

**Table S1. Daily Mean, variance, and predictability of environmental data for each month.** Predictability is given as the  $R^2$  of the sin-cos models of the daily fluctuations (see Section 2: Materials and Methods).

Date	Temperature			Dissolved Oxygen			Salinity		
	Mean	Variance	Predictability	Mean	Variance	Predictability	Mean	Variance	Predictability
2021									
January	15.34	1.16	0.69	9.61	1.72	0.52	34.25	0.52	0.17
February	14.51	1.14	0.48	9.62	0.81	0.31	32.85	0.93	0.29
March	14.60	0.91	0.53	9.68	1.29	0.34	32.6	2.47	0.36
April	13.89	0.37	0.55	10.26	0.55	0.42	31.11	15.46	0.32
May	14.08	0.77	0.49	10.14	0.3	0.4	34.33	1.55	0.24
June	12.63	0.27	0.60	10.42	0.24	0.31	33.71	1.30	0.21
July	12.24	0.03	0.58	10.43	2.19	0.41	32.72	1.18	0.28
August	12.46	0.04	0.62	9.64	2.38	0.40	33.10	2.43	0.23
September	12.48	0.17	0.52	12.48	0.17	0.52	34.28	1.13	0.34
October	12.16	0.41	0.54	11.2	14.56	0.47	28.92	3.43	0.41
November	12.80	1.40	0.71	9.72	17.88	0.55	17.66	7.62	0.27
December	14.99	1.22	0.50	10.37	9.50	0.50	14.58	0.17	0.11
2022									
January	13.19	1.49	0.61	11.27	24.23	0.56	--	--	--
February	14.61	1.51	0.91	11.40	15.01	0.87	--	--	--

**Table S2. Results of the Generalized Linear Models on egg volume, egg lipids and egg dry weight.** *p*-values in bold are significant ( $\alpha = 0.05$ )

<i>Predictors</i>	<b>Egg volume</b>				<b>Egg lipids</b>				<b>Egg dry weight</b>			
	<i>Estimates</i>	<i>Error</i>	<i>T statistic</i>	<i>p-value</i>	<i>Estimates</i>	<i>Error</i>	<i>T statistic</i>	<i>p-value</i>	<i>Estimates</i>	<i>Error</i>	<i>T statistic</i>	<i>p-value</i>
Intercept (June)	22.19	1.70	13.10	<b>&lt;0.001</b>	13.82	0.74	18.68	<b>&lt;0.001</b>	28.94	1.28	22.55	<b>&lt;0.001</b>
July	22.33	0.35	-0.78	0.436	15.4	1.17	1.35	0.181	30.91	2.03	0.97	0.334
August	22.25	0.15	-1.09	0.277	12.48	1.24	-1.09	0.280	24.6	2.15	-2.02	<b>0.046</b>
September	22.62	1.04	-0.35	0.726	12.23	1.08	-1.47	0.145	29.37	1.87	0.23	0.819
October	22.2	0.01	-2.25	<b>0.025</b>	10.88	1.17	-2.52	<b>0.014</b>	26.41	2.03	-1.25	0.217
November	22.19	0.01	-2.65	<b>0.008</b>	12.84	1.02	-0.96	0.338	30.6	1.77	0.94	0.352
December	22.19	0.00	-3.02	<b>0.003</b>	11.68	1.02	-2.10	<b>0.038</b>	30.7	1.77	0.99	0.324
January	22.19	0.01	-2.65	<b>0.008</b>	8.31	1.02	-5.40	<b>&lt;0.001</b>	31.3	1.77	1.33	0.187
February	22.22	0.06	-1.62	0.105	8.53	1.02	-5.19	<b>&lt;0.001</b>	32.15	1.77	1.81	0.074
March	22.2	0.03	-1.25	0.156	8.39	1.02	-5.33	<b>&lt;0.001</b>	32.25	1.77	1.87	0.065
April	22.27	0.17	-1.17	0.243	9.66	1.02	-4.08	<b>&lt;0.001</b>	35.55	1.77	3.73	<b>&lt;0.001</b>

**Table S3. Percentage of Fatty Acids found in early embryos of *T. dentatus* averaged for Season.** The numbers in parentheses show standard deviation.

