

# **Supplementary Material S6.1**

## **Thermal reaction norms of moth species and their host plant specialisation: specialists face a dual risk**

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**Tab. S6.1.1:** list of species and according host plants used during the experiment and degree of specialization

Species	Family	Host plant	Degree of specialisation
<i>Acronicta rumicis</i>	Noctuidae	<i>Salix caprea</i>	4
<i>Agrotis exclamationis</i>	Noctuidae	<i>Taraxacum officinale</i>	4
<i>Autographa gamma</i>	Noctuidae	<i>Urtica dioica</i>	4
<i>Autographa pulchrina</i>	Noctuidae	<i>Urtica dioica</i>	4
<i>Axylia putris</i>	Noctuidae	<i>Galium album</i>	3
<i>Calliteara pudibunda</i>	Geometridae	<i>Fagus sylvatica</i>	4
<i>Campaea margaritaria</i>	Geometridae	<i>Fagus sylvatica</i>	4
<i>Catarhoe cuculata</i>	Geometridae	<i>Galium album</i>	1
<i>Ceramica pisi</i>	Noctuidae	<i>Salix caprea</i>	4
<i>Charanyca trigrammica</i>	Noctuidae	<i>Plantago lanceolata</i>	3
<i>Colocasia coryli</i>	Noctuidae	<i>Fagus sylvatica</i>	4
<i>Eilema griseola</i>	Erebidae	<i>Lactuca sativa</i>	1
<i>Epirrhoe alternata</i>	Geometridae	<i>Galium album</i>	1
<i>Euplexia lucipara</i>	Noctuidae	<i>Corylus avellana</i>	4
<i>Hada plebeja</i>	Noctuidae	<i>Taraxacum officinale</i>	2
<i>Hoplodrina sp.</i>	Noctuidae	<i>Urtica dioica</i>	4
<i>Hypomecis roboraria</i>	Geometridae	<i>Quercus robur</i>	3
<i>Idaea deversaria</i>	Geometridae	<i>Quercus robur</i>	1
<i>Lacanobia oleracea</i>	Noctuidae	<i>Urtica dioica</i>	4
<i>Macdunnoughia confusa</i>	Noctuidae	<i>Urtica dioica</i>	4
<i>Miltochrista miniata</i>	Noctuidae	<i>Lactuca sativa</i>	1
<i>Ochropleura plecta</i>	Noctuidae	<i>Plantago lanceolata</i>	4
<i>Phlogophora meticulosa</i>	Noctuidae	<i>Urtica dioica</i>	4
<i>Phragmatobia fuliginosa</i>	Erebidae	<i>Rubus fruticosus</i>	4
<i>Pseudoips prasinana</i>	Nolidae	<i>Fagus sylvatica</i>	3
<i>Scotopteryx chenopodiata</i>	Geometridae	<i>Vicia sepium</i>	2
<i>Spilosoma lubricipeda</i>	Erebidae	<i>Taraxacum officinale</i>	4
<i>Spilosoma lutea</i>	Erebidae	<i>Taraxacum officinale</i>	4
<i>Xanthorhoe montanata</i>	Geometridae	<i>Rumex crispus</i>	4
<i>Xestia c-nigrum</i>	Noctuidae	<i>Rubus fruticosus</i>	4

**Tab. S6.1.2:** Absolute number of clutches per species and number of individuals per clutch in all three vivaria

Species	Number of clutches	Individuals per clutch
<i>Acronicta rumicis</i>	1	105
<i>Agrotis exclamationis</i>	15	10 x 105   2 x 104   92   72   70
<i>Autographa gamma</i>	5	95   85   84   65   54
<i>Autographa pulchrina</i>	1	41
<i>Axylia putris</i>	1	105
<i>Calliteara pudibunda</i>	1	78
<i>Campaea margaritaria</i>	2	105   68
<i>Catarhoe cuculata</i>	1	48
<i>Ceramica pisi</i>	1	105
<i>Charanyca trigrammica</i>	1	105
<i>Colocasia coryli</i>	1	102
<i>Eilema griseola</i>	1	44
<i>Epirrhoe alternata</i>	1	60
<i>Euplexia lucipara</i>	1	55
<i>Hada plebeja</i>	1	105
<i>Hoplodrina sp.</i>	1	105
<i>Hypomecis roboraria</i>	1	48
<i>Idaea deversaria</i>	1	48
<i>Lacanobia oleracea</i>	1	105
<i>Macdunnoughia confusa</i>	2	105   90
<i>Mitochondria miniata</i>	1	105
<i>Ochropleura plecta</i>	4	105   90   84   80
<i>Phlogophora meticulosa</i>	2	50   105
<i>Phragmatobia fuliginosa</i>	3	3 x 105
<i>Pseudoips prasinana</i>	2	45   29
<i>Scotopteryx chenopodiata</i>	1	52
<i>Spilosoma lubricipeda</i>	3	105   82   47
<i>Spilosoma lutea</i>	1	105
<i>Xanthorhoe montanata</i>	3	96   49   33
<i>Xestia c-nigrum</i>	3	2 x 105   38

**Tab. S6.1.3:** Pairwise analysis between two treatments. Results of the Tukey-test of the survival rate 5, 20 and 40 days after hatching, larval development, pupal weight and growth rate.

