Supplementary Tables S2-S7 and Figures S1-S5

Supplementary Table S2. Summary of preliminary models assessing effects of acclimation time and heating/cooling rates on thermal tolerance plasticity.

model	k	$\log(L)$	AIC_c	Δ_i	w_i	R^2
a. CTmax ARR						
accl. time + heating rate	10	244.295	-467.7	0.00	0.589	0.036
accl. time	9	242.625	-466.5	1.18	0.326	0.019
heating rate	9	241.269	-463.8	3.89	0.084	0.024
b. CTmin ARR						
accl. time	9	85.829	-151.9	0.00	0.572	0.074
accl. time + cooling rate	10	86.458	-150.7	1.15	0.321	0.094
cooling rate	9	84.155	-148.5	3.35	0.107	0.011

Supplementary Table S3. Summaries of all models for CT_{max} ARR with latitude. If an interaction term is included, the individual terms were included as well. Marginal sum of squares (which represent variation explained by fixed effects only) are shown.

model	k	log(L)	AIC_c	Δ_i	w_i	R^2
accl. time + habitat	11	255.558	-488.1	0.00	0.428	0.269
accl. time + habitat + hemisphere	12	255.598	-486.0	2.11	0.149	0.260
accl. time + habitat + latitude	12	255.559	-485.9	2.19	0.144	0.269
habitat	10	252.367	-483.9	4.21	0.052	0.193
accl. time	9	251.266	-483.9	4.26	0.051	0.019
accl. time + habitat + hemisphere +latitude	13	255.599	-483.8	4.31	0.050	0.259
accl. time + habitat x latitude + habitat x hemisphere	17	259.664	-482.9	5.17	0.032	0.233
accl. time + habitat x hemisphere x latitude	20	262.919	-482.5	5.58	0.026	0.281
accl. time + hemisphere	10	251.315	-481.8	6.32	0.018	0.018
accl. time + latitude	10	251.267	-481.7	6.41	0.017	0.018
accl. time + habitat x latitude + hemisphere x latitude	16	257.869	-481.6	6.48	0.017	0.210
accl. time + habitat x latitude + hemisphere x latitude + habitat x hemisphere	18	259.865	-481.1	7.05	0.013	0.217
latitude	9	248.290	-477.9	10.21	0.003	0.000

Supplementary Table S4. Summaries of all models for CT_{min} ARR with latitude.

model	k	log(L)	AIC_c	Δ_i	w_i	R^2
accl. time + habitat	11	94.303	-163.9	0.00	0.300	0.288
habitat	10	92.944	-163.8	0.15	0.278	0.267
accl. time + habitat + hemisphere	12	94.635	-162.1	1.85	0.119	0.314
accl. time + habitat x latitude	14	97.162	-161.9	1.99	0.111	0.352
accl. Time	9	90.087	-160.4	3.55	0.051	0.074
accl. time + hemisphere + habitat + latitude	13	95.019	-160.3	3.65	0.048	0.336
accl. time + hemisphere + habitat x latitude	15	97.561	-160.1	3.87	0.043	0.377
accl. time + latitude	10	90.583	-159.0	4.97	0.025	0.108
hemisphere + habitat x latitude	14	95.155	-157.9	6.01	0.015	0.348
latitude	9	88.527	-157.3	6.67	0.011	0.021

