

SUPPLEMENTARY MATERIAL

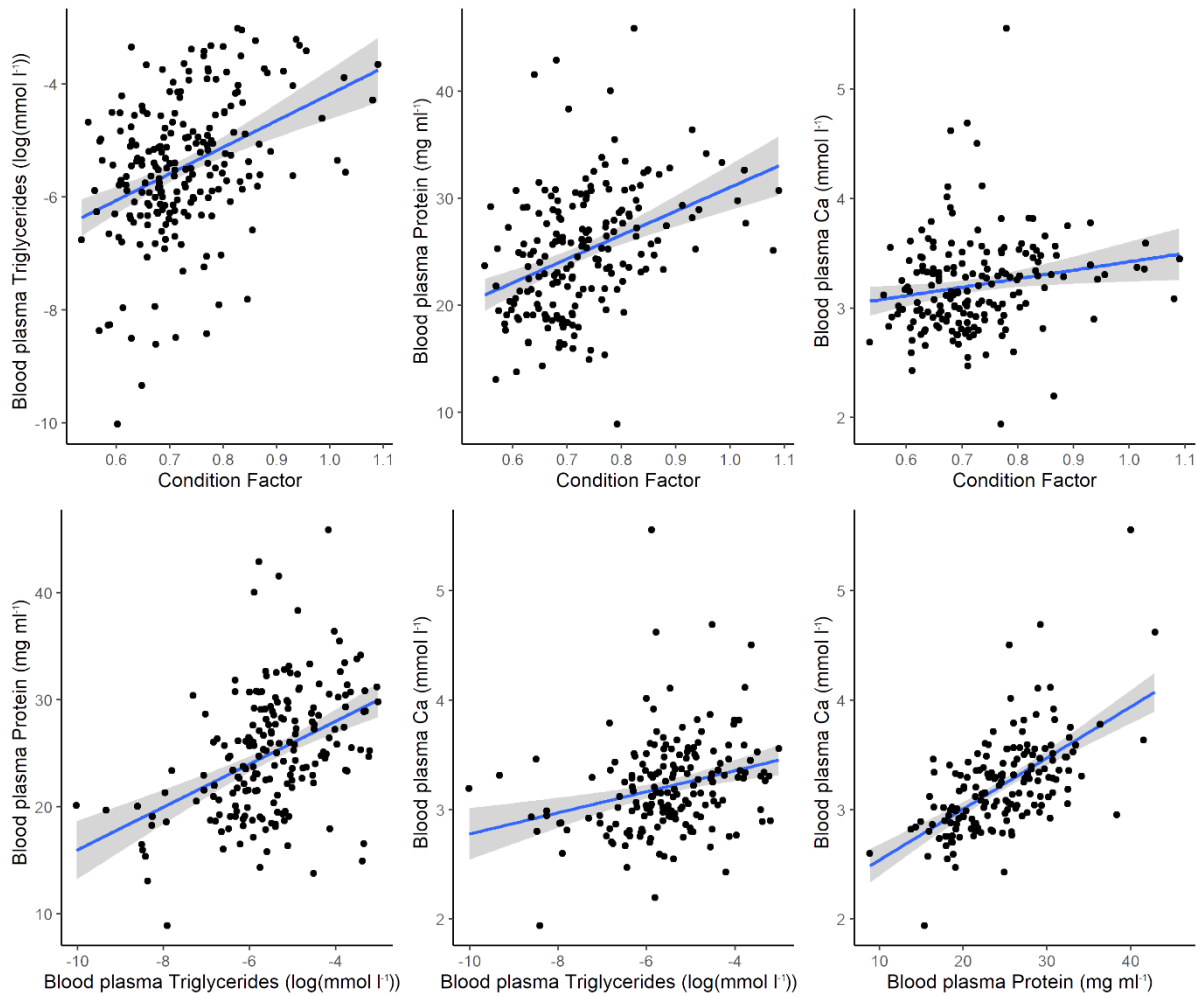


Figure S1: Correlations between different nutritional indicators. The black dots show the recorded values, the blue line a fitted linear model, and the grey band the models running 95% confidence interval.

Table S1: Model selection based on AIC values for migratory decision (MD; stay in freshwater and estuary or migrate to the sea). One full model including sex (S) and body size (BS) was fitted with each of the nutritional states (condition factor (CF), blood triglycerides (T) and blood protein (P)) and were followed by model selection. Bold text describes the full models that were subject to model selection.

