

Table S1.

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Table S2. Estimates of phylogenetic signal ( $\lambda$  and K) in log metabolic rate for three insect behaviors: flying (all insects), resting (Orthoptera only) and singing (Orthoptera only). Comparison of ordinary least squares (OLS) and phylogenetic least squares (PGLS) models for the relationship of log metabolic rate to log mass for three insect behaviors.

Dataset	Pagel's $\lambda$	Blomberg's K	OLS				PGLS			
			R <sup>2</sup>	t- value	P	AIC	R <sup>2</sup>	t-value	P	AIC
Flying	0.953	0.635	0.956	34.16	<0.001	-2.615	0.930	26.856	<0.001	-29.465
Resting	0.000	0.301	0.638	7.69	<0.001	13.538	0.639	7.239	<0.001	6.410
Singing	0.000	0.500	0.611	4.79	<0.001	20.093	0.647	4.795	<0.001	18.533

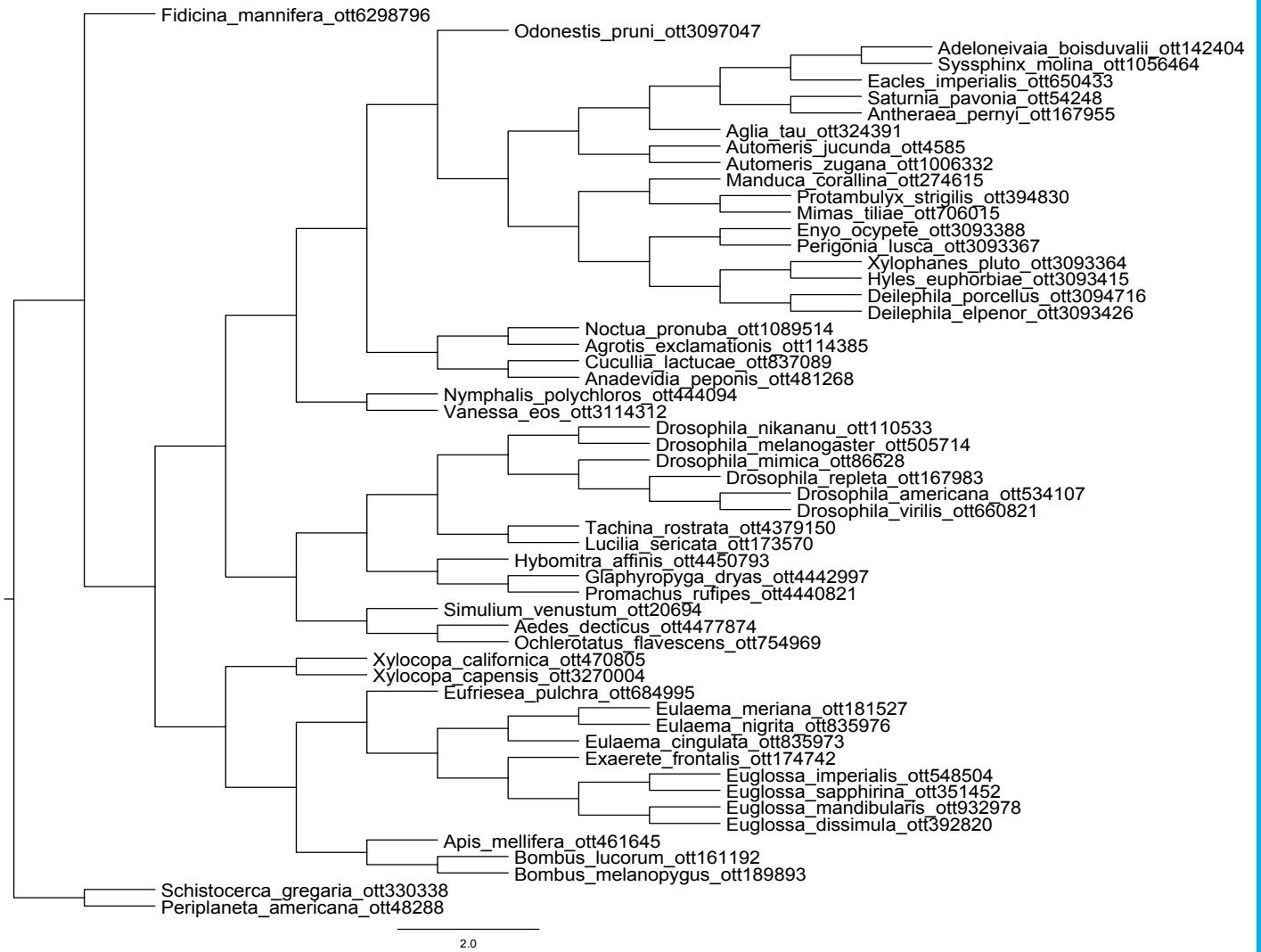


Figure S1 Species tree for flying insects used in phylogenetic signal analyses.

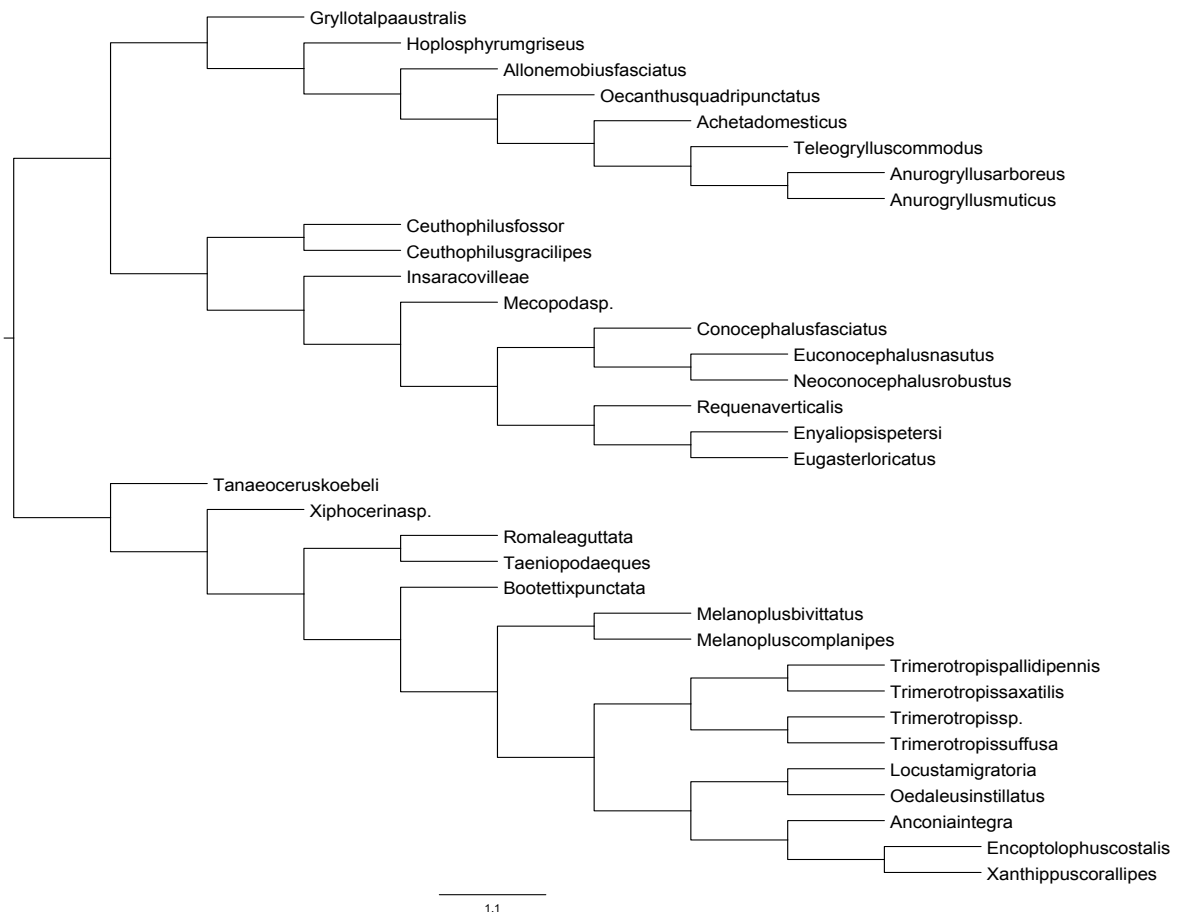


Figure S2. Species tree for resting Orthoptera used in phylogenetic signal analyses.

