

Table S1

Coefficients of the linear model fitted to data for Body mass (Mb) of *Phyllotis darwini* re-acclimated to opposite treatment during the adulthood. Significant differences are in bold.

Effect	Coefficient	SE	DE	T	P
Cold-Unrestricted water → Warm-Unrestricted water					
Intercept	1.67	0.01	15	118	<0.001
Male	0.05	0.01	8	2.8	0.02
Week 1	0.00	0.01	36	0	0.97
Week 2	0.00	0.01	36	1.4	0.16
Week 3	0.03	0.01	36	2.3	0.02
Week 4	0.03	0.01	36	2.4	0.02
Cold-Restricted water → Warm-Restricted restricted					
Intercept	40.54	3.03	7	13.4	<0.001
male	6.82	3.23	4	2.1	0.09
Week 1	-0.59	1.45	32	-0.4	0.68
Week 2	-1.72	1.45	32	-1.2	0.24
Week 3	-1.82	1.45	32	-1.3	0.21
Week 4	-0.83	1.45	32	-0.6	0.56
Cold-Unrestricted water → Warm-Restricted water					
Intercept	47.99	1.90	11	24.1	<0.001
male	10.34	2.58	8	4.0	<0.001
Week 1	-5.94	1.25	36	-4.7	<0.001
Week 2	-5.35	1.25	36	-4.3	<0.001
Week 3	-4.37	1.25	36	-3.5	<0.001
Week 4	-4.97	1.25	36	-4.0	<0.001
Cold-Restricted water → Warm-Unrestricted water					
Intercept	40.82	2.36	11	17.2	<0.001
male	8.15	1.71	38	4.7	<0.001
Week 1	-1.76	1.90	33	-0.9	0.35
Week 2	-3.32	1.90	33	-1.7	0.08
Week 3	0.04	1.90	33	0.2	0.83
Week 4	3.01	1.90	33	1.6	0.12
Warm-Unrestricted water → Cold-Unrestricted water					
Intercept	1.64	0.01	16	101	<0.001
male	0.09	0.02	34	6.4	<0.001
Week 1	0.01	0.03	37	1.2	0.213
Week 2	0.01	0.04	37	1.2	0.253
Week 3	0.01	0.05	37	1.0	0.334
Week 4	0.01	0.06	37	1.2	0.245
Warm-Restricted water → Cold-Restricted water					
Intercept	36.72	2.05	14	17.9	<0.001
male	6.63	2.45	10	2.7	0.022
Week 1	2.09	1.23	40	1.7	0.097
Week 2	2.02	1.23	40	1.6	0.108
Week 3	0.51	1.23	40	0.4	0.681
Week 4	1.62	1.23	40	1.3	0.194
Warm-Unrestricted water → Cold-Restricted water					
Intercept	1.66	0.03	13	50.3	<0.001
male	0.10	0.03	32	3.0	0.054
Week 1	-0.02	0.03	28	-0.5	0.597
Week 2	0.03	0.03	28	0.9	0.363
Week 3	-0.02	0.03	28	-0.6	0.547
Week 4	-0.03	0.03	28	-0.9	0.374
Warm-Restricted water → Cold-Unrestricted water					
Intercept	41.65	1.54	14	27	<0.001
male	3.29	1.92	7	1.7	0.130
Week 1	3.89	1.36	32	2.9	0.008
Week 2	4.83	1.36	32	3.5	0.001
Week 3	2.96	1.36	32	2.2	0.038
Week 4	4.46	1.36	32	3.3	0.003

Table S2

Coefficients of the linear model fitted to data for Basal metabolic rate (BMR) of *Phyllotis darwini* re-acclimated to opposite treatment during adulthood. Significant differences are in bold

