SUPPLEMENTARY MATERIALS – Detailed Results

Due to the limited sample size and the heterogeneous nature of the data, we preferred to be conservative, only trusting the results from the first partitions of both meta-analyses (see the main text of this study). However, we provide here the full meta-analyses, in order to increase the transparency of our study and also because these results can be useful as preliminary data that could guide future research. All references are provided in the Electronic Supplementary Material 1 (Appendix 1 – Datasets and references).

FIRST META-ANALYSIS: DIFFERENCES OF MEANS BETWEEN BODY AND AIR TEMPERATURE

Overall, the heterogeneity for the sample of the effect sizes of the 71 studied populations was highly significant for the fixed effect model ($Q_H = 2333.37, P<0.00001$). Furthermore, the 97.00% of the variability in effect sizes was intrinsic to the studies themselves ($I^2 = 97.00\%$). Therefore, partition analysis is advised in order to split the effect sizes by the moderator that best explains the variability. The first partition split the effect sizes by ‘season’ (Sum of Squares Between segments or $Q_B = 241.92$, Logworth = 1.10), resulting in two subsets: (1) ‘winter + summer’, and (2) ‘Other seasons” (which includes populations studied during spring and autumn, and populations for which data from various seasons were mixed in a common mean; Fig. A1).

The subset of ‘winter + summer’ included the 27 populations of lacertids which temperatures were studied for winter (1 population) or summer (26 populations), and was significantly heterogeneous for the fixed effect model ($Q_H = 869.77, P<0.00001; I^2 = 97.02\%$). Therefore, we continued partitioning. The best moderator to split effect sizes of this subset was ‘altitude’ ($Q_B = 106.54$, Logworth = 0.99; Fig. A6), dividing the subset of lizards studied during winter or summer in
two new subsets: (1) ‘low + mid altitude’ (< 1000 m asl), and (2) ‘high-altitude’ (> 1000 m asl; Fig. A2).

**Figure A1** Boxplots of the effect size of the first meta-analysis (differences of means between body and air temperatures transformed in the Hedge’s H estimator) for the two main groups that arose from the first partition: (1) the lacertids studied during summer (n = 26) and winter (n = 1) on one side, and (2) the lacertids studied during the other seasons (spring, autumn, or mixing the data from different seasons in a common mean value for the population). Body temperatures were approximately 1 °C closer to air temperatures for the lacertids studied in summer (and winter) than for other seasons.

**Figure A2** Boxplots of the effect size of the first meta-analysis (differences of means between body and air temperatures transformed in the Hedge’s H estimator) for the two groups that arose from the partition of the lacertids
studied during summer and winter: (1) low-altitude + mid-altitude (< 1000 m asl), and (2) high-altitude (> 1000 m asl). Thus, for summer, mean body temperatures of lacertids living above 1000 m asl differed considerably more from air temperatures than those of lizards living below 1000 m asl.

The subset of ‘low + mid altitude’ contained 15 populations of lizards and was still heterogeneous under the fixed effect model ($Q_H = 371.87, P<0.00001; \hat{I}^2 = 96.24\%$), being next partition by ‘preferred habitat’ ($Q_B = 150.70, \text{Logworth} = 1.03$), with two new subsets: (1) ‘rocky areas”, (2) ‘other habitats’ (Fig. A6). The subset of the lacertids which preferred habitats are rocky areas, live at < 1000 m and were studied during winter or summer included 7 populations, and was still heterogeneous under the fixed effect model ($Q_H = 78.61, P<0.00001; \hat{I}^2 = 92.37\%$), being next partition by ‘study habitat’ ($Q_B = 15.98, \text{Logworth} = 0.27$; Fig. A6), with two new subsets: (1) ‘rocky walls + rocky areas’ (Final Group 1), and (2) ‘sandy areas’ (Final Group 2). The Final Group 1 included 6 populations of lacertids which preferred habitats are rocky areas, live at < 1000 m and were studied during winter or summer in rocky habitats (Table A4).

**Table A4 Final Group 1.** Summary of the 6 populations of lacertids that were included in the Final Group 1 of the first meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the differences of means between $T_b$ and $T_a$, particularly the Hedge’s $H$). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var $H$ is the variance of the effect size Hedge’s $H$.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Hedge’s $H$</th>
<th>Var $H$</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td><em>Podarcis pityusensis</em></td>
<td>Ibiza island (Spain)</td>
<td>Summer</td>
<td>2.20</td>
<td>0.064</td>
</tr>
<tr>
<td>53</td>
<td><em>Podarcis lilfordi</em></td>
<td>Colom islet (Menorca, Spain)</td>
<td>Summer</td>
<td>0.54</td>
<td>0.018</td>
</tr>
<tr>
<td>53</td>
<td><em>Podarcis lilfordi</em></td>
<td>Aire islet (Menorca, Spain)</td>
<td>Summer</td>
<td>0.30</td>
<td>0.024</td>
</tr>
<tr>
<td>57</td>
<td><em>Scelarcis perspicillata</em></td>
<td>Lithica (Menorca, Spain)</td>
<td>Summer</td>
<td>0.50</td>
<td>0.039</td>
</tr>
<tr>
<td>59</td>
<td><em>Podarcis guadarramae</em></td>
<td>Nava de Francia (Salamanca, Spain)</td>
<td>Summer</td>
<td>0.14</td>
<td>0.015</td>
</tr>
<tr>
<td>59</td>
<td><em>Podarcis guadarramae</em></td>
<td>Nava de Francia (Salamanca, Spain)</td>
<td>Winter</td>
<td>0.98</td>
<td>0.031</td>
</tr>
</tbody>
</table>

The Final Group 1 was still heterogeneous for the fixed effect model ($Q_H = 62.62, P<0.00001; \hat{I}^2 = 92.02\%$), but we stopped partitioning due to the small sample size. Thus, we integrated the effect sizes with the random effects model: 0.7479 (95% CI: 0.1405/1.3554). If we inspect the Final Group 1, we notice that the study of the population of *Podarcis pityusensis* (Pérez-Mellado and Salvador 1981) has a great influence in the heterogeneity of the group (Fig. A3), with an effect size of 2.20.
If we remove the population of *P. pityusensis*, the heterogeneity of the Final Group 1 is considerably reduced ($Q_H = 16.92$, $P = 0.002$; $I^2 = 76.37\%$). In this case, the integrated effect size, considering the random effects model is $0.4787$ (95% CI: 0.0960/0.8713).

Figure A3 Baujat plot Final Group 1. In the Baujat plot (Baujat et al. 2002) we can see the relationship between the contribution to the heterogeneity (x-axis) and the contribution to the global effect size of the group (y-axis) of each population of the Final Group 1. The population of *Podarcis pityusensis* greatly contributes to the heterogeneity of the group.

The second population that was greatly influencing the heterogeneity of Final Group 1 is *Podarcis guadarramae* during winter (Ortega and Pérez-Mellado 2016, Fig. A3), with an effect size of 0.98. If we remove this study from the Final Group 1, then the subset of effect sizes is homogeneous ($Q_H = 5.56$, $P = 0.135$), with an integrated effect size, considering the fixed effect model, of $0.3390$ (95% CI: 0.1070/0.5710; see Fig. A4).

---

Figure A4 Synthesis forest plot of Final Group 1. The orange diamond is the integrated effect size (Hedge’s H) of Final Group 1 under the fixed effect model for the meta-partition of the differences between means (T_h and T_a) as a proxy of thermoregulatory ability. The blue squares are the effect size of each population and the size of the square depicts the weight of each population in the meta-analysis.

Regarding the Final Group 2, it only included one population, the one of *Pedioplanis hubanensis* (Murray et al. 2014) studied near the Swakop River (Swakopmund, Namibia), with an effect size of 1.40.

Continuing with the subset of ‘other habitats’, which includes the lacertid lizards with other preferred habitats than rocky areas, that live at < 1000 m asl and were studied during summer, there were 8 populations. This subset was still heterogeneous for the fixed effect model ($Q_H = 142.57$, $P < 0.00001$; $I^2 = 95.09\%$), but none of the factors was able to explain the variability of its effect sizes, so we stopped partitioning here, being the Final Group 3, and we assess it in detail. The initial populations included in the Final Group 3 are shown in Table A5.
Table A5 Final Group 3. Summary of the 8 populations of lacertids that were included in the Final Group 3 of the first meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the differences of means between $T_b$ and $T_a$, particularly the Hedge’s $H$). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var $H$ is the variance of the effect size Hedge’s $H$.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Hedge’s H</th>
<th>Var H</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td><em>Acanthodactylus erythrurus</em></td>
<td>Alicante (Spain)</td>
<td>Summer</td>
<td>-0.19</td>
<td>0.065</td>
</tr>
<tr>
<td>3</td>
<td><em>Podarcis muralis</em></td>
<td>Asturias (Spain)</td>
<td>Summer</td>
<td>1.17</td>
<td>0.020</td>
</tr>
<tr>
<td>58</td>
<td><em>Podarcis siculus</em></td>
<td>Menorca (Spain)</td>
<td>Summer</td>
<td>1.36</td>
<td>0.169</td>
</tr>
<tr>
<td>14</td>
<td><em>Psammodromus algirus</em></td>
<td>Soto de Viñuelas (Madrid, Spain)</td>
<td>Summer</td>
<td>1.55</td>
<td>0.046</td>
</tr>
<tr>
<td>19</td>
<td><em>Acanthodactylus boskianus</em></td>
<td>El-OMayed rocks (Egypt)</td>
<td>Summer</td>
<td>1.81</td>
<td>0.037</td>
</tr>
<tr>
<td>19</td>
<td><em>Acanthodactylus boskianus</em></td>
<td>El-OMayed dunes (Egypt)</td>
<td>Summer</td>
<td>1.95</td>
<td>0.019</td>
</tr>
<tr>
<td>24</td>
<td><em>Podarcis melisellensis</em></td>
<td>Lastovo (Croatia)</td>
<td>Summer</td>
<td>1.98</td>
<td>0.011</td>
</tr>
<tr>
<td>13</td>
<td><em>Gallotia galloti eisentrauti</em></td>
<td>Bajamar (Tenerife, Spain)</td>
<td>Summer</td>
<td>5.10</td>
<td>0.187</td>
</tr>
</tbody>
</table>

Here there are two populations which effect sizes clearly differs from the rest: (1) the population of *Acanthodactylus erythrurus* (Seva 1982), because its mean $T_b$ is below the mean $T_a$, and (2) the population of *Gallotia galloti eisentrauti* (Báez 1985) because its effect size is excessively greater than the rest. If we remove these two populations from the Final Group 3, then the heterogeneity is greatly reduced ($Q_H = 25.31$, $P = 0.00012$; $I^2 = 76.30\%$). As the heterogeneity was still significant, we integrated the effect size of Final Group 3 with the random effects model: $1.6711$ (95% CI: $1.2687/2.0735$).

Regarding the subset of ‘high-altitude’ lacertids, it included 12 populations and it was still heterogeneous under the fixed effect model ($Q_H = 56.77$, $P<0.00001$; $I^2 = 94.71\%$), being next partition by ‘body size’ ($Q_B = 173.57$, Logworth = 1.80; Fig. A6), with two new subsets: (1) ‘medium-sized’ (60-75 mm mean SVL\(^2\)), (2) ‘small-sized’ (< 60 mm mean SVL) lizards. The subset of the medium sized lacertids living at high elevations (> 1000 m) studied during summer\(^3\) includes 4 populations, and was still heterogeneous under the fixed effect model ($Q_H = 78.61$, $P<0.00001$; $I^2 = 92.37\%$), being next partition by ‘study habitat’ ($Q_B = 27.75$, Logworth = 0.48; Fig A6), with two new subsets: (1) ‘generalist’ (Final Group 4), and (2) ‘rocky areas’ (Final group 5).

