

Rapid life-history evolution in a wild *Daphnia pulex* population in response to novel size-dependent predation

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Supplementary figures

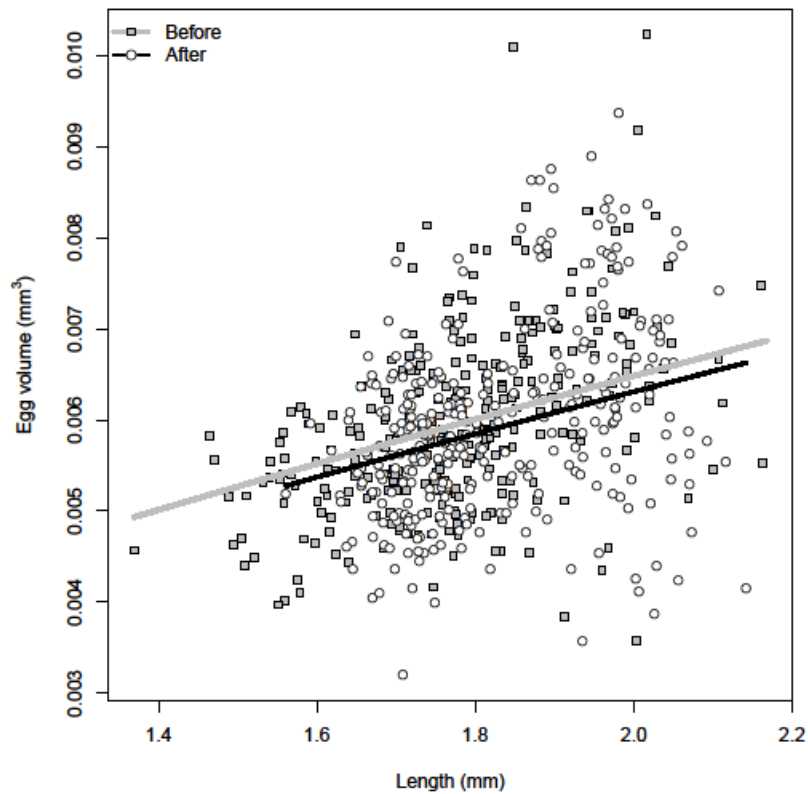


Figure S1 Egg volume–body length relationship. The relationship, fitted to log-log transformed data, is not significantly different between the periods.

