Supporting Information

Rohr *et al.* 10.1073/pnas.0806368105

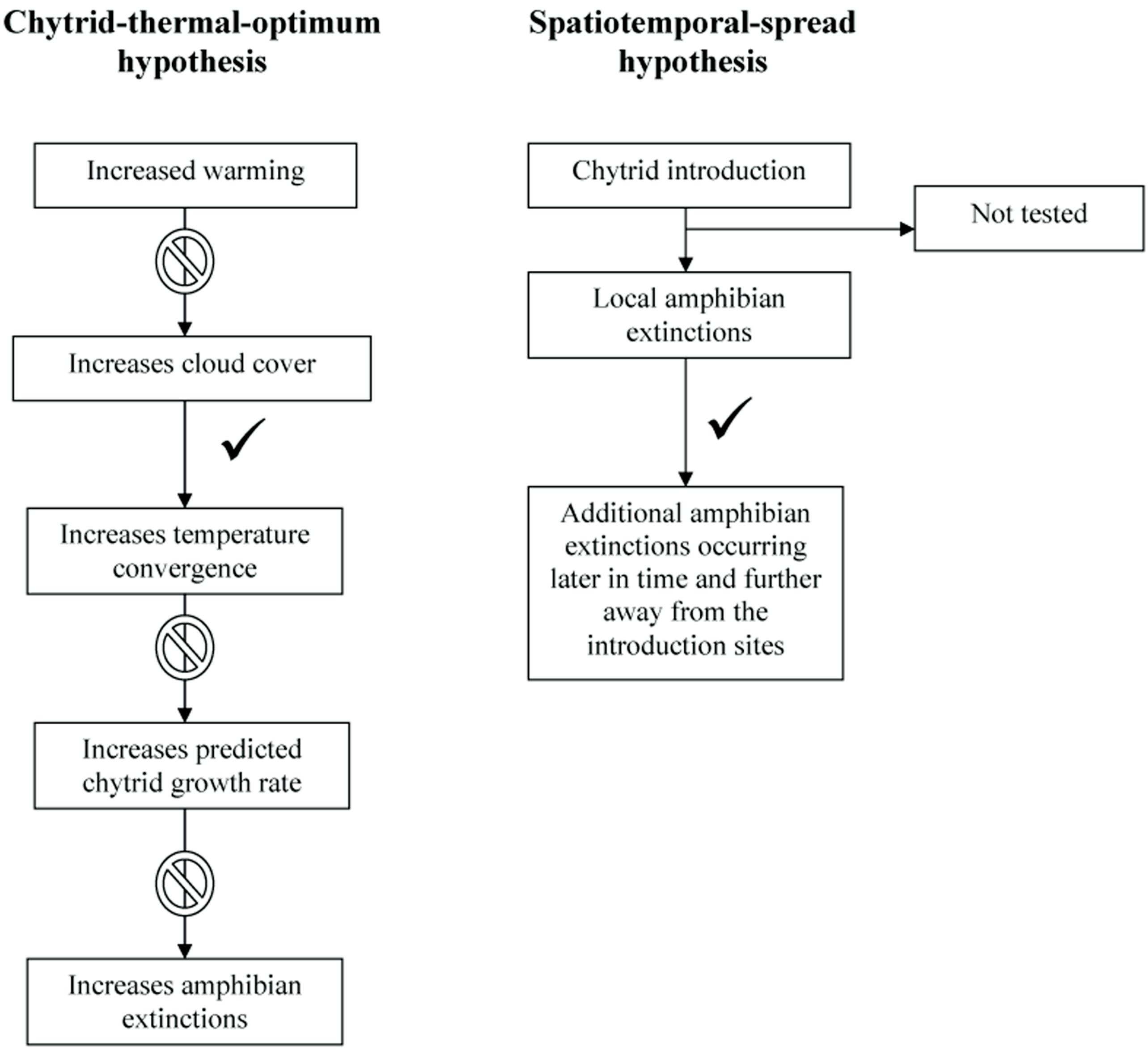

Fig. S1. Simple schematic summarizing the predictions of the chytrid-thermal-optimum and spatiotemporal-spread hypotheses for chytrid-related amphibian declines. Predictions supported by this publication are indicated by a check mark, whereas predictions not supported by this publication are indicated by a slashed circle.