\(^2\) Snout-vent length.

\(^3\) Remember that the former subset is called ‘winter + summer’ but only on especies was studied in Winter, *Podarcis guadarramae*, so all the populations of this subset of high elevation were studied in summer.
The Final Group 4 only included the population of *Podarcis muralis* (Martín-Vallejo 1990), which are medium sized lizards, generalists regarding habitat preferences, continental and studied in a forest area during summer, with an effect size of 0.38.

The Final Group 5 included 3 populations and it was still heterogeneous under the fixed effect model ($Q_H = 29.02$, $P<0.00001$; $I^2 = 93.10\%$), so we assessed it in detail. The populations included in the Final Group 5 are shown in Table A6.

**Table A6 Final Group 5.** Summary of the 3 populations of lacertids that were included in the Final Group 5 of the first meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the differences of means between $T_b$ and $T_a$, particularly the Hedge’s $H$). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var $H$ is the variance of the effect size Hedge’s $H$.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Hedge’s $H$</th>
<th>Var $H$</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td><em>Iberolacerta galani</em></td>
<td>La Baña (León, Spain)</td>
<td>Summer</td>
<td>0.88</td>
<td>0.028</td>
</tr>
<tr>
<td>55</td>
<td><em>Iberolacerta cyreni</em></td>
<td>Central System (Spain)</td>
<td>Summer</td>
<td>2.29</td>
<td>0.085</td>
</tr>
<tr>
<td>56</td>
<td><em>Iberolacerta monticola</em></td>
<td>Serra da Estrela (Portugal)</td>
<td>Summer</td>
<td>2.30</td>
<td>0.079</td>
</tr>
</tbody>
</table>

The population of *Iberolacerta galani* (Ortega et al. 2016b) has a smaller effect size than the other two *Iberolacerta* populations. If we remove this study, then the Final Group 5 is homogeneous under the fixed effect model ($Q_H = 0.00$, $P = 0.995$). Then, the Final Group 5 would include the populations of *Iberolacerta cyreni* (Ortega et al. 2016c) and *Iberolacerta monticola* (Ortega et al. 2017), with an integrated effect size of 0.38.

Regarding the subset of ‘small-sized’ lacertids that inhabits high altitudes (> 1000 m) and were studied in summer$^3$, it included 8 populations and it was still heterogeneous under the fixed effect model ($Q_H = 161.02$, $P<0.00001$; $I^2 = 95.65\%$), being next partition by ‘preferred habitat’ ($Q_B = 92.15$, Logworth = 1.50; Fig A6), with two new subsets: (1) ‘generalist’ (Final Group 6), and (2) ‘rocky areas’ (Final group 7).
The Final Group 6 only included the population of *Podarcis bocagei* (Ortega et al. 2016b), a continental lacertid of small body size, living at high altitude (> 1000 m), generalist regarding habitat preferences, studied in rocky areas during summer.

The Final Group 7 included 7 populations, all of them of the Pyrenean *Iberolacerta* populations, and it was still heterogeneous under the fixed effect model (*Q*<sub>H</sub> = 68.83, *P*<0.00001; *I*<sup>2</sup> = 91.28%; Table A7), but no other factor was able to explain the variability of its effect sizes, so we integrated the effect size with the random effect model: 3.3093 (95% CI: 2.3794/4.2392).

### Table A7 Final Group 7.

Summary of the 7 populations of lacertids that were included in the Final Group 7 of the first meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the differences of means between *T*<sub>b</sub> and *T*<sub>a</sub>, particularly the Hedge’s *H*). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var *H* is the variance of the effect size Hedge’s *H*.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Hedge’s <em>H</em></th>
<th>Var <em>H</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td><em>Iberolacerta bonnali</em></td>
<td>Pyrenees, Huesca (Spain)</td>
<td>Summer</td>
<td>5.29</td>
<td>0.190</td>
</tr>
<tr>
<td>50</td>
<td><em>Iberolacerta bonnali</em></td>
<td>Pyrenees, Huesca (Spain)</td>
<td>Summer</td>
<td>4.23</td>
<td>0.145</td>
</tr>
<tr>
<td>54</td>
<td><em>Iberolacerta aurelioi</em></td>
<td>Comapedrosa sky slope (Andorra)</td>
<td>Summer</td>
<td>2.43</td>
<td>0.203</td>
</tr>
<tr>
<td>54</td>
<td><em>Iberolacerta aurelioi</em></td>
<td>Comapedrosa mountain ridge (Andorra)</td>
<td>Summer</td>
<td>1.17</td>
<td>0.136</td>
</tr>
<tr>
<td>62</td>
<td><em>Iberolacerta aranica</em></td>
<td>Pyrenees, Lleida (Spain)</td>
<td>Summer</td>
<td>3.72</td>
<td>0.038</td>
</tr>
<tr>
<td>62</td>
<td><em>Iberolacerta bonnali</em></td>
<td>Hautes-Pyrenees (France)</td>
<td>Summer</td>
<td>3.18</td>
<td>0.072</td>
</tr>
<tr>
<td>62</td>
<td><em>Iberolacerta aurelioi</em></td>
<td>Pyrenees, Lleida (Spain)</td>
<td>Summer</td>
<td>3.17</td>
<td>0.042</td>
</tr>
</tbody>
</table>

Regarding the subset of ‘other seasons’, it included 44 populations of lacertids and it was significantly heterogeneous for the fixed effect model (*Q*<sub>H</sub> = 1221.68, *P*<0.00001; *I*<sup>2</sup> = 96.48%), so we continued the partition process. The best moderator to explain the variability of effect sizes was the ‘insularity’ (*Q*<sub>B</sub> = 359.39, Logworth = 4.46; Fig A7), partitioning the subset in two subsets: (1) ‘continental’ lizards, and (2) ‘insular’ lizards.
Figure A5 Boxplots of the effect size of the first meta-analysis (differences of means between body and air temperatures transformed in the Hedge’s H estimator) for two groups that arise from the partition of the lacertids studied during other seasons (spring, autumn, and mixed results from different seasons in a common mean): (1) continental lizards, and (2) insular lizards. Mean body temperatures of continental lacertids were considerably closer to air temperatures than these of insular lacertids.

The subset of ‘continental’ lacertids includes 35 populations and was heterogeneous ($Q_H = 622.66$, $P<0.00001$; $I^2 = 94.54\%$), and next partition results by ‘climate’\(^4\) ($Q_B = 103.66$, Logworth = 0.66; Fig. A7), with two new subsets: (1) “Csa + BWk”, and (2) ‘other climates’ (Csb + Bsk `BWs + EB + Dfc).

The subset of “Csa + BWk” comprises 13 populations (experiencing Mediterranean and arid climates) and is heterogeneous ($Q_H = 145.38$, $P<0.00001$; $I^2 = 91.82\%$), being next partition again by ‘study habitat’ ($Q_B = 86.85$, Logworth = 2.52; Fig A7), with two new subsets: (1) ‘sandy areas + rocky areas’ (Final Group 8), and (2) ‘scrublands’.

\(^4\)The different climates are considered following the classification Köppen (Kottek et al. 2006):
The subset of ‘sandy areas + rocky areas” contains 7 lizard populations and it was homogeneous for the fixed effect model (Q_H = 12.50, P = 0.052; Table A8), so it makes the Final Group 8 with an integrated effect size of 0.8430 (95% CI: 0.6362/1.0499).

Table A8 Final Group 8. Summary of the 7 populations of lacertids that were included in the Final Group 8 of the first meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the differences of means between T_b and T_a, particularly the Hedge’s H). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var H is the variance of the effect size Hedge’s H.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Hedge’s H</th>
<th>Var H</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>Hellenolacerta graeca</td>
<td>Stymphalia, Peloponnes (Greece)</td>
<td>Whole year</td>
<td>1.06</td>
<td>0.035</td>
</tr>
<tr>
<td>35</td>
<td>Podarcis peloponnesiaca</td>
<td>Stymphalia, Peloponnes (Greece)</td>
<td>Whole year</td>
<td>1.11</td>
<td>0.021</td>
</tr>
<tr>
<td>67</td>
<td>Acanthodactylus longipes</td>
<td>Tafilalt (Morocco)</td>
<td>Spring-Summer</td>
<td>1.18</td>
<td>0.308</td>
</tr>
<tr>
<td>67</td>
<td>Acanthodactylus scutellatus</td>
<td>Tafilalt (Morocco)</td>
<td>Spring-Summer</td>
<td>0.53</td>
<td>0.029</td>
</tr>
<tr>
<td>67</td>
<td>Acanthodactylus boskianus</td>
<td>Tafilalt (Morocco)</td>
<td>Spring-Summer</td>
<td>0.46</td>
<td>0.079</td>
</tr>
<tr>
<td>67</td>
<td>Mesalina olivieri</td>
<td>Tafilalt (Morocco)</td>
<td>Spring-Summer</td>
<td>0.35</td>
<td>0.127</td>
</tr>
<tr>
<td>67</td>
<td>Mesalina gutulata</td>
<td>Tafilalt (Morocco)</td>
<td>Spring-Summer</td>
<td>0.65</td>
<td>0.193</td>
</tr>
</tbody>
</table>

The subset ‘scrublands’ included 6 populations and it was still heterogeneous (Q_H = 46.03, P<0.00001; I^2 = 89.14%), being next partition by ‘body size’ (Q_B = 31.17, Logworth = 1.41; Fig A7), with two new subsets: (1) ‘large-sized’ lizards (> 75 mm mean SVL; Final Group 9), and (2) ‘medium-sized’ lizards (60-75 mm mean SVL; Final Group 10).

The subset of ‘large-sized’ lizards included 2 populations of Psammodromus algirus (Zamora-Camacho et al. 2015), studied at the highest elevations (2200 and 2500 m), and it was homogeneous for the fixed effect model (Q_H = 2.12, P = 0.150), being the Final Group 9, with an integrated effect size of 2.9413 (95% CI: 0.6262/5.2564).

The subset of ‘medium-sized’ lizards included 4 populations, also of Psammodromus algirus (Zamora-Camacho et al. 2015), studied at 300, 700, 1200, and 1700 m of altitude). This subset was still heterogeneous for the fixed effect model (Q_H = 12.74, P = 0.0052; I^2 = 76.47%; see Table A9). If we integrate the effect size of the 4 populations with the random effects model, it is 1.7971 (95% CI: 0.8601/2.7341).
If we remove the effect size of the population at 1700 m, the group of the remainder 3 populations is homogeneous for the fixed effect model ($Q_H = 2.82, P = 0.242$), with an integrated effect size of 1.5316 (0.9198/2.1434).

