

**Appendix B from D. Punzalan et al., “Temporally Variable Multivariate Sexual Selection on Sexually Dimorphic Traits in a Wild Insect Population”**  
(Am. Nat., vol. 175, no. 4, p. 401)

**Significance Testing for Temporal Variation in Selection**

**Table B1**

Coefficients from a first-order mixed model multiple logistic regression of (binary) mating success on four male traits in *Phymata americana*, combined across sampling dates

Predictor	df	Wald's $\chi^2$	<i>P</i> value
Year	1	.194	.659
Week(year)	8	1.092	.998
PN	1	.826	.363
WT	1	2.054	.152
DO	1	.288	.592
LA	1	8.141	.004 <sup>a</sup>
Year × PN	1	.397	.529
Year × WT	1	3.487	.062
Year × DO	1	2.199	.138
Year × LA	1	.663	.415
PN × week(year)	8	14.671	.066
WT × week(year)	8	19.060	.015 <sup>b</sup>
DO × week(year)	8	48.308	.001 <sup>a</sup>
LA × week(year)	8	46.312	.001 <sup>a</sup>

**Note:** Measured traits are pronotum width (PN), weight (WT), and dorsal (DO) and lateral (LA) color patterns. The year and date (week, nested in year) of each sample were included as categorical variables. *N* = 1,101. Data are from cross-sectional sampling in 2003 and 2004.

<sup>a</sup> Significance at *P* < .01.

<sup>b</sup> Significance at *P* < .05.

**Table B2**

Coefficients from a second-order mixed model multiple logistic regression of (binary) mating success on four male traits in *Phymata americana*, combined across sampling dates

Predictor	df	Wald's $\chi^2$	<i>P</i> value
PN × PN	1	.197	.657
PN × WT	1	.274	.601
PN × DO	1	7.037	.008 <sup>a</sup>
PN × LA	1	1.820	.177
WT × WT	1	.697	.404
WT × DO	1	1.506	.220
WT × LA	1	.384	.535
DO × DO	1	.045	.832
DO × LA	1	.626	.429
Year × PN × PN	1	.634	.426
Year × PN × WT	1	.657	.417
Year × PN × DO	1	.912	.340
Year × PN × LA	1	2.498	.114
Year × WT × WT	1	2.283	.131
Year × WT × DO	1	.455	.500
Year × WT × LA	1	.953	.329
Year × DO × DO	1	.012	.914
Year × DO × LA	1	.896	.344
Year × LA × LA	1	.003	.955
PN × PN × week(year)	8	15.292	.054
PN × WT × week(year)	8	11.454	.177
PN × DO × week(year)	8	15.240	.055
PN × LA × week(year)	8	18.385	.019 <sup>b</sup>
WT × WT × week(year)	8	11.015	.201
WT × DO × week(year)	8	7.269	.508
WT × LA × week(year)	8	11.857	.158
DO × DO × week(year)	8	14.061	.080
DO × LA × week(year)	8	9.380	.311
LA × LA × week(year)	8	18.300	.019 <sup>b</sup>

**Note:** Measured traits are pronotum width (PN), weight (WT), and dorsal (DO) and lateral (LA) color patterns. The year and date (week, nested in year) of each sample were included as categorical variables. The complete model included the terms listed in table B1, but, for brevity, only the pertinent (nonlinear) terms are included here.  $N = 1,101$ . Data are from cross-sectional sampling in 2003 and 2004.

<sup>a</sup> Significance at  $P < .01$ .

<sup>b</sup> Significance at  $P < .05$ .