**Table S1.** Variability of size-related traits in wild collected flies over 12 successive months (WL/TL: Wing Length / Thorax Length ratio). m: mean; SE: Standard Error; CV: Coefficient of Variation.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Site** | **Month** | **Wing length** | | | |  |  |  | **Thorax length** | | | |  |  |  | **WL/WT** | | | |  |  |  |
|  |  | **m** | **±** | **SE** | **CV** |  |  |  | **m** | **±** | **SE** | **CV** |  |  |  | **m** | **±** | **ES** | **CV** |  |  |  |
| **FST** | **1** | 243.65 | ± | 2.99 | 8.66 |  |  |  | 105.99 | ± | 1.36 | 9.04 |  |  |  | 2.30 | ± | 0.01 | 2.16 |  |  |  |
| **2** | 240.12 | ± | 1.64 | 4.83 |  |  |  | 104.86 | ± | 0.78 | 5.28 |  |  |  | 2.29 | ± | 0.01 | 1.78 |  |  |  |
| **3** | 236.92 | ± | 2.60 | 7.75 |  |  |  | 103.84 | ± | 1.12 | 7.63 |  |  |  | 2.28 | ± | 0.01 | 1.67 |  |  |  |
| **4** | 231.84 | ± | 2.81 | 8.57 |  |  |  | 102.04 | ± | 1.13 | 7.83 |  |  |  | 2.27 | ± | 0.01 | 1.90 |  |  |  |
| **5** | 227.09 | ± | 2.66 | 8.27 |  |  |  | 100.36 | ± | 1.13 | 7.99 |  |  |  | 2.26 | ± | 0.01 | 2.37 |  |  |  |
| **6** | 221.35 | ± | 2.53 | 8.08 |  |  |  | 98.24 | ± | 0.97 | 6.96 |  |  |  | 2.25 | ± | 0.01 | 2.07 |  |  |  |
| **7** | 218.48 | ± | 2.73 | 8.83 |  |  |  | 97.36 | ± | 1.17 | 8.50 |  |  |  | 2.24 | ± | 0.01 | 1.99 |  |  |  |
| **8** | 219.59 | ± | 2.11 | 6.78 |  |  |  | 97.29 | ± | 0.86 | 6.23 |  |  |  | 2.26 | ± | 0.01 | 2.66 |  |  |  |
| **9** | 225.22 | ± | 2.30 | 7.24 |  |  |  | 99.09 | ± | 0.83 | 5.91 |  |  |  | 2.27 | ± | 0.01 | 2.41 |  |  |  |
| **10** | 229.96 | ± | 1.95 | 6.01 |  |  |  | 100.92 | ± | 0.86 | 6.03 |  |  |  | 2.28 | ± | 0.01 | 2.74 |  |  |  |
| **11** | 231.78 | ± | 3.08 | 9.41 |  |  |  | 101.38 | ± | 1.26 | 8.81 |  |  |  | 2.29 | ± | 0.01 | 2.64 |  |  |  |
| **12** | 238.46 | ± | 2.18 | 6.45 |  |  |  | 103.70 | ± | 0.89 | 6.07 |  |  |  | 2.30 | ± | 0.00 | 1.40 |  |  |  |
| **Mean CV** | |  |  |  | 7.57 | ± | 0.39 | |  |  |  | 7.19 | ± | 0.37 | |  |  |  | 2.15 | ± | 0.12 | |
| **Menara** | **1** | 238.96 | ± | 2.43 | 7.18 |  |  |  | 104.58 | ± | 1.07 | 7.21 |  |  |  | 2.29 | ± | 0.01 | 1.83 |  |  |  |
| **2** | 233.77 | ± | 2.16 | 6.52 |  |  |  | 102.40 | ± | 0.87 | 6.03 |  |  |  | 2.28 | ± | 0.01 | 2.11 |  |  |  |
| **3** | 232.17 | ± | 3.58 | 10.90 |  |  |  | 101.90 | ± | 1.43 | 9.91 |  |  |  | 2.28 | ± | 0.01 | 2.50 |  |  |  |
| **4** | 226.71 | ± | 2.52 | 7.87 |  |  |  | 99.62 | ± | 0.97 | 6.88 |  |  |  | 2.27 | ± | 0.01 | 2.51 |  |  |  |
| **5** | 221.90 | ± | 2.93 | 9.33 |  |  |  | 97.96 | ± | 1.17 | 8.48 |  |  |  | 2.26 | ± | 0.01 | 2.28 |  |  |  |
