Table S1. Results of analysis of deviance (ANODEV) of binomial generalized linear model for 2018, 2019, and 2020 recapture by site, cross type, year, and all possible interaction terms. df is degrees of freedom, ΔDeviance refers to change in deviance, and LR refers to likelihood ratio.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
Null		2984.24	35			
Year	2	575.72	33	2408.52	< 0.001	
Cross type	3	439.11	30	136.61	< 0.001	4.62×10^{29}
Site	2	86.89	28	352.22	< 0.001	3.05×10^{76}
Cross type x Site	6	61.21	22	25.68	0.00026	376999.82
Cross type x Year	6	31.52	16	29.69	4.49×10^{-05}	2.80×10^{6}
Site x Year	4	19.07	12	12.45	0.014	505.22
Cross type x Site x Year	12	0	0	19.07	0.087	13835.60

Table S2. Results of analysis of deviance (ANODEV) of binomial generalized linear model for 2018 recapture by site, cross type, and their interaction. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		384.95	11			
Cross type	3	244.01	8	140.94	< 0.001	4.019×10^{30}
Site	2	11.34	6	232.68	< 0.001	3.35×10^{50}
Cross type x Site	6	0	0	11.34	0.079	289.31

Table S3. Results of analysis of deviance (ANODEV) of binomial generalized linear model for 2019 recapture by site, cross type, and their interaction. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		155.16	11			
Cross type	3	141.35	8	13.81	0.0032	995.26
Site	2	26.54	6	114.82	< 0.001	8.55×10^{24}
Cross type x Site	6	0	0	26.54	0.00018	5.79×10^{5}

Table S4. Results of analysis of deviance (ANODEV) of binomial generalized linear model for 2020 recapture by site, cross type, and their interaction. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		31.01	11			
Cross type	3	20.99	8	10.02	0.018	149.90
Site	2	6.42	6	14.57	0.001	1458.26
Cross type x Site	6	0	0	6.42	0.377	24.82

Table S5. Results of analysis of deviance (ANODEV) of binomial generalized linear model for 2020 recapture across all sites. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		10.02	3			
Cross type	3	0	0	10.02	0.018	149.90

Table S6. ANOVA table for linear model of 2019 recapture length by site, cross type, and one possible interaction. LR is the likelihood ratio, MS is mean squares, SS is sums of squares, df is degrees of freedom.

Source	Df	SS	MS	F	p	LR
Cross type	3	2828	942.70	9.43	5.14×10^{-06}	3.53×10^{6}
Site	2	34845	17422.40	174.27	< 0.001	6.41×10^{58}
Cross type x Site	6	2169	361.50	3.62	0.0017	1.16×10^{5}
Residuals	365	36491	100.00			

Table S7. Results of analysis of deviance (ANODEV) of gamma generalized linear model for 2020 recapture weight by site, cross type, and their interaction. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		77.00	403			
Cross type	3	73.98	400	3.01	1.67×10^{-07}	4.51
Site	2	35.49	398	38.50	< 0.001	2.29×10^{8}
Cross type x Site	6	32.98	392	2.51	7.19×10^{-05}	3.51

Table S8. Results of analysis of deviance (ANODEV) of gamma generalized linear model for 2020 recapture length by site, cross type, and their interaction. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		0.55	38			
Cross type	3	0.48	35	0.07	0.016	1.04
Site	2	0.20	33	0.28	1.08×10^{-09}	1.15
Cross type x Site	4	0.20	29	0.01	0.87	1.00

Table S9. Results of analysis of deviance (ANODEV) of gamma generalized linear model for 2020 recapture weight by site, cross type, and their interaction. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		4.90	38			
Cross type	3	4.33	35	0.57	0.00070	1.33
Site	2	1.08	33	3.24	< 0.001	5.06
Cross type x Site	4	1.00	29	0.08	0.67	1.04

Table S10. ANOVA table for linear model of 2019 recapture length from each site individually. Abbreviations of terms are defined as in Table S6.

Source	Df	SS	MS	F	p	LR
Site 1						
Cross type	3	2363.9	787.98	8.12	0.00020	40312.89
Residuals	45	4364.5	96.99			
Site 2						
Cross type	3	71	23.66	0.57	0.64	2.41
Residuals	124	5137.7	41.43			
Site 3						
Cross type	3	4443.4	1481.1	10.76	1.42×10^{-06}	4.16×10^{6}
Residuals	196	26988.7	137.7			

Table S11. ANOVA table for linear model of 2020 recapture condition factor by cross type, site, and their interaction. Abbreviations of terms are defined as in Table S6.

Source	Df	SS	MS	F	p	LR
Cross type	3	101.34	33.78	3.34	0.033	325.07
Site	2	3.69	1.84	0.18	0.834	1.28
Cross type x Site	4	1.21	0.30	0.030	0.998	1.08
Residuals	29	293.49	10.12			

Table S12. Results of analysis of deviance (ANODEV) of goodness of fit test used to analyze the effect of cross type on proportions of mature males in 2019. Abbreviations of terms are defined as in Table S1.

