

Supporting information

Table S1: **Density effect on fresh weight, dry weight and lipid content in the no-choice experiment.**

Parameters	Factors of the analysis	p-value
Fresh weight	Sex	<0.0001
	Morph	<0.0001
	Density	ns
	Morph:Density	0.00041
Dry weight	Sex	<0.0001
	Morph	<0.0001
	Density	ns
	Morph:Density	0.00017
Lipid content	Sex	<0.0001
	Morph	<0.0001
	Density	ns
	Morph:Density	0.00016

For females, n=34 in winged morph in high density and n=14 in low density, n=47 in wingless morph in high density and n=8 in low density. For males, n=44, n=12, n=39, n=14 respectively. GLM, ns indicates no significant difference and a p-value above 0.05.

Figure S1: **Linear regressions of energetic compartments (glycogen, sugars, lipids and proteins) (μg) along with aphid fresh weight (mg) for wingless (green) and winged (red) aphids.** Each data point corresponds to one biological replicate (15 aphids), $n=42$ for wingless aphids and $n=41$ for winged aphids. All energetic compartments correlated with fresh weight for the wingless and the winged morph ($P<0.0001$).

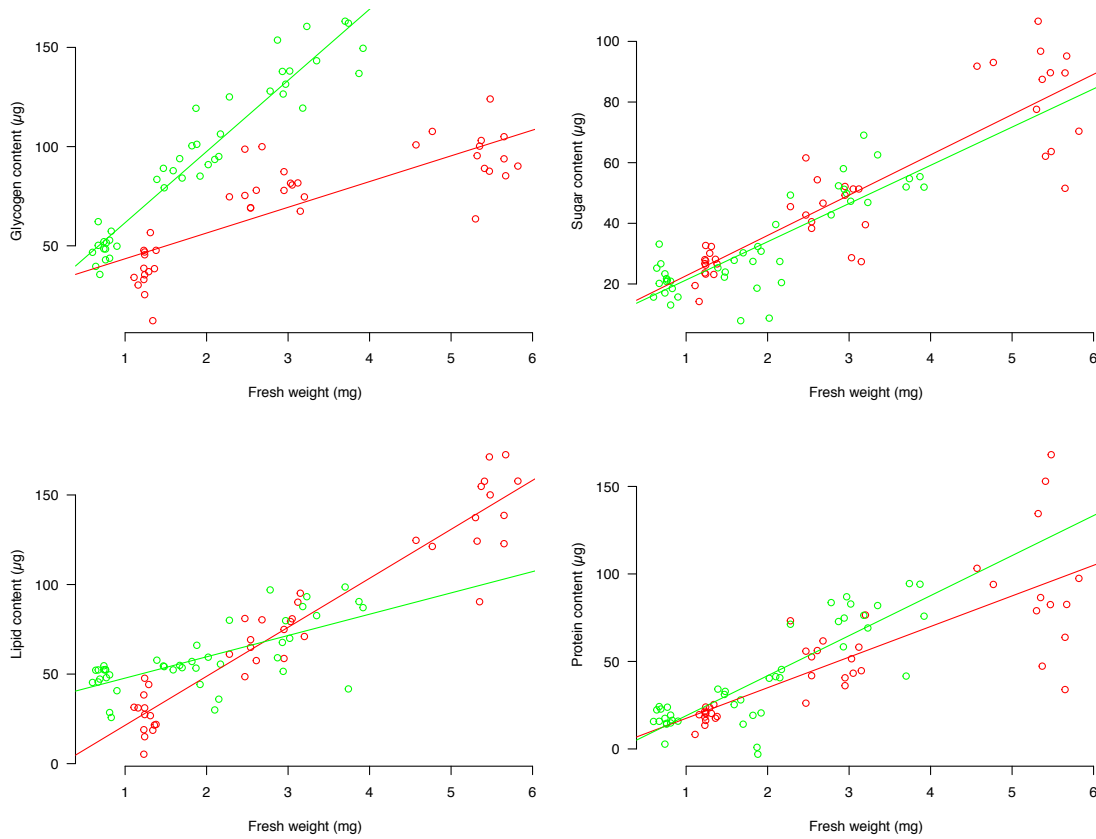


Table S2: Number of parasitoids used in this study and their distribution among the experimental modalities according to the stage and morph (WD: winged, WL: wingless).

Experiment	Parameter	Aphid morph	Aphid stage	Female	Male
No choice	Fresh weight	WD	Third	48	56
	Dry weight		Fourth	34	33
	Lipid content	WL	Third	55	53
			Fourth	14	16
Choice	Fresh weight	WD	Third	23	-
	Tibia size		Fourth	29	-
	Wing area	WL	Third	25	-
	Wing load		Fourth	15	-
	Egg load	WD	Third	20	-
	Egg volume	WL		19	-

Fig. S2: **Boxplot of residuals for wing area (mm²) (regression with mummy size) for female parasitoids emerging from two different aphid stages (3: third, 4: fourth) and aphid morph (WD: winged, WL: wingless).** n=23 in 3WD, n=25 in 3WL, n=29 in 4WD and n=15 in 4WL. GLM with post-hoc test (Tukey adjustment).