Effect	Coefficient	SE	DE	T	P
Cold-Unrestricted water → Warm-Unrestricted water					
Intercept	0.69	0.03	11	21.2	<0.001
male	-0.01	0.02	1	-0.2	0.84
Week 1	0.06	0.04	36	1.5	0.13
Week 2	0.11	0.04	36	2.4	0.01
Week 3	0.15	0.04	36	3.5	0.001
Week 4	0.17	0.042	36	4.0	<0.001
Cold-Restricted water → Warm-Restricted restricted					
Intercept	0.28	0.03	17	10.2	<0.001
male	-0.06	0.02	37	-3.2	0.003
Week 1	-0.06	0.03	34	-2.1	0.043
Week 2	-0.09	0.03	34	-3.5	0.001
Week 3	-0.13	0.03	34	-4.9	<0.001
Week 4	-0.11	0.03	34	-4.1	<0.001
Cold-Unrestricted water → Warm-Restricted water					
Intercept	0.43	0.04	29	8.9	<0.001
male	0.08	0.04	8	1.8	0.1
Week 1	0.19	0.05	36	3.5	<0.001
Week 2	0.30	0.05	36	5.3	<0.001
Week 3	0.24	0.05	36	4.4	<0.001
Week 4	0.21	0.05	36	3.7	<0.001
Cold-Restricted water → Warm-Unrestricted water					
Intercept	0.23	0.03	31	7.8	<0.001
male	-0.03	0.03	31	-1.2	0.23
Week 1	-0.04	0.03	34	-1.2	0.23
Week 2	-0.06	0.03	34	-1.9	0.06
Week 3	-0.06	0.03	34	-1.8	0.07
Week 4	-0.02	0.03	34	-0.7	0.5

Effect	Coefficient	SE	DE	T	P
Warm-Unrestricted water → Cold-Unrestricted water					
Intercept	1.52	0.10	12	15.5	<0.001
male	-0.17	0.09	23	-1.8	0.08
Week 1	0.14	0.09	38	1.5	0.14
Week 2	0.12	0.09	38	1.3	0.2
Week 3	0.06	0.09	38	0.7	0.51
Week 4	0.17	0.09	38	1.8	0.07
Warm-Restricted water → Cold-Restricted water					
Intercept	15.59	0.15	20	10.3	<0.001
male	-0.10	0.15	8	-0.7	0.510
Week 1	-0.03	0.15	36	-0.2	0.825
Week 2	-0.05	0.15	36	-0.3	0.745
Week 3	-0.06	0.15	36	-0.4	0.688
Week 4	0.05	0.15	36	0.4	0.717
Warm-Unrestricted water → Cold-Restricted water					
Intercept	1.40	0.08	34	18.4	<0.001
male	0.15	0.08	34	1.9	0.064
Week 1	0.01	0.10	34	0.1	0.958
Week 2	0.04	0.10	34	0.4	0.708
Week 3	0.06	0.10	34	0.6	0.583
Week 4	0.15	0.10	34	1.5	0.156
Warm-Restricted water → Cold-Unrestricted water					
Intercept	1.57	0.08	33	20.7	<0.001
male	-0.25	0.07	7	-3.7	0.008
Week 1	-0.02	0.10	32	-0.2	0.827
Week 2	0.09	0.10	32	1.0	0.348
Week 3	0.04	0.10	32	0.4	0.693
Week 4	0.14	0.10	32	1.4	0.165

Table S3

Coefficients of the linear model fitted to data for Total evaporative water loss (TEWL) of *Phyllotis darwini* re-acclimated to opposite treatment during adulthood. Significant differences are in bold

Effect	Coefficient	SE	DE	T	P
Cold-Unrestricted water → Warm-Unrestricted water					
Intercept	0.33	0.047	14	7.2	<0.001
male	-0.01	0.04	29	-0.3	0.80
Week 1	-0.04	0.05	40	-0.8	0.41
Week 2	-0.01	0.05	40	-0.2	0.82
Week 3	-0.05	0.05	40	-0.9	0.36
Week 4	-0.11	0.05	40	-2.2	0.03
Cold-Restricted water → Warm-Restricted restricted					
Intercept	0.35	0.05	18	7.6	<0.001
male	-0.07	0.04	2	-1.8	0.189
Week 1	-0.01	0.05	32	-0.3	0.799
Week 2	0.01	0.05	32	0.3	0.769
Week 3	-0.06	0.05	32	-1.1	0.268
Week 4	-0.10	0.05	32	-2.1	0.051
Cold-Unrestricted water → Warm-Restricted water					
Intercept	0.67	0.03	24	20	<0.001
male	0.08	0.03	8	2.3	0.05
Week 1	0.08	0.03	36	2.4	0.02
Week 2	0.09	0.03	36	2.7	0.009
Week 3	0.19	0.03	36	5.4	<0.001
Week 4	0.20	0.03	36	6.7	<0.001
Cold-Restricted water → Warm-Unrestricted water					
Intercept	2.10	0.15	8	13.2	<0.001
male	-0.02	0.10	13	-2.2	0.04
Week 1	-0.06	0.13	34	-0.5	0.61
Week 2	-0.16	0.13	34	-1.2	0.22
Week 3	-0.08	0.13	34	-0.6	0.52
Week 4	-0.18	0.13	34	-1.3	0.17

