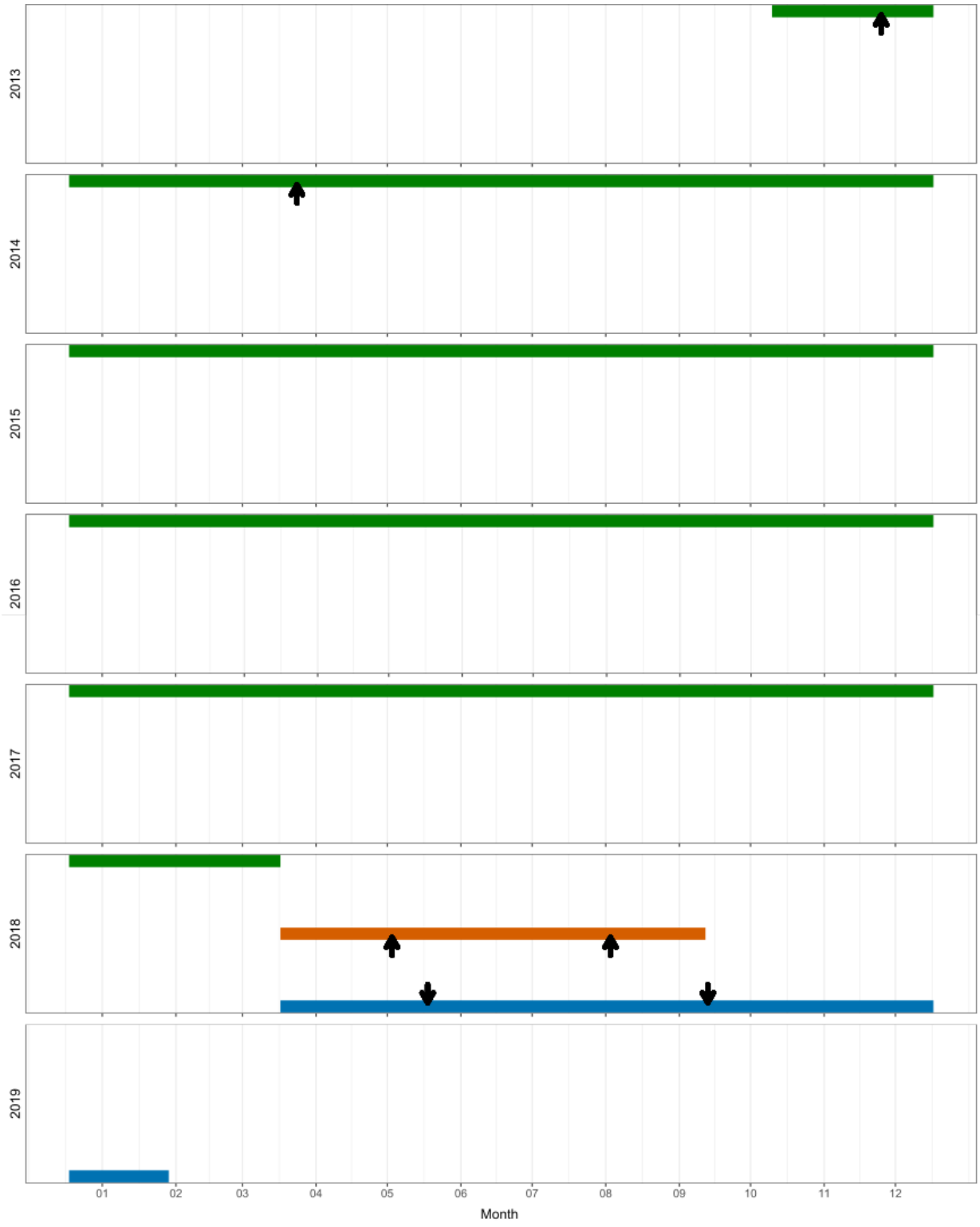

Fig. S1. Timeline of the rearing of the different treatment. Green (2013-2018): rearing of F0 fish; Orange (2018): rearing of F1-W fish; Blue (2018-2019): rearing of F1-C fish. Arrows indicate the time of metamorphosis from larvae to juveniles (first arrow per treatment) and when the fish reached the age of 3000 dd (second arrow per treatment). C- Cold life condition, W- Warm life condition.