	Autumn 21	Winter 21	Spring 21	Summer 22	Autumn 22
C14:0	3.67 (0.58)	4.31 (1.41)	4.96 (2.42)	3.63 (0.56)	3.08 (0.47)
C15:0	1.77 (0.40)	1.90 (0.55)	1.55 (0.56)	1.61 (0.27)	1.40 (0.20)
C16:0	29.67 (4.95)	33.17 (7.77)	22.59 (8.37)	22.49 (3.09)	22.27 (2.85)
C17:0	0.67 (0.66)	0.85 (0.70)	0.86 (0.66)	1.39 (0.19)	0.96 (0.52)
C18:0	6.00 (1.01)	7.27 (1.83)	6.05 (2.72)	4.50 (0.70)	4.64 (0.51)
C20:0	1.67 (1.67)	0.14 (0.64)	-	0.20 (0.64)	0.50 (1.07)
C21:0	0.53 (1.19)	0.13 (0.60)	0.42 (0.88)	1.24 (1.25)	1.80 (1.60)
C22:0	-	-	0.88 (3.96)	-	-
C23:0	0.12 (0.40)	-	2.33 (1.79)	3.06 (1.12)	3.36 (1.35)
C24:0	0.11 (0.38)	-	0.20 (0.73)	-	-
<b>Σ SFA</b>	<b>44.22</b>	<b>47.77</b>	<b>39.84</b>	<b>38.62</b>	<b>38.02</b>
C14:1	0.24 (0.79)	-	-	-	-
C15:1	0.27 (0.91)	-	-	-	-
C16:1	7.31 (2.99)	8.29 (1.90)	7.40 (2.20)	7.01 (0.98)	6.47 (1.15)
C17:1	-	-	1.09 (0.84)	1.74 (0.29)	1.16 (0.65)
C18:1n9	19.63 (1.89)	20.13 (2.97)	15.00 (4.83)	14.31 (1.82)	15.86 (2.75)
C20:1	1.44 (1.46)	0.60 (1.11)	1.38 (1.08)	1.90 (0.57)	1.89 (0.75)
<b>Σ MUFA</b>	<b>28.90</b>	<b>29.02</b>	<b>24.87</b>	<b>24.96</b>	<b>25.39</b>
C18:3n3	2.49 (1.27)	1.97 (1.21)	2.21 (1.07)	3.32 (0.81)	3.35 (1.10)
C20:5n3	10.30 (2.85)	11.64 (2.94)	2.57 (5.42)	0.83 (4.52)	3.06 (9.67)
C22:6n3	2.89 (1.68)	2.68 (1.32)	0.54 (1.20)	-	0.56 (1.78)
<b>Σ PUFA</b>	<b>15.68</b>	<b>16.29</b>	<b>5.32</b>	<b>4.14</b>	<b>6.97</b>
<b>n3</b>					
C18:3n6	2.86 (0.57)	1.90 (0.98)	1.95 (0.63)	2.19 (0.36)	2.30 (0.39)
C18:2n6t	0.10 (0.32)	0.05 (0.23)	0.19 (0.46)	0.18 (0.43)	0.67 (0.58)
C20:3n6	8.14 (3.96)	4.84 (1.77)	3.98 (1.68)	4.26 (1.17)	5.37 (2.91)
C20:4n6	-	-	23.85 (14.53)	25.50 (6.69)	21.01 (8.87)
<b>Σ PUFA</b>	<b>11.10</b>	<b>6.78</b>	<b>29.98</b>	<b>32.13</b>	<b>29.35</b>
<b>n6</b>					
C20:2	0.12 (0.38)	0.13 (0.41)	-	0.11 (0.46)	0.18 (0.57)
C22:2	-	-	-	0.03 (0.14)	0.09 (0.29)
<b>Σ PUFA</b>	<b>26.87</b>	<b>23.08</b>	<b>35.30</b>	<b>36.28</b>	<b>36.32</b>

**Table S4. Similarity percentages (SIMPER) analysis of fatty acid profiles of *T. dentatus* embryos from different seasons.** A21=Autumn 2021; W21=Winter 2021; Sp21=Spring 2021; Su22=Summer 2022; A22=Autumn 2022.

	Average	Sd	Ratio	Ava	Avb	Cumsum	<i>p</i>
<b>A21 Vs W21</b>							
C16.0	0.031	0.022	1.369	29.669	33.170	0.192	0.965
C20.3n6	0.019	0.019	0.978	8.141	4.840	0.308	<b>0.002</b>
C20.5n3	0.017	0.013	1.337	10.297	11.640	0.413	0.998
C16.1	0.015	0.010	1.525	7.308	8.290	0.505	<b>0.002</b>
C18.1n9	0.014	0.010	1.329	19.631	20.130	0.591	1.000
C18.0	0.009	0.008	1.110	6.008	7.270	0.647	0.548
C20.0	0.008	0.008	1.041	1.669	0.140	0.699	<b>0.001</b>
C22.6n3	0.008	0.007	1.212	2.885	2.680	0.749	0.510
C20.1	0.007	0.007	1.080	1.445	0.600	0.794	<b>0.008</b>
C18.3n3	0.007	0.006	1.183	2.494	1.970	0.836	0.356
C14.0	0.006	0.005	1.147	3.666	4.310	0.874	0.576
C18.3n6	0.005	0.005	1.037	2.858	1.900	0.907	<b>0.006</b>
C17.0	0.004	0.003	1.218	0.668	0.850	0.930	0.062
C21.0	0.003	0.006	0.516	0.526	0.130	0.949	0.990
C15.0	0.003	0.002	1.200	1.775	1.900	0.965	0.328
C15.1	0.001	0.004	0.316	0.273	0.000	0.974	<b>0.001</b>
C14.1	0.001	0.004	0.316	0.239	0.000	0.981	<b>0.001</b>
C20.2	0.001	0.002	0.450	0.116	0.130	0.988	0.293
C18.2n6t	0.001	0.002	0.386	0.096	0.050	0.993	0.977
C23.0	0.001	0.002	0.316	0.121	0.000	0.996	1.000
C24.0	0.001	0.002	0.316	0.115	0.000	1.000	0.455
C13.0	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C17.1	0.000	0.000	-	0.000	0.000	1.000	1.000
C18.2n6c	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C20.3n3	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C20.4n6	0.000	0.000	-	0.000	0.000	1.000	1.000
C22.0	0.000	0.000	-	0.000	0.000	1.000	0.571
C22.1n9	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C22.2	0.000	0.000	-	0.000	0.000	1.000	0.548
C24.1	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
<b>A21 Vs Sp21</b>							
C20.4n6	0.119	0.071	1.671	0.000	23.852	0.320	<b>0.001</b>
C16.0	0.048	0.034	1.402	29.669	22.589	0.449	<b>0.046</b>
C20.5n3	0.045	0.019	2.392	10.297	2.569	0.569	<b>0.016</b>
C18.1n9	0.030	0.017	1.763	19.631	15.000	0.649	<b>0.005</b>
C20.3n6	0.022	0.020	1.082	8.141	3.984	0.707	<b>0.001</b>
C16.1	0.015	0.009	1.599	7.308	7.400	0.748	<b>0.001</b>