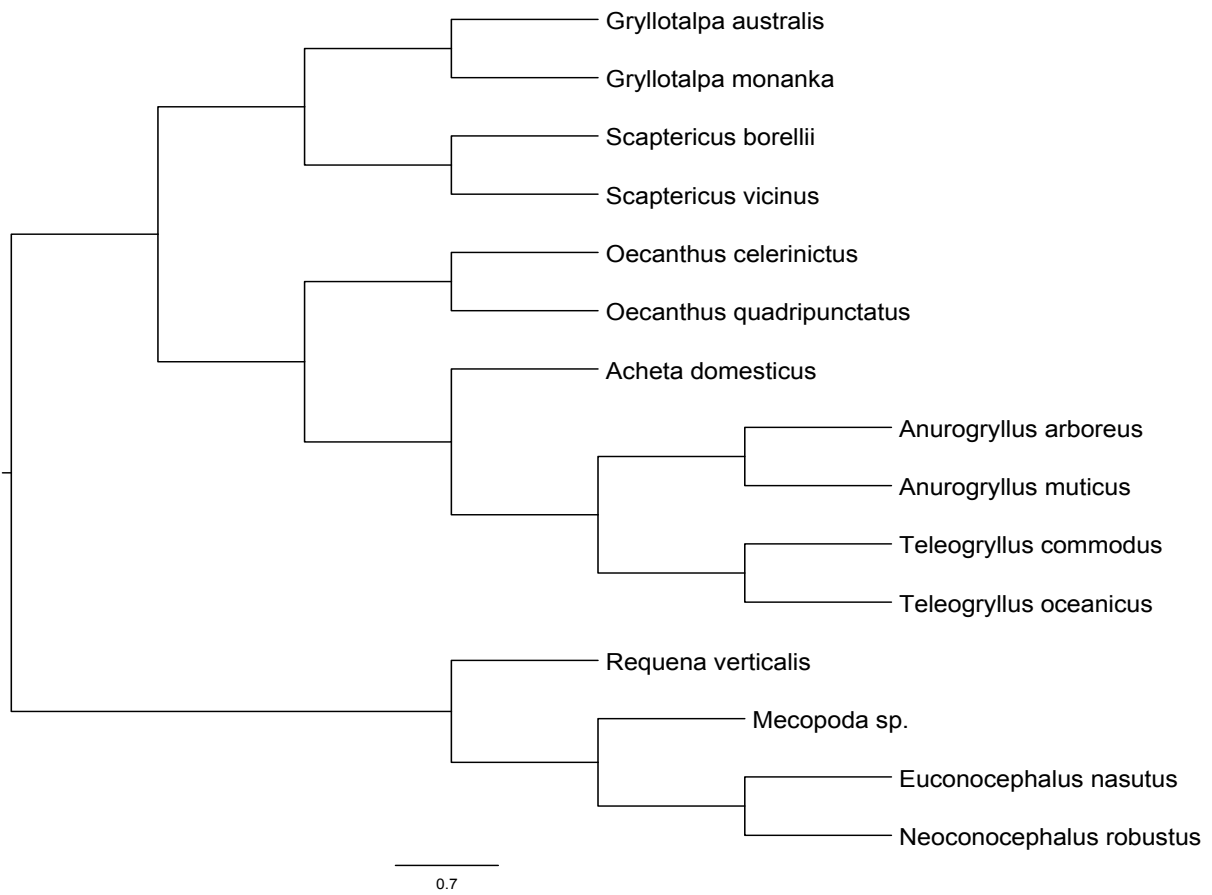


Figure S3. Species tree for singing Orthoptera used in phylogenetic signal analyses.