Effect	Coefficient	SE	DE	T	P
Warm-Unrestricted water → Cold-Unrestricted water					
Intercept	0.15	0.04	21	4.0	<0.001
male	-0.02	0.04	7	-0.6	0.586
Week 1	0.13	0.04	36	3.1	0.004
Week 2	0.12	0.04	36	2.9	0.005
Week 3	0.13	0.04	36	3.2	0.002
Week 4	0.19	0.04	36	4.6	<0.001
Warm-Restricted water → Cold-Restricted water					
Intercept	1.84	0.16	21	11.3	<0.001
male	-0.26	0.16	8	-1.6	0.142
Week 1	-0.22	0.17	36	-1.3	0.203
Week 2	-0.16	0.17	36	-1.0	0.338
Week 3	-0.06	0.17	36	-0.3	0.739
Week 4	0.21	0.17	36	1.3	0.212
Warm-Unrestricted water → Cold-Restricted water					
Intercept	1.47	0.10	16	15.1	<0.001
male	-0.05	0.09	33	-0.6	0.585
Week 1	0.18	0.12	32	1.5	0.145
Week 2	0.16	0.12	32	1.3	0.210
Week 3	0.20	0.12	32	1.7	0.109
Week 4	0.35	0.12	32	2.9	0.007
Warm-Restricted water → Cold-Unrestricted water					
Intercept	0.25	0.03	19	8.1	<0.001
male	-0.04	0.03	7	-1.3	0.252
Week 1	-0.02	0.03	32	-0.5	0.600
Week 2	-0.04	0.03	32	-1.2	0.224
Week 3	0.00	0.03	32	0.0	0.979
Week 4	0.03	0.03	32	1.0	0.331

Table S4

Coefficients of the linear model fitted to data for organs, renal function and renal structure of *Phyllotis darwini*. Individuals were re-acclimated during adults either cold or warm temperatures and to either *ad libitum* water or restricted water conditions. Significant differences are in bold ($p < 0.05$)

