Supplementary material

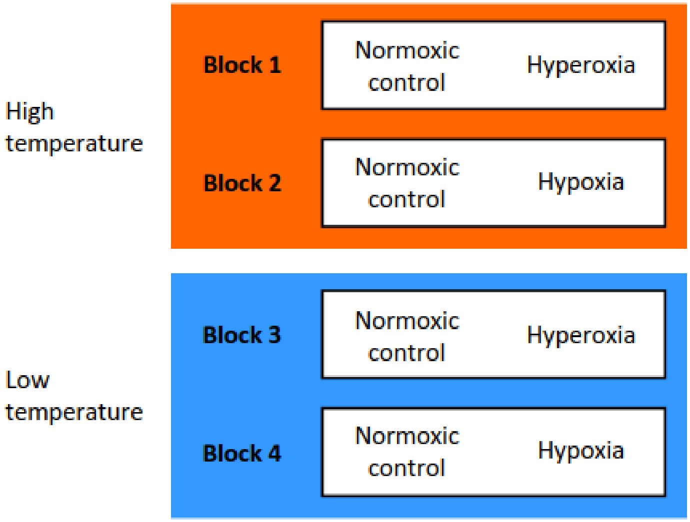

Figure S1. Experimental design. The experiment was organized as four temporally separate blocks (blocks 1–4), each of which included the normoxic control and either a hyperoxic (blocks 1 and 3) or hypoxic (blocks 2 and 4) manipulation. Two first blocks (blocks 1 and 2) were carried out at high temperature manipulation and two last blocks (blocks 3 and 4) at low temperature manipulation. Split-brood design was used within each block so that broods were split between the oxygen partial pressure manipulations. Because of the temporal separation of the experimental blocks, the short life span of *O. gothica* females and the clutch-laying habit of the species (a clutch consists of a large amount of eggs glued to each other), it was not possible to use the same broods in more than a single block.