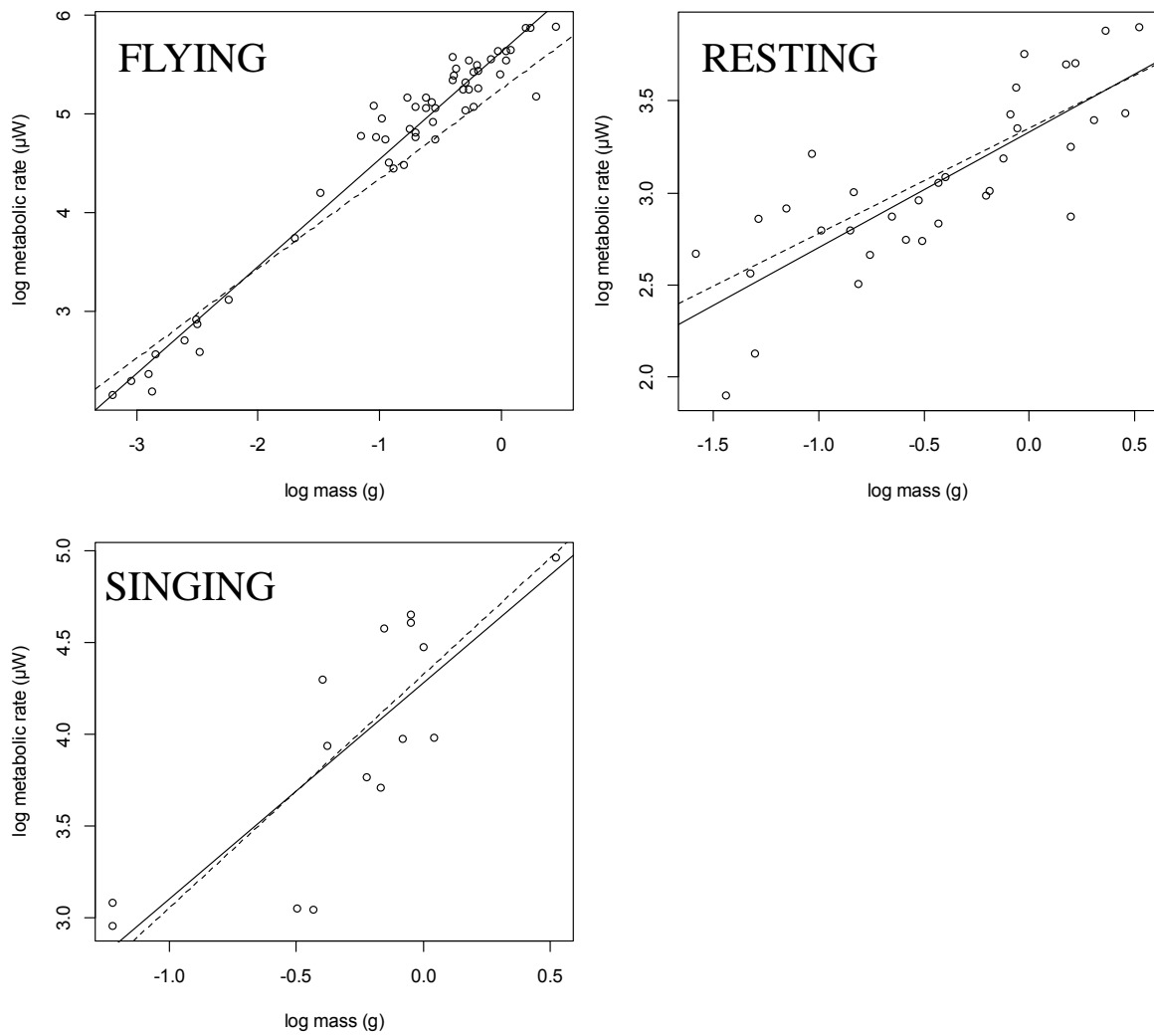