Model:	df	AIC	delta	weight
MD ~ S + BS + CF				
MD ~ BS + CF	5	224.00	0.00	0.56
MD ~ S + BS + CF	6	224.62	0.62	0.41
MD ~ S + BS	5	230.69	6.69	0.02
MD ~ BS	4	232.49	8.48	0.01
MD ~ CF	4	242.54	18.54	0.00
MD ~ S + CF	5	243.59	19.58	0.00
MD ~ S	4	244.93	20.93	0.00
MD ~ 1	3	248.40	24.40	0.00
MD ~ S + BS + T				
MD ~ S + BS + T	6	162.30	0.00	0.74
MD ~ S + BS	5	164.52	2.22	0.24
MD ~ S + T	5	171.17	8.87	0.01
MD ~ S	4	172.92	10.62	0.00
MD ~ BS + T	5	175.37	13.07	0.00
MD ~ BS	4	177.15	14.85	0.00
MD ~ T	4	185.04	22.74	0.00
MD ~ 1	3	186.74	24.44	0.00
MD ~ S + BS + P				
MD ~ S + BS	5	155.78	0.00	0.59
MD ~ S + BS + P	6	157.13	1.35	0.30
MD ~ BS	4	160.20	4.42	0.07
MD ~ BS + P	5	161.57	5.79	0.03
MD ~ S	4	165.76	9.98	0.00
MD ~ S + P	5	167.75	11.97	0.00
MD ~ 1	3	171.04	15.25	0.00
MD ~ P	4	173.03	17.24	0.00

Table S2: Summary of model outputs investigating the migratory decision (MD, resident in freshwater or estuaries vs. migration to sea) of sea trout in relation to sex, body size and nutritional state. Outputs are given for the best-fitting binomial mixed effect models on the influence of sex (S), body size (BS), condition factor (CF), blood plasma triglycerides (T) and blood plasma protein (P). Bold text describes the full models that were subject to model selection. Coefficients and standard errors (SE) are given for the explanatory variables that were retained in the best fitting model, or for the explanatory variables included in conditional model averaging* of competing models with $\Delta AIC < 4$. S (Male) indicate the estimated effect of male vs. baseline categorical variable (female).

Model	Coefficient	SE
MD ~ S + BS + CF*		
S (Male)	-0.454	0.379
BS	1.264	0.318
CF	-0.737	0.243
MD ~ S + BS + T		
S (Male)	-1.788	0.482
BS	1.150	0.385
T	-0.621	0.301
MD ~ S + BS + P*		
S (Male)	-1.211	0.480
BS	1.372	0.435
P	-0.278	0.326

Table S3: Model selection based on AIC values for timing of sea entry (TSE). One full model including sex (S) and body size (BS) was fitted with each of the nutritional states (condition factor (CF), blood triglycerides (T), blood protein (P) and blood calcium (C)) and were followed by model selection Bold text describes the full models that were subject to model selection.

Model:	df	AIC	delta	weight
TSE ~ S + BS + CF				
TSE ~ 1	4	437.30	0.00	0.26
TSE ~ BS	5	437.64	0.34	0.22
TSE ~ CF	5	438.59	1.29	0.14
TSE ~ S	5	439.00	1.70	0.11
TSE ~ S + BS	6	439.47	2.17	0.09
TSE ~ BS + CF	6	439.50	2.19	0.09
TSE ~ S + CF	6	440.19	2.89	0.06
TSE ~ S + BS + CF	7	441.27	3.97	0.04
TSE ~ S + BS + T				
TSE ~ T	5	327.01	0.00	0.38
TSE ~ BS + T	6	328.47	1.46	0.18
TSE ~ S + T	6	328.90	1.89	0.15
TSE ~ 1	4	329.48	2.47	0.11
TSE ~ S + BS + T	7	330.36	3.35	0.07
TSE ~ BS	5	331.29	4.28	0.04
TSE ~ S	5	331.39	4.38	0.04
TSE ~ S + BS	6	333.21	6.20	0.02
TSE ~ S + BS + P				
TSE ~ 1	4	304.10	0.00	0.38
TSE ~ P	5	305.95	1.84	0.15
TSE ~ BS	5	305.99	1.88	0.15
TSE ~ S	5	306.10	2.00	0.14
TSE ~ BS + P	6	307.87	3.77	0.06
TSE ~ S + P	6	307.94	3.83	0.06
TSE ~ S + BS	6	307.99	3.88	0.05
TSE ~ S + BS + P	7	309.87	5.77	0.02
TSE ~ S + BS + C				
TSE ~ S	5	204.33	0.00	0.25
TSE ~ 1	4	204.94	0.61	0.19
TSE ~ S + BS	6	205.23	0.89	0.16
TSE ~ BS	5	205.76	1.43	0.12
TSE ~ S + C	6	206.33	2.00	0.09
TSE ~ C	5	206.94	2.61	0.07
TSE ~ S + BS + C	7	207.17	2.83	0.06
TSE ~ BS + C	6	207.73	3.40	0.05

