>	<b>0.140</b>	<b>-0.015</b>	<b>0.440</b>	<b>1.000</b>	<b>2468</b>	<b>0.646</b>	<b>0.478</b>
$\beta_{pRHmax}$	Population capture	-0.037	0.087	-0.279	0.077	1.000	5174	0.371	0.483
$\beta_{psol}$	Population capture	<b>-0.264</b>	<b>0.088</b>	<b>-0.438</b>	<b>-0.090</b>	<b>1.000</b>	<b>4381</b>	<b>0.990</b>	<b>0.100</b>
$\beta_{ptmed0cm}$	Population capture	<b>0.145</b>	<b>0.189</b>	<b>-0.046</b>	<b>0.622</b>	<b>1.000</b>	<b>1168</b>	<b>0.601</b>	<b>0.490</b>

Parameter	Vital rate	Effective						Mean importance	SD importance
		Mean	SD	2.50%	97.50%	$\hat{R}$	sample size		
<b>Population capture</b>									
$\beta_{ptmin0cm}$		-0.158	0.249	-0.814	0.124	1.010	923	0.582	0.493
$\beta_{pprecip}$		-0.500	0.097	-0.698	-0.316	1.000	3677	1.000	0.000
$\beta_{pperf}$		0.214	0.296	-0.069	1.015	1.010	702	0.631	0.483
$\beta_{pha}$	Population capture	0.008	0.048	-0.084	0.147	1.000	10852	0.254	0.435
$\beta_{pfire}$		-0.173	0.243	-0.775	0.112	1.000	37961	0.611	0.487
$\beta_{pTSLF}$	Population capture	-0.007	0.070	-0.196	0.152	1.000	23746	0.308	0.462

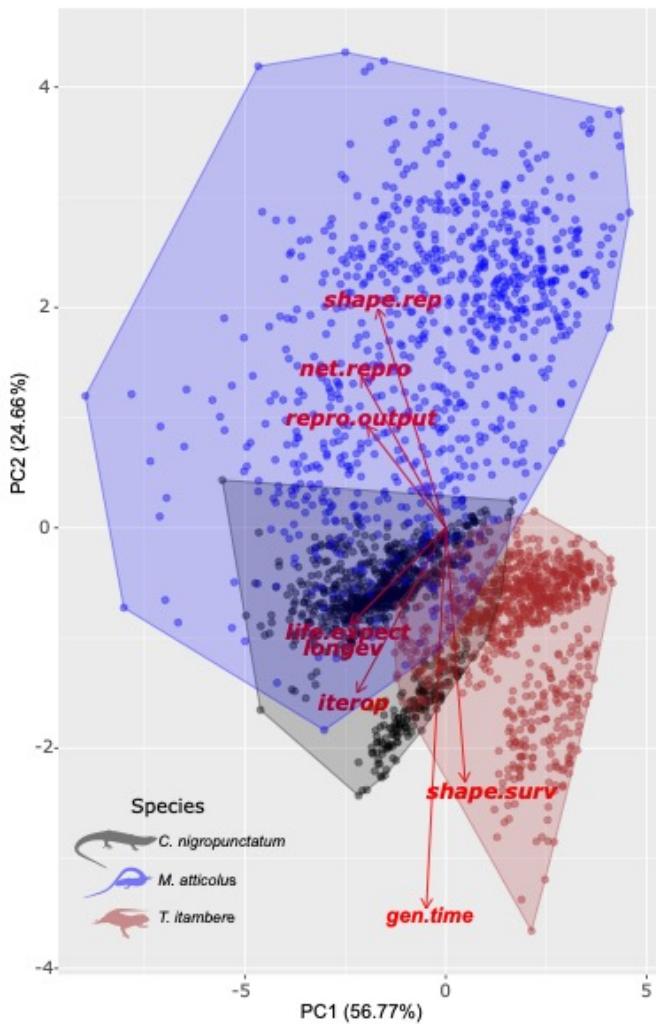
\* Fixed values

As mentioned in the main text, the environmental variables were poor predictors of the *C. nigropunctatum* vital rates. In *M. atticolus*, precipitation affected positively survival (Table S4). *T. itambere* survival decreased with high mean temperatures (*tmed2m*) and increased with high insolation and precipitation (Table S4). Recruitment of *M. atticolus* decreased in months with higher mean locomotor performance and increased in months/plots with fire and high temperatures (*tmed2m* and *tmin0cm*) and hours of activity. Recruitment in *T. itambere* increased with high mean temperatures (*tmed2m*) and low insolation (Table S4). Despite most vital rates were not affected by microclimatic or ecophysiological variables, capture probabilities were in all species. In *C. nigropunctatum*, capture probability was positively affected by mean air temperature, air humidity and insolation and negatively affected by precipitation and mean locomotor performance (*tmed2m*, *RHmax*, *sol*, *precip*, and *perf*; Table S4). In *M. atticolus*, capture probabilities decreased with high