C22.6n3	0.013	0.008	1.629	2.885	0.540	0.783	<b>0.001</b>
C23.0	0.011	0.008	1.360	0.121	2.334	0.814	<b>0.027</b>
C18.0	0.010	0.010	0.928	6.008	6.053	0.839	0.366
C20.0	0.008	0.008	1.029	1.669	0.000	0.862	<b>0.001</b>
C14.0	0.008	0.011	0.715	3.666	4.959	0.883	0.211
C20.1	0.007	0.005	1.255	1.445	1.381	0.902	<b>0.026</b>
C18.3n3	0.006	0.005	1.170	2.494	2.206	0.918	0.591
C17.1	0.005	0.004	1.310	0.000	1.086	0.933	<b>0.014</b>
C18.3n6	0.005	0.004	1.197	2.858	1.954	0.945	<b>0.029</b>
C22.0	0.004	0.019	0.228	0.000	0.884	0.957	0.147
C21.0	0.004	0.006	0.666	0.526	0.415	0.968	0.958
C17.0	0.004	0.003	1.194	0.668	0.858	0.977	0.126
C15.0	0.003	0.002	1.082	1.775	1.546	0.984	0.297
C24.0	0.001	0.004	0.392	0.115	0.199	0.988	0.126
C15.1	0.001	0.004	0.316	0.273	0.000	0.992	<b>0.001</b>
C18.2n6t	0.001	0.002	0.526	0.096	0.190	0.995	0.800
C14.1	0.001	0.004	0.316	0.239	0.000	0.999	<b>0.001</b>
C20.2	0.001	0.002	0.316	0.116	0.000	1.000	0.683
C13.0	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C18.2n6c	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C20.3n3	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C22.1n9	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C22.2	0.000	0.000	-	0.000	0.000	1.000	0.616
C24.1	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>

**A21 Vs Su22**

C20.4n6	0.128	0.033	3.869	0.000	25.501	0.346	<b>0.001</b>
C20.5n3	0.052	0.014	3.702	10.297	0.826	0.487	<b>0.002</b>
C16.0	0.038	0.025	1.525	29.669	22.488	0.590	0.572
C18.1n9	0.027	0.012	2.280	19.631	14.312	0.663	<b>0.040</b>
C20.3n6	0.020	0.019	1.054	8.141	4.260	0.718	<b>0.001</b>
C23.0	0.015	0.006	2.576	0.121	3.060	0.758	<b>0.001</b>
C22.6n3	0.014	0.008	1.800	2.885	0.000	0.797	<b>0.001</b>
C16.1	0.014	0.007	2.055	7.308	7.015	0.834	<b>0.011</b>
C17.1	0.009	0.001	5.987	0.000	1.736	0.857	<b>0.001</b>
C20.0	0.008	0.008	1.063	1.669	0.204	0.879	<b>0.001</b>
C18.3n3	0.007	0.005	1.354	2.494	3.318	0.898	0.385
C21.0	0.007	0.006	1.079	0.526	1.241	0.916	0.117
C20.1	0.006	0.004	1.439	1.445	1.902	0.933	0.089
C18.0	0.006	0.004	1.469	6.008	4.999	0.951	0.966
C17.0	0.004	0.003	1.369	0.668	1.389	0.961	<b>0.010</b>
C18.3n6	0.004	0.003	1.364	2.858	2.188	0.972	0.268
C14.0	0.003	0.002	1.345	3.666	3.634	0.980	1.000
C15.0	0.002	0.002	1.108	1.775	1.609	0.985	0.947

C15.1	0.001	0.004	0.316	0.273	0.000	0.989	<b>0.001</b>
C18.2n6t	0.001	0.002	0.542	0.096	0.184	0.992	0.832
C14.1	0.001	0.004	0.316	0.239	0.000	0.995	<b>0.001</b>
C20.2	0.001	0.003	0.388	0.116	0.108	0.998	0.342
C24.0	0.001	0.002	0.316	0.115	0.000	1.000	0.402
C22.2	0.000	0.001	0.185	0.000	0.026	1.000	0.476
C13.0	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C18.2n6c	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C20.3n3	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C22.0	0.000	0.000	-	0.000	0.000	1.000	0.684
C22.1n9	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C24.1	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>

### A21 Vs A22

C20.4n6	0.105	0.042	2.486	0.000	21.009	0.299	<b>0.002</b>
C20.5n3	0.056	0.020	2.780	10.297	3.059	0.460	<b>0.001</b>
C16.0	0.039	0.025	1.558	29.669	22.271	0.570	0.526
C18.1n9	0.021	0.012	1.711	19.631	15.860	0.631	0.578
C20.3n6	0.020	0.018	1.127	8.141	5.373	0.689	<b>0.004</b>
C23.0	0.016	0.007	2.464	0.121	3.361	0.735	<b>0.001</b>
C22.6n3	0.014	0.008	1.786	2.885	0.564	0.776	<b>0.001</b>
C16.1	0.014	0.008	1.770	7.308	6.475	0.815	0.057
C21.0	0.009	0.007	1.203	0.526	1.799	0.840	<b>0.003</b>
C20.0	0.008	0.008	1.089	1.669	0.504	0.864	<b>0.001</b>
C18.0	0.007	0.005	1.568	6.008	4.643	0.885	0.779
C18.3n3	0.007	0.006	1.230	2.494	3.347	0.905	0.307
C20.1	0.007	0.005	1.422	1.445	1.890	0.924	0.095
C17.1	0.006	0.003	1.872	0.000	1.165	0.940	<b>0.014</b>
C14.0	0.004	0.002	1.649	3.666	3.083	0.952	0.953
C18.3n6	0.003	0.003	1.327	2.858	2.298	0.961	0.457
C17.0	0.003	0.003	1.206	0.668	0.961	0.971	0.439
C18.2n6t	0.003	0.003	1.183	0.096	0.666	0.980	<b>0.003</b>
C15.0	0.002	0.002	1.093	1.775	1.401	0.986	0.720
C15.1	0.001	0.004	0.315	0.273	0.000	0.990	0.091
C20.2	0.001	0.003	0.455	0.116	0.180	0.994	0.225
C14.1	0.001	0.004	0.315	0.239	0.000	0.997	0.091
C24.0	0.001	0.002	0.315	0.115	0.000	0.999	0.447
C22.2	0.000	0.001	0.332	0.000	0.091	1.000	<b>0.047</b>
C13.0	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C18.2n6c	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C20.3n3	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C22.0	0.000	0.000	-	0.000	0.000	1.000	0.385
C22.1n9	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C24.1	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>