| **6** | 218.65 | ± | 2.92 | 9.44 |  |  |  | 96.62 | ± | 1.20 | 8.75 |  |  |  | 2.26 | ± | 0.01 | 2.17 |  |  |  |
| **7** | 217.76 | ± | 2.39 | 7.77 |  |  |  | 96.41 | ± | 0.93 | 6.82 |  |  |  | 2.26 | ± | 0.01 | 2.16 |  |  |  |
| **8** | 222.07 | ± | 2.29 | 7.28 |  |  |  | 97.47 | ± | 0.85 | 6.18 |  |  |  | 2.28 | ± | 0.01 | 2.88 |  |  |  |
| **9** | 230.74 | ± | 3.09 | 9.46 |  |  |  | 100.81 | ± | 1.17 | 8.17 |  |  |  | 2.29 | ± | 0.01 | 2.76 |  |  |  |
| **10** | 234.66 | ± | 1.92 | 5.79 |  |  |  | 102.64 | ± | 0.89 | 6.16 |  |  |  | 2.29 | ± | 0.01 | 2.34 |  |  |  |
| **11** | 236.42 | ± | 1.87 | 5.60 |  |  |  | 103.07 | ± | 0.75 | 5.17 |  |  |  | 2.29 | ± | 0.01 | 2.16 |  |  |  |
| **12** | 240.89 | ± | 2.21 | 6.49 |  |  |  | 104.93 | ± | 0.84 | 5.69 |  |  |  | 2.30 | ± | 0.01 | 1.98 |  |  |  |
| **Mean CV** | |  |  |  | 7.80 | ± | 0.48 | |  |  |  | 7.12 | ± | 0.41 | |  |  |  | 2.31 | ± | 0.09 | |

**Table S2.** Variability of abdominal pigmentation and sternopleural bristles number (STP) in wild collected flies over 12 successive months. m: mean; SE: Standard Error; CV: Coefficient of Variation.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Site** | **Month** | **Pigmentation** | | | | | **STP** | | | | | | | | | | | |
|  |  | **m** | **±** | **SE** | **CV** |  |  |  | **m** | **±** | **SE** | | **CV** |  |  | | | |
| **FST** | **1** | 14.68 | ± | 0.64 | 30.91 |  |  |  | 19.88 | ± | 0.37 | 13.20 | | | | |
| **2** | 13.46 | ± | 0.56 | 29.38 |  |  |  | 20.12 | ± | 0.37 | 13.08 | | | | |
| **3** | 12.22 | ± | 0.35 | 20.13 |  |  |  | 20.28 | ± | 0.37 | 12.88 | | | | |
| **4** | 11.32 | ± | 0.33 | 20.54 |  |  |  | 20.58 | ± | 0.33 | 11.28 | | | | |
| **5** | 10.42 | ± | 0.59 | 40.12 |  |  |  | 20.74 | ± | 0.32 | 11.01 | | | | |
| **6** | 8.50 | ± | 0.56 | 46.35 |  |  |  | 20.90 | ± | 0.41 | 14.02 | | | | |
| **7** | 7.58 | ± | 0.54 | 50.58 |  |  |  | 21.06 | ± | 0.46 | 15.33 | | | | |
| **8** | 7.14 | ± | 0.31 | 30.87 |  |  |  | 20.12 | ± | 0.43 | 14.95 | | | | |
| **9** | 10.94 | ± | 0.47 | 30.54 |  |  |  | 20.28 | ± | 0.39 | 13.77 | | | | |
| **10** | 12.26 | ± | 0.57 | 32.70 |  |  |  | 19.06 | ± | 0.38 | 14.28 | | | | |
| **11** | 14.86 | ± | 0.59 | 27.96 |  |  |  | 18.76 | ± | 0.29 | 11.06 | | | | |
| **12** | 18.38 | ± | 0.49 | 18.84 |  |  |  | 17.84 | ± | 0.24 | 9.63 | | | | |
| **Mean CV** | |  |  |  | 31.58 | ± | 2.87 |  |  |  |  | | 12.87 | | | ± | | 0.51 | |
| **Menara** | **1** | 18.08 | ± | 0.49 | 19.22 |  |  |  | 18.28 | ± | 0.38 | 14.71 | | | | | |  |  |