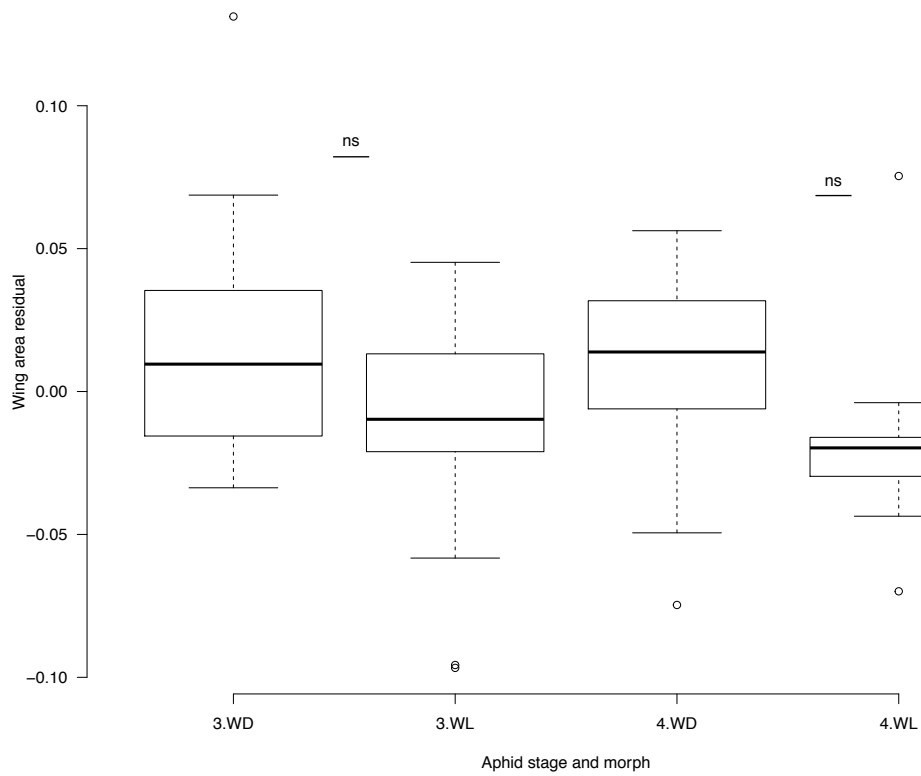


Fig. S3: **Boxplot of egg volume (μm^3) for female parasitoids emerging from the third aphid stage and from two different aphid morphs (WD: winged, WL: wingless). n=20 in 3WD, n=19 in 3WL. GLM.**

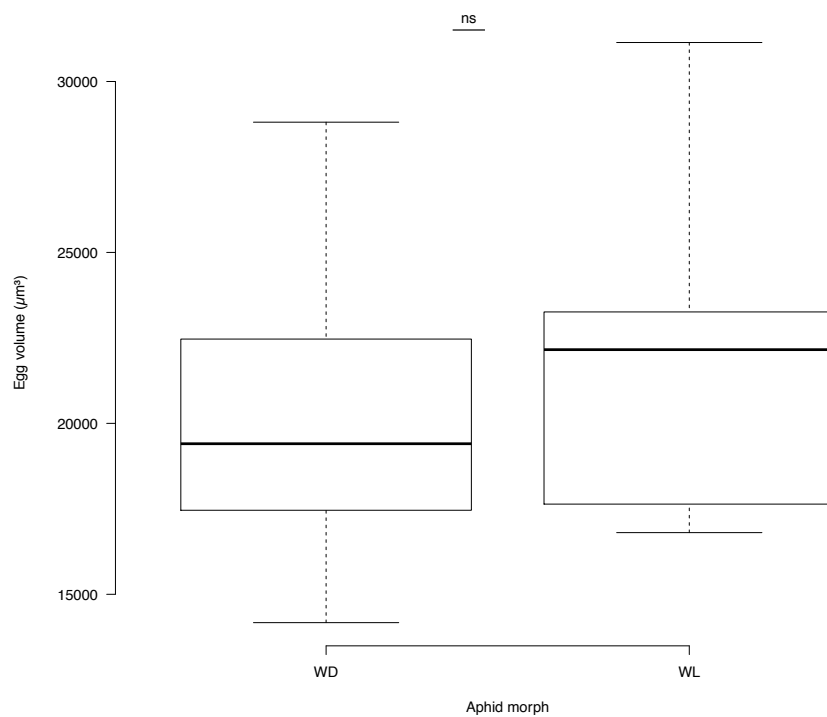


Fig. S4: **Boxplot of reproductive effort for female parasitoids emerging from the third aphid stage and from two different aphid morphs (WD: winged, WL: wingless). n=20 in 3WD, n=19 in 3WL. GLM.**

