

Supplementary Material

Table S1. Temperature (°C) (mean \pm s.d.) over the experimental period (April-August 2019) in the four treatments: the two levels of temperature control (CT) and high (HT), and the two levels of food availability, high ration (HR), and low ration (LR).

Month	Treatment	Temperature (°C)
April	CT+HR	15.181 \pm 0.608
	CT+LR	15.777 \pm 1.472
	HT+HR	18.732 \pm 1.481
	HT+LR	18.641 \pm 2.014
May	CT+HR	15.349 \pm 0.560
	CT+LR	15.757 \pm 1.713
	HT+HR	19.183 \pm 1.804
	HT+LR	18.883 \pm 1.427
June	CT+HR	16.258 \pm 0.773
	CT+LR	16.028 \pm 1.571
	HT+HR	19.431 \pm 1.407
	HT+LR	18.964 \pm 1.456
July	CT+HR	16.790 \pm 0.541
	CT+LR	17.286 \pm 0.461
	HT+HR	20.076 \pm 0.628
	HT+LR	19.872 \pm 0.410
August	CT+HR	17.210 \pm 0.314
	CT+LR	17.495 \pm 0.448
	HT+HR	20.858 \pm 0.734
	HT+LR	20.527 \pm 1.007

Table S2. Primer sequences and amplicon size for the genes studied.

Gene	Primer sequences	Amplicon Size (bp)
<i>β-actin</i>	Fw: 5' - GTGCGTGACATCAAGGAGAAG -3' Rv: 5' - CGAGGAAGGATGGCTGGAA -3'	178
<i>cyp11b1</i>	Fw: 5' - GAGTGGAGCGAGAGGGAAGA -3' Rv: 5' - GATGGCGACGCAGAGAACAG -3'	142
<i>cyp19a1</i>	Fw: 5' - CCGCACAGAGTTCTTCCACA -3' Rv: 5' - CGTCACCAGGATCGACTTCA -3'	154
<i>20β-hsd</i>	Fw: 5' - GAGAAGTACGGAGGGGTGGA -3' Rv: 5' - ACATGTCTCTGGTGGCGAAG -3'	130

Fw: forward primer; Rv: reverse primer.

Table S3. Aikake's Information Criteria (AIC) model selection for “glmm” with: 1) negative binomial distribution for **Time to Ignore** the observer; 2) gaussian distribution for duration of **Locomotion** behaviours; 3) negative binomial distribution for duration of **Rest** behaviours; 4) negative binomial distribution for the frequency fish **Hide**; 5) negative binomial distribution for the frequency fish show **Aggression**. Temperature refers to Control (CT) or High T°C (HT). Food refers to high ration (HR) or low ration (LR) treatments, day refers to the day of observation (1 to 3). The selected model is shown in bold.

Time to ignore		
Variables	df	AIC
T° x Food x Day	11	996.541
T° x Food	7	998.467
T° x Food + Day	8	1000.411
Locomotion		
Variables	df	AIC
T° x Food x Day	11	1217.586
T° x Food	7	1210.926
T° x Food + Day	8	1212.924
Rest		
Variables	df	AIC

T° x Food x Day	10	387.995
T° x Food	6	382.274
T° x Food + Day	7	383.608
Hide		
Variables	df	AIC
T° x Food x Day	10	642.890
T° x Food	6	634.895
T° x Food + Day	7	636.895
Aggression		
Variables	df	AIC
T° x Food x Day	10	366.253
T° x Food	6	360.679
T° x Food + Day	7	361.983

Table S4. Effect of temperature (control, CT, and high, HT) and food availability (high ration, HR, and low ration, LR) on the gonadosomatic index of males (♂) and females (♀) of two-spotted gobies, *Pomatochistus flavescens*. Bold text indicates significant treatment effects ($p \leq 0.05$) as compared to CT+HR.

Conditional model - ♂	Estimate	t value	Pr(> t)
CT+LR	-0.434	-2.759	0.010
HT+HR	-0.348	-2.208	0.035
HT+LR	0.282	1.125	0.270
Conditional model - ♀			
CT+LR	-1.574	-1.177	0.253
HT+HR	0.052	0.048	0.963
HT+LR	-0.487	-0.275	0.786

Table S5. Effect of temperature (control, CT, and high, HT) and food availability (high ration, HR, and low ration, LR) on two-spotted goby, *Pomatochistus flavescens* size (SL) and weight (W), after 4 months of exposure to the treatments. Bold text indicates significant treatment effects ($p \leq 0.05$) as compared to CT+HR.

Conditional model – SL	Estimate	t value	Pr(> t)
CT+LR	-0.293	-3.580	<0.001
HT+HR	-0.012	-0.165	0.869
HT+LR	0.042	0.348	0.729
Conditional model - W			
CT+LR	-0.223	-4.035	<0.001
HT+HR	-0.063	-1.235	0.222
HT+LR	0.103	1.265	0.211

Table S6 - Effect of Control (CT) and High (HT) temperature treatments on fatty acid profile (% of total FA) of two-spotted goby, *Pomatochistus flavescens*. Bold text indicates significant treatment effects ($p \leq 0.05$) as compared to CT+HR treatment.

Fatty Acids	Resid. Dev	F	Pr(>F)
Saturated (SFA)			
14:0	0.527	1.59	0.226
16:0	6.17	8.10	0.012
18:0	2.88	0.04	0.837
Other SFA	1.24	0.21	0.655
Σ SFA	10.45	5.91	0.027
Monounsaturated (MUFA)			
16:1 <i>n</i> -9/ <i>n</i> -7	5.57	0.03	0.865
18:1 <i>n</i> -9/ <i>n</i> -7	288.24	0.017	0.898
Other MUFA	0.070	1.11	0.308
Σ MUFA	272.14	0.02	0.903
Polyunsaturated (PUFA)			
18:2 <i>n</i> -6	102.78	0.012	0.914
18:3 <i>n</i> -3	6.82	4.18	0.058
20:4 <i>n</i> -6	0.48	0.54	0.473
20:5 <i>n</i> -3	5.10	7.89	0.013
22:5 <i>n</i> -3	120.60	1.09	0.312
22:6 <i>n</i> -3	164.77	0.88	0.363
Other PUFA	197.86	0.46	0.508
Σ PUFA	389.52	3.26	0.090
Σ <i>n</i> -3	436.50	3.98	0.063
Σ <i>n</i> -6	10.63	1.41	0.253
<i>n</i> -3/ <i>n</i> -6	4.98	3.98	0.063
Total	673.85	3.07	0.099