### Table A9 Final Group 10
Summary of the 4 populations of lacertids that were initially included in the Final Group 10 of the first meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the differences of means between $T_b$ and $T_a$, particularly the Hedge’s $H$). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var $H$ is the variance of the effect size Hedge’s $H$.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Hedge’s $H$</th>
<th>Var $H$</th>
</tr>
</thead>
<tbody>
<tr>
<td>68</td>
<td><em>Psammobromus algirus</em></td>
<td>Sierra Nevada (Spain) 300 m</td>
<td>Spring-Summer</td>
<td>1.61</td>
<td>0.039</td>
</tr>
<tr>
<td>68</td>
<td><em>Psammobromus algirus</em></td>
<td>Sierra Nevada (Spain) 700 m</td>
<td>Spring-Summer</td>
<td>1.79</td>
<td>0.089</td>
</tr>
<tr>
<td>68</td>
<td><em>Psammobromus algirus</em></td>
<td>Sierra Nevada (Spain) 1200 m</td>
<td>Spring-Summer</td>
<td>1.14</td>
<td>0.078</td>
</tr>
<tr>
<td>68</td>
<td><em>Psammobromus algirus</em></td>
<td>Sierra Nevada (Spain) 1700 m</td>
<td>Spring-Summer</td>
<td>2.91</td>
<td>0.172</td>
</tr>
</tbody>
</table>

Regarding the subset of ‘other climates’ (fresher and humid climates), it included 22 populations and it was heterogeneous for the fixed effect model ($Q_H = 373.61, P<0.00001; I^2 = 94.38\%$), being next partition by ‘season’ ($Q_B = 100.18, \text{Logworth} = 1.49; \text{Fig. A7}$), again, with two new subsets: (1) ‘other seasons’ (spring, autumn, and mixed data for the whole annual season), and (2) ‘spring-summer’ (when data from spring and summer were mixed in a common mean; Final Group 13).

The subset of ‘other seasons’ included 20 populations of continental lacertids of fresh and humid climates studied in autumn, spring or during the whole activity season, and it was heterogeneous for the fixed effect model ($Q_H = 268.39, P<0.00001; I^2 = 92.92\%$). Next partition was by ‘study habitat’ ($Q_B = 159.94, \text{Logworth} = 3.35; \text{Fig. A7}$), with two new subsets: (1) ‘rocky areas’ (Final Group 11), and ‘other habitats’ (sandy areas, unknown habitats, grasslands, and scrublands) (Final Group 12).
Table A10 Final Group 11. Summary of the 4 populations of lacertids of the Final Group 11 of the first meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the differences of means between $T_b$ and $T_a$, particularly the Hedge’s $H$). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var H is the variance of the effect size Hedge’s $H$.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Hedge’s H</th>
<th>Var H</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td><em>Iberolacerta cyreni</em></td>
<td>Guadarrama (Madrid, Spain)</td>
<td>Spring</td>
<td>2.30</td>
<td>0.012</td>
</tr>
<tr>
<td>51</td>
<td><em>Iberolacerta galani</em></td>
<td>La Baña (León, Spain)</td>
<td>Spring</td>
<td>1.10</td>
<td>0.089</td>
</tr>
<tr>
<td>59</td>
<td><em>Podarcis guadarramae</em></td>
<td>Nava de Francia (Salamanca, Spain)</td>
<td>Spring</td>
<td>0.12</td>
<td>0.030</td>
</tr>
<tr>
<td>59</td>
<td><em>Podarcis guadarramae</em></td>
<td>Nava de Francia (Salamanca, Spain)</td>
<td>Autumn</td>
<td>0.73</td>
<td>0.046</td>
</tr>
</tbody>
</table>

The **Final Group 11** included 4 populations of lacertids (Table A10) and it was still heterogeneous for the fixed effect model ($Q_H = 129.34, P<0.00001; I^2 = 97.68\%$). No other factor was able to explain the variability of effect sizes, so we integrated the effect size of the Final Group 11 with the random effects model: $1.0679$ (95% CI: $0.8393/2.9751$).

The **Final Group 12** included 16 populations of lacertids (Table A11) and it is still heterogeneous for the fixed effect model ($Q_H = 94.88, P<0.00001; I^2 = 84.18\%$). None of the studied factors could explain the heterogeneity of Final Group 12. One concern arises in this group: the mean temperatures of the populations than were reported for the whole activity period (that is, the mean of the temperatures measured throughout the whole annual activity period of the population) have the problem that they are mixing temperatures of different seasons, which, as we have shown in this study, is the main factor influencing the effect sizes. Therefore, those data must be taken with caution, since the seasonal influence is clearly masking the real effect size of each population for each season. We integrated the effect size with the random effects model: $2.2416$ (95% CI: $2.0261/2.4569$).
Table A11 Final Group 12. Summary of the 16 populations of lacertids of the Final Group 12 of the first meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the differences of means between $T_b$ and $T_a$, particularly the Hedge's $H$). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var H is the variance of the effect size Hedge’s H.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Hedge’s H</th>
<th>Var H</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Acanthodactylus erythrurus</td>
<td>Ebro Delta (Tarragona, Spain)</td>
<td>Whole year</td>
<td>2.70</td>
<td>0.050</td>
</tr>
<tr>
<td>17</td>
<td>Psammobromus algirus</td>
<td>Ebro Delta (Tarragona, Spain)</td>
<td>Whole year</td>
<td>1.91</td>
<td>0.022</td>
</tr>
<tr>
<td>27</td>
<td>Acanthodactylus erythrurus</td>
<td>Espeja (Salamanca, Spain)</td>
<td>Whole year</td>
<td>2.67</td>
<td>0.134</td>
</tr>
<tr>
<td>27</td>
<td>Psammobromus occidentalis</td>
<td>Espeja (Salamanca, Spain)</td>
<td>Whole year</td>
<td>2.21</td>
<td>0.111</td>
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<td>27</td>
<td>Psammobromus algirus</td>
<td>Espeja (Salamanca, Spain)</td>
<td>Whole year</td>
<td>2.03</td>
<td>0.125</td>
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<tr>
<td>31</td>
<td>Helioboleluguubris</td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>2.90</td>
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<tr>
<td>31</td>
<td>Ichnotropis squamulose</td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>2.34</td>
<td>0.034</td>
</tr>
<tr>
<td>33</td>
<td>Merosoles suborbitalis</td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>1.98</td>
<td>0.005</td>
</tr>
<tr>
<td>33</td>
<td>Nucras intertexta</td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>3.93</td>
<td>3.103</td>
</tr>
<tr>
<td>33</td>
<td>Nucras tessellate</td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>2.30</td>
<td>0.057</td>
</tr>
<tr>
<td>33</td>
<td>Pedioplanis lineoocellata</td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>1.88</td>
<td>0.004</td>
</tr>
<tr>
<td>33</td>
<td>Pedioplanis namaquensis</td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>2.63</td>
<td>0.022</td>
</tr>
<tr>
<td>40</td>
<td>Psammobromus edwardsianus</td>
<td>El Prat de Llobregat (Barcelona, Spain)</td>
<td>Whole year</td>
<td>1.76</td>
<td>0.015</td>
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<tr>
<td>41</td>
<td>Atlantolacerta andreanszkyi</td>
<td>Morocco</td>
<td>Spring</td>
<td>2.94</td>
<td>0.077</td>
</tr>
<tr>
<td>42</td>
<td>Lacerta agilis</td>
<td>Pyreness (Girona, Spain)</td>
<td>Whole year</td>
<td>2.10</td>
<td>0.014</td>
</tr>
<tr>
<td>66</td>
<td>Pedioplanis husabensis</td>
<td>Swakop River (Swakopmund, Namibia)</td>
<td>Autumn</td>
<td>1.59</td>
<td>0.054</td>
</tr>
</tbody>
</table>

The Final Group 13 included 2 populations: Zootoca vivipara (Herczeg et al., 2004) and Iberolacerta martinezricai (Arribas, 2013), and it was still heterogeneous for the fixed effect model ($Q_H = 5.04, P = 0.025; I^2 = 80.16\%$). We integrated the effect sizes with the random effects model: 3.3486 (95% CI: -0.9382/7.6354).

Regarding the subset of ‘insular’ lacertids, studied during autumn or spring, or mixing data from different seasons (the whole year or spring-summer mixing), it included 9 populations and it was still heterogeneous for the fixed effect model ($Q_H = 239.63, P<0.00001; I^2 = 96.66\%$), and next partition is by ‘altitude’ ($Q_B = 58.72$, Logworth = 0.74; Fig. A7), with two new subsets: (1) ‘low-altitude’ (< 400 m asl), and (2) ‘high-altitude’ (> 1000 m asl, Final Group 16).

The subset of ‘low-altitude’ included 7 populations and it was still heterogeneous for the fixed effect model ($Q_H = 162.19, P<0.00001; I^2 = 96.30\%$), and next partition is by ‘preferred habitat’ ($Q_B = 20.63$, Logworth = 0.16; Fig. A7), with two new subsets: (1) ‘rocky areas’ (Final Group 14), and (2) ‘open areas + generalist’ (Final Group 15).
The Final Group 14 included 2 populations, *Podarcis lilfordi* of Colom islet and of Aire islet during spring (Ortega et al., 2014), and it was still heterogeneous for the fixed effect model (\(Q_H = 76.64, P<0.00001\)), so we integrated its effect sizes with the random effects model: 3.1899 (95% CI: 

\[-12.3384/18.7182\].

**Table A12 Final Group 15.** Summary of the 5 populations of lacertids of the Final Group 15 of the first meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the differences of means between \(T_b\) and \(T_a\), particularly the Hedge’s H). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var H is the variance of the effect size Hedge’s H.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Hedge’s H</th>
<th>Var H</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td><em>Podarcis siculus</em></td>
<td>Calvi, Corsica (France)</td>
<td>Spring</td>
<td>4.28</td>
<td>0.118</td>
</tr>
<tr>
<td>13</td>
<td><em>Gallotia galloti eisentrauti</em></td>
<td>Bajamar, Tenerife (Spain)</td>
<td>Spring</td>
<td>6.61</td>
<td>0.229</td>
</tr>
<tr>
<td>18</td>
<td><em>Podarcis liolepis</em></td>
<td>Columbretes Islands, Castellón (Spain)</td>
<td>Autumn</td>
<td>3.56</td>
<td>0.032</td>
</tr>
<tr>
<td>36</td>
<td><em>Podarcis tiliguerta</em></td>
<td>Calvi, Corsica (France)</td>
<td>Spring</td>
<td>3.55</td>
<td>0.051</td>
</tr>
<tr>
<td>58</td>
<td><em>Podarcis siculus</em></td>
<td>Menorca (Spain)</td>
<td>Spring</td>
<td>1.65</td>
<td>0.174</td>
</tr>
</tbody>
</table>

The Final Group 15 included 5 populations (see Table A12) and it was still heterogeneous for the fixed effect model (\(Q_H = 64.93, P<0.00001, I^2 = 93.84\%\)), so we integrated its effect sizes with the random effects model: 3.9013 (95% CI: 2.4394/5.3632).

The Final Group 16 included 2 populations, *Archaeolacerta bedriagae* (Bauwens et al., 1990) and *Podarcis tiliguerta* (Van Damme et al., 1989) of Haut-Asco (Corsica, France), and it was still heterogeneous for the fixed effect model (\(Q_H = 18.71, P = 0.00002\)), so we integrated its effect sizes with the random effects model: 5.5799 (95% CI: -7.8739/19.0337).
Table A13 All the studies included in the first meta-partition. Full references of the studies are provided in the Electronic Supplementary Material 1.