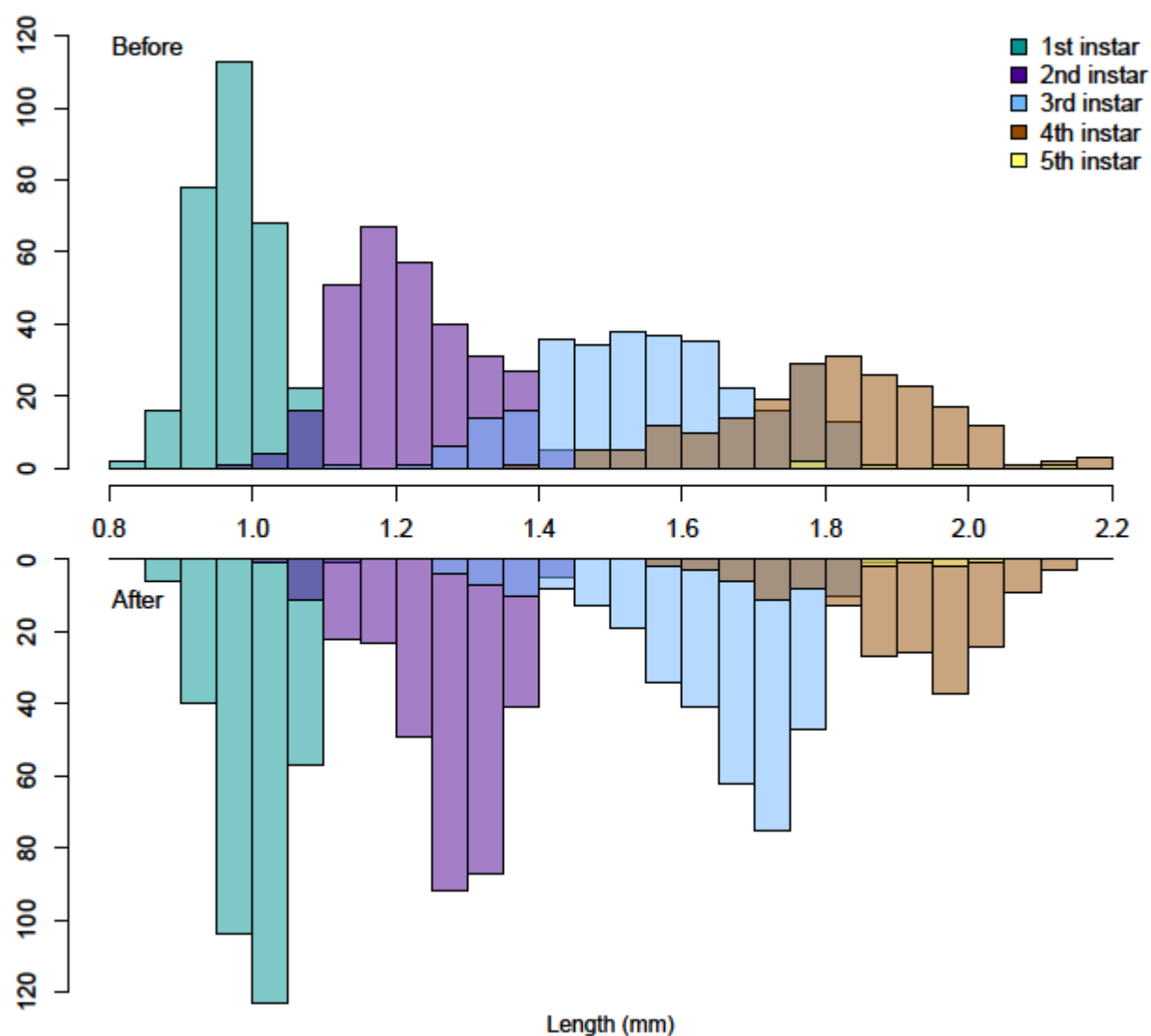


Figure S2 Length distribution per instar before and after the perch introduction. The numbering assumes that the instar observed at 45 hours is the first instar.