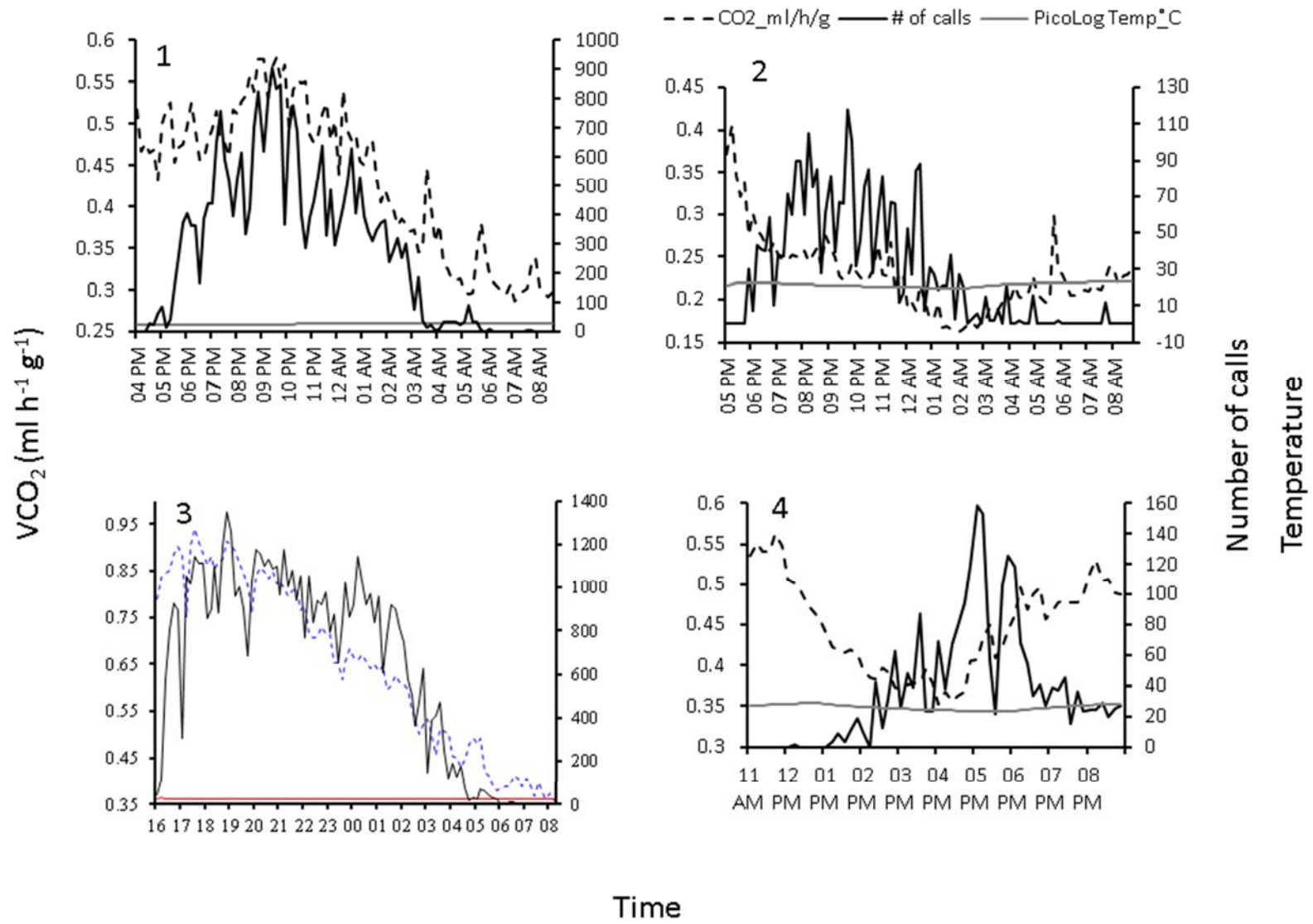