<table>
<thead>
<tr>
<th>Population</th>
<th>Study</th>
<th>Hedge's H</th>
<th>Var H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acanthodactylus boskianus dunes</td>
<td>Darwish-Mahmoud 2003</td>
<td>1.949883</td>
<td>0.019493</td>
</tr>
<tr>
<td>Acanthodactylus boskianus rocks</td>
<td>Darwish-Mahmoud 2003</td>
<td>1.811989</td>
<td>0.037404</td>
</tr>
<tr>
<td>Acanthodactylus boskianus</td>
<td>Pérez-Mellado 1992</td>
<td>0.465174</td>
<td>0.079174</td>
</tr>
<tr>
<td>Acanthodactylus erythrurus</td>
<td>Seva 1982</td>
<td>-0.18827</td>
<td>0.064821</td>
</tr>
<tr>
<td>Acanthodactylus erythrurus</td>
<td>Carretero and Llorente 1995</td>
<td>2.700605</td>
<td>0.050275</td>
</tr>
<tr>
<td>Acanthodactylus erythrurus</td>
<td>Pollo and Pérez-Mellado 1989</td>
<td>2.674634</td>
<td>0.134235</td>
</tr>
<tr>
<td>Acanthodactylus longipes</td>
<td>Pérez-Mellado 1992</td>
<td>1.187031</td>
<td>0.308418</td>
</tr>
<tr>
<td>Acanthodactylus scutellatus</td>
<td>Pérez-Mellado 1992</td>
<td>0.531228</td>
<td>0.029191</td>
</tr>
<tr>
<td>Archaeolacerta bedini</td>
<td>Baez 1985</td>
<td>6.641960</td>
<td>0.183955</td>
</tr>
<tr>
<td>Atlantolacerta andreanszkyi</td>
<td>Baez 1985</td>
<td>2.94407</td>
<td>0.077225</td>
</tr>
<tr>
<td>Gallotia galloti eisenrauti spring</td>
<td>Baez 1985</td>
<td>6.610987</td>
<td>0.22955</td>
</tr>
<tr>
<td>Gallotia galloti eisenrauti summer</td>
<td>Baez 1985</td>
<td>5.099098</td>
<td>0.186906</td>
</tr>
<tr>
<td>Heliobolus lugubris</td>
<td>Verwaijen and Van Damme 2007</td>
<td>2.898104</td>
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<tr>
<td>Hellenolacerta graeca</td>
<td>Maragou et al. 1997</td>
<td>1.058777</td>
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</tr>
<tr>
<td>Iberolacerta aranica</td>
<td>Arribas 2010</td>
<td>3.718332</td>
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<tr>
<td>Iberolacerta aurelioi 2500 msl</td>
<td>Ortega et al. 2016g</td>
<td>2.427302</td>
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<td>3.165878</td>
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<tr>
<td>Iberolacerta bounali</td>
<td>Martinez-Rica 1977</td>
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<tr>
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<td>4.243453</td>
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<td>Iberolacerta cyreni</td>
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<td>0.089478</td>
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<tr>
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<td>0.884923</td>
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</tr>
<tr>
<td>Iberolacerta martinezicai</td>
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<td>3.05305</td>
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<td>Huey and Pianka 1977</td>
<td>1.930048</td>
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<td>Mesalina gutulata</td>
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<td>0.605207</td>
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<td>Mesalina olivieri</td>
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<td>Pedioplanis hasabensis summer</td>
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<td>1.400759</td>
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<td>Podarcis lilfordi lilfordi summer</td>
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<td>Latitude</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------------------------</td>
<td>------------</td>
<td>-----------</td>
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<td>Podarcis Siculus</td>
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<tr>
<td>Psammodromus algirus</td>
<td>Carrascal and Díaz 1989</td>
<td>1.548465</td>
<td>0.045981</td>
</tr>
<tr>
<td>Psammodromus algirus</td>
<td>Carretero and Llorente 1995</td>
<td>1.906306</td>
<td>0.021806</td>
</tr>
<tr>
<td>Psammodromus algirus</td>
<td>Pollo and Pérez-Mellado 1989</td>
<td>2.031139</td>
<td>0.125467</td>
</tr>
<tr>
<td>Psammodromus algirus 300 m asl</td>
<td>Zamora-Camacho et al. 2015</td>
<td>1.614261</td>
<td>0.039278</td>
</tr>
<tr>
<td>Psammodromus algirus 700 m asl</td>
<td>Zamora-Camacho et al. 2015</td>
<td>1.786516</td>
<td>0.08907</td>
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<tr>
<td>Psammodromus algirus 1200 m asl</td>
<td>Zamora-Camacho et al. 2015</td>
<td>1.142711</td>
<td>0.078313</td>
</tr>
<tr>
<td>Psammodromus algirus 1700 m asl</td>
<td>Zamora-Camacho et al. 2015</td>
<td>2.911218</td>
<td>0.172002</td>
</tr>
<tr>
<td>Psammodromus algirus 2200 m asl</td>
<td>Zamora-Camacho et al. 2015</td>
<td>2.688209</td>
<td>0.063392</td>
</tr>
<tr>
<td>Psammodromus algirus 2500 m asl</td>
<td>Zamora-Camacho et al. 2015</td>
<td>3.219476</td>
<td>0.069698</td>
</tr>
<tr>
<td>Psammodromus edwardsianus</td>
<td>Carretero and Llorente 1993</td>
<td>1.758195</td>
<td>0.015033</td>
</tr>
<tr>
<td>Psammodromus occidentalis</td>
<td>Pollo and Pérez-Mellado 1989</td>
<td>2.212411</td>
<td>0.110998</td>
</tr>
<tr>
<td>Scelarcis perspicillata</td>
<td>Ortega et al. 2016d</td>
<td>0.500112</td>
<td>0.038961</td>
</tr>
<tr>
<td>Zootoca vivipara</td>
<td>Herczeg et al. 2004</td>
<td>3.733736</td>
<td>0.076464</td>
</tr>
</tbody>
</table>
Figure A6 First tree of the first meta-partition. Summary tree of the meta-partition of the lacertids studied during winter and summer for the first meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the differences of means between $T_b$ and $T_a$, particularly the Hedge’s $H$). Within each partition, effect sizes are organized from left (smaller) to right (larger). The best moderator that explains the variability of each partition is reported into a green arrow, with its respective values of the between-class component of the sums of squares from the test of homogeneity ($Q_B$) and the Logworth ($-\log_{10}(p\text{-value})$) of $Q_B$. 

```
Winter + Summer (n = 27)

Altitude
($Q_B = 106.54$; Lw = 0.99)

Low-altitude + Mid-altitude (n = 15)
Preferred habitat
($Q_B = 150.70$; Lw = 1.03)

Rocky areas (n = 7)
Study habitat
($Q_B = 15.98$; Lw = 0.27)
Rocky walls + Rocky areas (n = 6) FINAL GROUP 1
Sandy areas (n = 1) FINAL GROUP 2
Other habitats (n = 8) FINAL GROUP 3

High-altitude (n = 12)
Preferred habitat
($Q_B = 27.75$; Lw = 0.48)

Medium-sized (n = 4)

Preferred habitat
($Q_B = 92.15$; Lw = 1.50)

Small-sized (n = 8)

Body size
($Q_B = 173.57$; Lw = 1.80)

Rocky areas (n = 3) FINAL GROUP 5
Generalist (n = 1) FINAL GROUP 6
Rocky areas (n = 7) FINAL GROUP 7

Generalist (n = 1)
```
Figure A7 Second tree of the first meta-partition. Summary tree of the meta-partition of the lacertids studied during autumn and spring, or mixing temperatures for the whole activity season or for spring and summer for the first meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the differences of means between $T_b$ and $T_a$, particularly the Hedge’s $H$). Within each partition, effect sizes are organized from left (smaller) to right (larger). The best moderator that explains the variability of each partition is reported into a green arrow, with its respective values of the between-class component of the sums of squares from the test of homogeneity ($Q_B$) and the Logworth ($-\log_{10}(p\text{-value})$) of $Q_B$. 

- **Other seasons** ($n = 44$)
  - **Insularity** ($Q_B = 359.39; Lw = 4.46$)
    - **Continental** ($n = 35$)
      - **Climate** ($Q_B = 103.66; Lw = 0.66$)
        - **Csa + BWk** ($n = 13$)
          - **Preferred habitat** ($Q_B = 27.75; Lw = 0.48$)
            - Sandy areas + Rocky areas ($n = 7$) **FINAL GROUP 8**
            - Scrublands ($n = 6$)
              - **Body size** ($Q_B = 31.17; Lw = 1.41$)
                - Large-sized ($n = 2$) **FINAL GROUP 9**
                - Medium-sized ($n = 4$) **FINAL GROUP 10**
          - **Preferred habitat** ($Q_B = 100.18; Lw = 1.49$)
            - Rocky areas ($n = 4$) **FINAL GROUP 11**
            - Other habitats ($n = 16$) **FINAL GROUP 12**
        - **Season** ($Q_B = 100.18; Lw = 1.49$)
          - Sring-summer ($n = 2$) **FINAL GROUP 13**
          - Generalist ($n = 1$) **FINAL GROUP 14**
        - **Other seasons** ($n = 20$)
          - **Preferred habitat** ($Q_B = 20.63; Lw = 0.16$)
            - Rocky areas ($n = 3$) **FINAL GROUP 15**
    - Other climates ($n = 22$)
      - **Altitude** ($Q_B = 58.72; Lw = 0.74$)
        - **Low-altitude** ($n = 7$)
          - **Preferred habitat** ($Q_B = 20.63; Lw = 0.16$)
            - Rocky areas ($n = 3$) **FINAL GROUP 15**
          - **High-altitude** ($n = 2$) **FINAL GROUP 16**
        - **Other seasons** ($n = 20$)
          - **Preferred habitat** ($Q_B = 20.63; Lw = 0.16$)
            - Rocky areas ($n = 3$) **FINAL GROUP 15**
          - **High-altitude** ($n = 2$) **FINAL GROUP 16**
SECOND META-ANALYSIS: CORRELATION BETWEEN BODY AND AIR TEMPERATURE

The heterogeneity of the whole set of effect sizes (n = 60 populations of lizards) was highly significant for the fixed effect model ($Q_H = 803.36, P < 0.00001, I^2 = 92.65\%$). The first partition was by the moderator ‘altitude’ ($Q_B = 157.44, \text{Logworth} = 3.52; \text{Fig. A10}$), resulting in two subsets: (1) ‘high-altitude’ (> 1000 m asl), and (2) ‘low-altitude + mid-altitude’ (< 1000 m asl; Fig. A8).

![Figure A8 Boxplots of the effect size of the second meta-analysis (the coefficient of correlation between body and air temperatures transformed in the Fisher’s Z estimator) for the two main groups that arise from the first partition: (1) the lacertids living at high-altitudes (> 1000 masl, n = 27), and (2) the lacertids that inhabit at medium and low altitudes (< 1000 masl, n = 33). Mean correlation between body and air temperatures was considerably lower for mountain lizards, suggesting greater extent of body temperature regulation for these populations.]

The subset of ‘high-altitude’ included 27 populations of lizards and it was heterogeneous ($Q_H = 81.74, P < 0.00001, I^2 = 68.19\%$), being next partition by ‘body size’ ($Q_B = 19.26, \text{Logworth} = 1.90; \text{Fig. A10}$), with two new subsets: (1) ‘medium-sized’ lizards (< 60-75 mm mean SVL), and (2) ‘small-sized + large-sized’ lizards (< 60 or > 75 mm mean SVL).
The subset of ‘medium-sized’ lizards included 11 populations of lizards and it was still heterogeneous \((Q_H = 29.47, P = 0.00105, I^2 = 66.07\%)\), being next partition by ‘season’ \((Q_B = 13.97, \text{Logworth} = 1.40; \text{Fig. A10})\), with two new subsets: (1) ‘spring-summer’ (Final Group 1), and (2) ‘spring + summer’ (Final Group 2).

The subset of ‘spring-summer’ included 5 populations \((I. martinezricai \text{ of Arribas 2013, A. scutellatus and A. boskianus \text{ of Pérez-Mellado 1992, and P. algirus \text{ of Zamora-Camacho et al. 2015 of 1200 and 1700 m}}})\) and it was heterogeneous \((Q_H = 10.44, P = 0.03356, I^2 = 61.70\%)\) so we integrated the effect sizes with the random effects model: 0.1283 \((-0.1569/0.4135)\), being the Final Group 1.