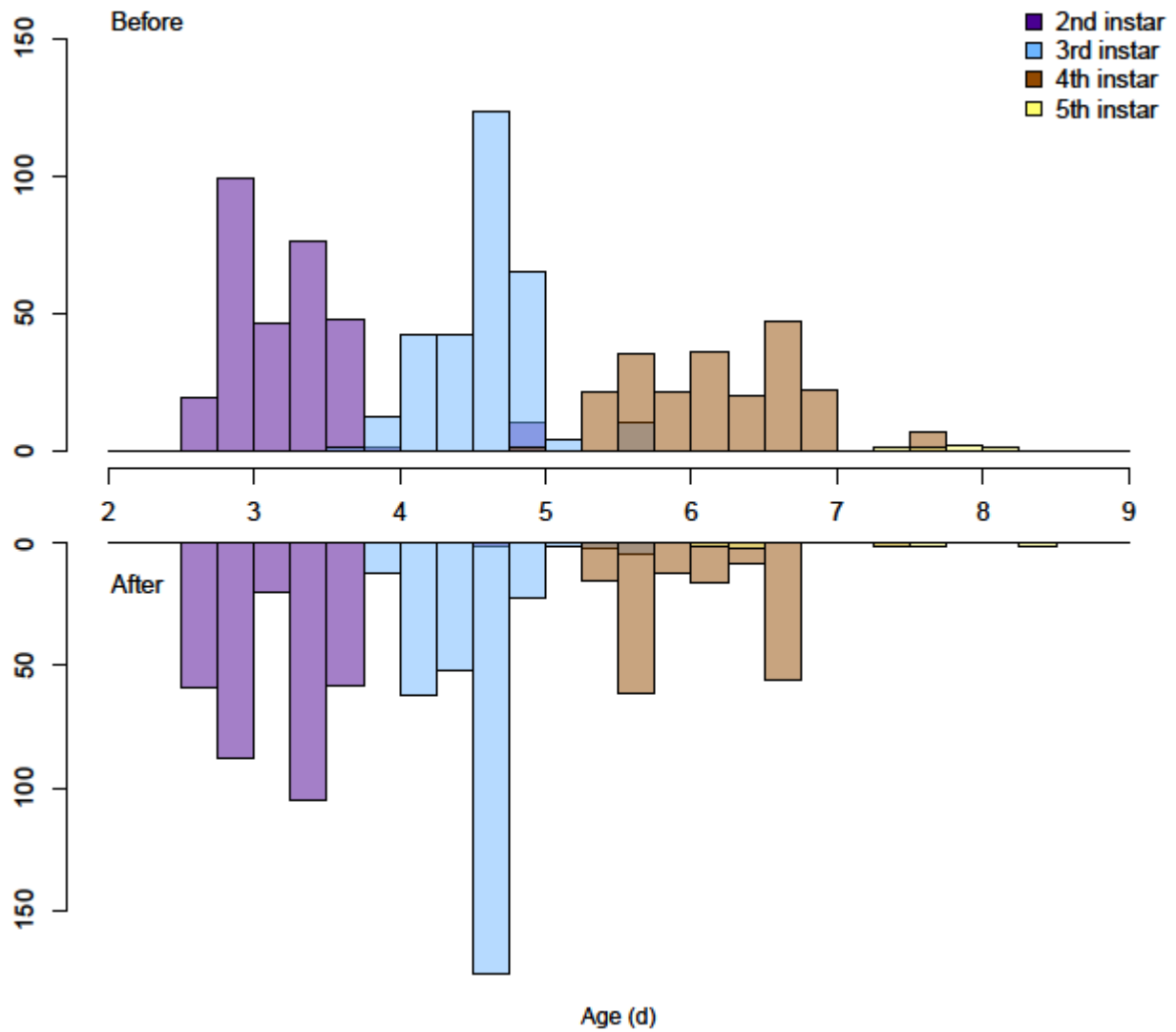


Figure S3 Age distribution per instar before and after the perch introduction. The numbering assumes that the instar observed at 45 hours is the first instar. The first instar is omitted as they all have the same nominal age (45 hours).

Supplementary tables

Key output from (generalized) linear mixed models underlying the key results reported in the main text.

Instar number at maturation

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.1001	0.3164
Residual		0.1436	0.3790

Number of obs: 630, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	3.74907	0.09167	23.16989	40.899	<2e-16	***
Fish.introAfter	-0.23105	0.12593	23.19389	-1.835	0.0794	.
Batch1	0.15570	0.08741	23.36309	1.781	0.0879	.
Batch2	0.08898	0.09537	22.85624	0.933	0.3605	

Age (d) at maturation

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.3123	0.5588
Residual		0.4243	0.6514

Number of obs: 630, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	5.78510	0.16166	23.04040	35.786	< 2e-16	***
Fish.introAfter	-0.49974	0.22208	23.06318	-2.250	0.034270	*
Batch1	0.61190	0.15415	23.22267	3.970	0.000598	***
Batch2	-0.05997	0.16821	22.74385	-0.357	0.724743	

Length (mm) at maturation

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.003983	0.06311
Residual		0.012266	0.11075

Number of obs: 630, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	1.80005	0.01890	23.06734	95.244	<2e-16	***
Fish.introAfter	0.02507	0.02597	23.11079	0.966	0.3443	
Batch1	0.01970	0.01806	23.46491	1.091	0.2864	
Batch2	0.03666	0.01959	22.45005	1.871	0.0744	.

Growth (mm/d) from birth to maturation

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.0010446	0.03232
	Residual	0.0007591	0.02755

Number of obs: 630, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	0.274782	0.009226	23.065748	29.782	<2e-16	***
Fish.introAfter	0.029995	0.012673	23.078785	2.367	0.0267	*
Batch1	-0.027048	0.008790	23.164762	-3.077	0.0053	**
Batch2	0.007020	0.009615	22.901591	0.730	0.4727	

Growth (mm/d) from 45 hours to maturation

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.001189	0.03448
	Residual	0.000977	0.03126

Number of obs: 630, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	0.221938	0.009864	23.067587	22.499	< 2e-16	***
Fish.introAfter	0.028863	0.013550	23.082178	2.130	0.04404	*
Batch1	-0.029856	0.009399	23.179292	-3.177	0.00418	**
Batch2	0.010169	0.010277	22.882922	0.990	0.33275	

Growth (mm/d) from maturation to the instar after the release of the first clutch

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.001107	0.03327
	Residual	0.007258	0.08519

Number of obs: 630, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	0.292765	0.010611	23.189743	27.590	<2e-16	***
Fish.introAfter	-0.034982	0.014587	23.257276	-2.398	0.0249	*
Batch1	0.008224	0.010179	23.978084	0.808	0.4271	
Batch2	-0.003737	0.010936	22.058602	-0.342	0.7358	

Growth ((mm/d)^{0.5}) from maturation to the instar after the release of the 1st clutch

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.0009234	0.03039
Residual		0.0061644	0.07851

Number of obs: 630, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	0.533480	0.009712	23.267831	54.932	<2e-16	***
Fish.introAfter	-0.031872	0.013350	23.336100	-2.387	0.0254	*
Batch1	0.006507	0.009317	24.070926	0.698	0.4917	
Batch2	-0.003113	0.010008	22.118238	-0.311	0.7586	