Variable	Estimate	SE	df	T	P
Cold-Unrestricted water					
<i>SI (g)</i>					
Intercept	1.31	0.07	32	19.5	<0.001
Warm-Unrestricted water	-0.10	0.09	32	-1.14	0.263
Warm-Restricted water	-0.37	0.08	32	-4.91	<0.001
<i>Kidney (g)</i>					
Intercept	0.47	0.01	38	34.5	<0.001
Male	0.11	0.02	38	5.17	<0.001
<i>Stomach (g)</i>					
Intercept	0.69	0.03	13	22.2	<0.001
Male	0.13	0.04	37	2.94	0.005
<i>Heart (g)</i>					
Intercept	0.20	0.01	10	14.7	<0.001
Male	0.06	0.02	38	3.62	<0.001
<i>Liver (g)</i>					
Intercept	0.45	0.21	37	2.13	0.0399
Body mass (g)	0.03	0.00	37	6.39	<0.001
<i>UCA(mosm/kg)</i>					
Intercept	2718.3	213.8	25	12.72	<0.001
Warm-Unrestricted water	254.5	327.7	18	0.78	0.447
Warm-Restricted water	146.6	275.6	22	0.53	0.6
Male	-10.6	301.9	25	-0.04	0.972
Warm-Unrestricted water*Male	112.6	514.8	22	0.22	0.829
Warm-Restricted water* Male	219.8	386.5	23	0.57	0.575
<i>RMT/g</i>					
Intercept	2765.7	304.8	19	9.07	<0.001
Warm-Unrestricted water	-500.5	373.3	19	-1.34	0.196
Warm-Restricted water	501.8	403.3	19	1.24	0.228
Male	59.8	403.3	19	0.15	0.884
Warm-Unrestricted water*Male	321.3	549.5	19	0.59	0.566
Warm-Restricted water* Male	-293.7	536.7	19	-0.55	0.591
Cold-Restricted water					
<i>Kidney</i>					
Intercept	0.13	0.06	22	2.41	0.0245
Body mass (g)	0.01	0.00	22	6.10	<0.001
<i>Liver</i>					
Intercept	0.14	0.30	22	0.48	0.639
Body mass (g)	0.036	0.01	22	5.11	<0.001
<i>RMT/g</i>					
Intercept	106.575	0.053	10	20.15	<0.001
Male	-0.209	0.076	13	-2.74	0.017
Warm-Unrestricted water					
<i>Pancrea (g)</i>					
Intercept	-0.02	0.02	19	-0.99	0.333
Male	0.00	0.00	18	4.23	<0.001
<i>Liver (g)</i>					
Intercept	1.61	0.08	18	19.34	<0.001
Male	0.43	0.09	17	4.75	<0.001
<i>UCA(mosm/kg)</i>					
Intercept	3603.2	230.4	18	15.64	<0.001
Cold-Unrestricted water	-1120.8	317.0	15	-3.54	0.003
Cold-Restricted water	112.2	317.2	19	0.35	0.728
Male	-47.6	293.2	19	-0.16	0.873
Cold-Unrestricted water*Male	597.9	456.5	14	1.31	0.211
Cold-Restricted*Male	489.5	493.1	17	0.99	0.335
<i>RMT/g</i>					
Intercept	1	0.058	23	20.39	<0.001
Cold-Unrestricted water	-0.307	0.071	23	-4.34	<0.001
Cold-Restricted water	-0.267	0.075	23	-3.58	0.002
Male	-0.232	0.062	23	-3.76	0.001
Warm restricted water					
<i>SI (g)</i>					
Intercept	0.58	0.18	23	3.20	0.004
Cold-Unrestricted water	0.29	0.07	23	4.31	<0.001
Cold-Restricted water	0.11	0.07	23	1.59	0.126
Body mass (g)	0.01	0.00	23	3.23	0.004
<i>Kidney (g)</i>					
Intercept	0.51	0.02	21	20.7	<0.001
Male	0.14	0.02	22	5.62	<0.001
Cold-Unrestricted water	-0.03	0.03	19	-1.10	0.285
Cold-Restricted water	-0.16	0.03	23	-5.83	<0.001
<i>Pancrea (g)</i>					
Intercept	-0.02	0.02	19	-0.99	0.333
Body mass (g)	0.00	0.00	18	4.23	<0.001
<i>Liver (g)</i>					
Intercept	1.61	0.08	18	19.3	<0.001
Male	0.43	0.09	17	4.75	<0.001
<i>UCA(mosm/kg)</i>					
Intercept	3665.8	234.2	16	15.65	<0.001
Cold-Unrestricted water	-534.5	337.6	9	-1.58	0.147
Cold-Restricted water	-1356.3	354.3	13	-3.83	0.002
Female	-389.0	451.6	11	-0.86	0.407
Male	-577.7	335.2	17	-1.72	0.103
Cold-Unrestricted water*Male	497.1	593.6	17	0.84	0.414

SI (g)							
Intercept	1	0.05	24	21.8	<0.001		
Cold-Unrestricted water	0.35	0.08	24	4.59	<0.001		
Cold-Restricted water	0.07	0.08	24	0.9	0.377		
Kidney (g)							
Intercept	0.34	0.02	20	15	<0.001		
Male	0.14	0.02	22	5.62	<0.001		
Cold-Unrestricted water	0.16	0.03	23	5.83	<0.001		
Cold-Restricted water	0.13	0.03	14	4.34	<0.001		
						Cold-Restricted*Male	860.7
							501.0
							16
							1.72
							0.105
						RMT/g	
						Intercept	1.096
						Cold-Unrestricted water	-0.256
						Cold-Restricted water	-0.205
						Male	-0.214
							0.046
							25
							23.73
							<0.001
							-5.07
							<0.001
							-3.98
							<0.001
							-5.22
							<0.001

Table S5

Model selection *Phyllotis darwini* re-acclimated during adulthood to temperature and water availability treatments. The variables included in each model, the degrees of freedom (Df), Information Criteria for finite samples (AICc), Delta AIC (Δi) and model weights (wi) are listed. Variables tested within each model include Basal metabolic rate (BMR), Total evaporative water loss (TEWL), Body mass (Mb), enzymatic activity (CS and COX), relative medullary thickness (RMT), urine capability ability (UCA) and organ mass (liver, lung, kidney, heart, pancrea, stomach, small intestine (SI) and large intestine (LI). Shaded rows represent the models with substantial support (Δi). The predictor variables for each model are: Treatment (1), gender (2), and body mass (3)