**W21 Vs Sp21**

C20.4n6	0.119	0.071	1.672	0.000	23.852	0.325	<b>0.001</b>
C16.0	0.060	0.039	1.525	33.170	22.589	0.487	<b>0.001</b>
C20.5n3	0.050	0.022	2.250	11.640	2.569	0.623	<b>0.001</b>
C18.1n9	0.032	0.019	1.662	20.130	15.000	0.711	<b>0.001</b>
C18.0	0.013	0.011	1.163	7.270	6.053	0.747	<b>0.001</b>
C22.6n3	0.012	0.007	1.771	2.680	0.540	0.780	<b>0.001</b>
C23.0	0.012	0.009	1.330	0.000	2.334	0.811	<b>0.003</b>
C16.1	0.012	0.009	1.230	8.290	7.400	0.843	0.149
C20.3n6	0.009	0.009	1.094	4.840	3.984	0.868	0.855
C14.0	0.009	0.011	0.810	4.310	4.959	0.893	<b>0.036</b>
C20.1	0.007	0.005	1.290	0.600	1.381	0.911	<b>0.007</b>
C18.3n3	0.006	0.005	1.123	1.970	2.206	0.927	0.748
C17.1	0.005	0.004	1.311	0.000	1.086	0.942	<b>0.005</b>
C22.0	0.004	0.019	0.228	0.000	0.884	0.954	0.278
C18.3n6	0.004	0.004	0.963	1.900	1.954	0.965	0.102
C17.0	0.004	0.003	1.174	0.850	0.858	0.975	<b>0.049</b>
C15.0	0.003	0.003	1.277	1.900	1.546	0.984	<b>0.001</b>
C21.0	0.003	0.005	0.532	0.130	0.415	0.991	1.000
C18.2n6t	0.001	0.002	0.477	0.050	0.190	0.994	0.938
C24.0	0.001	0.004	0.276	0.000	0.199	0.996	0.254
C20.0	0.001	0.003	0.223	0.140	0.000	0.998	1.000
C20.2	0.001	0.002	0.321	0.130	0.000	1.000	0.736
C13.0	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C14.1	0.000	0.000	-	0.000	0.000	1.000	0.488
C15.1	0.000	0.000	-	0.000	0.000	1.000	0.488
C18.2n6c	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C20.3n3	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C22.1n9	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C22.2	0.000	0.000	-	0.000	0.000	1.000	0.714
C24.1	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>

**W21 Vs Su21**

C20.4n6	0.128	0.033	3.872	0.000	25.501	0.337	<b>0.001</b>
C20.5n3	0.058	0.014	4.053	11.640	0.826	0.491	<b>0.001</b>
C16.0	0.054	0.028	1.948	33.170	22.488	0.633	<b>0.001</b>
C18.1n9	0.030	0.016	1.828	20.130	14.312	0.712	<b>0.001</b>
C23.0	0.015	0.005	2.786	0.000	3.060	0.752	<b>0.001</b>
C22.6n3	0.013	0.006	2.077	2.680	0.000	0.787	<b>0.001</b>
C18.0	0.012	0.009	1.314	7.270	4.999	0.819	<b>0.012</b>
C16.1	0.010	0.007	1.464	8.290	7.015	0.845	0.651
C17.1	0.009	0.001	5.991	0.000	1.736	0.868	<b>0.001</b>
C20.3n6	0.008	0.007	1.183	4.840	4.260	0.890	0.966

C20.1	0.008	0.004	2.085	0.600	1.902	0.911	<b>0.001</b>
C18.3n3	0.008	0.006	1.233	1.970	3.318	0.931	<b>0.020</b>
C21.0	0.006	0.006	1.025	0.130	1.241	0.948	0.135
C14.0	0.006	0.005	1.181	4.310	3.634	0.964	0.635
C18.3n6	0.004	0.004	0.947	1.900	2.188	0.974	0.251
C17.0	0.003	0.003	1.109	0.850	1.389	0.983	0.272
C15.0	0.003	0.002	1.239	1.900	1.609	0.990	0.231
C20.0	0.002	0.004	0.391	0.140	0.204	0.994	0.941
C20.2	0.001	0.003	0.396	0.130	0.108	0.997	0.279
C18.2n6t	0.001	0.002	0.494	0.050	0.184	1.000	0.963
C22.2	0.000	0.001	0.186	0.000	0.026	1.000	0.633
C13.0	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C14.1	0.000	0.000	-	0.000	0.000	1.000	0.550
C15.1	0.000	0.000	-	0.000	0.000	1.000	0.550
C18.2n6c	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C20.3n3	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C22.0	0.000	0.000	-	0.000	0.000	1.000	0.774
C22.1n9	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C24.0	0.000	0.000	-	0.000	0.000	1.000	0.901
C24.1	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>

**W21 Vs A22**

C20.4n6	0.105	0.042	2.492	0.000	21.009	0.284	<b>0.002</b>
C20.5n3	0.062	0.018	3.417	11.640	3.059	0.451	<b>0.001</b>
C16.0	0.055	0.027	2.043	33.170	22.271	0.599	<b>0.006</b>
C18.1n9	0.024	0.016	1.503	20.130	15.860	0.664	0.233
C23.0	0.017	0.006	2.619	0.000	3.361	0.710	<b>0.001</b>
C22.6n3	0.014	0.006	2.091	2.680	0.564	0.746	<b>0.001</b>
C18.0	0.013	0.009	1.470	7.270	4.643	0.782	<b>0.044</b>
C20.3n6	0.012	0.011	1.095	4.840	5.373	0.815	0.373
C16.1	0.011	0.008	1.407	8.290	6.475	0.846	0.253
C21.0	0.009	0.008	1.180	0.130	1.799	0.870	<b>0.003</b>
C20.1	0.008	0.004	1.864	0.600	1.890	0.892	<b>0.001</b>
C14.0	0.008	0.005	1.512	4.310	3.083	0.913	0.242
C18.3n3	0.008	0.007	1.143	1.970	3.347	0.935	0.073
C17.1	0.006	0.003	1.876	0.000	1.165	0.951	<b>0.007</b>
C18.3n6	0.004	0.004	0.915	1.900	2.298	0.961	0.304
C18.2n6t	0.003	0.003	1.195	0.050	0.666	0.969	<b>0.002</b>
C17.0	0.003	0.003	1.192	0.850	0.961	0.978	0.398
C15.0	0.003	0.002	1.624	1.900	1.401	0.987	<b>0.044</b>
C20.0	0.003	0.005	0.543	0.140	0.504	0.995	0.490
C20.2	0.001	0.003	0.461	0.130	0.180	0.999	0.187
C22.2	0.000	0.001	0.333	0.000	0.091	1.000	<b>0.049</b>
C13.0	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>