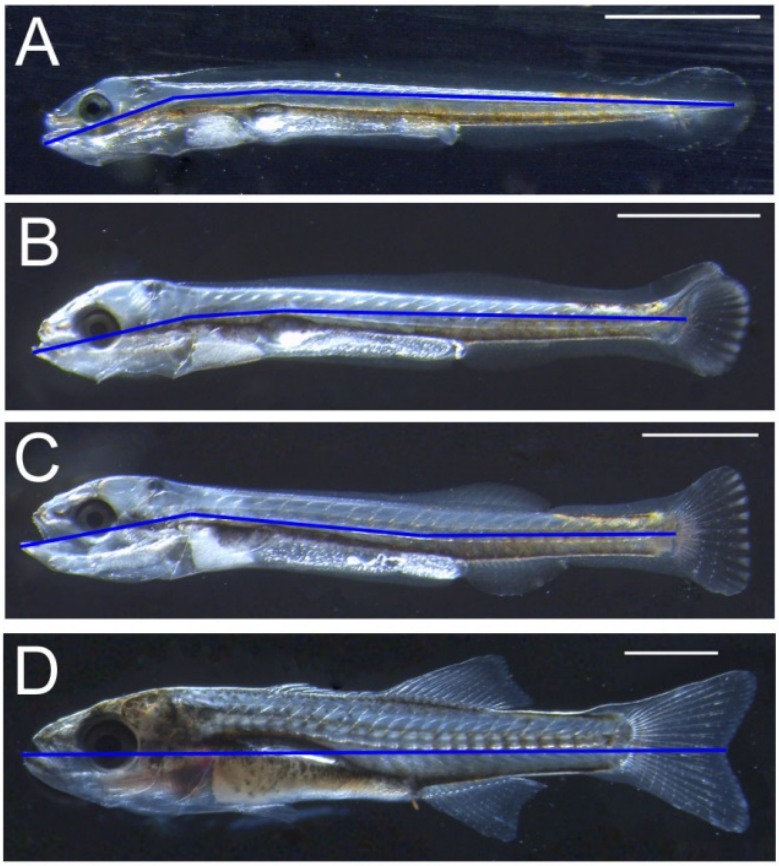

Fig. S2. Body length measurements in larvae at different developmental stages. A – pre flexion (about 300 dd), B – flexion (about 460 dd), D- post flexion (about 460 dd) and (post)metamorphosis (about 900 dd). Until post flexion the segmented line tool in the software ImageJ (Schneider, et al., 2012) was used to measure the length of the larva, afterwards the length of the larvae was measured as a straight line, as it would be done with callipers. The lines of the measurement are marked in blue.

Table S1. Light intensity during rearing phase of European sea bass larvae. Age is given in days post hatch (dph). Light intensity was changed at the indicated days and remained identical during the light phase until the next increase.

Age [dph]	2	8	11	20	30	32	36	46
Light intensity [lux]	0	0-1	1	7	10	31	59	96

Table S2. Larval mortality in % in the different larval rearing tanks (n=3). A – Ambient PCO_2 andD1000 – ambient + 1000 µatm CO_2, T – temperature, Rep 1-3 – replicate tank 1-3.

	A			Δ1000		
T [°C]	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
15	73.5	28.8	83.1	67.9	55.0	47.2
20	96.4	76.2	25.8	59.3	52.5	53.7

Table S3. Biometrical data of larvae used for respiration measurements. Treatments: C – cold life condition (15°C), W – warm life condition (20°C), A – ambient PCO_2, Δ1000 – ambient PCO_2 + 1000 µatm, values are means ± s.e.m. Different letters indicate significant differences between groups (LME, $P<0.05$).

Treatment	n	Dry weight [mg]	Bodylength [mm]
C – A	18	2.87±0.51[a]	13.96±0.77[a]
C – Δ1000	20	2.95±0.46[a]	14.04±0.80[a]
W – A	21	2.51±0.43[a]	13.04±0.71[a]
W – Δ1000	18	1.70±0.53[a]	11.63±0.85[a]

Table S4. Biometrical data of juveniles used for respiration measurements. Treatments: C – cold life condition (up to 18°C), W – warm life condition (up to 23°C), A – ambient PCO_2, Δ1000 – ambient PCO_2 + 1000 µatm, values are means ± s.e.m. Different letters indicate significant differences between groups (LME, P<0.05).

Generation	Treatment	Age [m]	n	Fish mass [g]	Forklength [mm]	Condition factor [-]
F0	C – A	6	20	5.06±0.24[a]	-	-
F0	C – Δ1000	6	20	5.85±0.27[a]	-	-
F0	C – A	18	24	81.80±2.60[b]	18.11±0.18[b]	1.37±0.02[b]
F0	C – Δ1000	18	24	81.40±3.22[b]	18.25±0.22[b]	1.33±0.03[b]
F1	C – A	10	33	15.00±0.69[c]	10.86±0.14[c]	1.14±0.02[c]
F1	C – Δ1000	10	26	13.05±0.56[c]	10.31±0.14[c]	1.17±0.01[c]
F1	W – Δ1000	5	29	15.73±1.01[c]	11.04±0.20[c]	1.12±0.02[c]