

Electronic supplementary material

Table S1. Mean flight metabolic rate and thoracic temperature of sampled orchid bee species ranked by mean body mass (g) (\pm SE) (n=188).

Genus	Species	n	Body mass (g)	FMR (ml CO ₂ h ⁻¹ g ⁻¹)	Thorax temperature (°C)
<i>Euglossa</i>	<i>sapphirina</i>	12	0.0597 (\pm 0.0018)	79.80 (\pm 2.19)	36.53 (\pm 0.33)
<i>Euglossa</i>	<i>crassipunctata</i>	14	0.0764 (\pm 0.0020)	74.05 (\pm 2.11)	37.12 (\pm 0.19)
<i>Euglossa</i>	<i>bursigera</i>	12	0.0813 (\pm 0.0016)	89.99 (\pm 2.95)	38.83 (\pm 0.39)
<i>Euglossa</i>	<i>dissimula</i>	10	0.0919 (\pm 0.0029)	84.58 (\pm 4.66)	37.83 (\pm 0.57)
<i>Euglossa</i>	<i>deceptrix</i>	6	0.0953 (\pm 0.0046)	--	--
<i>Euglossa</i>	<i>mixta</i>	10	0.1083 (\pm 0.0035)	90.84 (\pm 3.46)	38.89 (\pm 0.27)
<i>Euglossa</i>	<i>tridentata</i>	12	0.1206 (\pm 0.0037)	81.12 (\pm 1.73)	38.41 (\pm 0.23)
<i>Euglossa</i>	<i>cognata</i>	13	0.1625 (\pm 0.0040)	75.27 (\pm 2.26)	37.62 (\pm 0.46)
<i>Euglossa</i>	<i>asarophora</i>	5	0.1624 (\pm 0.0082)	--	--
<i>Euglossa</i>	<i>imperialis</i>	11	0.1689 (\pm 0.0058)	67.20 (\pm 2.78)	38.43 (\pm 0.33)
<i>Eufriesea</i>	<i>rufocauda</i>	5	0.2117 (\pm 0.0143)	--	--
<i>Eufriesea</i>	<i>anisochlora</i>	9	0.2185 (\pm 0.0071)	--	--
<i>Eufriesea</i>	<i>chrysopyga</i>	7	0.2744 (\pm 0.0072)	--	--
<i>Eulaema</i>	<i>polychroma</i>	2	0.3326 (\pm 0.0219)	67.01 (\pm 2.40)	38.00 (\pm 0.50)
<i>Eufriesea</i>	<i>pulchra</i>	10	0.3895 (\pm 0.0147)	88.64 (\pm 2.32)	38.22 (\pm 0.27)
<i>Eulaema</i>	<i>nigrita</i>	10	0.4147 (\pm 0.0183)	63.57 (\pm 1.22)	38.30 (\pm 0.60)
<i>Eufriesea</i>	<i>dressleri</i>	3	0.4507 (\pm 0.0207)	--	--
<i>Eufriesea</i>	<i>schmidtiana</i>	4	0.5024 (\pm 0.0187)	--	--
<i>Eulaema</i>	<i>cingulata</i> *	11	0.5261 (\pm 0.0189)	59.98 (\pm 2.08)	36.77 (\pm 0.55)
<i>Exaerete</i>	<i>frontalis</i>	7	0.7097 (\pm 0.0420)	36.02 (\pm 1.42)	36.18 (\pm 0.61)
<i>Eulaema</i>	<i>bombiformis</i>	4	0.9228 (\pm 0.0356)	56.77 (\pm 5.84)	38.18 (\pm 0.70)
<i>Eulaema</i>	<i>meriana</i>	11	0.9394 (\pm 0.0252)	51.53 (\pm 1.31)	37.62 \pm 0.52)

*Note that *Eulaema cingulata* has been recently recognized as *Eulaema marcii* in Central America. We maintained the *E. cingulata* species name in our data set to relate to published data using this name and referring to this Central American species.

Table S2. Mean (\pm SE) % saturated fatty acid in the phospholipid fraction of 22 species of orchid bees.