The subset of ‘spring + summer’ included 6 populations \((P. muralis \text{ of Martín-Vallejo 1990, I. cyreni \text{ of Martín & Salvador 1993, I. galani \text{ of spring and summer and I cyreni and I. monticola \text{ of Ortega et al. 2016a, 2016b, 2016c and 2017}}})\) and it was homogeneous \((Q_H = 5.14, P = 0.39852, I^2 = 2.81\%)\), so we integrated the effect sizes with the fixed effect model: 0.3818 \((0.2682/0.4955)\), being Final Group 2.

The subset of ‘small + large’ lizards included 16 populations and it was still heterogeneous \((Q_H = 32.95, P = 0.00476, I^2 = 54.48\%)\), being next partition by ‘preferred habitat’ \((Q_B = 14.38, \text{Logworth} = 1.33; \text{Fig. A10})\), with two new subsets: (1) ‘rocky areas + scrublands’ (Final Group 3), and (2) ‘other habitats’ (grasslands, sandy areas, and generalist; Final Group 4).

The subset of ‘rocky areas + scrublands’ included 11 populations \((A. bedriagae \text{ of Bauwens et al. 1990, I. bonnali \text{ of Martínez-Rica 1977, I. bonnali and I. aurelioi \text{ at 2500 and 2700 m \text{ of Ortega et al. 2016e and 2016g, I. aranica, I. bonnali and I. aurelioi \text{ of Arribas 2009 and 2010, M. guttulata \text{ of Pérez-Mellado 1992, and P. algirus \text{ of 2200 and 2500 m}}}}})\) and was homogeneous \((Q_H = 17.22, P = 0.06969, I^2 = 41.92\%)\), so we integrated the effect sizes with the fixed effect model: 0.4007 \((0.3116/0.4899)\), being Final Group 3.
The subset of ‘other habitats’ included 5 populations (A. andreanszkyi of Busack 1987, P. bocagei of Ortega et al. 2016b, and A. longipes, M. olivieri and M. guttulata of Pérez-Mellado 1992) and it was also homogeneous ($Q_H = 2.05, P = 0.72654, I^2 = \%$), so we integrated the effect sizes with the fixed effect model: 0.6394 (0.4105/0.8684), being **Final Group 4**.

The subset of ‘low-altitude + mid-altitude’ included 33 populations and it was heterogeneous ($Q_H = 559.27, P<0.00001, I^2 = 94.28\%$). Here there was a clear outlier, the population of Zootoca vivipara of Herczeg et al. (2004), with an effect size of 2.1095 (Fig. A9). After removing this population, the subset was still heterogeneous ($Q_H = 424.88, P<0.00001, I^2 = 92.70\%$), and next partition was by ‘season’ ($Q_B = 122.33, \text{Logworth} = 1.87$; Fig. A10), with two subsets: (1) ‘other seasons’ (including data from spring, summer, winter, when data from different seasons are mixed to compute the correlation coefficient, and from when the study dates are not provided in the publication), and (2) ‘summer’ (Final Group 8).

**Figure A9** In this figure we can see the subset of 33 populations living at < 1000 m asl included in the second meta-analysis (on which the effect size is the correlation between body and air temperature). The outlier population is the one of Zootoca vivipara of Herczeg et al. 2004, living in Oulanka, Finland. We removed this population of the second meta-analysis.
The subset of ‘other seasons’ included 25 populations and it was heterogeneous ($Q_H = 273.26$, $P<0.00001$, $I^2 = 91.22\%$), and next partition was by ‘insularity’ ($Q_B = 68.31$, Logworth = 2.18; Fig. A10), with two new subsets: (1) ‘insular’ lizards (Final Group 5), and (2) ‘continental’ lizards.

The **Final Group 5** is the subset of ‘insular’ lizards, which included 4 populations (Table A14) and was homogeneous ($Q_H = 2.93$, $P = 0.40251$), so we integrated the effect sizes with the fixed effect model: 1.2069 (1.0115/1.4400).

### Table A14 Final Group 5. Summary of the 4 populations of lacertids of the Final Group 5 of the second meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the correlation between $T_b$ and $T_a$, particularly the Fisher’s Z). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var Z is the variance of the effect size Fisher’s Z.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Fisher’s Z</th>
<th>Var Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Podarcis siculus</td>
<td>Calvi, Corsica (France)</td>
<td>Spring</td>
<td>0.053</td>
<td>0.018</td>
</tr>
<tr>
<td>18</td>
<td>Podarcis liolepis</td>
<td>Columbretes Islands, Castellón (Spain)</td>
<td>Autumn</td>
<td>0.150</td>
<td>0.006</td>
</tr>
<tr>
<td>36</td>
<td>Podarcis tiliguerta</td>
<td>Calvi, Corsica (France)</td>
<td>Spring</td>
<td>0.319</td>
<td>0.010</td>
</tr>
<tr>
<td>58</td>
<td>Podarcis siculus</td>
<td>Menorca (Spain)</td>
<td>Spring</td>
<td>0.212</td>
<td>0.077</td>
</tr>
</tbody>
</table>

The subset of ‘continental’ lizards included 21 populations and it was heterogeneous under the fixed effect model ($Q_H = 201.62$, $P<0.00001$, $I^2 = 90.08\%$), being next partition by ‘study habitat’ ($Q_B = 74.30$, Logworth = 1.49; Fig. A10), with two new subsets: (1) ‘unknown + forest + scrublands’ (Final group 6), and (2) ‘sandy areas + rocky areas’ (Final group 7).

The **Final Group 6** included 12 populations (Table A15) and it was still heterogeneous for the fixed effect model ($Q_H = 72.81$, $P<0.00001$, $I^2 = 84.89\%$). However, none of the moderators could explain the heterogeneity. Thus, we integrated the effect sizes with the random effect model: 0.4760 (95% CI: 0.3290/0.6231).

### Table A15 Final Group 6. Summary of the 12 populations of lacertids of the Final Group 6 of the second meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the correlation between $T_b$ and $T_a$.}
particularly the Fisher’s Z). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var Z is the variance of the effect size Fisher’s Z.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Fisher’s Z</th>
<th>Var Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td><em>Podarcis carbonelli</em></td>
<td>Central System (Spain and Portugal)</td>
<td>Unknown</td>
<td>0.012</td>
<td>83.333</td>
</tr>
<tr>
<td>27</td>
<td><em>Acanthodactylus erythrurus</em></td>
<td>Espeja (Salamanca, Spain)</td>
<td>Whole year</td>
<td>0.033</td>
<td>30.030</td>
</tr>
<tr>
<td>27</td>
<td><em>Psammomus occidentalis</em></td>
<td>Espeja (Salamanca, Spain)</td>
<td>Whole year</td>
<td>0.200</td>
<td>50.000</td>
</tr>
<tr>
<td>31</td>
<td><em>Heliothorax lugubris</em></td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>0.005</td>
<td>172.414</td>
</tr>
<tr>
<td>31</td>
<td><em>Ichnotropis squamulosa</em></td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>0.011</td>
<td>89.286</td>
</tr>
<tr>
<td>33</td>
<td><em>Meroles suborbitalis</em></td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>0.002</td>
<td>476.190</td>
</tr>
<tr>
<td>33</td>
<td><em>Nucras tessellata</em></td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>0.007</td>
<td>147.059</td>
</tr>
<tr>
<td>33</td>
<td><em>Pedioplanis linoocellata</em></td>
<td>Kalahari (Botswana and South Africa)</td>
<td>Whole year</td>
<td>0.001</td>
<td>666.667</td>
</tr>
<tr>
<td>68</td>
<td><em>Psammomus algirus</em></td>
<td>Sierra Nevada (Granada, Spain)</td>
<td>Spring-Summer</td>
<td>0.015</td>
<td>64.935</td>
</tr>
<tr>
<td>68</td>
<td><em>Psammomus algirus</em></td>
<td>Sierra Nevada (Granada, Spain)</td>
<td>Spring-Summer</td>
<td>0.034</td>
<td>29.985</td>
</tr>
</tbody>
</table>

The Final Group 7 included 9 populations (Table A16) and it was still heterogeneous ($Q_H = 52.55, P<0.00001, I^2 = 84.78\%$), so we integrated the effect sizes with the random effects model:

0.9137 (95% CI: 0.7051/1.1224).

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Fisher’s Z</th>
<th>Var Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td><em>Podarcis guadarramae</em></td>
<td>Central System (Spain and Portugal)</td>
<td>Unknown</td>
<td>0.908</td>
<td>0.010</td>
</tr>
<tr>
<td>17</td>
<td><em>Acanthodactylus erythrurus</em></td>
<td>Ebro Delta (Tarragona, Spain)</td>
<td>Whole year</td>
<td>0.590</td>
<td>0.013</td>
</tr>
<tr>
<td>17</td>
<td><em>Psammomus algirus</em></td>
<td>Ebro Delta (Tarragona, Spain)</td>
<td>Whole year</td>
<td>0.950</td>
<td>0.008</td>
</tr>
<tr>
<td>35</td>
<td><em>Hellenolacerta graeca</em></td>
<td>Stymphalia (Peloponnesse, Greece)</td>
<td>Whole year</td>
<td>0.586</td>
<td>0.016</td>
</tr>
<tr>
<td>35</td>
<td><em>Podarcis peloponnesiaca</em></td>
<td>Stymphalia (Peloponnesse, Greece)</td>
<td>Whole year</td>
<td>0.987</td>
<td>0.009</td>
</tr>
<tr>
<td>40</td>
<td><em>Psammomus edwardsianus</em></td>
<td>El Prat de Llobregat (Barcelona, Spain)</td>
<td>Whole year</td>
<td>0.996</td>
<td>0.005</td>
</tr>
<tr>
<td>59</td>
<td><em>Podarcis guadarramae</em></td>
<td>Nava de Francia (Salamanca, Spain)</td>
<td>Spring</td>
<td>1.637</td>
<td>0.016</td>
</tr>
<tr>
<td>59</td>
<td><em>Podarcis guadarramae</em></td>
<td>Nava de Francia (Salamanca, Spain)</td>
<td>Autumn</td>
<td>0.858</td>
<td>0.023</td>
</tr>
<tr>
<td>59</td>
<td><em>Podarcis guadarramae</em></td>
<td>Nava de Francia (Salamanca, Spain)</td>
<td>Winter</td>
<td>0.698</td>
<td>0.014</td>
</tr>
</tbody>
</table>

The Final Group 8 included 7 populations (Table A17) and it was still heterogeneous ($Q_H = 13.89, P = 0.03088, I^2 = 56.81\%$), so we integrated the effect sizes with the random effects model:

1.1066 (0.9546/1.2086).
Table A17 Final Group 8. Summary of the 7 populations of lacertids of the Final Group 8 of the second meta-partition (effect size used as a proxy for the thermoregulatory ability of the population is the correlation between $T_b$ and $T_a$, particularly the Fisher’s Z). ID is the identification number of the study of which data for the meta-analysis were extracted (see Appendix 2). Var Z is the variance of the effect size Fisher’s Z.