Table S4: Summary of model outputs examining the relationship between the timing of sea entry (TSE) of sea trout and the variables sex, body size and nutritional state. Output of the best-fitting linear mixed effect models examining the influence of sex (S), body size (BS), condition factor (CF), blood plasma triglycerides (T), blood plasma protein (P) and blood plasma calcium (C) is presented. Bold text describes the full models that were subject to model selection. Summary statistics are given for the explanatory variables included in conditional model averaging of competing models with $\Delta AIC < 4$. S (Male) indicate the estimated effect of male vs. baseline categorical variable (female).

Model	Coefficient	SE
TSE ~ S + BS + CF		
S (Male)	0.075	0.147
BS	-0.098	0.082
CF	-0.075	0.074
TSE ~ S + BS + T		
S (Male)	0.056	0.172
BS	0.068	0.093
T	0.188	0.087
TSE ~ S + BS + P		
S (Male)	-0.009	0.186
BS	0.032	0.101
P	0.038	0.096
TSE ~ S + BS + C		
S (Male)	0.183	0.114
BS	-0.068	0.063
C	0.004	0.062

Table S5: Model selection based on AIC values for marine residence time (MRT). One full model including sex (S) and body size (BS) was fitted with each of the nutritional states (condition factor (CF), blood triglycerides (T), blood protein (P) and blood calcium (C)) and were followed by model selection. Bold text describes the full models that were subject to model selection.

Model:	df	AIC	delta	weight
MRT ~ S + BS + CF				
MRT ~ CF	5	202.32	0.00	0.34
MRT ~ BS + CF	6	202.96	0.64	0.25
MRT ~ S + CF	6	203.98	1.65	0.15
MRT ~ S + BS + CF	7	204.50	2.18	0.11
MRT ~ 1	4	205.16	2.83	0.08
MRT ~ BS	5	207.03	4.71	0.03
MRT ~ S	5	207.05	4.73	0.03
MRT ~ S + BS	6	208.92	6.60	0.01
MRT ~ S + BS + T				
MRT ~ 1	4	174.38	0.00	0.37
MRT ~ S	5	176.08	1.70	0.16
MRT ~ BS	5	176.36	1.98	0.14
MRT ~ T	5	176.37	1.99	0.14
MRT ~ S + BS	6	178.04	3.66	0.06
MRT ~ S + T	6	178.05	3.66	0.06
MRT ~ BS + T	6	178.35	3.97	0.05
MRT ~ S + BS + T	7	179.99	5.61	0.02
MRT ~ S + BS + P				
MRT ~ 1	4	158.49	0.00	0.36
MRT ~ P	5	160.12	1.63	0.16
MRT ~ S	5	160.37	1.88	0.14
MRT ~ BS	5	160.48	1.99	0.13
MRT ~ S + P	6	162.07	3.58	0.06
MRT ~ BS + P	6	162.08	3.59	0.06
MRT ~ S + BS	6	162.36	3.86	0.05
MRT ~ S + BS + P	7	164.03	5.54	0.02
MRT ~ S + BS + C				
MRT ~ 1	4	145.04	0.00	0.36
MRT ~ S	5	146.69	1.65	0.16
MRT ~ BS	5	146.89	1.85	0.14
MRT ~ C	5	147.00	1.96	0.14
MRT ~ S + BS	6	148.53	3.49	0.06
MRT ~ S + C	6	148.60	3.56	0.06
MRT ~ BS + C	6	148.87	3.83	0.05
MRT ~ S + BS + C	7	150.48	5.44	0.02

Table S6: Summary of model outputs the response of marine residence time (MRT) to the variables sex, body size and nutritional state. Output of the best-fitting linear mixed effect models examining the influence of sex (S), body size (BS), condition factor (CF), blood plasma triglycerides (T), blood plasma protein (P) and blood plasma calcium (C) is presented. Bold text describes the full models that were subject to model selection. Summary statistics are given for the explanatory variables included in conditional model averaging of competing models with $\Delta AIC < 4$. S (Male) indicate the estimated effect of male vs. baseline categorical variable (female).