C14.1	0.000	0.000	-	0.000	0.000	1.000	0.345
C15.1	0.000	0.000	-	0.000	0.000	1.000	0.345
C18.2n6c	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C20.3n3	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C22.0	0.000	0.000	-	0.000	0.000	1.000	0.519
C22.1n9	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C24.0	0.000	0.000	-	0.000	0.000	1.000	0.703
C24.1	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>

### Sp21 Vs Su22

C20.4n6	0.063	0.048	1.303	23.852	25.501	0.293	1.000
C16.0	0.034	0.028	1.206	22.589	22.488	0.451	0.965
C18.1n9	0.018	0.018	1.035	15.000	14.312	0.537	0.994
C20.5n3	0.016	0.032	0.505	2.569	0.826	0.612	1.000
C18.0	0.009	0.012	0.768	6.053	4.999	0.654	0.608
C23.0	0.009	0.007	1.353	2.334	3.060	0.696	0.996
C16.1	0.009	0.008	1.016	7.400	7.015	0.736	0.995
C14.0	0.008	0.011	0.719	4.959	3.634	0.774	0.093
C20.3n6	0.007	0.007	1.025	3.984	4.260	0.808	0.999
C18.3n3	0.007	0.006	1.190	2.206	3.318	0.839	0.379
C21.0	0.006	0.006	1.057	0.415	1.241	0.868	0.147
C20.1	0.005	0.004	1.083	1.381	1.902	0.890	1.000
C22.0	0.004	0.019	0.228	0.884	0.000	0.911	<b>0.001</b>
C17.1	0.004	0.004	1.162	1.086	1.736	0.930	1.000
C17.0	0.003	0.003	1.109	0.858	1.389	0.945	0.483
C22.6n3	0.003	0.006	0.457	0.540	0.000	0.958	1.000
C18.3n6	0.003	0.003	0.900	1.954	2.188	0.970	0.983
C15.0	0.002	0.002	1.060	1.546	1.609	0.980	0.782
C18.2n6t	0.002	0.003	0.609	0.190	0.184	0.987	0.628
C20.0	0.001	0.003	0.323	0.000	0.204	0.992	0.999
C24.0	0.001	0.004	0.276	0.199	0.000	0.997	0.195
C20.2	0.001	0.002	0.239	0.000	0.108	0.999	0.861
C22.2	0.000	0.001	0.186	0.000	0.026	1.000	0.703
C13.0	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C14.1	0.000	0.000	-	0.000	0.000	1.000	0.593
C15.1	0.000	0.000	-	0.000	0.000	1.000	0.593
C18.2n6c	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C20.3n3	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C22.1n9	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C24.1	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>

### Su22 Vs A22

C20.4n6	0.043	0.039	1.125	25.501	21.009	0.271	1.000
C20.5n3	0.019	0.049	0.381	0.826	3.059	0.387	1.000

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C16.0	0.016	0.013	1.266	22.488	22.271	0.487	1.000
C18.1n9	0.013	0.011	1.184	14.312	15.860	0.571	1.000
C20.3n6	0.012	0.011	1.086	4.260	5.373	0.644	0.417
C21.0	0.008	0.007	1.113	1.241	1.799	0.692	<b>0.024</b>
C23.0	0.007	0.005	1.306	3.060	3.361	0.734	1.000
C16.1	0.007	0.004	1.670	7.015	6.475	0.776	0.999
C18.3n3	0.005	0.004	1.271	3.318	3.347	0.808	0.942
C14.0	0.004	0.003	1.441	3.634	3.083	0.831	0.996
C18.0	0.004	0.003	1.346	4.999	4.643	0.854	1.000
C17.1	0.003	0.003	1.086	1.736	1.165	0.874	1.000
C18.2n6t	0.003	0.003	1.187	0.184	0.666	0.894	<b>0.003</b>
C20.0	0.003	0.005	0.593	0.204	0.504	0.914	0.434
C20.1	0.003	0.003	0.873	1.902	1.890	0.933	1.000
C22.6n3	0.003	0.008	0.333	0.000	0.564	0.950	1.000
C17.0	0.002	0.002	0.955	1.389	0.961	0.965	0.976
C18.3n6	0.002	0.002	1.366	2.188	2.298	0.978	0.994
C15.0	0.002	0.001	1.449	1.609	1.401	0.988	0.996
C20.2	0.001	0.003	0.413	0.108	0.180	0.997	0.194
C22.2	0.001	0.001	0.381	0.026	0.091	1.000	<b>0.004</b>
C13.0	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C14.1	0.000	0.000	-	0.000	0.000	1.000	0.417
C15.1	0.000	0.000	-	0.000	0.000	1.000	0.417
C18.2n6c	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C20.3n3	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C22.0	0.000	0.000	-	0.000	0.000	1.000	0.666
C22.1n9	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>
C24.0	0.000	0.000	-	0.000	0.000	1.000	0.800
C24.1	0.000	0.000	-	0.000	0.000	1.000	<b>0.001</b>

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**Table S5. Results of the univariate *many*-GLM on single FAs.**