Growth increment (mm) between the release of the 1st and 2nd clutch

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.0004034	0.02008
Residual		0.0037010	0.06084

Number of obs: 625, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	0.315654	0.006693	24.625181	47.162	<2e-16	***
Fish.introAfter	0.007159	0.009198	24.668443	0.778	0.444	
Batch1	-0.003217	0.006431	25.653764	-0.500	0.621	
Batch2	-0.003739	0.006873	23.113770	-0.544	0.592	

Growth increment (mm) between the release of the 2nd and 3rd clutch

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.0001919	0.01385
Residual		0.0035800	0.05983

Number of obs: 432, groups: Clone, 17

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	0.224006	0.008573	14.741403	26.130	9.3e-14	***
Fish.introAfter	0.010213	0.008930	14.944511	1.144	0.27077	
Batch3	0.029143	0.009005	14.640274	3.236	0.00569	**

Maturation probability during the 2nd to the 5th instar

Random effects:

Groups	Name	Variance	Std.Dev.
Individ	(Intercept)	0.00	0.000
Clone	(Intercept)	5.28	2.298

Number of obs: 1650, groups: Individ, 630; Clone, 27

Fixed effects:

	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	-5.1404	0.6713	-7.658	1.89e-14	***
I(s1 - x.mean)	33.6916	3.0912	10.899	< 2e-16	***
I(a1 - a.mean)	1.8025	0.3649	4.939	7.85e-07	***

Maturation probability during the 3rd instar

Random effects:

Groups	Name	Variance	Std.Dev.
Individ	(Intercept)	1.281e-13	3.579e-07
Clone	(Intercept)	4.136e+00	2.034e+00

Number of obs: 630, groups: Individ, 630; Clone, 27

Fixed effects:

	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	-2.6351	0.5211	-5.057	4.26e-07	***
I(s1 - x.mean)	39.1178	4.1863	9.344	< 2e-16	***

Egg size (mm³) for the 1st clutch

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.003935	0.06273
Residual		0.018243	0.13507

Number of obs: 619, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)	
(Intercept)	-5.11210	0.01940	22.78882	-263.461	< 2e-16	***
log(I(s1/mean.x))	0.72037	0.08971	607.37186	8.030	5.06e-15	***
Fish.introAfter	-0.02694	0.02667	22.86196	-1.010	0.323151	
Batch1	0.07408	0.01861	23.51374	3.981	0.000571	***
Batch2	-0.03453	0.02009	22.06590	-1.718	0.099751	.

Clutch size for the 1st clutch

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.01228	0.1108
Residual		0.05400	0.2324

Number of obs: 611, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)
(Intercept)	2.340792	0.023630	22.720799	99.060	<2e-16 ***
log(I(s1/mean.x))	2.785377	0.153341	603.270734	18.165	<2e-16 ***
Batch1	-0.033944	0.032638	23.523776	-1.040	0.309
Batch2	-0.008349	0.035414	22.621166	-0.236	0.816

Clutch size for the 2nd clutch

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.01075	0.1037
Residual		0.03403	0.1845

Number of obs: 618, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)
(Intercept)	2.82207	0.03120	23.13425	90.465	< 2e-16 ***
log(I(s2/mean.x))	2.38117	0.20102	569.66694	11.845	< 2e-16 ***
Fish.introAfter	0.04246	0.04284	23.12605	0.991	0.33195
Batch1	-0.04491	0.02986	23.67616	-1.504	0.14582
Batch2	-0.04357	0.03238	22.59928	-1.346	0.19179
log(I(s2/mean.x)):Fish.introAft	-0.84820	0.26713	604.90815	-3.175	0.00157 **

Clutch size for the 3rd clutch

Random effects:

Groups	Name	Variance	Std.Dev.
Clone	(Intercept)	0.01084	0.1041
Residual		0.03867	0.1966

Number of obs: 615, groups: Clone, 27

Fixed effects:

	Estimate	Std. Error	df	t value	Pr(> t)
(Intercept)	3.00429	0.03155	23.27106	95.226	< 2e-16 ***
log(I(scl1/mean.x))	2.11327	0.24030	549.85454	8.794	< 2e-16 ***
Fish.introAfter	0.05863	0.04339	23.39196	1.351	0.18959
Batch1	-0.03798	0.03019	23.80682	-1.258	0.22059
Batch2	-0.04378	0.03281	22.88177	-1.334	0.19518
log(I(scl1/mean.x)):Fish.introAft	-1.05183	0.34262	602.47423	-3.070	0.00224 **