Genus	Species	C14:0	C16:0	C18:0	C20:0	C22:0	Σ SFAs
<i>Euglossa</i>	<i>sapphirina</i>	0.23 (\pm 0.12)	7.77 (\pm 0.47)	15.04 (\pm 0.60)	0.25 (\pm 0.088)	0.00 (\pm 0.00)	23.06 (\pm 0.97)
<i>Euglossa</i>	<i>crassipunctata</i>	0.08 (\pm 0.03)	6.75 (\pm 0.31)	14.62 (\pm 0.73)	0.45 (\pm 0.11)	0.08 (\pm 0.08)	21.91 (\pm 0.87)
<i>Euglossa</i>	<i>bursigera</i>	0.13 (\pm 0.07)	7.30 (\pm 0.60)	13.64 (\pm 0.68)	0.52 (\pm 0.1)	0.05 (\pm 0.05)	21.51 (\pm 1.07)
<i>Euglossa</i>	<i>dissimula</i>	0.03 (\pm 0.03)	6.38 (\pm 0.43)	12.42 (\pm 0.75)	0.58 (\pm 0.11)	0.00 (\pm 0.00)	19.38 (\pm 1.00)
<i>Euglossa</i>	<i>deceptrix</i>	0.22 (\pm 0.20)	8.33 (\pm 0.43)	14.97 (\pm 1.24)	0.45 (\pm 0.27)	0.00 (\pm 0.00)	23.75 (\pm 1.49)
<i>Euglossa</i>	<i>mixta</i>	0.04 (\pm 0.03)	6.74 (\pm 0.35)	12.63 (\pm 0.51)	0.45 (\pm 0.11)	0.00 (\pm 0.00)	19.82 (\pm 0.76)
<i>Euglossa</i>	<i>tridentata</i>	0.12 (\pm 0.05)	6.95 (\pm 0.21)	12.17 (\pm 0.52)	0.59 (\pm 0.09)	0.00 (\pm 0.00)	19.71 (\pm 0.53)
<i>Euglossa</i>	<i>cognata</i>	0.00 (\pm 0.06)	7.38 (\pm 0.67)	12.90 (\pm 0.69)	1.70 (\pm 0.63)	0.00 (\pm 0.00)	21.98 (\pm 1.01)
<i>Euglossa</i>	<i>asarophora</i>	0.23 (\pm 0.00)	7.37 (\pm 0.50)	13.56 (\pm 0.84)	0.62 (\pm 0.09)	0.00 (\pm 0.00)	21.55 (\pm 1.17)
<i>Euglossa</i>	<i>imperialis</i>	0.24 (\pm 0.10)	8.62 (\pm 0.56)	11.91 (\pm 1.03)	0.56 (\pm 0.13)	0.00 (\pm 0.00)	21.09 (\pm 1.22)
<i>Eufriesea</i>	<i>rufocauda</i>	0.05 (\pm 0.04)	7.35 (\pm 0.50)	16.46 (\pm 2.15)	0.96 (\pm 0.37)	0.00 (\pm 0.00)	24.76 (\pm 2.40)
<i>Eufriesea</i>	<i>anisochlora</i>	0.36 (\pm 0.05)	6.43 (\pm 0.24)	14.31 (\pm 0.2)	0.87 (\pm 0.23)	0.00 (\pm 0.00)	21.62 (\pm 0.32)
<i>Eufriesea</i>	<i>chrysopyga</i>	0.14 (\pm 0.07)	6.54 (\pm 0.61)	16.84 (\pm 1.37)	1.05 (\pm 0.26)	0.00 (\pm 0.00)	24.42 (\pm 1.67)
<i>Eulaema</i>	<i>polychroma</i>	0.62 (\pm 0.11)	5.80 (\pm 0.10)	10.00 (\pm 0.15)	0.13 (\pm 0.09)	0.00 (\pm 0.00)	15.92 (\pm 0.14)
<i>Eufriesea</i>	<i>pulchra</i>	0.18 (\pm 0.05)	4.38 (\pm 0.14)	12.94 (\pm 0.42)	0.39 (\pm 0.09)	0.00 (\pm 0.00)	17.71 (\pm 0.52)
<i>Eulaema</i>	<i>nigrita</i>	0.31 (\pm 0.10)	7.59 (\pm 0.79)	11.53 (\pm 0.76)	0.18 (\pm 0.06)	0.00 (\pm 0.00)	19.30 (\pm 1.53)
<i>Eufriesea</i>	<i>dressleri</i>	0.00 (\pm 0.00)	13.01 (\pm 1.73)	18.17 (\pm 1.94)	0.00 (\pm 0.00)	0.00 (\pm 0.00)	31.18 (\pm 3.44)
<i>Eufriesea</i>	<i>schmidtiana</i>	0.13 (\pm 0.07)	6.88 (\pm 0.37)	13.55 (\pm 0.63)	0.53 (\pm 0.28)	0.45 (\pm 0.39)	21.46 (\pm 0.35)
<i>Eulaema</i>	<i>cingulata</i>	0.57 (\pm 0.10)	6.34 (\pm 0.16)	8.86 (\pm 0.33)	0.26 (\pm 0.07)	0.00 (\pm 0.00)	15.46 (\pm 0.38)
<i>Exaerete</i>	<i>frontalis</i>	0.02 (\pm 0.02)	8.85 (\pm 0.65)	9.75 (\pm 1.23)	0.06 (\pm 0.05)	0.35 (\pm 0.32)	19.00 (\pm 1.59)
<i>Eulaema</i>	<i>bombiformis</i>	0.44 (\pm 0.25)	6.08 (\pm 0.32)	9.73 (\pm 0.46)	0.20 (\pm 0.18)	0.00 (\pm 0.00)	16.02 (\pm 0.83)
<i>Eulaema</i>	<i>meriana</i>	0.45 (\pm 0.08)	6.03 (\pm 0.20)	10.442 (\pm 0.55)	0.54 (\pm 0.12)	0.00 (\pm 0.00)	17.01 (\pm 0.60)

