**Supplementary Table 1**: The studies cited in Table 1 in the main text have been referenced in detail here. Species, geographical scales (altitude/latitude), traits with respective publications have been tabulated below. The genus Drosophila has been abbreviated *D*. Co-ordinates of the range of latitudes and altitudes from where populations were obtained have been mentioned. Numbers in parentheses refer to the number of populations collected from either a single locality or from multiple locations.

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| --- | --- | --- | --- | --- | --- |
| **Continents** | **Species** | **Geographic scale** | | **Traits** | **References** |
|  | | **Latitudinal** | **Altitude (a.s.l)** |  | |
| **Australia** | *D.melanogaster, D. simulans* | Melbourne ([37°48S 144°57′47″E](https://geohack.toolforge.org/geohack.php?pagename=Melbourne&params=37_48_49_S_144_57_47_E_region:AU-VIC_type:city(5,200,000))) (1) |  | Desiccation tolerance | (McKenzie & Parsons, 1974) |
| *D.melanogaster* |  | 300m to 2100m  27.6728° S, 148.3717° E | Body Size | (James *et al.*, 1995) |
| *D.melanogaster* | 16" 53 - 42" 53' oS  (20) |  | Larval Development (Time) | (James & Partridge, 1995) |
| *D.melanogaster* | 17°- 43o S (20) |  | Wing Thorax ratio | (Azevedo *et al.*, 1998) |
| *D. serrata* | 36oS – 16oS  (2) |  | Chill coma, body size | (Hallas *et al.*, 2002) |
| *D. melanogaster* | Coast East  35” 49’N |  | Body Size | (James *et al.*, 1995),  (Imasheva *et al.*, 1994) |
| *D.melanogaster* | Australia (20) |  | Ovariole Number | (Azevedo *et al.*, 1996),  (Schmidt *et al.*, 2005) |
| *D.melanogaster* | 43o6’ S- 15o28’ S |  | Cold resistance | (Hoffmann & Alisha Anderson and Rebecca Halla, 2002) |
| *D.melanogaster* | 25.27° S, 133.77° E.  42.04° S, 146.81° E |  | Wolbachia Infection Frequency | (Kriesner *et al.*, 2016) |
| *D.melanogaster* | Tropical: 16.907oS, 145.709oE, 18.267 oS, 146.017oE.  Temperate: 42.769 oS, 147.576oE (1) |  | Day time sleep (Siesta) | (Yang & Edery, 2018) |
| **Asia** | *D.melanogaster, D. simulans* | Japan  (35.6635° N, 138.7317° E) (7) |  | Ovariole Number | (Metropolitan, 1986) |
| *D.melanogaster, D. ananassae, Zaprionus indianus* | India  9.2° - 28.9°  (9) |  | Desiccation/ Starvation Tolerance | (Karan *et al.*, 1998a) |
| *D.melanogaster, D. kikkawai* | India, Sri Lanka  6.8oN – 31.3oN |  | Wing length | (Karan *et al.*, 1998b) |
| *D.melanogaster* | India  10 – 32o74’N | 600– 2050m  (30.46′ -32.3′°N) (5) | Trident pigmentation | (Parkash & Munjal, 1999b) |
| *D.melanogaster, D. kikkawai,*  *D.* ananassae*,*  *D. bipectinata,*  *D. repleta* | 6.6 oN – 31.3 oN (5) |  | Body weight | (Karan *et al.*, 1998b) |
| *D.melanogaster, D. ananassae,*  *Z. indianus,*  *D. repleta* | 10.0 oN to 32.7 oN  (4) |  | Desiccation resistance | (Parkash & Munjal, 1999a) |
| *D.melanogaster* | 17.3′ – 32.3′°N (9) |  | Desiccation tolerance, Starvation resistance | (Karan *et al.*, 1998a) |
| *D.melanogaster* |  | 10– 2202m  (11.15′ – 31.06′°N)  (10) | Ovariole number | (Rajpurohit *et al.*, 2008) |
| *D. takahashi,*  *D. nepalenesis* |  | 219 – 2202 m | Desiccation tolerance, Starvation resistance | (Parkash *et al.*, 2005) |