	Treatm. 1	Treatm. 2	<i>z</i>	<i>p</i>	
Survival rate after 5 days	+ 4 °C	control	-2.578	0.027	*
	+ 8°C	control	-5.429	< 0.001	***
	+ 8°C	+ 4 °C	-2.852	0.012	*
Survival rate after 20 days	+ 4 °C	control	-4.351	< 0.001	***
	+ 8°C	control	-7.132	< 0.001	***
	+ 8°C	+ 4 °C	-2.781	0.151	*
Survival rate after 40 days	+ 4 °C	control	-4.441	< 0.001	***
	+ 8°C	control	-7.028	< 0.001	***
	+ 8°C	+ 4 °C	-2.587	0.026	*
Larval development	+ 4 °C	control	-12.866	< 0.0001	***
	+ 8°C	control	-14.181	< 0.0001	***
	+ 8°C	+ 4 °C	-3.029	0.001	***
Pupae mass	+ 4 °C	control	0.412	0.911	
	+ 8°C	control	-2.933	0.009	**
	+ 8°C	+ 4 °C	-3.444	< 0.002	***
Growth rate	+ 4 °C	control	9.492	< 0.0001	***
	+ 8°C	control	7.627	< 0.0001	***
	+ 8°C	+ 4 °C	-0.760	0.727	

**Tab. S6.1.4:** Results of the Tukey-test of the survival rate 5, 20 and 40 days after hatching, larval development, pupal weight and growth rate within each host-plant category.

		Treatm. 1	Treatm. 2	<i>z</i>	<i>p</i>	
Survival rate after 5 days	Narrow specialists	+ 4 °C	control	-0.557	0.843	
		+ 8°C	control	-2.971	0.008	**
		+ 8°C	+ 4 °C	-2.414	0.041	*
	Moderate specialists	+ 4 °C	control	-1.265	0.415	
		+ 8°C	control	-4.131	< 0.001	***
		+ 8°C	+ 4 °C	-2.867	0.012	*
	Moderate generalists	+ 4 °C	control	-2.435	0.0395	*
		+ 8°C	control	-1.343	0.372	
		+ 8°C	+ 4 °C	1.092	0.519	
	Wide generalists	+ 4 °C	control	-2.06	0.098	.
		+ 8°C	control	-4.147	< 0.001	***
		+ 8°C	+ 4 °C	-2.087	0.093	.
Survival rate after 20 days	Narrow specialists	+ 4 °C	control	-2.294	0.055	.
		+ 8°C	control	-3.222	0.003	**
		+ 8°C	+ 4 °C	-0.927	0.623	
	Moderate specialists	+ 4 °C	control	-3.384	0.002	**
		+ 8°C	control	-4.137	< 0.001	***
		+ 8°C	+ 4 °C	-0.753	0.732	
	Moderate generalists	+ 4 °C	control	-0.75	0.734	
		+ 8°C	control	-0.892	0.645	
		+ 8°C	+ 4 °C	-0.142	0.989	
	Wide generalists	+ 4 °C	control	-3.574	< 0.001	***
		+ 8°C	control	-6.215	< 0.001	***
		+ 8°C	+ 4 °C	0.023	0.023	*
Survival rate after 40 days	Narrow specialists	+ 4 °C	control	-1.305	0.393	
		+ 8°C	control	-2	0.112	
		+ 8°C	+ 4 °C	-0.696	0.766	
	Moderate specialists	+ 4 °C	control	-1.269	0.413	
		+ 8°C	control	-0.851	0.671	
		+ 8°C	+ 4 °C	0.418	0.908	
	Moderate generalists	+ 4 °C	control	-1.275	0.409	
		+ 8°C	control	-1.758	0.184	
		+ 8°C	+ 4 °C	-0.483	0.879	
	Wide generalists	+ 4 °C	control	-3.789	< 0.001	***
		+ 8°C	control	-6.401	< 0.001	***
		+ 8°C	+ 4 °C	-2.613	0.024	*
Larval development	Narrow specialists	+ 4 °C	control	-0.195	0.846	
	Moderate specialists	+ 4 °C	control	-1.005	0.315	
	Moderate generalists	+ 4 °C	control	-8.525	< 0.0001	***
		+ 8°C	control	-5.529	< 0.0001	***
	Wide generalists	+ 8°C	+ 4 °C	0.549	0.845	
		+ 4 °C	control	-10.011	< 0.0001	***
		+ 8°C	control	-13.117	< 0.0001	***
		+ 8°C	+ 4 °C	-4.099	< 0.001	***
Pupae mass	Narrow specialists	+ 4 °C	control	0.526	0.599	
	Moderate specialists	+ 4 °C	control	-0.369	0.712	
	Moderate generalists	+ 4 °C	control	3.587	< 0.001	***
		+ 8°C	control	-0.542	0.848	
	Wide generalists	+ 8°C	+ 4 °C	-3.308	0.002	**
		+ 4 °C	control	-1.058	0.54	
		+ 8°C	control	-3.378	0.002	**
		+ 8°C	+ 4 °C	-2.526	0.031	*
Growth rate	Narrow specialists	+ 4 °C	control	1.254	0.21	
	Moderate specialists	+ 4 °C	control	2.003	0.045	*

	Treatm. 1	Treatm. 2	<i>z</i>	<i>p</i>	
Moderate generalists	+ 4 °C	control	6.775	< 0.001	***
	+ 8°C	control	2.229	0.065	.
	+ 8°C	+ 4 °C	-2.753	0.016	*
Wide generalists	+ 4 °C	control	6.652	< 0.0001	***
	+ 8°C	control	7.047	< 0.0001	***
	+ 8°C	+ 4 °C	0.947	0.61	