<i>Mean</i>	<b>Temperature</b>		<b>Dissolved Oxygen</b>		<b>Salinity</b>	
	<i>Deviance</i>	<i>p-value</i>	<i>Deviance</i>	<i>p-value</i>	<i>Deviance</i>	<i>p-value</i>
C13.0	0.000	1.000	0.000	1.000	0.000	1.000
C14.0	1.608	0.795	7.677	0.075	1.852	0.555
C14.1	0.305	0.828	0.074	0.988	0.673	0.946
C15.0	3.101	0.467	0.773	0.964	6.269	0.118
C15.1	0.305	0.855	0.074	0.988	0.673	0.939
C16.0	23.952	<b>0.003</b>	1.208	0.947	44.987	<b>0.002</b>
C16.1	5.507	0.133	2.760	0.619	5.258	0.170
C17.0	11.514	0.012	4.405	0.335	2.487	0.492
C17.1	95.497	0.002	9.167	<b>0.047</b>	164.54	<b>0.002</b>
C18.0	14.382	0.007	4.843	0.279	4.310	0.249
C18.1n9	31.946	0.002	2.568	0.644	43.602	<b>0.002</b>
C18.2n6c	0.000	1.000	0.000	1.000	0.000	1.000
C18.3n6	0.000	0.999	4.775	0.285	2.240	0.524
C18.2n6t	4.212	0.246	0.114	0.988	4.272	0.249
C18.3n3	9.688	0.028	20.360	<b>0.002</b>	0.202	0.959
C20.0	1.041	0.795	0.505	0.964	5.236	0.170
C20.1	23.700	<b>0.003</b>	2.523	0.668	9.551	<b>0.033</b>
C20.2	1.611	0.795	0.078	0.988	2.068	0.524
C20.3n3	0.000	1.000	0.000	1.000	0.000	1.000
C20.3n6	3.969	0.250	0.256	0.978	8.609	<b>0.043</b>
C21.0	13.799	<b>0.008</b>	7.453	0.079	2.367	0.524
C20.4n6	71.930	<b>0.002</b>	0.877	0.964	611	<b>0.002</b>

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C20.5n3	67.083	<b>0.002</b>	1.697	0.871	181.1	<b>0.002</b>
C22.0	0.563	0.820	1.017	0.964	0.000	1.000
C22.1n9	0.000	1.000	0.000	1.000	0.000	1.000
C22.2	0.000	1.000	0.000	1.000	0.000	1.000
C23.0	43.418	<b>0.002</b>	2.172	0.714	139.7	<b>0.002</b>
C22.6n3	40.993	<b>0.002</b>	3.828	0.410	65.612	<b>0.002</b>
C24.0	2.308	0.584	1.714	0.871	0.316	0.958
C24.1	0.000	1.000	0.000	1.000	0.000	1.000
<i>Variance</i>						
C13.0	0.000	1.000	0.000	1.000	0.000	1.000
C14.0	0.350	0.975	0.862	0.863	14.890	<b>0.015</b>
C14.1	0.761	0.955	1.450	0.800	0.223	0.999
C15.0	5.672	0.073	4.330	0.263	0.000	1.000
C15.1	0.761	0.955	1.450	0.800	0.223	0.999
C16.0	60.515	<b>0.002</b>	31.469	<b>0.002</b>	2.403	0.760
C16.1	6.893	0.053	1.400	0.800	0.765	0.984
C17.0	13.833	0.006	5.844	0.155	0.119	1.000
C17.1	296.118	<b>0.002</b>	75.844	<b>0.002</b>	3.163	0.662
C18.0	11.575	0.011	5.183	0.180	1.684	0.895
C18.1n9	58.805	<b>0.002</b>	29.177	<b>0.002</b>	0.650	0.984
C18.2n6c	0.000	1.000	0.000	1.000	0.000	1.000
C18.3n6	0.676	0.955	1.557	0.800	4.269	0.546
C18.2n6t	2.498	0.378	0.844	0.863	0.767	0.984
C18.3n3	7.675	<b>0.045</b>	3.955	0.285	3.867	0.596
C20.0	4.224	0.162	8.677	<b>0.031</b>	1.275	0.934

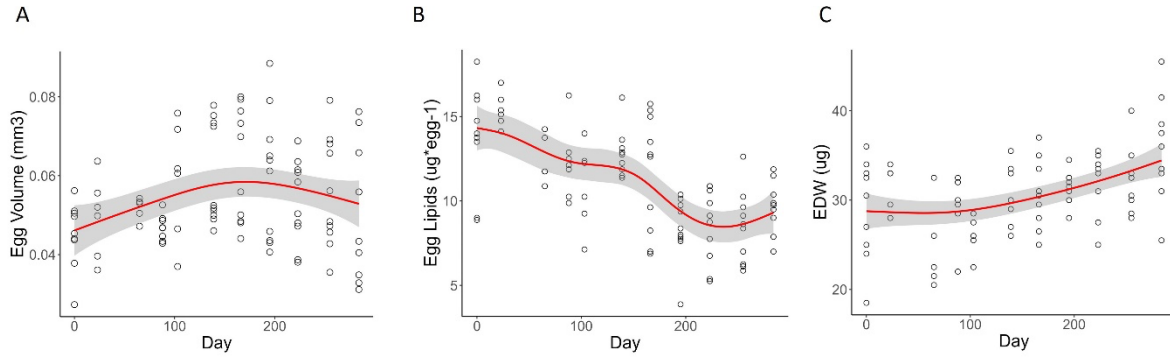
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C20.1	23.925	<b>0.003</b>	5.789	0.155	0.044	1.000
C20.2	3.490	0.231	3.591	0.346	0.816	0.984
C20.3n3	0.000	1.000	0.000	1.000	0.000	1.000
C20.3n6	10.051	<b>0.016</b>	11.342	<b>0.007</b>	2.991	0.673
C21.0	7.846	0.044	2.900	0.459	5.062	0.348
C20.4n6	355.870	<b>0.002</b>	88.710	<b>0.002</b>	6.100	0.240
C20.5n3	338.521	<b>0.002</b>	85.510	<b>0.002</b>	9.361	0.059
C22.0	0.293	0.975	0.249	0.875	0.055	1.000
C22.1n9	0.000	1.000	0.000	1.000	0.000	1.000
C22.2	0.000	1.000	0.000	1.000	0.000	1.000
C23.0	205.975	<b>0.002</b>	80.487	<b>0.002</b>	8.171	0.092
C22.6n3	136.596	<b>0.002</b>	59.582	<b>0.002</b>	5.806	0.280
C24.0	1.246	0.802	0.085	0.875	0.111	1.000
C24.1	0.000	1.000	0.000	1.000	0.000	1.000
<i>Predictability</i>						
C13.0	0.000	1.000	0.000	1.000	0.000	1.000
C14.0	0.246	0.988	0.054	0.966	1.608	0.780
C14.1	0.056	0.988	1.707	0.828	0.305	0.856
C15.0	0.677	0.980	0.190	0.966	3.101	0.503
C15.1	0.056	0.988	1.707	0.828	0.305	0.856
C16.0	1.201	0.939	8.733	0.076	23.952	<b>0.002</b>
C16.1	1.659	0.909	0.492	0.954	5.507	0.146
C17.0	6.128	0.220	13.535	<b>0.016</b>	11.514	<b>0.015</b>
C17.1	20.135	0.003	75.172	<b>0.002</b>	95.497	<b>0.002</b>
C18.0	0.269	0.988	2.602	0.619	14.382	<b>0.006</b>