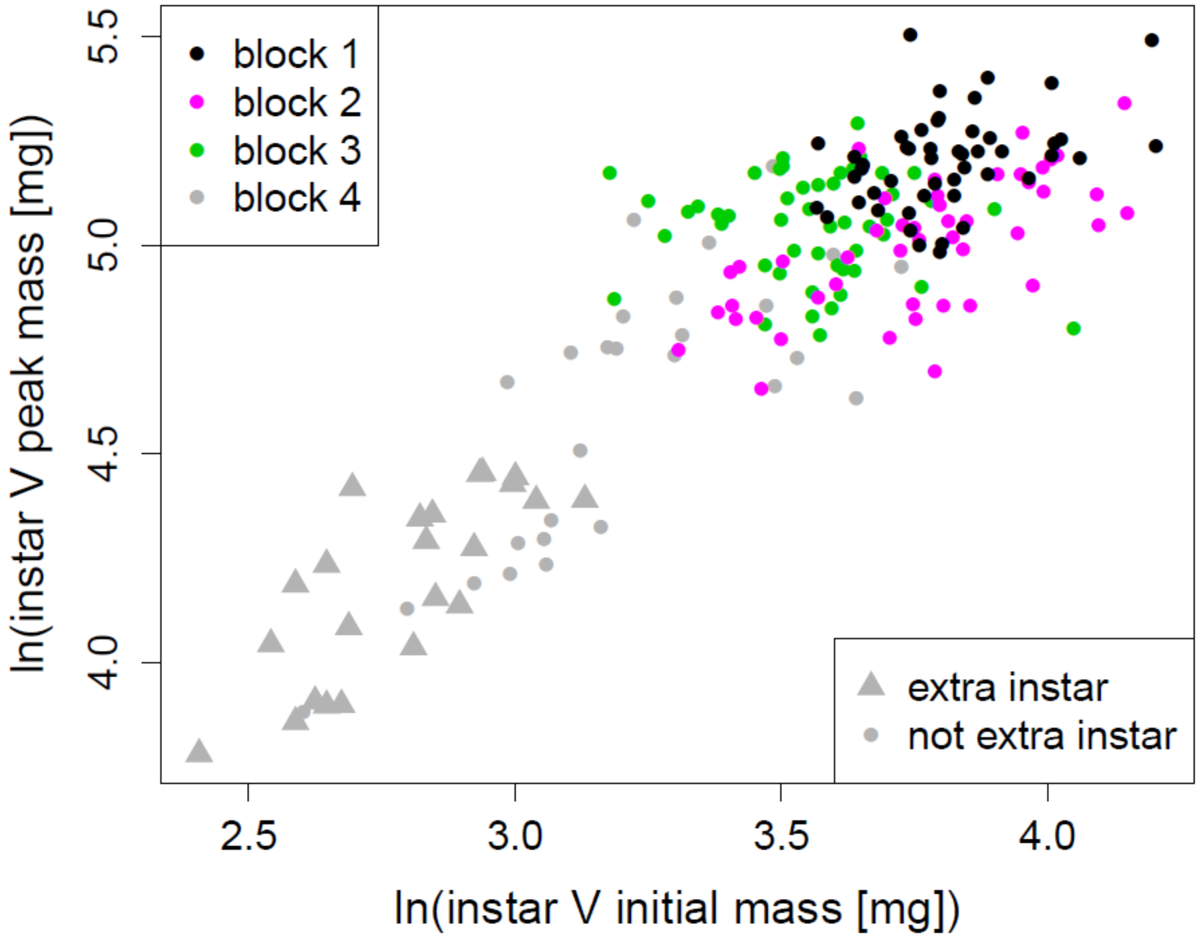

Figure S2. Peak mass of instar V shown in relation to the initial mass of the instar (both ln-transformed) in the four experimental blocks (indicated by different colours). The figure illustrates the decreasing trend in body size in the focal instar across experimental blocks due to increasing degree of delay in egg hatching across the blocks. Hatching of eggs was not delayed in the first block. Part of the individuals of the last (4^{th}) block completed an extra (7^{th}) instar. These individuals are indicated with triangle symbols. Note that the instar V that was exposed to the experimental manipulations was not the penultimate instar, but the third-last one, if an extra larval instar was completed. Individuals having an extra larval instar were not excluded from the analyses because using initial instar V mass as a covariate in all analyses appropriately takes into account variation in number of instars that translates into size variation. There was also no difference in the relative mass increment between individuals having an extra instar and those not having it in the last experimental block (i.e. the only block where an extra instar was observed; data not shown).

Table S1. Sets of models with nonzero Akaike wights for the ln-transformed relative mass increment and growth rate as well as untransformed critical mass and growth duration in the penultimate (V) larval instar in *Orthosia gothica*.

Trait	**Model[a]**	**df**	**AIC$_c$**	**ΔAIC$_c$**	**Akaike weight**
Relative mass increment	12347	10	-188.75	0	0.33
	123467	12	-187.39	1.36	0.17
	1234	9	-187.14	1.61	0.15
	123	8	-186.35	2.40	0.10
	12346	11	-186.00	2.75	0.08
	123457	12	-184.93	3.82	0.05
	1234567	14	-183.45	5.30	0.02
	12345	11	-183.38	5.37	0.02
	1235	10	-182.92	5.83	0.02
	124	8	-182.91	5.84	0.02
	12	7	-182.23	6.52	0.01
	123456	13	-182.13	6.62	0.01
	1246	10	-181.88	6.87	0.01
Critical mass	1235	10	1217.19	0	0.56
	12345	11	1218.89	1.70	0.24
	123457	12	1220.70	3.51	0.10
	123456	13	1221.28	4.09	0.07
	1234567	14	1222.97	5.78	0.03
Growth rate	1246	10	-136.86	0	0.44
	12346	11	-135.52	1.34	0.22
	123467	12	-134.12	2.74	0.11
	124	8	-132.54	4.33	0.05
	123456	13	-132.44	4.42	0.05
	14	6	-131.89	4.97	0.04
	1234567	14	-131.12	5.74	0.02
	1234	9	-130.85	6.02	0.02
	134	7	-130.03	6.83	0.01
	12347	10	-129.47	7.39	0.01
	1347	8	-128.55	8.32	0.01
Growth duration	23467	11	179.48	0	0.18
	123467	12	179.52	0.04	0.18
	246	9	179.82	0.34	0.15
	1246	10	179.85	0.38	0.15
	12346	11	181.58	2.10	0.06
	2346	10	181.62	2.14	0.06
	234567	13	182.90	3.42	0.03
	347	7	183.09	3.61	0.03
	1234567	14	183.10	3.62	0.03
	4	5	183.22	3.74	0.03
	34	6	184.73	5.25	0.01

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	23456	12	184.99	5.51	0.01
	1347	8	185.01	5.53	0.01
	14	6	185.11	5.63	0.01
	123456	13	185.12	5.64	0.01
	2345678	15	185.22	5.74	0.01
	12345678	16	185.23	5.76	0.01
	134	7	186.60	7.12	0.01

[a] The numbers refer to model terms as follows: 1=initial mass, 2=oxygen manipulation (pO_2), 3=sex, 4=temperature manipulation (T), 5= pO_2 × sex, 6= pO_2 × T, 7=sex × T, 8= pO_2 × sex × T

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