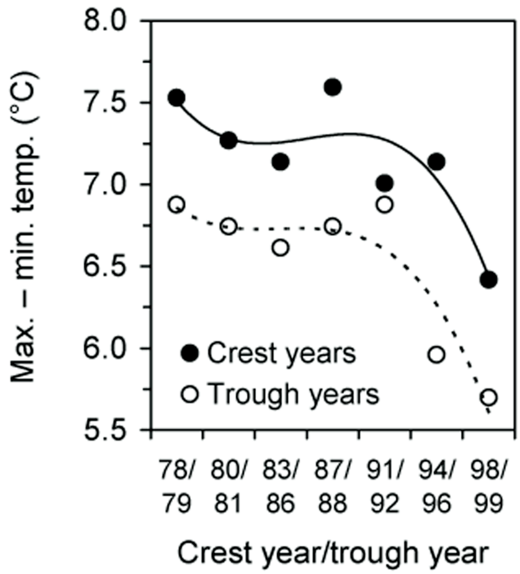

Fig. S2. Difference between mean daily maximum and mean daily minimum temperatures in adjacent (i.e., paired) crest (warm, closed circles) and trough years (cool, open circles) for warmer months at Monteverde (data from Pounds *et al.* 2006) and third-order, best-fit polynomial curves. Crest years were defined as those where temperature was lower in the previous and subsequent year, and trough years were defined as those where temperature was higher in the previous and subsequent year. Cooler/trough years had significantly closer mean daily maximum and mean daily minimum temperatures than warmer/crest years, for both warmer (t = 5.36, df = 1,6, P = 0.002) and cooler months (t = 5.13, df = 1,5, P = 0.004).