<table>
<thead>
<tr>
<th>ID</th>
<th>Species</th>
<th>Study place</th>
<th>Season</th>
<th>Fisher’s Z</th>
<th>Var Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td><em>Psammodromus algirus</em></td>
<td>Soto de Viñuelas (Madrid, Spain)</td>
<td>Summer</td>
<td>1.245</td>
<td>0.018</td>
</tr>
<tr>
<td>19</td>
<td><em>Acanthodactylus boskianus</em></td>
<td>El-Omayed dunes (Egypt)</td>
<td>Summer</td>
<td>1.245</td>
<td>0.007</td>
</tr>
<tr>
<td>19</td>
<td><em>Acanthodactylus boskianus</em></td>
<td>El-Omayed rocks (Egypt)</td>
<td>Summer</td>
<td>0.822</td>
<td>0.014</td>
</tr>
<tr>
<td>57</td>
<td><em>Scelarcis perspicillata</em></td>
<td>Lithica, Menorca (Spain)</td>
<td>Summer</td>
<td>0.927</td>
<td>0.020</td>
</tr>
<tr>
<td>58</td>
<td><em>Podarcis siculus</em></td>
<td>Menorca (Spain)</td>
<td>Summer</td>
<td>0.987</td>
<td>0.083</td>
</tr>
<tr>
<td>59</td>
<td><em>Podarcis guadarramae</em></td>
<td>Nava de Francia (Salamanca, Spain)</td>
<td>Summer</td>
<td>1.245</td>
<td>0.008</td>
</tr>
<tr>
<td>65</td>
<td><em>Podarcis milensis</em></td>
<td>Milos Island (Greece)</td>
<td>Summer</td>
<td>1.099</td>
<td>0.005</td>
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</table>
Table A18 All the studies included in the second meta-partition. Full references of the studies are provided in the Electronic Supplementary Material 1

<table>
<thead>
<tr>
<th>Population</th>
<th>Study</th>
<th>Fisher’s Z</th>
<th>Var z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acanthodactylus boskianus dunes</td>
<td>Darwish-Mahmoud 2003</td>
<td>1.2454</td>
<td>0.0067</td>
</tr>
<tr>
<td>Acanthodactylus boskianus rocks</td>
<td>Darwish-Mahmoud 2003</td>
<td>0.8217</td>
<td>0.0137</td>
</tr>
<tr>
<td>Acanthodactylus boskianus</td>
<td>Pérez-Mellado 1992</td>
<td>0.1348</td>
<td>0.0435</td>
</tr>
<tr>
<td>Acanthodactylus erythrurus</td>
<td>Gil et al. 1993</td>
<td>0.7414</td>
<td>0.0108</td>
</tr>
<tr>
<td>Acanthodactylus erythrurus</td>
<td>Carretero and Llorente 1995</td>
<td>0.5901</td>
<td>0.0135</td>
</tr>
<tr>
<td>Acanthodactylus erythrurus</td>
<td>Pollo and Pérez-Mellado 1989</td>
<td>0.3712</td>
<td>0.0333</td>
</tr>
<tr>
<td>Acanthodactylus longipes</td>
<td>Pérez-Mellado 1992</td>
<td>0.2715</td>
<td>0.200</td>
</tr>
<tr>
<td>Acanthodactylus scutellatus</td>
<td>Pérez-Mellado 1992</td>
<td>0.0983</td>
<td>0.0147</td>
</tr>
<tr>
<td>Archaeolacerta bedriagae</td>
<td>Bauwens et al. 1990</td>
<td>0.3361</td>
<td>0.0143</td>
</tr>
<tr>
<td>Atlantolacerta andreamsziyi</td>
<td>Busack 1987</td>
<td>0.6565</td>
<td>0.0192</td>
</tr>
<tr>
<td>Heliolepis lugubris</td>
<td>Verwaijen and Van Damme 2007</td>
<td>0.4847</td>
<td>0.0058</td>
</tr>
<tr>
<td>Hellenolacerta graeca</td>
<td>Maragou et al. 1997</td>
<td>0.586</td>
<td>0.0161</td>
</tr>
<tr>
<td>Iberolacerta aranica</td>
<td>Arribas 2010</td>
<td>0.4599</td>
<td>0.0071</td>
</tr>
<tr>
<td>Iberolacerta aurelioi 2500 masl</td>
<td>Ortega et al. 2016g</td>
<td>-0.4024</td>
<td>0.0714</td>
</tr>
<tr>
<td>Iberolacerta aurelioi 2700 masl</td>
<td>Ortega et al. 2016g</td>
<td>-0.1481</td>
<td>0.0714</td>
</tr>
<tr>
<td>Iberolacerta aurelioi</td>
<td>Arribas 2009</td>
<td>0.5361</td>
<td>0.0094</td>
</tr>
<tr>
<td>Iberolacerta bonnali</td>
<td>Martínez-Rica 1977</td>
<td>0.4489</td>
<td>0.0222</td>
</tr>
<tr>
<td>Iberolacerta bonnali</td>
<td>Ortega et al. 2016e</td>
<td>0.3161</td>
<td>0.0232</td>
</tr>
<tr>
<td>Iberolacerta bonnali</td>
<td>Arribas 2010</td>
<td>0.3428</td>
<td>0.0164</td>
</tr>
<tr>
<td>Iberolacerta cyreni</td>
<td>Martín and Salvador 1993</td>
<td>0.2997</td>
<td>0.0036</td>
</tr>
<tr>
<td>Iberolacerta cyreni</td>
<td>Ortega et al. 2016c</td>
<td>0.5295</td>
<td>0.027</td>
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<tr>
<td>Iberolacerta galani</td>
<td>Ortega et al. 2016a</td>
<td>0.3496</td>
<td>0.0435</td>
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<tr>
<td>Iberolacerta galani</td>
<td>Ortega et al. 2016b</td>
<td>0.5493</td>
<td>0.0131</td>
</tr>
<tr>
<td>Iberolacerta martinezricai</td>
<td>Arribas 2013</td>
<td>0.1511</td>
<td>0.0036</td>
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<tr>
<td>Iberolacerta monticola</td>
<td>Ortega et al. 2017</td>
<td>0.4477</td>
<td>0.025</td>
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<tr>
<td>Ichnotropis squamulosa</td>
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<td>0.3008</td>
<td>0.0112</td>
</tr>
<tr>
<td>Meroles suborbiatalis</td>
<td>Huey and Panka 1997</td>
<td>0.6184</td>
<td>0.0021</td>
</tr>
<tr>
<td>Mesalina guttulata</td>
<td>Pérez-Mellado 1992</td>
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<td>0.125</td>
</tr>
<tr>
<td>Mesalina olivieri</td>
<td>Pérez-Mellado 1992</td>
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<td>0.0769</td>
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<tr>
<td>Nucras tessellata</td>
<td>Huey and Panka 1997</td>
<td>0.8107</td>
<td>0.0068</td>
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<tr>
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<td>Huey and Panka 1977</td>
<td>0.6625</td>
<td>0.0015</td>
</tr>
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<td>Pedioplanis namaquensis</td>
<td>Huey and Panka 1977</td>
<td>0.3428</td>
<td>0.0068</td>
</tr>
<tr>
<td>Podarcis bocagei</td>
<td>Ortega et al. 2016b</td>
<td>0.7057</td>
<td>0.0145</td>
</tr>
<tr>
<td>Podarcis carbonelli</td>
<td>Pérez-Mellado 1983</td>
<td>0.3654</td>
<td>0.012</td>
</tr>
<tr>
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<td>Pérez-Mellado 1983</td>
<td>0.9076</td>
<td>0.0096</td>
</tr>
<tr>
<td>Podarcis guadarramae spring</td>
<td>Ortega and Pérez-Mellado 2016</td>
<td>1.6366</td>
<td>0.0159</td>
</tr>
<tr>
<td>Podarcis guadarramae summer</td>
<td>Ortega and Pérez-Mellado 2016</td>
<td>1.2454</td>
<td>0.0076</td>
</tr>
<tr>
<td>Podarcis guadarramae autumn</td>
<td>Ortega and Pérez-Mellado 2016</td>
<td>0.8576</td>
<td>0.0232</td>
</tr>
<tr>
<td>Podarcis guadarramae winter</td>
<td>Ortega and Pérez-Mellado 2016</td>
<td>0.6978</td>
<td>0.0143</td>
</tr>
<tr>
<td>Podarcis iolepis</td>
<td>Castilla and Bauwens 1991</td>
<td>0.1501</td>
<td>0.0063</td>
</tr>
<tr>
<td>Podarcis milensis</td>
<td>Adamopoulou et al. 2005</td>
<td>1.0986</td>
<td>0.0054</td>
</tr>
<tr>
<td>Podarcis muralis</td>
<td>Martín-Vallejo 1990</td>
<td>0.4284</td>
<td>0.0174</td>
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<td>Podarcis peloponnesiacus</td>
<td>Maragou et al. 1997</td>
<td>0.9868</td>
<td>0.0092</td>
</tr>
<tr>
<td>Podarcis siculus</td>
<td>Van Damme et al. 1990</td>
<td>0.053</td>
<td>0.0185</td>
</tr>
<tr>
<td>Podarcis siculus spring</td>
<td>Ortega et al. 2016f</td>
<td>0.2121</td>
<td>0.0769</td>
</tr>
<tr>
<td>Podarcis siculus summer</td>
<td>Ortega et al. 2016f</td>
<td>0.9868</td>
<td>0.0833</td>
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<tr>
<td>Podarcis tiliguerta</td>
<td>Van Damme et al. 1989</td>
<td>0.3194</td>
<td>0.0101</td>
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<tr>
<td>Psammobromus algirus</td>
<td>Carrascal and Díaz 1989</td>
<td>1.2454</td>
<td>0.0185</td>
</tr>
<tr>
<td>Psammobromus algirus</td>
<td>Pollo and Pérez-Mellado 1989</td>
<td>0.8673</td>
<td>0.0145</td>
</tr>
<tr>
<td>Psammobromus algirus 300 m asl</td>
<td>Zamora-Camacho et al. 2015</td>
<td>-0.0591</td>
<td>0.0154</td>
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<tr>
<td>Psammobromus algirus 700 m asl</td>
<td>Zamora-Camacho et al. 2015</td>
<td>0.1409</td>
<td>0.0345</td>
</tr>
<tr>
<td>Psammobromus algirus 1200 m asl</td>
<td>Zamora-Camacho et al. 2015</td>
<td>-0.3073</td>
<td>0.037</td>
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<tr>
<td>Psammobromus algirus 1700 m asl</td>
<td>Zamora-Camacho et al. 2015</td>
<td>0.6112</td>
<td>0.0454</td>
</tr>
<tr>
<td>Species</td>
<td>Source</td>
<td>Frequency</td>
<td>SE</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------------------</td>
<td>-----------</td>
<td>-----</td>
</tr>
<tr>
<td><em>Psammodromus algirus</em></td>
<td>Zamora-Camacho et al. 2015</td>
<td>0.491</td>
<td>0.0172</td>
</tr>
<tr>
<td>2200 m asl</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Psammodromus algirus</em></td>
<td>Zamora-Camacho et al. 2015</td>
<td>0.4225</td>
<td>0.0156</td>
</tr>
<tr>
<td>2500 m asl</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><em>Psammodromus edwardsianus</em></td>
<td>Carretero and Llorente 1993</td>
<td>0.9962</td>
<td>0.0055</td>
</tr>
<tr>
<td><em>Psammodromus occidentalis</em></td>
<td>Pollo and Pérez-Mellado 1989</td>
<td>0.8404</td>
<td>0.200</td>
</tr>
<tr>
<td><em>Scelarcis perspicillata</em></td>
<td>Ortega et al. 2016d</td>
<td>0.9266</td>
<td>0.0200</td>
</tr>
<tr>
<td><em>Zootoca vivipara</em></td>
<td>Herczeg et al. 2004</td>
<td>2.1095</td>
<td>0.0143</td>
</tr>
</tbody>
</table>
**Figure A10 Tree of the second meta-partition.** Summary tree of the meta-partition of the correlations between body and air temperatures in lacertids. Within each partition, effect sizes are organized from left (smaller) to right (larger). The best moderator that explains the variability of each partition is reported into a green arrow, with its respective values of the between-class component of the sums of squares from the test of homogeneity ($Q_B$) and the Logworth ($-\log_{10}(p$-value)) of $Q_B$. 