Table S3. Mean (\pm SE) % unsaturated fatty acid in the phospholipid fraction of 22 species of orchid bees.

Genus	Species	C16:1 n-7	C18:1 n-9	C18:2 n-6	C18:3 n-3	C20:5	C22:1	Σ PUFAs
<i>Euglossa</i>	<i>sapphirina</i>	0.47 (\pm 0.11)	43.45 (\pm 1.41)	6.16 (\pm 0.64)	25.66 (\pm 1.12)	0.16 (\pm 0.09)	0.82 (\pm 0.46)	31.98 (\pm 1.28)
<i>Euglossa</i>	<i>crassipunctata</i>	0.16 (\pm 0.04)	47.32 (\pm 2.35)	6.43 (\pm 1.07)	23.32 (\pm 2.25)	0.39 (\pm 0.10)	0.41 (\pm 0.19)	30.13 (\pm 2.42)
<i>Euglossa</i>	<i>bursigera</i>	2.42 (\pm 0.24)	46.91 (\pm 1.22)	8.64 (\pm 1.53)	19.55 (\pm 1.75)	0.46 (\pm 0.13)	0.38 (\pm 0.14)	28.65 (\pm 1.72)
<i>Euglossa</i>	<i>dissimula</i>	3.10 (\pm 0.76)	51.28 (\pm 2.12)	10.30 (\pm 1.73)	15.15 (\pm 1.18)	0.44 (\pm 0.12)	0.33 (\pm 0.12)	25.89 (\pm 2.34)
<i>Euglossa</i>	<i>deceptrix</i>	0.27 (\pm 0.25)	50.25 (\pm 2.10)	12.81 (\pm 3.08)	11.46 (\pm 1.21)	0.41 (\pm 0.24)	0.84 (\pm 0.35)	24.67 (\pm 2.30)
<i>Euglossa</i>	<i>mixta</i>	0.04 (\pm 0.03)	49.07 (\pm 1.61)	10.13 (\pm 1.33)	20.01 (\pm 1.80)	0.37 (\pm 0.12)	0.51 (\pm 0.18)	30.51 (\pm 1.86)
<i>Euglossa</i>	<i>tridentata</i>	0.08 (\pm 0.05)	52.14 (\pm 1.83)	12.76 (\pm 1.47)	14.33 (\pm 1.34)	0.59 (\pm 0.10)	0.27 (\pm 0.07)	27.68 (\pm 1.47)
<i>Euglossa</i>	<i>cognata</i>	2.10 (\pm 0.05)	53.26 (\pm 1.52)	13.04 (\pm 1.70)	7.97 (\pm 0.85)	1.43 (\pm 0.54)	0.24 (\pm 0.13)	22.44 (\pm 1.98)
<i>Euglossa</i>	<i>asarophora</i>	0.18 (\pm 0.55)	46.12 (\pm 2.29)	13.59 (\pm 0.78)	17.29 (\pm 0.88)	0.59 (\pm 0.12)	0.45 (\pm 0.17)	31.46 (\pm 1.83)
<i>Euglossa</i>	<i>imperialis</i>	0.23 (\pm 0.07)	45.81 (\pm 2.12)	19.04 (\pm 1.73)	12.61 (\pm 1.09)	0.45 (\pm 0.15)	0.45 (\pm 0.23)	32.11 (\pm 1.91)