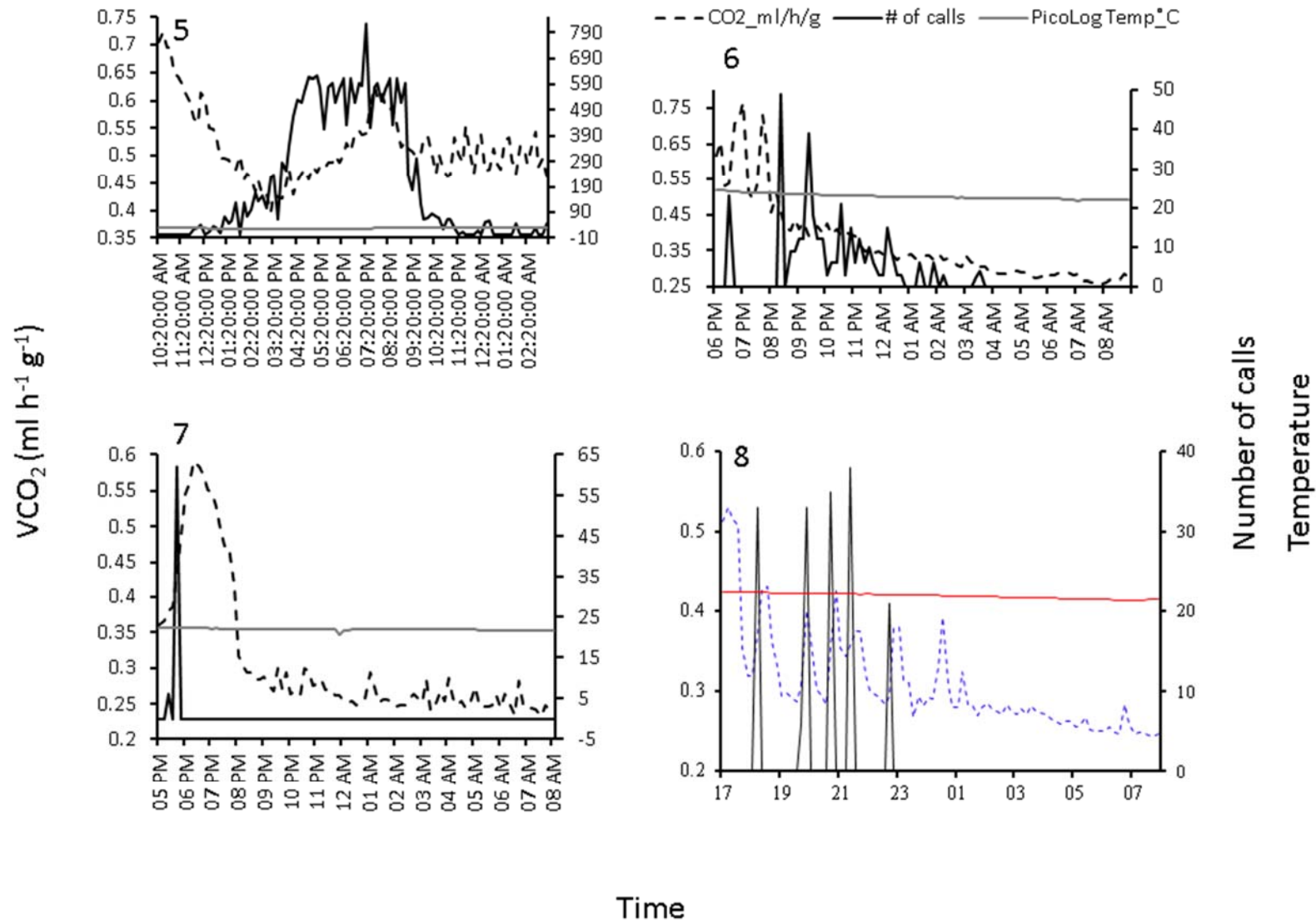