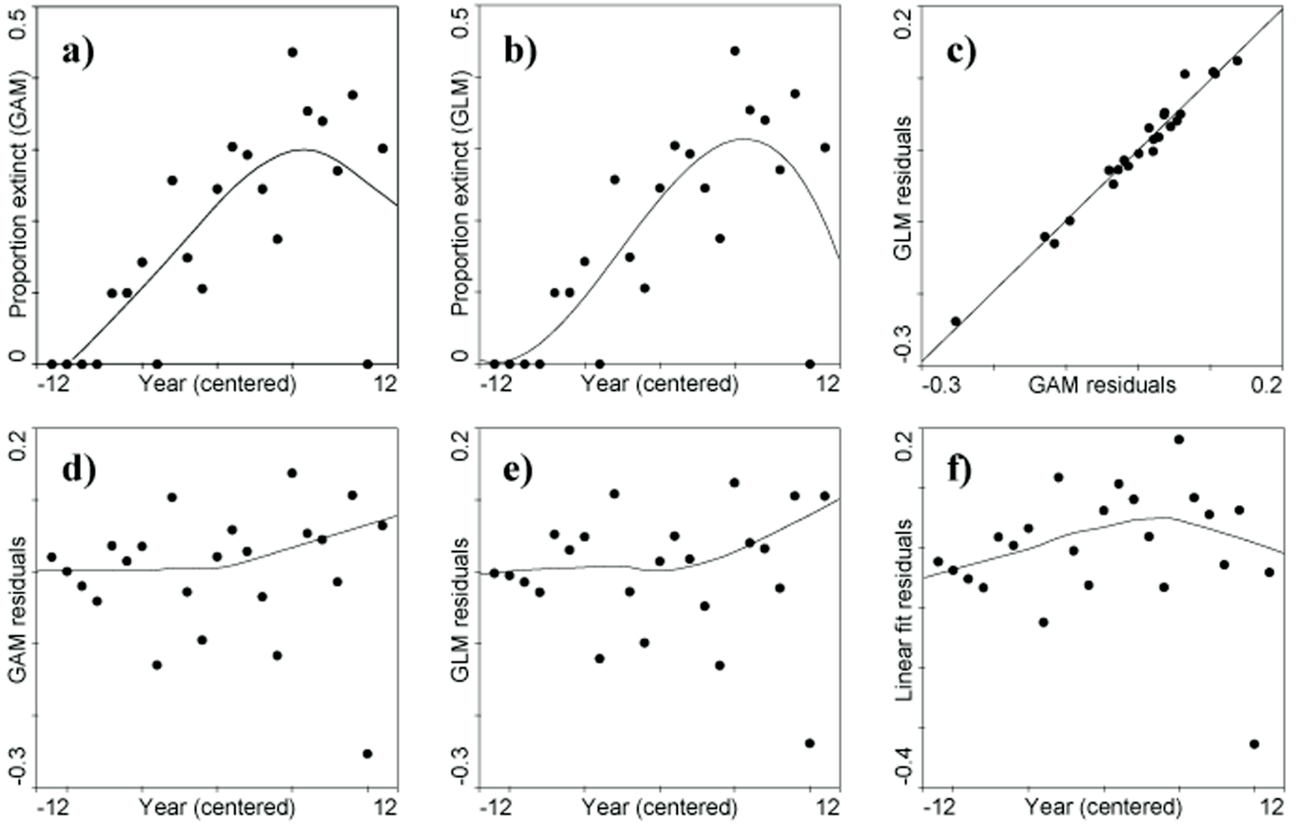

Fig. S3. Estimated best-fit curves for the relationship between year and number of extinctions per extant species using (*A*) the generalized additive model (GAM) or (*B*) the cubic polynomial function in the generalized linear model (GLM with angular transformation). Model selection in GAM and GLM was conducted using AIC, and the GAM was significantly nonlinear ($F = 3.53$, $df = 3$, $P = 0.049$). (*C*) Third order model residuals plotted against the residuals of the GAM to show goodness of fit. The slope of the linear regression line for the residual versus residual plot was not significantly different from zero (coefficient = 0.981, SE = 0.36, $t = 27.25$), and there was little discrepancy between the two fitted models. (*D—F*) The residuals of the GAM, third order model, and first order model, are plotted against the predictor (along with loess curves) to show that the linear fit is not the most appropriate model. The predictor (year) does not explain much residual variability in either the GAM or GLM models (*D* and *E*) ($R^2 < 0.001$); however, the predictor explains 13% of the residual variation in the linear model (*F*), indicating that this model is missing nonlinearities in the data.