Supplementary Table S5. Summaries of all models for *CT* ARRs with seasonality

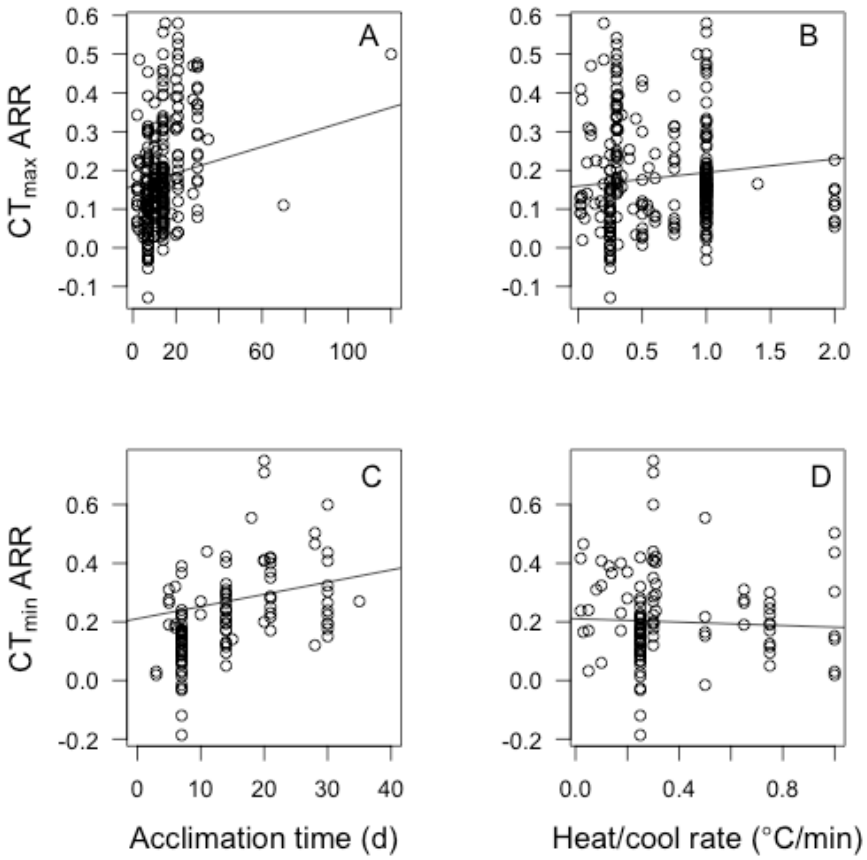
model	k	log(L)	AIC_c	Δ_i	w_i	R^2
a. seasonality and CTmax ARR						
accl. time + habitat	11	217.449	-411.7	0.00	0.487	0.216
accl. time	9	214.201	-409.6	2.10	0.171	0.023
accl. time + habitat + seasonality	12	217.450	-409.4	2.23	0.160	0.216
accl. time + habitat x seasonality	14	218.973	-408.0	3.71	0.076	0.224
accl. time + seasonality	10	214.208	-407.4	4.27	0.058	0.024
habitat	10	213.936	-406.8	4.82	0.044	0.166
seasonality	9	210.635	-402.4	9.23	0.005	0.000
b. seasonality and CTmin ARR						
seasonality	9	72.000	-122.4	0.00	0.731	0.408
accl. time + seasonality	10	72.189	-119.9	2.51	0.208	0.403
acclimation time	9	69.517	-117.4	4.96	0.061	0.306

Supplementary Table S6. Summary of models including trade-offs between CT ARRs and inherent thermal tolerance.

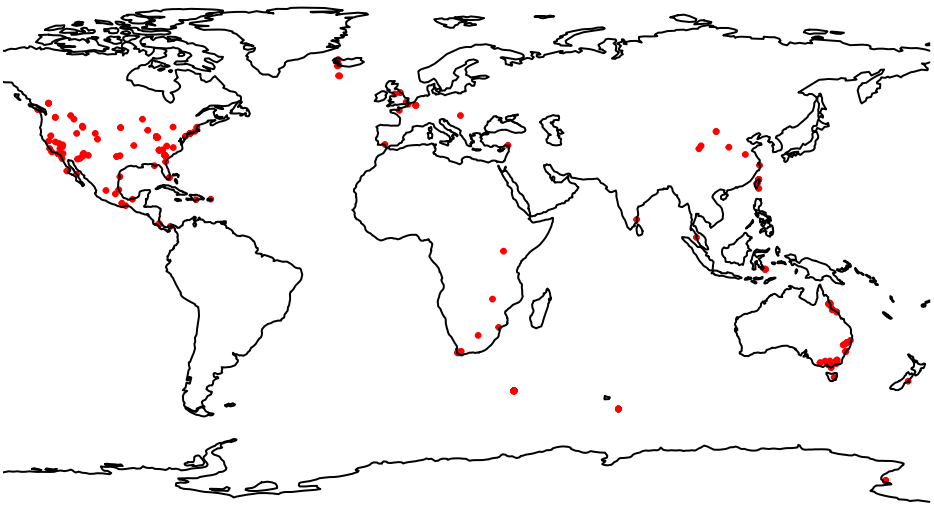
model	k	log(L)	AIC_c	Δ_i	w_i	R^2
a. CTmax ARR and maximum CTmax						
accl. time	9	251.266	-483.9	0.00	0.713	0.019
accl. time + max CT	10	251.304	-481.8	2.08	0.252	0.020
max CT	9	248.246	-477.8	6.04	0.035	0.000
b. CTmin ARR and minimum CTmin						
accl. Time	10	90.870	-159.5	0.00	0.693	0.074
accl. time + min CT	11	90.871	-157.1	2.47	0.202	0.074
min CT	9	87.779	-155.8	3.77	0.105	0.003

Supplementary Table S7. Summary of models examining the relationship between CT_{max} ARR and CT_{min} ARR.