- **WHOLE SAMPLE**
  - (n = 60)
  - **Altitude**
    - ($Q_B = 157.44; Lw = 3.52$)
    - **High-altitude**
      - (n = 27)
        - **Body size**
          - ($Q_B = 19.26; Lw = 1.90$)
          - **Medium-sized**
            - (n = 11)
              - **Season**
                - ($Q_B = 13.97; Lw = 1.40$)
                - **Spring-summer**
                  - (n = 5)
                    - **FINAL GROUP 1**
                  - **Spring + Summer**
                    - (n = 6)
                      - **FINAL GROUP 2**
                - **Small-sized + large-sized**
                  - (n = 16)
            - **FINAL GROUP 3**
      - **Low-altitude + Mid-altitude**
        - (n = 32*)
        - **Season**
          - ($Q_B = 19.26; Lw = 1.90$)
          - **Other seasons**
            - (n = 25)
              - **Preferred habitat**
                - ($Q_B = 14.38; Lw = 1.33$)
                - **Insular**
                  - (n = 4)
                    - **FINAL GROUP 5**
            - **FINAL GROUP 8**
              - **Summer**
                - (n = 7)
                  - **Preferred habitat**
                    - ($Q_B = 14.38; Lw = 1.33$)
            - **Continental**
              - (n = 21)
                - **Study habitat**
                  - ($Q_B = 74.30; Lw = 1.49$)
                  - **Unknown + Forest + Scrublands**
                    - (n = 5)
                      - **FINAL GROUP 4**
                  - **Sandy areas + Rocky areas**
                    - (n = 9)
                      - **FINAL GROUP 7**
    - **FINAL GROUP 1**
    - **FINAL GROUP 2**
    - **FINAL GROUP 3**
    - **FINAL GROUP 4**
    - **FINAL GROUP 5**
    - **FINAL GROUP 6**
    - **FINAL GROUP 7**
    - **FINAL GROUP 8**
**THID ANALYSIS: MULTIMODEL INFERENCE**

We report below the results of the multimodel inference and model averaging of the following model set:

\[ E \sim \text{size} + \text{season} + \text{altitude} + \text{insularity} + \text{season:altitude} + \text{size:altitude}, \]

where ‘E’ is the index of thermoregulation effectiveness of Hertz et al. (1993)\(^5\), ‘size’ is mean snout-vent length (SVL, in mm) of the studied population, ‘altitude’ is the elevation of the population (m asl), ‘insularity’ is considered as: 0 = ‘continental population’ vs 1 = ‘insular population’, ‘season’ is considered as: 1 = ‘spring’, 2 = ‘summer’ and 3 = ‘others’ (since many authors merged data of various seasons into a common value of E).

