

Supplementary Materials

Similar Response of a Range Expanding Dragonfly to Low- and High-Elevation Predators

Rabah Zebsa ^{1,2}, Hayat Mahdjoub ² and Rassim Khelifa ^{2,3,4,*}

Rabah Zebsa^{1,2}, Hayat Mahdjoub², Rassim Khelifa^{2,3,4}

¹ Laboratoire Biologie, Eau et Environnement (LBEE), Université 8 Mai 1945, Guelma 24000, Algeria;
zebsarabah@gmail.com

² Department of Evolutionary Biology and Environmental Studies, University of Zurich, Winterthurerstrasse 190, CH-8057 Zurich, Switzerland; hayatmahdjoub@gmail.com

³ Institute for Resources, Environment and Sustainability, University of British Columbia, Vancouver,
429-2202 Main Mall, Vancouver, BC V6T 1Z4, Canada

⁴ Department of Biological Sciences, Simon Fraser University, Burnaby, BC V5A 1S6, Canada

* Correspondence: rassimkhelifa@gmail.com

Supplementary tables

Table S1. Summary results of the linear mixed effects model regressing head width of *Sympetrum striolatum* against time, temperature and predation treatments.

| | Estimate | Std. Error | df | t value | Pr(> t) |
|---------------------------|-----------------|-----------------------|-----------|----------------|--------------------|
| (Intercept) | -7.838e+00 | 4.167e-01 | 1.046e+03 | -18.810 | < 2e-16 |
| time | 2.537e-02 | 1.220e-03 | 1.031e+03 | 20.805 | < 2e-16 |
| TreatmentHigh | -1.900e+00 | 5.807e-01 | 1.037e+03 | -3.272 | 0.001105 |
| TreatmentLow | -1.821e+00 | 6.013e-01 | 1.037e+03 | -3.028 | 0.002522 |
| Temp24 | -5.555e+00 | 6.504e-01 | 1.057e+03 | -8.542 | < 2e-16 |
| time:TreatmentHigh | 5.774e-03 | 1.697e-03 | 1.021e+03 | 3.402 | 0.000695 |
| time:TreatmentLow | 5.586e-03 | 1.762e-03 | 1.023e+03 | 3.170 | 0.001569 |
| time:Temp24 | 1.751e-02 | 1.917e-03 | 1.045e+03 | 9.134 | < 2e-16 |
| TreatmentHigh:Temp24 | -1.079e+00 | 8.988e-01 | 1.040e+03 | -1.200 | 0.230352 |
| TreatmentLow:Temp24 | 3.590e-02 | 9.036e-01 | 1.040e+03 | 0.040 | 0.968316 |
| time:TreatmentHigh:Temp24 | 3.282e-03 | 2.643e-03 | 1.026e+03 | 1.241 | 0.214755 |
| time:TreatmentLow:Temp24 | -1.912e-04 | 2.660e-03 | 1.027e+03 | -0.072 | 0.942720 |

* removing the non-significant interaction terms did not change the significance of the remaining terms.

Table S2. Summary results of the linear mixed effects model regressing growth efficiency of *Sympetrum striolatum* against temperature and predation treatments. Growth efficiency was log-transformed ($\log[y+0.01]$).

| | Estimate | Std. Error | t value | Pr(> t) |
|----------------------|-----------------|-------------------|----------------|--------------------|
| (Intercept) | -3.0420 | 0.5501 | -5.530 | 1.64e-07 |
| TreatmentLow | 2.2019 | 0.6943 | 3.172 | 0.00188 |
| TreatmentHigh | 2.7307 | 0.6704 | 4.073 | 7.91e-05 |
| Temp24 | 2.9430 | 0.7665 | 3.840 | 0.00019 |
| TreatmentLow:Temp24 | -1.8282 | 0.9935 | -1.840 | 0.06796 |
| TreatmentHigh:Temp24 | -1.9908 | 0.9675 | -2.058 | 0.04157 |

* removing the non-significant interaction term did not change the significance of the remaining terms.

Table S3. Summary results of the linear mixed effects model regressing food intake of *Sympetrum striolatum* against temperature and predation treatments. Food intake was log-transformed (log[y]).

| | Estimate | Std. Error | t value | Pr(> t) |
|----------------------|-----------------|-------------------|----------------|--------------------|
| (Intercept) | -2.12691 | 0.07210 | -29.498 | < 2e-16 |
| TreatmentLow | -0.14433 | 0.09039 | -1.597 | 0.11101 |
| TreatmentHigh | -0.27431 | 0.08949 | -3.065 | 0.00231 |
| Temp24 | -0.07370 | 0.10528 | -0.700 | 0.48426 |
| TreatmentLow:Temp24 | -0.35725 | 0.13974 | -2.556 | 0.01090 |
| TreatmentHigh:Temp24 | -0.24544 | 0.13523 | -1.815 | 0.07019 |

Table S4. Summary results of the linear mixed effects model regressing the length of the 8th (a) and 9th (b) lateral spine corrected for body size of *Sympetrum striolatum* against temperature and predation treatments. The length of lateral spines was log-transformed (log[y]).

| (a) 8th spine | Estimate | Std. Error | t value | Pr(> t) |
|----------------------|-----------------|-------------------|----------------|--------------------|
| (Intercept) | -3.05566 | 0.07890 | -38.727 | <2e-16 |
| TreatmentHigh | 0.20988 | 0.11158 | 1.881 | 0.0649 |
| TreatmentLow | 0.27013 | 0.10240 | 2.638 | 0.0106 |
| Temp24 | 0.05994 | 0.21608 | 0.277 | 0.7825 |
| TreatmentHigh:Temp24 | -0.24259 | 0.24700 | -0.982 | 0.3301 |
| TreatmentLow:Temp24 | -0.43935 | 0.24712 | -1.778 | 0.0806 |
| (b) 9th spine | Estimate | Std. Error | t value | Pr(> t) |
| (Intercept) | -2.37962 | 0.06678 | -35.632 | < 2e-16 |
| TreatmentHigh | 0.12034 | 0.09445 | 1.274 | 0.20760 |
| TreatmentLow | 0.28254 | 0.08667 | 3.260 | 0.00185 |
| Temp24 | 0.08445 | 0.18289 | 0.462 | 0.64597 |
| TreatmentHigh:Temp24 | -0.22818 | 0.20906 | -1.091 | 0.27952 |
| TreatmentLow:Temp24 | -0.37349 | 0.20916 | -1.786 | 0.07930 |