<i>Eufriesea</i>	<i>rufocauda</i>	0.04 (\pm 0.04)	46.10 (\pm 2.43)	17.31 (\pm 1.27)	10.35 (\pm 1.16)	1.22 (\pm 0.71)	0.16 (\pm 0.15)	28.88 (\pm 1.53)
<i>Eufriesea</i>	<i>anisochlora</i>	0.16 (\pm 0.04)	48.25 (\pm 0.71)	19.99 (\pm 0.55)	8.44 (\pm 0.33)	1.153 (\pm 0.27)	0.04 (\pm 0.02)	29.58 (\pm 0.79)
<i>Eufriesea</i>	<i>chrysopyga</i>	0.18 (\pm 0.08)	48.14 (\pm 1.17)	14.12 (\pm 1.25)	11.02 (\pm 1.11)	1.74 (\pm 0.44)	0.24 (\pm 0.20)	26.88 (\pm 2.23)
<i>Eulaema</i>	<i>polychroma</i>	0.062 (\pm 0.043)	54.69 (\pm 0.83)	14.35 (\pm 3.43)	14.35 (\pm 2.68)	0.00 (\pm 0.00)	0.00 (\pm 0.00)	28.70 (\pm 0.75)
<i>Eufriesea</i>	<i>pulchra</i>	0.058 (\pm 0.033)	54.00 (\pm 1.11)	8.76 (\pm 1.51)	18.70 (\pm 1.47)	0.39 (\pm 0.13)	0.21 (\pm 0.11)	27.84 (\pm 0.99)
<i>Eulaema</i>	<i>nigrita</i>	0.04 (\pm 0.03)	53.13 (\pm 1.11)	14.35 (\pm 1.90)	12.61 (\pm 1.03)	0.24 (\pm 0.10)	0.02 (\pm 0.01)	27.20 (\pm 2.20)
<i>Eufriesea</i>	<i>dressleri</i>	0.00 (\pm 0.00)	51.89 (\pm 2.12)	11.54 (\pm 1.98)	5.39 (\pm 0.44)	0.00 (\pm 0.00)	0.00 (\pm 0.00)	16.93 (\pm 2.07)
<i>Eufriesea</i>	<i>schmidtiana</i>	0.057 (\pm 0.028)	59.62 (\pm 2.46)	5.99 (\pm 3.65)	12.46 (\pm 1.79)	0.15 (\pm 0.11)	0.02 (\pm 0.02)	18.69 (\pm 1.75)
<i>Eulaema</i>	<i>cingulata</i>	0.015 (\pm 0.010)	54.81 (\pm 1.87)	16.68 (\pm 1.89)	12.10 (\pm 1.20)	0.30 (\pm 0.09)	0.05 (\pm 0.03)	29.09 (\pm 1.70)
<i>Exaerete</i>	<i>frontalis</i>	0.26 (\pm 0.12)	52.59 (\pm 2.10)	16.18 (\pm 1.28)	11.91 (\pm 1.49)	0.03 (\pm 0.03)	0.00 (\pm 0.00)	28.12 (\pm 1.79)
<i>Eulaema</i>	<i>bombiformis</i>	0.08 (\pm 0.07)	59.77 (\pm 0.65)	8.62 (\pm 1.46)	14.92 (\pm 1.06)	0.15 (\pm 0.13)	0.00 (\pm 0.00)	23.69 (\pm 1.68)
<i>Eulaema</i>	<i>meriana</i>	0.04 (\pm 0.03)	56.05 (\pm 1.29)	13.44 (\pm 1.85)	12.54 (\pm 1.09)	0.40 (\pm 0.13)	0.06 (\pm 0.03)	26.38 (\pm 1.09)