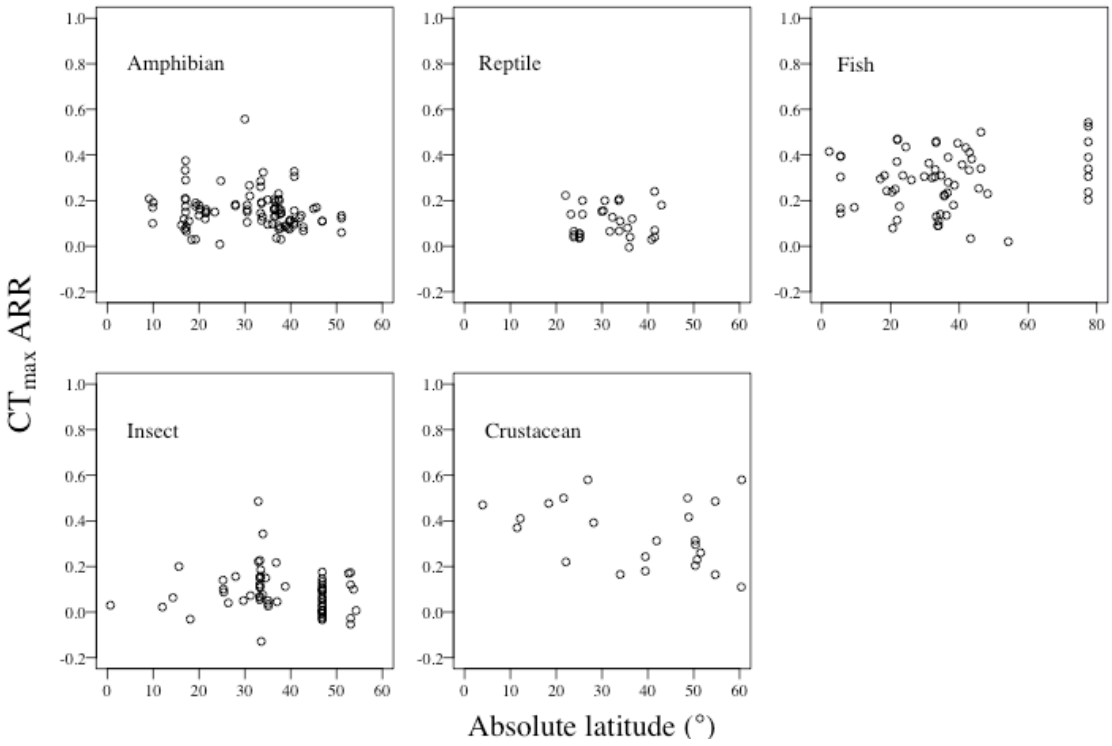
model	k	log(L)	AIC_c	Δ_i	w_i	R^2
accl time + CTmin ARR	10	109.175	-196.0	0.00	0.785	0.211
CTmin ARR	9	106.430	-192.9	3.04	0.172	0.090
accl time	9	105.056	-190.2	5.79	0.043	0.076