Model	Coefficient	SE
MRT ~ S + BS + CF		
S (Male)	0.132	0.215
BS	0.160	0.129
CF	-0.247	0.108
MRT ~ S + BS + T		
S (Male)	-0.145	0.264
BS	0.022	0.135
T	0.015	0.131
MRT ~ S + BS + P		
S (Male)	-0.086	0.276
BS	0.021	0.144
P	-0.080	0.136
MRT ~ S + BS + C		
S (Male)	-0.174	0.294
BS	0.056	0.146
C	0.030	0.146

Table S7: Model selection based on AIC values for migratory distance (MDist). One full model including sex (S) and body size (BS) was fitted with each of the nutritional states (condition factor (CF), blood triglycerides (T), blood protein (P) and blood calcium (C)) and were followed by model selection. Bold text describes the full models that were subject to model selection.

Model:	df	AIC	delta	weight
MDist ~ S + BS + CF				
MDist ~ BS + CF	6	242.14	0.00	0.48
MDist ~ S + BS + CF	7	244.11	1.97	0.18
MDist ~ BS	5	244.61	2.47	0.14
MDist ~ S + BS	6	246.52	4.38	0.05
MDist ~ CF	5	246.56	4.42	0.05
MDist ~ 1	4	246.74	4.60	0.05
MDist ~ S + CF	6	248.51	6.37	0.02
MDist ~ S	5	248.72	6.58	0.02
MDist ~ S + BS + T				
MDist ~ BS	5	250.83	0.00	0.42
MDist ~ S + BS	6	252.56	1.73	0.18
MDist ~ BS + T	6	252.83	2.00	0.15
MDist ~ 1	4	253.69	2.86	0.10
MDist ~ S + BS + T	7	254.56	3.73	0.06
MDist ~ T	5	255.54	4.71	0.04
MDist ~ S	5	255.62	4.79	0.04
MDist ~ S + T	6	257.45	6.62	0.02
MDist ~ S + BS + P				
MDist ~ BS	5	224.97	0.00	0.31
MDist ~ 1	4	226.02	1.04	0.18
MDist ~ S + BS	6	226.46	1.49	0.15
MDist ~ BS + P	6	226.71	1.74	0.13
MDist ~ S	5	227.69	2.72	0.08
MDist ~ P	5	227.94	2.97	0.07
MDist ~ S + BS + P	7	228.29	3.31	0.06
MDist ~ S + P	6	229.58	4.60	0.03
MDist ~ S + BS + C				
MDist ~ BS	5	221.01	0.00	0.36
MDist ~ S + BS	6	221.31	0.30	0.31
MDist ~ BS + C	6	222.87	1.85	0.14
MDist ~ S + BS + C	7	223.14	2.13	0.12
MDist ~ 1	4	226.23	5.22	0.03
MDist ~ S	5	227.27	6.26	0.02
MDist ~ C	5	228.22	7.21	0.01
MDist ~ S + C	6	229.27	8.25	0.01

Table S8: Summary of model outputs on the response of migratory distance (MDist) to the variables sex, body length and nutritional state. Output of the best-fitting linear mixed effect models on the influence of the variables sex (S), body size (BS), condition factor (CF), blood triglycerides (T), blood protein (P) and blood calcium (C) are presented. Bold text describes the full models that were subject to model selection. Summary statistics are given for the explanatory variables included in conditional model averaging of competing models with $\Delta AIC < 4$. S (Male) indicate the estimated effect of male vs. baseline categorical variable (female).

Model	Coefficient	SE
MDist ~ S + BS + CF		
S (Male)	0.023	0.132
BS	0.214	0.086
CF	-0.138	0.066
MDist ~ S + BS + T		
S (Male)	-0.088	0.172
BS	0.227	0.099
T	-0.002	0.086
MDist ~ S + BS + P		
S (Male)	-0.120	0.184
BS	0.218	0.110
P	-0.023	0.108
MDist ~ S + BS + C		
S (Male)	-0.254	0.197
BS	0.316	0.105
C	-0.040	0.104