| **2** | 17.72 | ± | 0.55 | 22.14 |  |  |  | 18.50 | ± | 0.33 | 12.75 | | | | | |  |  |
| **3** | 15.02 | ± | 0.74 | 34.80 |  |  |  | 18.64 | ± | 0.37 | 14.00 | | | | | |  |  |
| **4** | 13.88 | ± | 0.61 | 31.24 |  |  |  | 19.08 | ± | 0.34 | 12.52 | | | | | |  |  |
| **5** | 11.86 | ± | 0.62 | 37.17 |  |  |  | 19.46 | ± | 0.35 | 12.60 | | | | | |  |  |
| **6** | 9.66 | ± | 0.71 | 51.72 |  |  |  | 19.82 | ± | 0.31 | 11.06 | | | | | |  |  |
| **7** | 6.64 | ± | 0.27 | 28.50 |  |  |  | 20.04 | ± | 0.33 | 11.76 | | | | | |  |  |
| **8** | 7.94 | ± | 0.59 | 52.48 |  |  |  | 18.64 | ± | 0.34 | 13.00 | | | | | |  |  |
| **9** | 11.66 | ± | 0.46 | 27.70 |  |  |  | 18.52 | ± | 0.37 | 13.94 | | | | | |  |  |
| **10** | 11.74 | ± | 0.44 | 26.54 |  |  |  | 18.40 | ± | 0.34 | 13.18 | | | | | |  |  |
| **11** | 14.00 | ± | 0.55 | 27.91 |  |  |  | 18.34 | ± | 0.33 | 12.64 | | | | | |  |  |
| **12** | 18.18 | ± | 0.47 | 18.38 |  |  |  | 18.22 | ± | 0.31 | 11.85 | | | | | |  |  |
| **Mean CV** | |  |  |  | 31.48 | ± | 3.21 |  |  |  |  | | 12.83 | | | ± | | 0.30 | |

**Table S3.** Mean values ± standard error (SE) and coefficient of variation (CV) in laboratory flies grown at different temperatures. m: mean; SE: Standard Error; CV: Coefficient of Variation.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Wing** | |  | **Thorax** | |  | **WL/TL** |  |  | **pigmentation** | |  | **STP** | |
| **T°C** | **m ± SE** | **CV** |  | **m ± SE** | **CV** |  | **m ± SE** | **CV** |  | **m ± SE** | **CV** |  | **m ± SE** | **CV** |
| **12** | 269.04±0.96 | 2.53 |  | 107.92±0.31 | 2.05 |  | 2.493±0.008 | 2.19 |  | 25.65±0.15 | 4.00 |  | 17.44±0.33 | 13.27 |
| **14** | 269.28±0.81 | 2.13 |  | 110.28±0.41 | 2.64 |  | 2.443±0.008 | 2.29 |  | 24.12±0.21 | 6.26 |  | 19.24±0.24 | 8.76 |
| **17** | 259.44±0.95 | 2.59 |  | 111.88±0.52 | 3.28 |  | 2.320±0.009 | 2.65 |  | 21.10±0.22 | 7.37 |  | 22.10±0.35 | 11.09 |
| **21** | 248.24±0.84 | 2.38 |  | 108.24±0.51 | 3.33 |  | 2.295±0.007 | 2.25 |  | 11.64±0.51 | 31.23 |  | 22.82±0.37 | 11.57 |
| **25** | 237.04±0.79 | 2.36 |  | 104.08±0.42 | 2.85 |  | 2.278±0.006 | 1.98 |  | 5.24±0.23 | 30.74 |  | 22.56±0.64 | 10.75 |
| **28** | 223.44±0.73 | 2.32 |  | 99.68±0.41 | 2.91 |  | 2.242±0.006 | 1.94 |  | 5.42±0.27 | 34.98 |  | 21.10±0.28 | 9.49 |
| **31** | 210.48±0.81 | 2.71 |  | 94.20±0.48 | 3.57 |  | 2.236±0.007 | 2.23 |  | 4.28±0.29 | 48.15 |  | 18.30±0.28 | 10.66 |
| **Mean CV** | | 2.43±0.07 | |  | 2.95±0.19 |  |  | 2.22±0.09 |  |  | 23.25±6.53 |  |  | 10.80±0.55 |