It is recommended to select the potential moderator variables and their possible interactions based on their biological meaning influencing the response variable, and to avoid including many moderators and/or interactions that are not supported by evidence (Burnham and Anderson 2004\(^6\); Zuur et al. 2010\(^7\)). Thus, we included each moderator in the model after a careful exploration of the effect that it had in the response variable (through plots and descriptive statistics). We also took into consideration the results from the two meta-analyses to take into account the potential moderators influencing the thermoregulation effectiveness.

```
Call:
glm(formula = E ~ Size + factor(Season) + Altitude + factor(Insularity) +
     factor(Season):Altitude + Size:Altitude, family = gaussian,
     na.action = "na.fail")
Deviance Residuals:
     Min       1Q   Median       3Q      Max
-0.27248 -0.03881  0.01332  0.06911  0.24187
Coefficients:                   Estimate Std. Error t value Pr(>|t|)

(Intercept)               1.057e+00  1.670e-01   6.330 2.52e-07 ***
Size                     -3.174e-03  1.791e-03  -1.772 0.0849 .
factor(Season)2          -3.061e-03  8.244e-02  -0.037 0.9706
factor(Season)3          -8.258e-02  8.282e-02  -0.037 0.9979
Altitude                 2.180e-05  1.866e-04   0.011 0.9407
factor(Insularity)2     -6.028e-04  5.453e-02  -0.011 0.9912
factor(Season)2:Altitude -4.821e-05  7.509e-05  -0.011 0.9912
factor(Season)3:Altitude -9.363e-05  7.054e-05  -0.011 0.9912
Size:Altitude           2.550e-07  2.403e-06   0.011 0.9912

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for gaussian family taken to be 0.01159417)

Null deviance: 0.73611  on 44 degrees of freedom
Residual deviance: 0.41739  on 36 degrees of freedom
AIC: -62.913

Number of Fisher Scoring iterations: 2

stdz.model <- standardize(global.model, standardize.y = FALSE)
summary(stdz.model)

Call:
glm(formula = E ~ z.Size + factor(Season) + z.Altitude + factor(Insularity) +
    factor(Season):z.Altitude + z.Size:z.Altitude, family = gaussian,
    na.action = "na.fail")

Deviance Residuals:
       Min        1Q    Median        3Q       Max
-0.27248 -0.03881   0.01332   0.06911   0.24187

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   0.887406    0.062686  14.156 2.77e-16 ***
z.Size         0.082901    0.056349   1.471   0.1499
factor(Season)2  0.049722    0.058666   0.848   0.4023
factor(Season)3  0.173196    0.057143   3.031   0.0045 **
z.Altitude      0.067227    0.122825   0.547   0.5875
factor(Insularity)2 -0.000603    0.054533  -0.111   0.9912
factor(Season)2:z.Altitude -0.084417    0.131468  -0.642   0.5249
factor(Season)3:z.Altitude -0.163939    0.123515  -1.327   0.1928
z.Size:z.Altitude   0.012642    0.119159   0.106   0.9161

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for gaussian family taken to be 0.01159417)

Null deviance: 0.73611  on 44 degrees of freedom
Residual deviance: 0.41739  on 36 degrees of freedom
AIC: -62.913

Number of Fisher Scoring iterations: 2

model.set <- dredge(stdz.model)
model.set

Global model call: glm(formula = E ~ z.Size + factor(Season) + z.Altitude + factor(Insularity) +
    factor(Season):z.Altitude + z.Size:z.Altitude, family = gaussian,
    na.action = "na.fail")

---
Model selection table
     (Int) fct(Ins) fct(Ssn) z.Alt z.Size fct(Ssn):z.Alt z.Alt:z.Size df logLik
AICc delta
11  0.8845 +    -0.10450  5 39.215 -
66.9 0.00
15  0.8769 +    -0.04067 -0.10520 6 40.090 -
66.0 0.92
12  0.9011 +    -0.10980 6 39.678 -
\[
\begin{array}{cccc}
16 & 0.8743 & + & -0.04350 -0.10460 & 7 40.093 - \\
63.2 & 3.73 & & & \\
47 & 0.8767 & + & -0.04095 -0.10690 & -0.004964 7 40.092 - \\
63.2 & 3.73 & & & \\
31 & 0.8871 & + & 0.07002 -0.08682 & + 8 41.450 - \\
62.9 & 3.99 & & & \\
3 & 0.8186 & + & & 4 35.524 - \\
62.0 & 4.84 & & & \\
7 & 0.8108 & + & -0.03944 & 5 36.219 - \\
60.9 & 5.99 & & & \\
23 & 0.8451 & + & 0.13470 & + 7 38.864 - \\
60.7 & 6.19 & & & \\
48 & 0.8739 & + & -0.04403 -0.10650 & -0.005671 8 40.095 - \\
60.2 & 6.70 & & & \\
63 & 0.8870 & + & 0.06665 -0.08283 & + 0.012600 9 41.457 - \\
59.8 & 7.12 & & & \\
32 & 0.8874 & + & 0.07044 -0.08688 & + 9 41.450 - \\
59.8 & 7.14 & & & \\
4 & 0.8259 & + & & 5 35.644 - \\
59.8 & 7.14 & & & \\
8 & 0.7918 & + & -0.06386 & 6 36.417 - \\
58.6 & 8.27 & & & \\
24 & 0.8331 & + & 0.11470 & + 8 38.393 - \\
57.9 & 9.03 & & & \\
64 & 0.8874 & + & 0.06723 -0.08290 & + 0.012640 10 41.457 - \\
56.4 & 10.45 & & & \\
73 & 0.7933 & -0.05784 -0.08176 & 4 31.985 - \\
55.0 & 11.92 & & & \\
9 & 0.7933 & -0.07615 & 3 30.731 - \\
54.9 & 12.02 & & & \\
10 & 0.8225 & + & -0.08580 & 4 31.417 - \\
53.8 & 13.06 & & & \\
45 & 0.7909 & -0.06273 -0.11610 & -0.103800 5 32.485 - \\
53.4 & 13.46 & & & \\
1 & 0.7933 & & & 2 28.691 - \\
53.1 & 13.79 & & & \\
5 & 0.7933 & -0.04991 & 3 29.545 - \\
52.5 & 14.39 & & & \\
14 & 0.7908 & + & -0.06069 -0.08121 & 5 31.987 - \\
52.4 & 14.46 & & & \\
2 & 0.8100 & + & & 3 28.903 - \\
51.2 & 15.67 & & & \\
46 & 0.7847 & + & -0.06973 -0.11530 & -0.105300 6 32.498 - \\
50.8 & 16.11 & & & \\
6 & 0.7716 & + & -0.07502 & 4 29.697 - \\
50.4 & 16.50 & & weight & \\
11 & 0.352 & & & \\
15 & 0.222 & & & \\
12 & 0.147 & & & \\
16 & 0.054 & & & \\
47 & 0.054 & & & \\
31 & 0.048 & & & \\
3 & 0.031 & & & \\
7 & 0.018 & & & \\
23 & 0.016 & & & \\
48 & 0.012 & & & \\
63 & 0.010 & & & \\
32 & 0.010 & & & \\
4 & 0.010 & & & \\
8 & 0.006 & & & \\
24 & 0.004 & & & \\
64 & 0.002 & & & \\
13 & 0.001 & & & \\
9 & 0.001 & & & \\
10 & 0.001 & & & \\
45 & 0.000 & & & \\
1 & 0.000 & & & \\
5 & 0.000 & & & \\
14 & 0.000 & & & \\
2 & 0.000 & & & \\
46 & 0.000 & & & \\
6 & 0.000 & & & \\
\end{array}
\]

Models ranked by AICc(x)
top.models <- get.models(model.set, subset = delta < 2)
top.models

Call: glm(formula = E ~ factor(Season) + z.Size + 1, family = gaussian, 
na.action = "na.fail")

Coefficients:
(Intercept) factor(Season)2 factor(Season)3 z.Size
0.88451 -0.05126 -0.17808 -0.10454

Degrees of Freedom: 44 Total (i.e. Null); 41 Residual
Null Deviance: 0.7361
Residual Deviance: 0.4611 AIC: -68.43

Call: glm(formula = E ~ factor(Season) + z.Altitude + z.Size + 1, family = gaussian, 
na.action = "na.fail")

Coefficients:
(Intercept) factor(Season)2 factor(Season)3 z.Altitude z.Size
0.87694 -0.04354 -0.16757 -0.04067 -0.10521

Degrees of Freedom: 44 Total (i.e. Null); 40 Residual
Null Deviance: 0.7361
Residual Deviance: 0.4435 AIC: -68.18

Call: glm(formula = E ~ factor(Insularity) + factor(Season) + z.Size + 1, family = gaussian, na.action = "na.fail")

Coefficients:
(Intercept) factor(Insularity)2 factor(Season)2 factor(Season)3 z.Size
0.90113 -0.03111 -0.04807 -0.17296 -0.10976

Degrees of Freedom: 44 Total (i.e. Null); 40 Residual
Null Deviance: 0.7361
Residual Deviance: 0.4517 AIC: -67.36

attr("rank")
function (x)
do.call("rank", list(x))
<environment: 0x0000000015b5fde0>
attr("rank")<function>
AICC(x)
attr("rank")<function>
[1] "function" "rankFunction"
attr("beta")
[1] "none"

average <- model.avg(top.models)
summary(average)

Call: model.avg(object = top.models)
Component model call:
glm(formula = E ~ <3 unique rhs>, family = gaussian, na.action = na.fail)

Component models:
df loglik AICc delta weight
24 5 39.21 -66.89 0.00 0.49
234 6 40.09 -65.97 0.92 0.31
124 6 39.68 -65.14 1.75 0.20

Term codes:
factor(Insularity) factor(Season) z.Altitude z.Size
Model-averaged coefficients:
(full average)
| Estimate | Std. Error | Adjusted SE | z value | Pr(>|z|) |
|----------|------------|-------------|---------|----------|
| (Intercept) | 0.885564 | 0.048430 | 0.049876 | 17.755 < 2e-16 *** |
| factor(Season)2 | -0.048231 | 0.055985 | 0.057703 | 0.836 0.40324 |
| factor(Season)3 | -0.173802 | 0.054582 | 0.056251 | 3.090 0.00200 ** |
| z.Size | -0.105810 | 0.038737 | 0.039926 | 2.650 0.00805 * |
| z.Altitude | -0.012527 | 0.025955 | 0.026344 | 0.476 0.63442 |
| factor(Insularity)2 | -0.006341 | 0.019859 | 0.020234 | 0.75400 |

(conditional average)
| Estimate | Std. Error | Adjusted SE | z value | Pr(>|z|) |
|----------|------------|-------------|---------|----------|
| (Intercept) | 0.88556 | 0.04843 | 0.04988 | 17.755 < 2e-16 *** |
| factor(Season)2 | -0.04823 | 0.05599 | 0.05770 | 0.836 0.40324 |
| factor(Season)3 | -0.17380 | 0.05458 | 0.05625 | 3.090 0.00200 ** |
| z.Size | -0.10581 | 0.03874 | 0.03993 | 2.650 0.00805 ** |
| z.Altitude | -0.04067 | 0.03229 | 0.03329 | 1.222 0.22184 |
| factor(Insularity)2 | -0.03111 | 0.03412 | 0.03519 | 0.884 0.37667 |

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ‘ 1

Relative variable importance:
<table>
<thead>
<tr>
<th>factor(Season)</th>
<th>z.Size</th>
<th>z.Altitude</th>
<th>factor(Insularity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance:</td>
<td>1.00</td>
<td>1.00</td>
<td>0.31   0.20</td>
</tr>
<tr>
<td>N containing models:</td>
<td>3     3     1      1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

top.models2 <- get.models(model.set, cumsum(weight) <= 0.95)
top.models2
$`11`
Call: glm(formula = E ~ factor(Season) + z.Size + 1, family = gaussian, na.action = "na.fail")

Coefficients:
<table>
<thead>
<tr>
<th>(Intercept)</th>
<th>factor(Season)2</th>
<th>factor(Season)3</th>
<th>z.Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.88451</td>
<td>-0.05126</td>
<td>-0.17808</td>
<td>-0.10454</td>
</tr>
</tbody>
</table>

Degrees of Freedom: 44 Total (i.e. Null); 41 Residual
Null Deviance: 0.7361
Residual Deviance: 0.4611 AIC: -68.43

$`15`
Call: glm(formula = E ~ factor(Season) + z.Altitude + z.Size + 1, family = gaussian, na.action = "na.fail")

Coefficients:
<table>
<thead>
<tr>
<th>(Intercept)</th>
<th>factor(Season)2</th>
<th>factor(Season)3</th>
<th>z.Altitude</th>
<th>z.Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.87694</td>
<td>-0.04354</td>
<td>-0.16757</td>
<td>-0.04067</td>
<td>-0.10521</td>
</tr>
</tbody>
</table>

Degrees of Freedom: 44 Total (i.e. Null); 40 Residual
Null Deviance: 0.7361
Residual Deviance: 0.4435 AIC: -68.18

$`12`
Call: glm(formula = E ~ factor(Insularity) + factor(Season) + z.Size + 1, family = gaussian, na.action = "na.fail")

Coefficients:
<table>
<thead>
<tr>
<th>(Intercept)</th>
<th>factor(Insularity)2</th>
<th>factor(Season)2</th>
<th>factor(Season)3</th>
<th>z.Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.90113</td>
<td>-0.03111</td>
<td>-0.04807</td>
<td>-0.17296</td>
<td>-0.10976</td>
</tr>
</tbody>
</table>

Degrees of Freedom: 44 Total (i.e. Null); 40 Residual
Null Deviance: 0.7361
Residual Deviance: 0.4517  AIC: -67.36

$'16'$

Call:  glm(formula = E ~ factor(Insularity) + factor(Season) + z.Altitude +
        z.Size + 1, family = gaussian, na.action = "na.fail")

Coefficients:
(Intercept)  factor(Insularity)2  factor(Season)2  factor(Season)3 
 0.874350          0.003858     -0.043404     -0.167478
 z.Altitude   z.Size
 -0.043502        -0.104614

Degrees of Freedom: 44 Total (i.e. Null);  39 Residual
Null Deviance: 0.7361  Residual Deviance: 0.4435  AIC: -66.19

$'47'$

Call:  glm(formula = E ~ factor(Season) + z.Altitude + z.Size + z.Altitude:z.Size +
        1, family = gaussian, na.action = "na.fail")

Coefficients:
(Intercept)  factor(Season)2  factor(Season)3  z.Altitude  z.Size  
 0.876722         -0.043650     -0.167184     -0.040952
 z.Altitude:z.Size
 -0.004964

Degrees of Freedom: 44 Total (i.e. Null);  39 Residual
Null Deviance: 0.7361  Residual Deviance: 0.4435  AIC: -66.18

$'31'$

Call:  glm(formula = E ~ factor(Season) + z.Altitude + z.Size + factor(Season):z.Altitude +
        1, family = gaussian, na.action = "na.fail")

Coefficients:
(Intercept)  factor(Season)2  factor(Season)3  factor(Season)2:z.Altitude
 0.88710         -0.05056      -0.17296     -0.09062
 z.Altitude
 0.07002
 factor(Season)3:z.Altitude
 -0.16600

Degrees of Freedom: 44 Total (i.e. Null);  38 Residual
Null Deviance: 0.7361  Residual Deviance: 0.4175  AIC: -66.9

$'3'$

Call:  glm(formula = E ~ factor(Season) + 1, family = gaussian, na.action = "na.fail")

Coefficients:
(Intercept)  factor(Season)2  factor(Season)3
 0.81857         0.03329      -0.10798

Degrees of Freedom: 44 Total (i.e. Null);  42 Residual
Null Deviance: 0.7361  Residual Deviance: 0.5433  AIC: -63.05

$'7'$

Call:  glm(formula = E ~ factor(Season) + z.Altitude + 1, family = gaussian, na.action = "na.fail")

Coefficients:
(Intercept)  factor(Season)2  factor(Season)3  z.Altitude
 0.81082         0.04129      -0.09735     -0.03944
Degrees of Freedom: 44 Total (i.e. Null); 41 Residual
Null Deviance: 0.7361
Residual Deviance: 0.5268 AIC: -62.44

$`23$

Call: glm(formula = E ~ factor(Season) + z.Altitude + factor(Season):z.Altitude + 1, family = gaussian, na.action = "na.fail")

Coefficients:

(Intercept) factor(Season)2 factor(Season)3
0.845057 0.006923 -0.126238
z.Altitude factor(Season)2:z.Altitude factor(Season)3:z.Altitude
0.134725 -0.153831 -0.247478

Degrees of Freedom: 44 Total (i.e. Null); 39 Residual
Null Deviance: 0.7361
Residual Deviance: 0.4684 AIC: -63.73

attr("rank")
function (x)
do.call("rank", list(x))
<environment: 0x0000000015b5fde0>
attr("rank")attr("call")
AICc(x)attr("rank")attr("class")
[1] "function" "rankFunction"
[1] "none"
top.models2 <- get.models(model.set, cumsum(weight) <= 0.95)
average2 <- model.avg(top.models2)
summary(average2)

Call:
model.avg(object = top.models2)

Component model call:
glm(formula = E ~ <9 unique rhs>, family = gaussian, na.action = na.fail)

Component models:
df logLik AICc delta weight
24 5 39.21 -66.89 0.00 0.37
234 6 40.09 -65.97 0.92 0.24
124 6 39.68 -65.14 1.75 0.16
1234 7 40.09 -63.16 3.73 0.06
2346 7 40.09 -63.16 3.73 0.06
2345 8 41.45 -62.90 3.99 0.05
2 4 35.52 -62.05 4.84 0.03
23 5 36.22 -60.90 5.99 0.02
235 7 38.86 -60.70 6.19 0.02

Term codes:
factor(Insularity) factor(Season) z.Altitude
1 factor(Season):z.Altitude
2 z.Altitude:z.Size
3
4
5
6

Model-averaged coefficients:
(Full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)
(Intercept) 0.8801829 0.0514335 0.0528411 16.657 <2e-16 ***
factor(Season)2 -0.0425007 0.0591109 0.0607381 0.700 0.4841
factor(Season)3 -0.1685995 0.0569570 0.0585716 2.879 0.0040 **
z.Size -0.0975681 0.0467977 0.047780 2.042 0.0411 *
z.Altitude -0.0093684 0.0479685 0.0487856 0.192 0.8477
factor(Insularity)2 -0.0046280 0.0218368 0.0223398 0.207 0.8359
z.Altitude:z.Size -0.0002865 0.0233983 0.0241453 0.012 0.9905
factor(Season):z.Altitude -0.0071979 0.0403784 0.0410837 0.175 0.8609
factor(Season):z.Altitude -0.0126056 0.0566652 0.0572111 0.220 0.8256

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)
(Intercept) 0.880183 0.051433 0.0528411 16.657 <2e-16 ***
factor(Season)2  -0.042501  0.059111  0.060738  0.700  0.484
factor(Season)3  -0.168600  0.056957  0.058572  2.879  0.004 **
z.Size          -0.104767  0.039968  0.041194  2.543  0.011 *
z.Altitude      -0.021416  0.070725  0.071991  0.297  0.766
factor(Insularity)2 -0.021652  0.043155  0.044343  0.488  0.625
z.Altitude:z.Size -0.004964  0.097278  0.100392  0.049  0.961
factor(Season)2:z.Altitude -0.106413  0.116388  0.119981  0.887  0.375
factor(Season)3:z.Altitude -0.186359  0.122840  0.126525  1.473  0.141
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:
   factor(Season) z.Size z.Altitude factor(Insularity)
Importance:          1.00 0.93 0.44 0.21
N containing models: 9 6 6 2
   factor(Season):z.Altitude z.Altitude:z.Size
Importance:          0.07 0.06
N containing models: 2 1