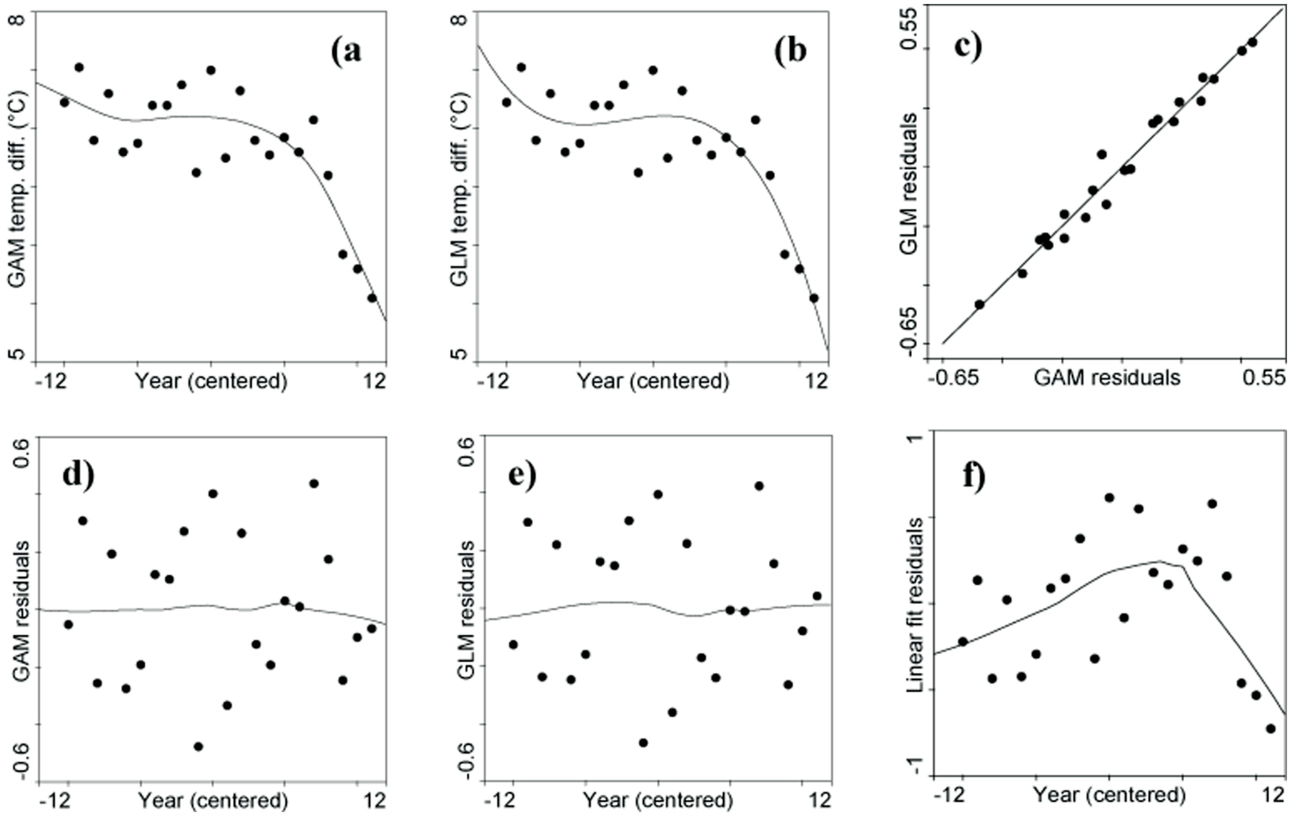

Fig. S4. Estimated best-fit curves for the relationship between year and difference in the mean daily maximum and mean daily minimum temperatures for warmer months using (*A*) the generalized additive model (GAM) or (*B*) the cubic polynomial function in the generalized linear model (GLM; normal errors). Model selection in GAM and GLM was conducted using AIC, and the GAM was significantly nonlinear ($F = 7.33$, $df = 4$, $P = 0.002$). To show the goodness-of-fit of the third order model, its residuals are plotted against the residuals of the GAM (*C*). The slope of the linear regression line for the residual versus residual plot was not significantly different from zero (r = 0.981, SE = 0.36, $t = 27.25$) and there was little discrepancy between the two fitted models (*C*). (*D–F*)The residuals of the GAM, third order model, and first order model, are plotted against the predictor (along with loess curves) to show that the linear fit is not the most appropriate model. The predictor (year) does not explain much residual variability in either the GAM or GLM models (*D* and *E*) ($r^2 < 0.02$);however, the predictor explains 46% of the residual variation in the linear model (*F*), indicating that this model is missing nonlinearities in the data.

Table S1. Results from the general linear model testing whether temperature convergence (difference in the average daily maxima and minima temperatures for warmer and cooler months), ambient air temperature, and their interaction were significant predictors of the proportion of *Atelopus* extinctions during both the 1980s and 1990s, during the 1980s only, when extinctions were increasing, and during the 1990s only, when extinctions appeared to be decreasing

		Warmer months		Cooler months	
Effect	*df*	*F*	*p*	*F*	*p*
1980–1998					
Temp. convergence	1,15	0.08	0.783	0.68	0.422
Air temp.	1,15	5.57	0.032	4.21	0.058
Interaction	1,15	$<$0.01	0.998	0.03	0.867
1980–1989					
Temp. convergence	1, 6	0.24	0.640	0.33	0.586
Air temp.	1, 6	4.91	0.069	5.77	0.053
Interaction	1, 6	0.17	0.693	0.39	0.554
1990–1998					
Temp. convergence	1, 5	1.45	0.282	0.46	0.526
Air temp.	1, 5	3.72	0.112	1.55	0.268
Interaction	1, 5	2.46	0.178	2.41	0.181

Table S2. Model selection results comparing first to fourth order polynomial regression models for the relationship between year (1975–1998) and number of ''extinctions'' per extant species and mean daily maximum minus mean daily minimum temperatures for warmer months and cooler months

Model	AIC	Log Ratio $\chi 2$	*p*
Number of extinctions per extant species			
Third order	−40.45	22.76	0.000045
Second order	−39.58	19.89	0.000048
Fourth order	−38.55	22.86	0.000135
First order	−36.93	15.24	0.000095
Temperature difference warmer months			
Third order	9.18	31.96	0.000001
Fourth order	11.05	32.08	0.000002
Second order	15.40	23.73	0.000007
First order	23.00	14.13	0.000170
Temperature difference cooler months			
Third order	−1.40	42.60	$<$0.000001
Fourth order	0.59	42.61	$<$0.000001
Second order	8.39	30.82	$<$0.000001
First order	15.13	22.08	0.000003

Table S3. Summary of selected third order regression models for the relationship between year (1975–1998) and the number of ''extinctions'' per extant species and the mean daily maximum minus mean daily minimum temperatures for warmer months and cooler months

Effect	*df*	Parameter estimate	Standard error	Wald statistic	*p*
Number of extinctions per extant species					
Year	1,19	0.0252	0.0067	14.27	0.0002
$Year^2$	1,19	−0.0011	0.0004	5.84	0.0156
$Year^3$	1,19	−0.0001	0.0001	3.05	0.0806
Temperature difference warmer months					
Year	1,18	0.0052	0.0210	0.06	0.8045
$Year^2$	1,18	−0.0062	0.0015	17.49	0.0000
$Year^3$	1,18	−0.0008	0.0003	9.97	0.0016
Temperature difference cooler months					
Year	1,18	−0.0046	0.0165	0.08	0.7796
$Year^2$	1,18	−0.0050	0.0012	18.33	0.0000
$Year^3$	1,18	−0.0008	0.0002	15.59	0.0001