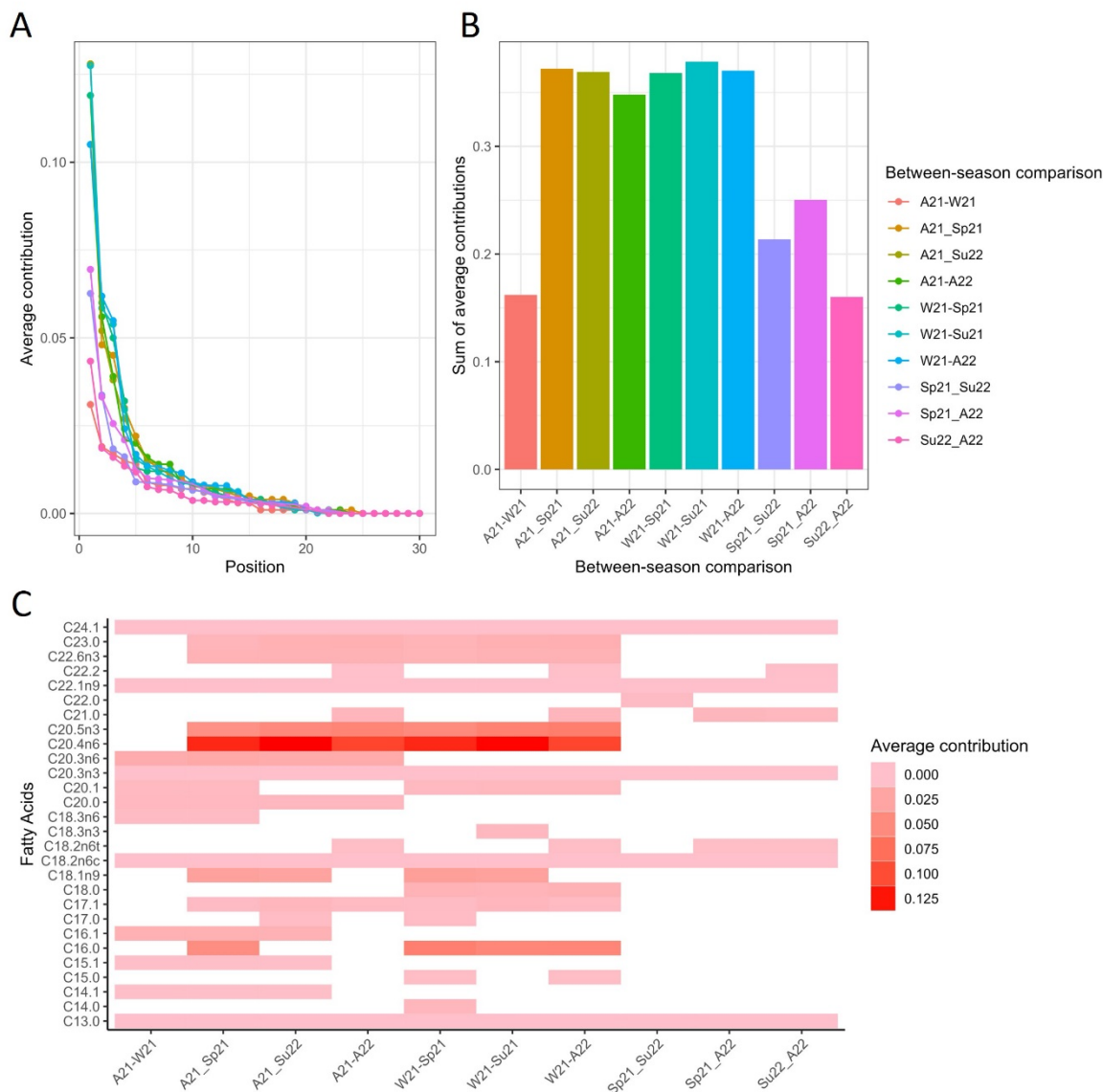
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C18.1n9	0.725	0.980	12.280	<b>0.018</b>	31.946	<b>0.002</b>
C18.2n6c	0.000	1.000	0.000	1.000	0.000	1.000
C18.3n6	0.381	0.986	1.276	0.828	0.000	0.997
C18.2n6t	0.190	0.988	0.164	0.966	4.212	0.267
C18.3n3	2.561	0.758	7.692	0.108	9.688	0.025
C20.0	0.032	0.988	6.175	0.175	1.041	0.787
C20.1	5.977	0.220	8.813	0.076	23.700	<b>0.002</b>
C20.2	0.822	0.980	1.528	0.828	1.611	0.780
C20.3n3	0.000	1.000	0.000	1.000	0.000	1.000
C20.3n6	1.448	0.909	12.954	<b>0.016</b>	3.969	0.276
C21.0	1.588	0.909	4.886	0.363	13.799	<b>0.006</b>
C20.4n6	4.860	0.441	29.051	<b>0.002</b>	71.930	<b>0.002</b>
C20.5n3	17.093	<b>0.007</b>	43.698	<b>0.002</b>	67.083	<b>0.002</b>
C22.0	0.747	0.980	0.071	0.966	0.563	0.856
C22.1n9	0.000	1.000	0.000	1.000	0.000	1.000
C22.2	0.000	1.000	0.000	1.000	0.000	1.000
C23.0	8.829	0.076	31.233	<b>0.002</b>	43.418	<b>0.002</b>
C22.6n3	8.863	0.076	39.986	<b>0.002</b>	40.993	<b>0.002</b>
C24.0	1.035	0.959	0.562	0.954	2.308	0.591
C24.1	0.000	1.000	0.000	1.000	0.000	1.000