Variable	Model	DF	logLik	AICc	Δi	weight
Cold-Unrestricted water						
CS (Umol/min g)	null	4	72.2	-134	0.00	0.97
COX (Umol/min g)	1	6	-58.2	132	0.00	0.70
COX (Umol/min g)	1, 2	7	-57.2	134	1.68	0.30
RMT/g	null	4	5.30	-0.9	0.00	0.77
UCA (mosm/kg)	1, 2 1:2	9	-194	415	0.00	1.00
Lung (g)	null	4	61.8	-114	0.00	0.97
SI (g)	1	6	-5.57	25.7	0.00	0.55
SI (g)	null	4	-8.95	27.0	1.34	0.28
LI (g)	null	4	21.5	-33.9	0.00	0.91
Kidney (g)	2	5	45.3	-78.9	0.00	0.70
Stomach (g)	2	5	21.1	-30.5	0.00	0.51
Stomach (g)	null	4	19.4	-29.7	0.86	0.33
Heart (g)	2	5	56.4	-101	0.00	0.53
Heart (g)	3	5	55.9	-100	1.16	0.30
Pancrea (g)	null	4	102	-195	0.00	0.92
Liver (g)	3	5	-2.54	16.8	0.00	0.59
Liver (g)	3, 2:3	6	-1.89	18.3	1.47	0.28
Cold-Restricted water						
CS (Umol/min g)	1	6	0.85	16.3	0.00	0.49
CS (Umol/min g)	1, 2	7	2.90	16.8	0.52	0.38
COX (Umol/min g)	null	4	-2.21	14.9	0.00	0.92
RMT/g	2	5	-3.31	20.0	0.00	0.63
RMT/g	null	4	-5.53	21.2	1.22	0.34
UCA (mosm/kg)	1, 2 1:2	9	-150	331	0.00	1.00
Lung (g)	null	4	46.6	-83.1	0.00	0.83
SI (g)	null	4	8.70	-7.3	0.00	0.86
LI (g)	null	4	24.1	-38.2	0.00	0.79
Kidney (g)	3	5	34.2	-55.0	0.00	0.97
Stomach (g)	null	4	18.9	-27.7	0.00	0.98
Heart (g)	null	4	39.7	-69.4	0.00	0.63
Heart (g)	2	5	40.7	-68.1	1.30	0.33
Pancrea (g)	null	4	60.3	-110	0.00	1.00
Liver (g)	3	5	-3.22	19.8	0.00	0.91
Warm-Unrestricted water						
CS (Umol/min g)	1	6	7.18	2.6	0.00	0.96
COX (Umol/min g)	1	6	10.4	-2.7	0.00	0.96
RMT/g	1, 2	7	6.21	7.5	0.00	0.37
RMT/g	1, 3	7	5.74	8.4	0.92	0.23
RMT/g	3	5	1.70	9.5	1.97	0.14
UCA (mosm/kg)	1, 2, 1:2	9	-157	343	0.00	1.00
Lung (g)	null	4	48.5	-87.3	0.00	0.99
SI (g)	1	6	5.88	4.4	0.00	0.69
LI (g)	null	4	22.9	-35.9	0.00	0.70
LI (g)	3	5	23.4	-33.9	1.95	0.26
Kidney (g)	1, 2	7	27.6	-35.3	0.00	0.78
Stomach (g)	null	4	-0.58	11.0	0.00	0.91
Heart (g)	null	4	34.0	-58.3	0.00	0.69
Pancrea (g)	3	5	66.9	-121	0.00	0.38
Pancrea (g)	2	5	66.8	-121	0.13	0.35
Pancrea (g)	null	4	65	-120	0.73	0.26
Liver (g)	2	5	-5.53	23.9	0.00	0.81
Warm-Restricted water						
CS (Umol/min g)	null	4	0.42	8.80	0.00	0.80
COX (Umol/min g)	null	4	-35.8	81.3	0.00	0.62
RMT/g	1, 2	7	16.4	-14.5	0.00	0.90
UCA (mosm/kg)	1, 2, 1:2	10	-142	319.9	0.00	1.00
Lung (g)	null	4	62.6	-116	0.00	0.75
SI (g)	1, 3	7	8.51	0.70	0.00	0.39
SI (g)	3	5	5.49	0.90	0.19	0.36
LI (g)	null	4	41.9	-74.7	0.00	0.93
Kidney (g)	1, 2	7	42.0	-66.2	0.00	0.76
Stomach (g)	null	4	-0.58	11	0.00	0.91
Heart (g)	null	4	34.0	-58.3	0.00	0.69
Pancrea (g)	3	5	66.9	-121	0.00	0.38
Liver (g)	2	5	-5.53	23.9	0.00	0.81