	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		11.003	3			
Cross type	3	0	0	11.003	0.0117	245.06

Table S13. Results of analysis of deviance (ANODEV) of goodness of fit test used to analyze family representation through time. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		957.42	207			
Year	2	957.41	205	0.02	0.99	1.01
Site	2	943.45	203	13.96	0.00093	1074.92
Family	24	292.09	179	651.35	< 0.001	2.75×10^{141}
Year x Site	4	292.09	175	0	0.99	1
Year x Family	48	227.1	127	65	0.052	1.30×10^{14}
Site x Family	43	62.94	84	164.15	4.72×10^{-16}	4.41×10^{35}
Year x Site x Family	84	957.42	0	62.94	0.96	4.65×10^{13}

Table S14. Results of analysis of deviance (ANODEV) of gamma generalized linear model for 2018 recapture weight by family, site, and their interaction. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		232.72	1241			
Family	24	180.81	1217	51.91	< 0.001	1.87×10^{11}
Site	2	131.3	1215	49.513	< 0.001	5.64×10^{10}
Family x Site	47	114.29	1168	17.006	< 0.001	4929.54

Table S15. Results of analysis of deviance (ANODEV) of gamma generalized linear model for 2019 recapture weight by family, site, and their interaction. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	P	LR
NULL		76.995	403			
Family	24	64.171	379	12.824	< 0.001	609.11
Site	2	27.958	377	36.213	< 0.001	7.30×10^7
Family x Site	42	20.578	335	7.38	< 0.001	40.04

Table S16. Results of analysis of deviance (ANODEV) of gamma generalized linear model for 2018 recapture length by family, site, and their interaction. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		22.849	1239			
Family	24	17.706	1215	5.143	< 0.001	13.09
Site	2	12.512	1213	5.1944	< 0.001	13.43
Family x Site	47	11.226	1166	1.2857	< 0.001	1.90

Table S17. Results of analysis of deviance (ANODEV) of gamma generalized linear model for 2020 recapture weight by family, site, and their interaction. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		4.9005	38			
Family	13	3.2314	25	1.66902	< 0.001	2.30
Site	2	0.5643	23	2.66711	< 0.001	3.80
Family x Site	5	0.4158	18	0.14851	0.2801	1.08

Table S18. Results of analysis of deviance (ANODEV) of gamma generalized linear model for 2019 recapture length by family, site, and their interaction. Abbreviations of terms are defined as in Table S1.

Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		8.4094	376			
Family	24	7.0899	352	1.3195	< 0.001	1.93
Site	2	3.1563	350	3.9336	< 0.001	7.15
Family x Site	41	2.482	309	0.6742	< 0.001	1.40

Table S19. Results of analysis of deviance (ANODEV) of gamma generalized linear model for 2020 recapture length by family, site, and their interaction. Abbreviations of terms are defined as in Table S1.

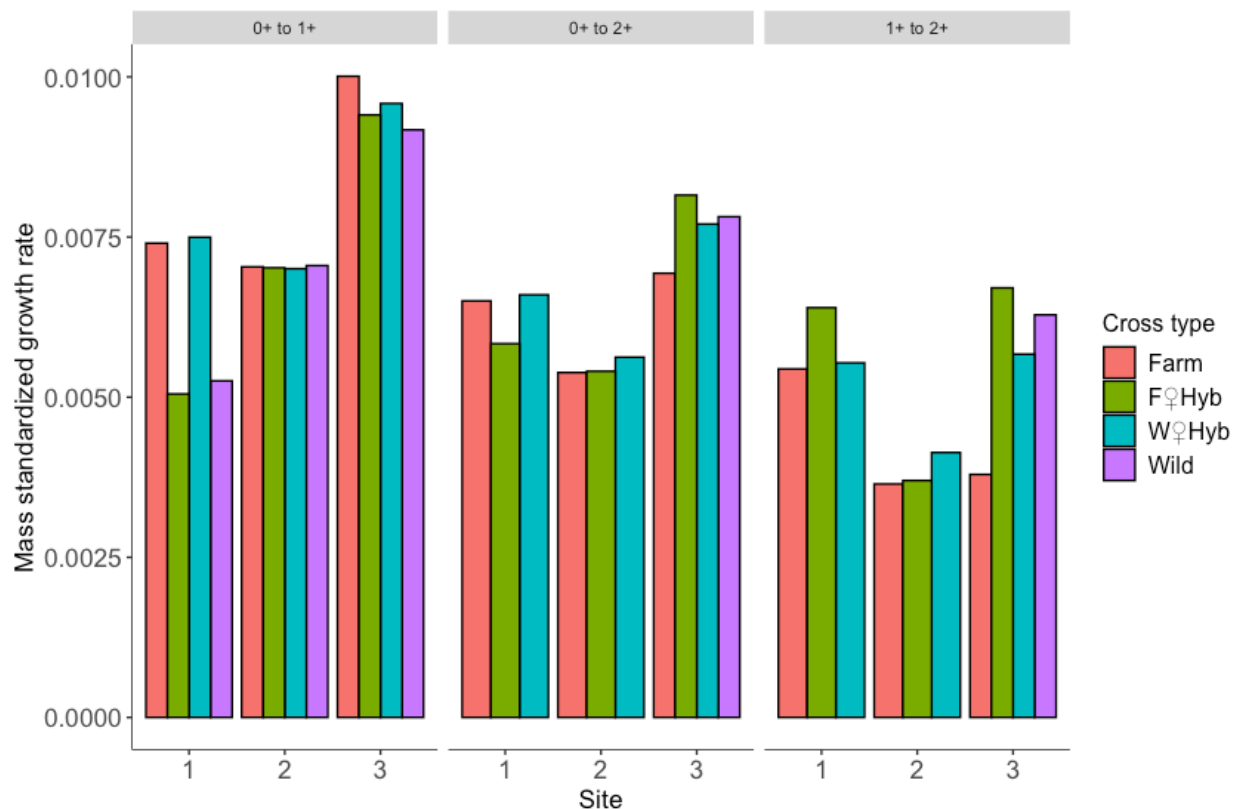| Source	df	Residual Deviance	Residual df	ΔDeviance	p	LR
NULL		0.55148	38			
Family	13	0.34149	25	0.209989	< 0.001	1.11
Site	2	0.07145	23	0.27004	< 0.001	1.14
Family x Site	5	0.06133	18	0.010122	0.7067	1.01