temperatures and precipitation and with time since last fire ( $tmed0cm$ ,  $tmin0cm$ ,  $precip$ ,  $TSLF$ ; Table S4). In *T. itambere*, capture probability increased in months/plots with high mean temperatures ( $tmed2m$  and  $tmed0cm$ ) and mean locomotor performance ( $perf$ ) and decreased with high minimum temperatures, insolation, and precipitation ( $tmin0cm$ ,  $sol$ , and  $precip$ ; Table S4). Capture probability of *T. itambere* also decreased in months when fires occurred (Table S4).

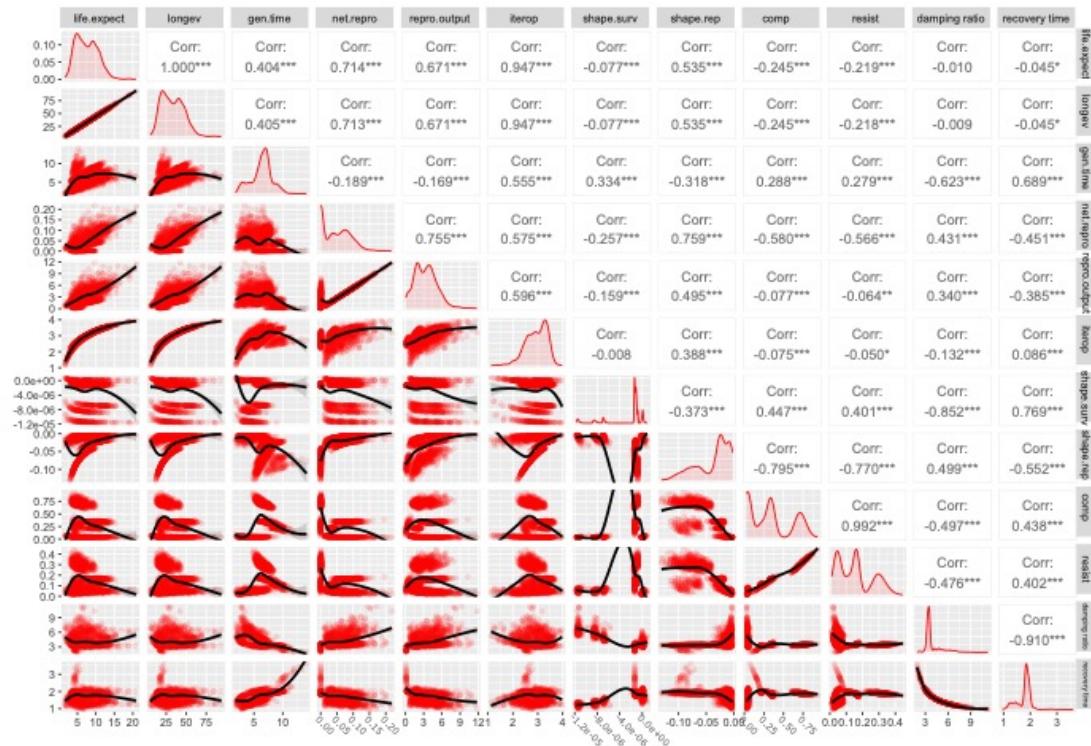
### **Life history traits**

With the monthly stochastic Integral Projection Models, we estimated eight different life history traits of the studied species with package Rage(Jones *et al.* 2022): generation time; degree of iteroparity; life expectancy; longevity; net reproductive output expected lifetime production of offspring that start life by an individual also starting life; net reproductive output calculated as the per-generation population growth rate; ‘shape’ value of distribution of reproduction over size; ‘shape’ value of survival lifespan inequality. The Principal Component Analysis (PCA) shows that species have different life history strategies, summarized by two main axes that account for 81.43% of the variation (Fig. S8). The first axis is related to the time schedules of mortality and reproduction, with populations with long-living individuals and reproduction more spread through life in one end, and populations with short-living individuals and high reproductive output concentrated in much shorter time interval (Fig. S8). The second axis is related to the fast-slow continuum, with populations with long generation time and low-reproductive output in one end and short generation time and high-reproductive output in another (Fig. S8).