Figure S4. Relationship of mass to metabolic rate for three insect behaviors: flying insects; resting Orthoptera and singing Orthoptera. Solid line indicates ordinary least square trend and dashed line indicates phylogenetic least squares trend or trend corrected for phylogenetic signal.





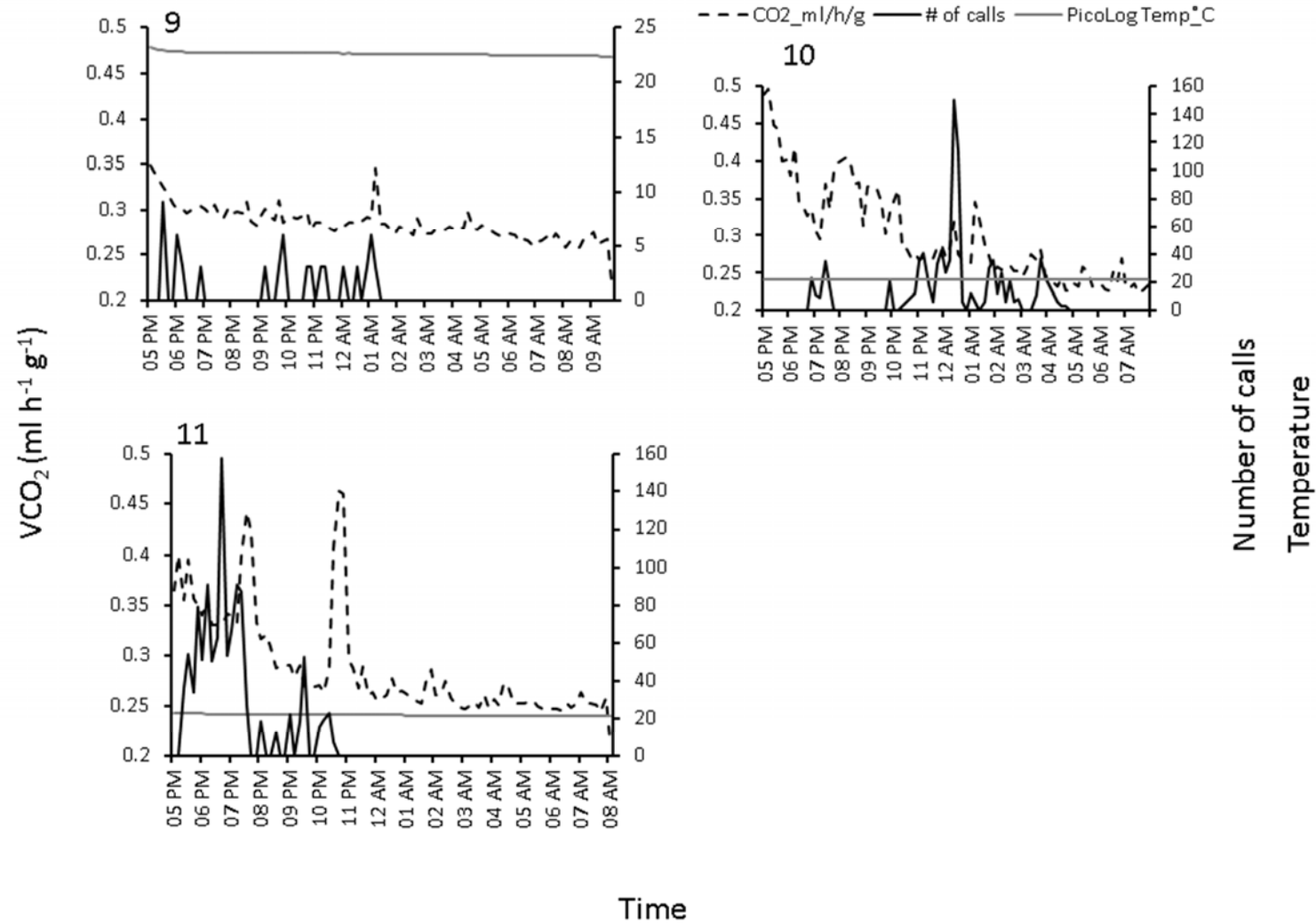


Figure S5: Line graphs showing raw data of VCO<sub>2</sub>, number of calls, and temperature over time for 11 katydid individuals.