

Supplementary Information for

Asexuality shapes traits in a hybrid fish

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Supplementary Tables

Supplementary Table I. Results of the RDA and pairwise analyses.

Explanatory factors		Df	Variance	F	Pr(>F)	Adjusted R ²	Adjusted p-values
Analysis #1: Comparison of sex/asex triploids in natural conditions							
Model selection	Lineage + Reproduction + Size	3	0.00035059	12.021	0.0001	28.98%	
	Reproduction	1	0.00012003	12.347	0.0001	10.20%	
Marginal effects	Lineage	1	0.00006175	6.3521	0.0001	4.81%	
	Size	1	0.00003271	3.365	0.0055	2.13%	
	Residual	78	0.00075829				
Analysis #2: Comparison of sex/asex triploids in common garden							
Model selection	Lineage + Reproduction	2	0.00021679	4.509	0.0002	25.98%	
	Reproduction	1	0.00016082	6.69	0.0001	22.17%	
Marginal effects	Lineage	1	0.00004848	2.0166	0.0337	3.96%	
	Residual	18	0.00043271				
Analysis #3: Comparison of sex/asex triploids in both natural and common garden environments							
Model selection	Size + Reproduction + Environment × Lineage	5	0.00046405	12.828	0.0001	36.70%	
	Reproduction	1	0.00010619	14.6779	0.0001	8.83%	
Marginal effects	Size	1	0.00002632	3.6377	0.0033	1.70%	
	Environment:Lineage	1	0.00002911	4.0237	0.0007	1.95%	
	Residual	97	0.00070178				
Analysis #4: Comparison of sexual and asexual organisms in both triploids and diploids							
Model selection	Size + Reproduction + Environment + Lineage	5	0.00051617	38.899	0.0001	49.67%	
	Reproduction	1	0.00008401	31.657	0.0001	8.21%	
Marginal effects	Environment	1	0.00006009	22.644	0.0001	5.79%	
	Lineage	2	0.00003050	5.7471	0.0001	2.53%	
	Size	1	0.00002536	9.555	0.0001	2.29%	
	Residual	187	0.00049628				
Analysis #5: Pairwise diploids versus triploids							
Asex in natural conditions	Ploidy	1	0.00001225	1.2503	0.2654	0.44%	1
	Residual	56	0.00054847				
Asex in common garden	Ploidy	1	0.00002305	1.3321	0.2246	1.81%	0.8984
	Residual	17	0.00029422				
Sex in natural conditions	Ploidy	1	0.00009301	7.5593	0.0001	11.81%	0.0004
	Residual	48	0.00059060				
Sex in common garden	Ploidy	1	0.00003333	2.3429	0.0615	4.28%	0.2360
	Residual	29	0.00041258				