Figure S1. Average growth rate for the different cross types for each site between three different recapture periods. 0+ to 1+ refers to the period between the 3-month post-release and 1-year post-release recapture events, 0+ to 2+ refers to the period between the 3-month-post release and 2-year post-release recapture events, and 1+ to 2+ refers to the period between the 1-year post-release and 2-year post-release recapture events.
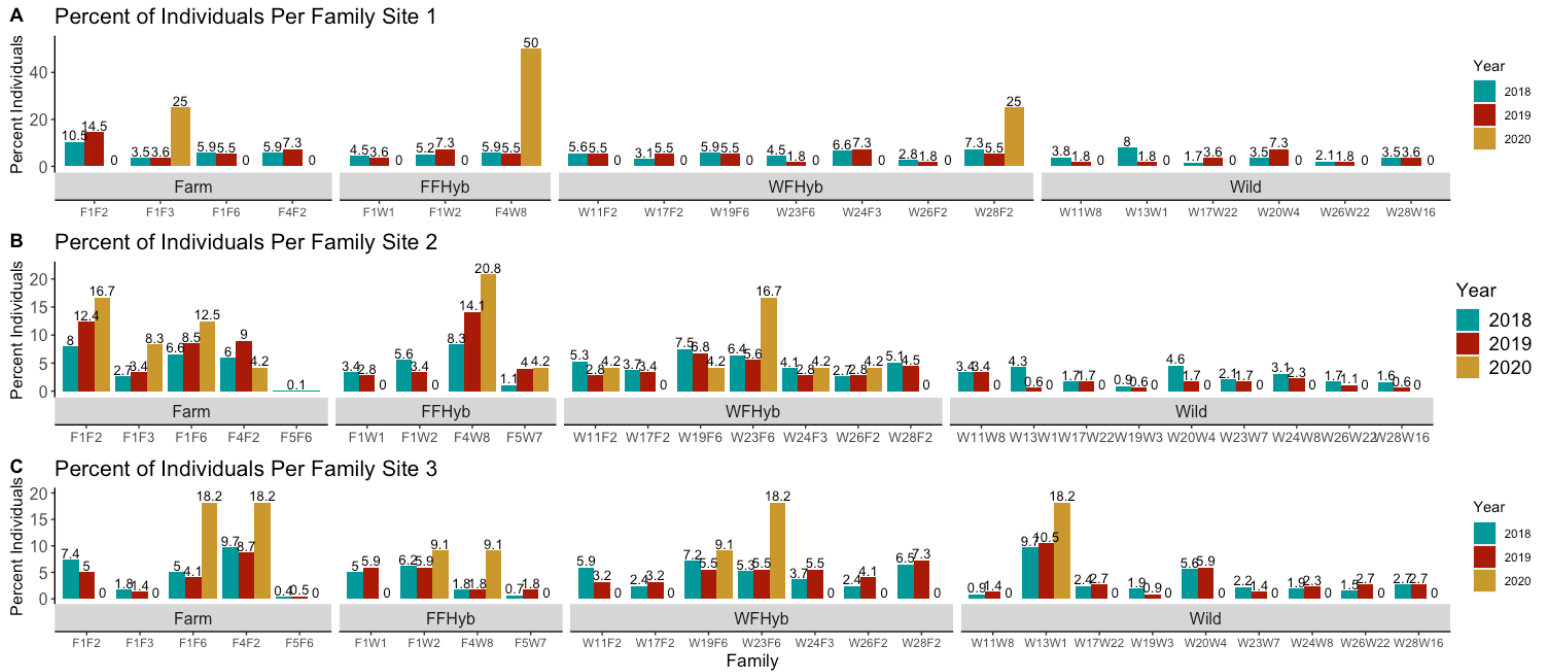
Figure S2. Percentages of Atlantic salmon individuals recaptured per family each year in Sites (A)1, (B) 2, and (C) 3.