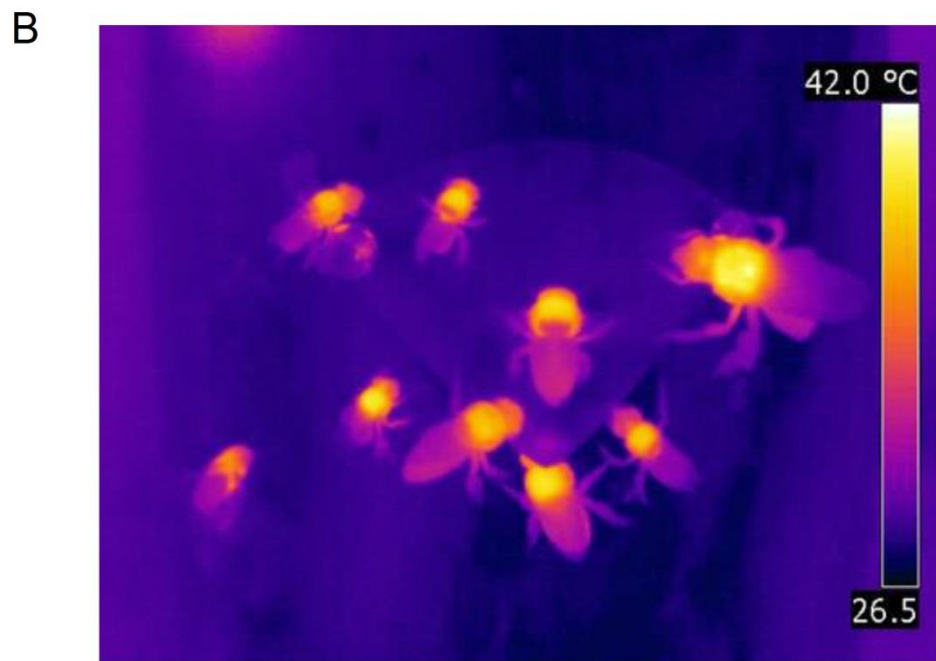
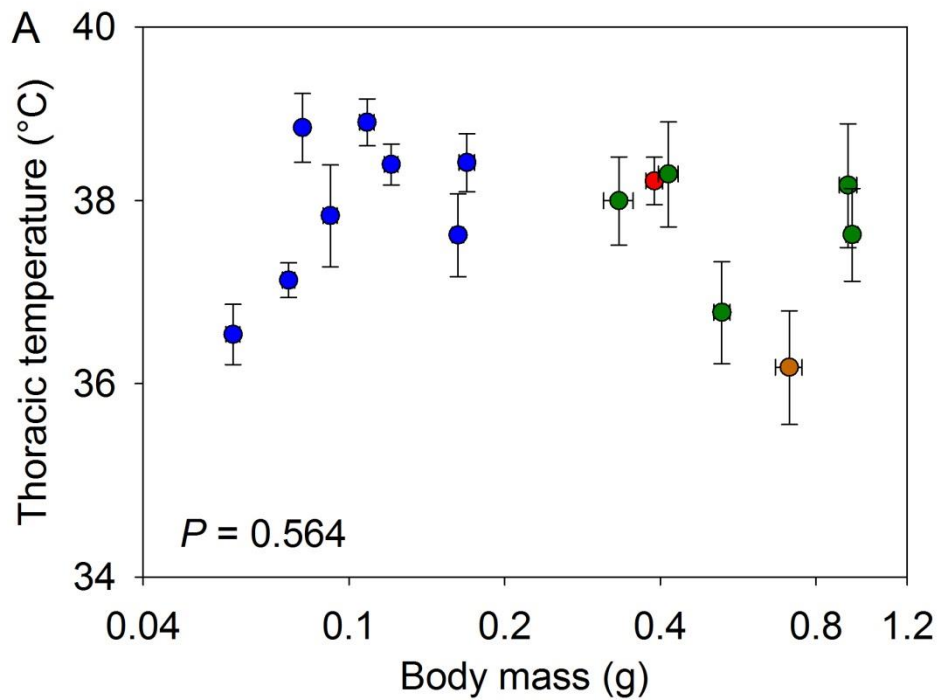


Figure S1. (A) Relationship between body mass and thoracic temperature in 15 orchid bee species. Values are means (\pm SE) and colors represent the four genera sampled (blue: *Euglossa*, red: *Eufriesea*, green: *Eulaema*, orange: *Exaerete*). (B) Thermogram showing orchid bee species of various sizes collecting chemical baits on a paper attached to a tree.