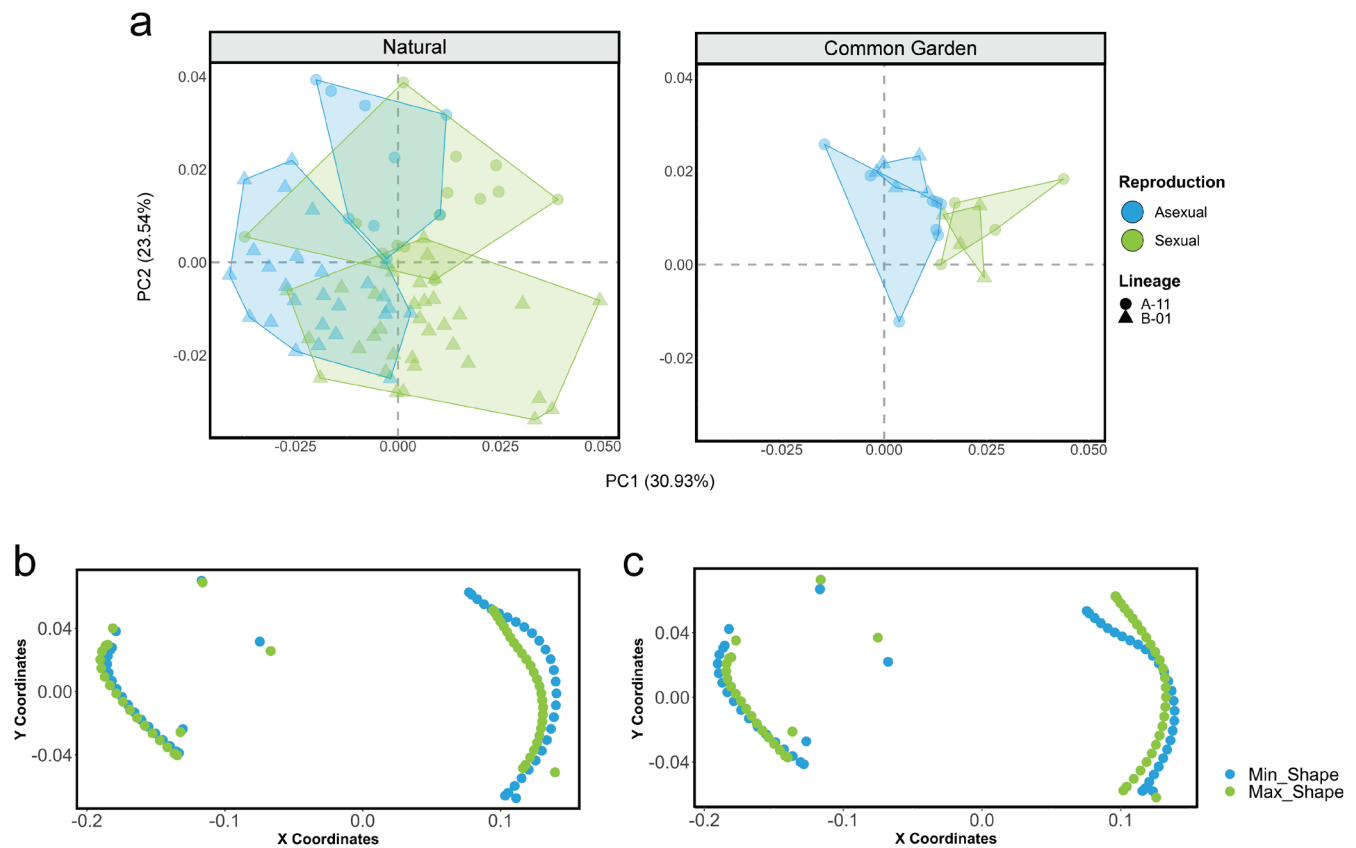
Detailed statistics for each of the four model selection analyses and subsequent variation partitioning, as well as the pairwise analysis. Analysis #1-4 were computed by RDA; Analysis #5 is a pairwise analysis. Adjusted p-values were corrected with a Bonferroni correction. Factors not selected in the automatic stepwise procedure were not included in the marginal effects. Factors included in the model selections were the following, when applicable: size, reproduction (reproductive strategy), environment (natural or common garden), lineage (A-11, B-01 or *C. eos*) and ploidy (diploid or triploid). Sex: organisms under sexual reproduction; Asex: organisms under asexual reproduction. Source data for this table can be found in Supplementary Data 1 and Supplementary Code 1.

Supplementary Table II. Sampling of the study.

	Natural Conditions			Common Garden			Total
	B-01	A-11	<i>C. eos</i>	B-01	A-11	<i>C. eos</i>	
Asexual triploids	26	9	–	5	8	–	48
Sexual triploids	33	14	–	4	4	–	55
Diploids (Asexual)	32	–	–	14	–	–	46
<i>C. eos</i> (Sexual)	–	–	17	–	–	27	44
Total	91	23	17	23	12	27	193

Sample size and genomic composition of individuals used in this study (A-11 or B-01 hybrid lineages and *C. eos*) according to environmental conditions. The first section of the results used only sexual and asexual triploids from natural conditions. The second & third section added the triploids from the common garden. Finally, the final section added asexual diploid hybrids and sexual *C. eos* from both conditions.

Supplementary Figures



Supplementary Figure 1. Shape variation and extreme shapes in triploids. **a**, Shape variation. Principal Component Analysis (PCA) of the two hybrid lineages (A-11 and B-01, shape) with individuals originating from two natural habitats (creek and lake, respectively) and from common garden conditions, according to their reproductive strategy (color). Note that the content of this PCA is the same as in Figure 2 of the main document, with convex hulls added. While a single PCA was performed among all samples, two panels according to environments were used to represent the ordination, for more clarity. **b** and **c**, Extreme shapes of both PC1 (**b**) and PC2 (**c**). Within the legend, Min_Shape (blue) indicates the minimum shape, i.e. the shape toward the negative numbers along the axis, and Max_Shape (green), the maximum shape, i.e. toward the positive numbers along the axis. Source data for this figure can be found in Supplementary Data 1 and Supplementary Code 1.