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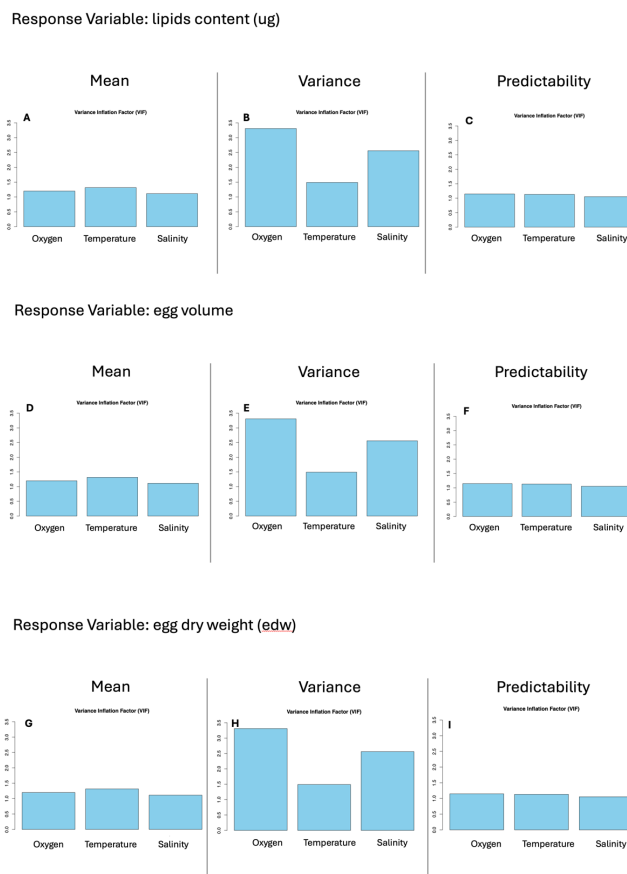


**Fig. S1. Time series of MI traits using General Additive Models (GAM) on (A) embryo volume, (B) embryo lipid content and (C) embryo dry weight.** In the X axes, time is given as Day (measured as elapsed time after the first sampling). Empty circles represent each sample (averaged per brood). The red line represents the predicted values of the statistical model, while the grey shade around the red line represents the 95% confident interval.

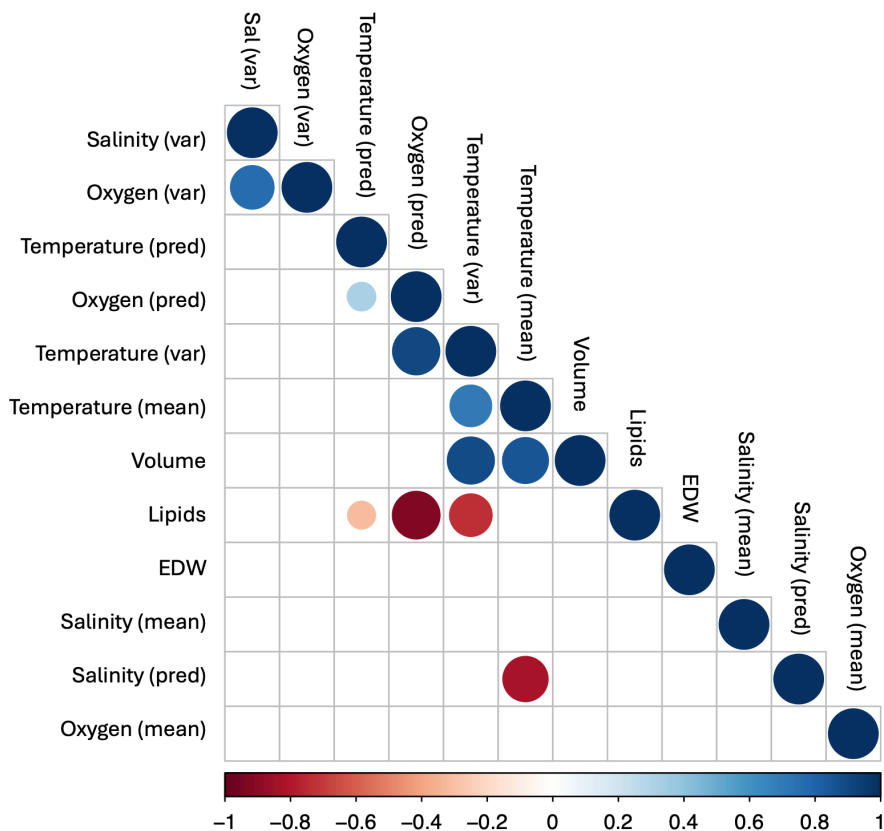


**Fig. S2. Graphical visualization of SIMPER analysis.** (A) Average contributions of each FA grouped by between-seasons comparison. The position of each FA is ranked from the most to the least important in term of contribution. (B) Sum of the average contribution (i.e. the average dissimilarity between observations) of all FAs for each between-season comparison. The heatmap in (C) represents the average contribution of each FA grouped by the between-season comparison found with the SIMPER analysis. The warmer the colour (red), the higher is the average contribution of the FA within each similarity group (between-season comparison). Blank cells are not significant. A21=Autumn 2021; W21=Winter 2021; Sp21=Spring 2021; Su22=Summer 2022; A22=Autumn 2022.





**Fig. S3.** Barplots showing the level of inflation for each predictor (oxygen, temperature, and salinity) when considering their mean (A-D-G), variance (B-E-H) and predictability (C-F-I) on the response variables (Embryo Lipid Content, Volume and dry weight). In all the barplot the VIF was lower than 5, the accepted threshold when considering a predictor inflating the model. Our models therefore are not affected by collinearity among explanatory variables.



**Fig. S4.** Correlation plot showing the level of correlations among our predictors and response variables. Blank cells represent non-significant correlations. Although a level of correlation is recorded for oxygen and temperature predictability and variance of salinity and oxygen, those did not inflate the model as detected by the VIF model (see Fig. 3).