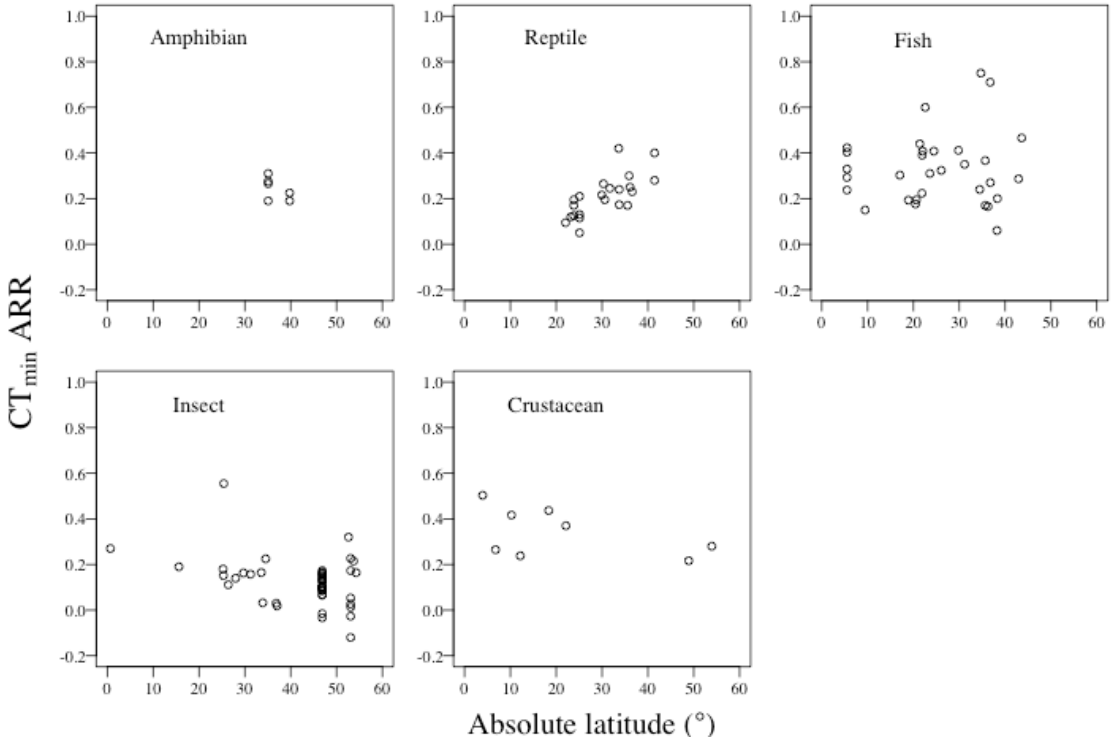
Supplementary Figure S1. CT_{max} ARR and CT_{min} ARR in relation to acclimation time (A,C) and B) heating rate (CT_{max} ARR) or D) cooling rate (CT_{min} ARR). Model-averaged slopes are shown.



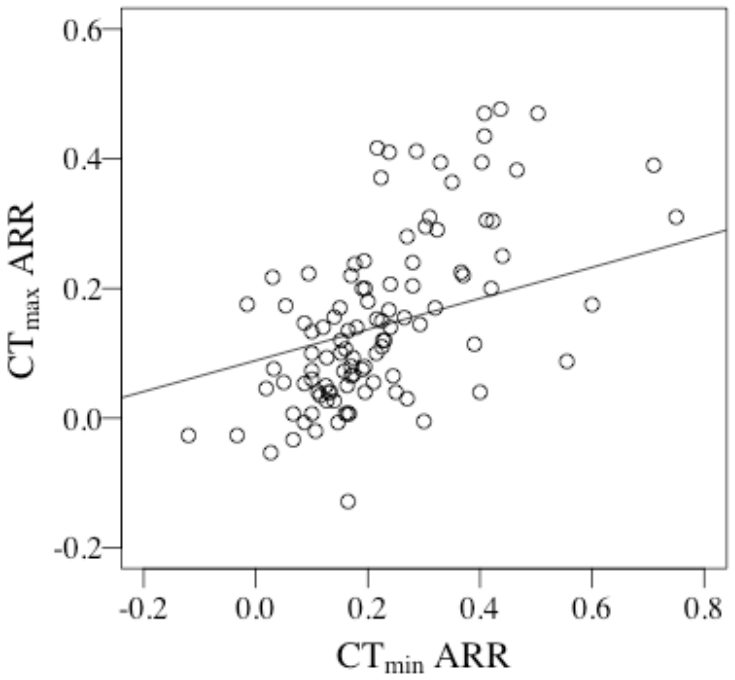
Supplementary Figure S2. Collection localities for taxa used to assess the relationship between plasticity and thermal seasonality.



Supplementary Figure S3. CT_{max} ARR with respect to latitude for each major clade.



Supplementary Figure S4. CT_{min} ARR with respect to latitude for each major clade.



Supplementary Figure S5. Relationship between plasticity in upper and lower thermal tolerance. Model-averaged slope is shown.