| *D. nasuta,*  *D. immigrans* | 11.0 – 30.51°N (7) |  | Chill-coma recovery,  Heat-knockdown resistance | (Parkash & Ranga, 2013) |
| *D. immigrans* | 30.51′°N – 32.36′°N | 600 – 2226m (8) | Abdominal pigmentation, Desiccation resistance | (Parkash *et al.*, 2008) |
| *D. kikkawai* | 12.6′–32.7′°N (7) |  | Desiccation tolerance, Starvation resistance | (Karan *et al.*, 1998a) |
| *D. kikkawai* | 8.29′°N – 32.7′°N (8) |  | Body weight,  Wing length,  Thorax length,  Abdominal bristles, Ovariole number | (Parkash & Munjal, 1999a) |
| *D. kikkawai* | 6.8′°N – 31.3′°N (9) |  | Thorax length,  Wing length,  Sterno-pleural bristles, Abdominal bristles,  Body weight,  Abdominal pigmentation | (Karan, 1998) |
| *D. melanogaster* | 8.29 – 32.40°N (8) |  | Total body lipids,  Trehalose | (Parkash *et al.*, 2012) |
| *D. melanogaster, D. simulans* | Southern Turkey  50 – 1500 m  (37.03 – 38.25°N) (4) |  | Body size,  Chill coma recovery | (Yilmaz& Özsoy, 2022) |
| *D.melanogaster* | 30.50 °N – 8.05 °N |  | Copulation duration | (Parkash *et al.*, 2011) |
| **South America** | *D.melanogaster* | 2o 13oS, 41°30oS  (10 P) |  | Body Size | (van ’T Land *et al.*, 1999) |
| *D. subobscura* | 29.92 S - 56.2 N  (2p) |  | Wing Size | (Calboli *et al.*, 2003) |
| *D.melanogaster* | 2o00’S 77 o30’W  (1) | **\_** | Egg size | (Azevedo *et al.*, 1996) |
| *D.subobscura*  *(Female)* | -45o35- 56o9’N. (13) |  | Wing Size | (Gilchrist *et al.*, 2004) |
| *D.buzzatti* |  | North western Argentina  26o36’S, 65 o 52’W; 2300m,  27 o 48’S, 64 o 18’W; 202 m | Thermal tolerance | (Sørensen *et al.*, 2005) |
| **North America** | *D.subobscura*  *(Females)* | 35.5oN - 50.7oN (11) |  | Wing length | (Huey, 2000) |
| *D. subobscura* | 35.5oN -50.7oN (1) |  | Cell size | (Calboli *et al.*, 2003) |
| *D.melanogaster* | Walpole (43.9522° N, 69.5598° W) (1) |  | Diapause | (Schmidt & Conde, 2006) |
| *D.melanogaster* | 35.7796° N, 78.6382° W  North Caroline (Raleigh) USA. (1) |  | Aldh-Phe gene | (Fry, 2001) |
| *D. subobscura* | 37o0’21” N, 38o31’1” N, 40o46’41” N (1) |  | Thermoregulatory Behaviour | (Huey, 2009) |
| *D. melanogaster* | 25°32′N, 80°29′W, 39°53′N, 75°24′W. 44°1′N, 69°56′  (1) |  | In (3R) Payne | (Fabian *et al.*, 2012) |
| *D. dunni* | 18.22° N, 66.59° W (1) |  | Abdominal Pigmentation | (Hollocher *et al.*, 2046) |
| **Europe** | *D.subobscura*  *(Females)* | 36.5oN - 56.1oN (10) |  | Wing length | (Huey, 2000) |
| *D.buzzatti* |  | 28.29° N, 16.63° W (9) | Starvation resistance | (Sarup & Loeschcke, 2010) |
| *D.melanogaster* | 36.97oN – 62.01 oN (6) |  | Time less allele (ls-Tim) | (Pegoraro *et al.*, 2017) |
| *D. melanogaster* | -33.72oN -59.85oN | 7 m - 3050 m | Ovariole number, Wing size and Cell number | (Klepsatel et al., 2014) |
| **Africa** | *D.melanogaster* |  | 295 m – 2506 m (1) | Wing size | (Pitchers *et al.*, 2013) |
| *D. melanogaster* |  | 78-2506 m (20) | Mid-day siesta | (Cao & Edery, 2017) |
| *D. melanogaster* | -33.72oN -59.85oN | 7 m - 3050 m | Ovariole number, Wing size and Cell number | (Klepsatel *et al.*, 2014) |
| *D. melanogaster* | 7.37° N, 12.35° E (Cameroon)  3.22° S, 40.12° E  (Kenya, Malindi)  1.37° N, 32.29° E  (Uganda) |  | Abdominal pigmentation | (Pool and Aquadro 2007) |

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