**Fig. S8.** Principal component analysis (PCA) showing the variation of life history traits from three species of lizards (*Copeoglossum nigropunctatum*, *Micrablepharus atticolus*, and *Tropidurus itambere*) from the Brazilian Cerrado savannas. *gen.time* = generation time; *iterop* = degree of iteroparity; *life.expect* = life expectancy; *longev* = longevity; *net.repro* = net reproductive output expected lifetime production of offspring that start life by an individual also starting life; *repro.output* = net reproductive output calculated as the per-generation population growth rate; *shape.rep* = ‘shape’ value of distribution of reproduction over size; *shape.surv* = ‘shape’ value of survival lifespan inequality.

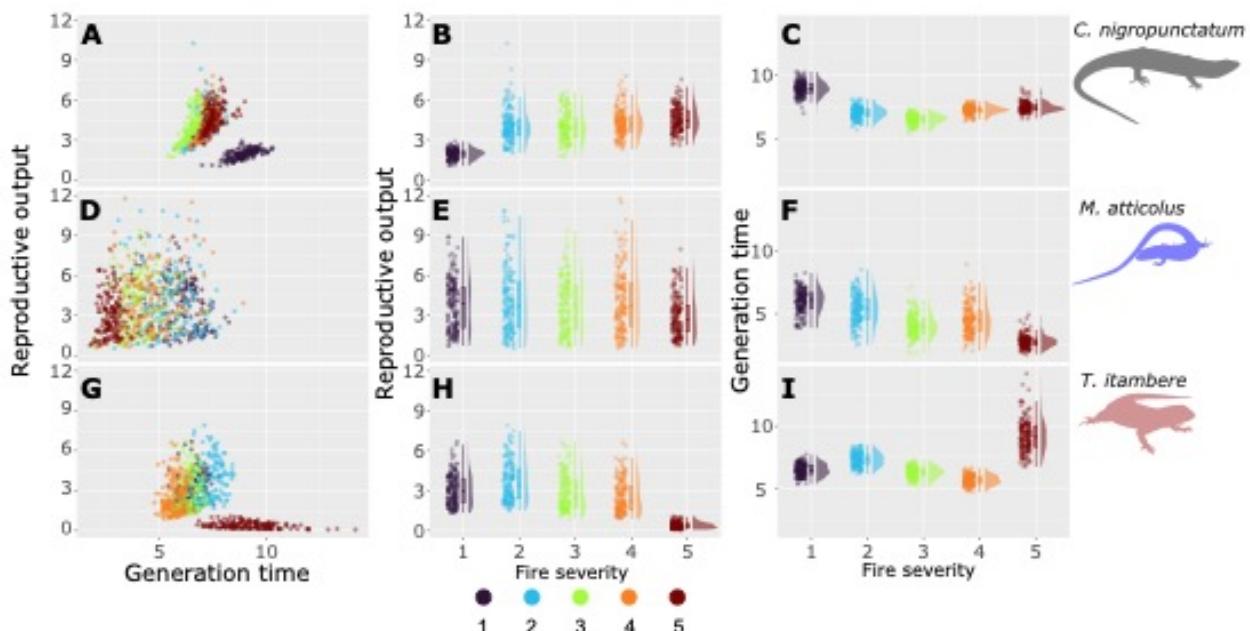
Life history traits are highly correlated (Fig. S9). For instance, life expectancy, longevity, and degree of iteroparity have more than 90% of positive correlation (Fig. S9). We also show that life history traits and demographic resilience components (resistance, compensation, damping ratio, and recovery time) correlate among them (Fig. S9).



**Fig. S9.** Correlations and relationships among life history traits and demographic resilience components (resistance, compensation, damping ratio, and recovery time)

estimated by stochastic Integral Projection Models of three species of lizards (*Copeoglossum nigropunctatum*, *Micrablepharus atticolus*, and *Tropidurus itambere*) from the Brazilian Cerrado savannas. *comp* = compensation; *gen.time* = generation time; *iterop* = degree of iteroparity; *life.expect* = life expectancy; *longev* = longevity; *net.repro* = net reproductive output expected lifetime production of offspring that start life by an individual also starting life; *repro.output* = net reproductive output calculated as the per-generation population growth rate; *resist* = resistance; *shape.rep* = ‘shape’ value of distribution of reproduction over size; *shape.surv* = ‘shape’ value of survival lifespan inequality.

We also show how reproductive output and generation time vary among species and fire regimes of varying fire severity (Fig. S10). We can observe that the main differences among fire regimes derive from reproductive output in *C. nigropunctatum*, generation time in *M. atticolus*, and both reproductive output and generation time in *T. itambere* (Fig. S10).



**Fig. S10.** Variation of reproductive output and generation time of populations of three lizard species (*Copeoglossum nigropunctatum*, *Micrablepharus atticolus*, and *Tropidurus itambere*) from the Brazilian Cerrado savannas in fire regimes of varying severity.

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