

SUPPLEMENTARY

Table S1: Statistical results of the linear model testing the effect of species, sex, and month on the Le Cren condition index. The best model was selected with the AIC as being $\text{lme}(\text{Le.Cren.index} \sim \text{Species} + \text{Sex} + \text{Sampling_Months}, \text{random} = \sim 1 | \text{Fish_}, \text{data} = \text{data})$. Significant effects are indicated in bold.

	DF	F-value	p-value
(Intercept)	25	17771.2	<0.001
Species	19	11.4	3.2^E-3
Sex	19	0.3 ^E -1	0.95
Month	19	26.6	<0.001

Table S2: Statistical results of the linear model testing the effect of species, sex, month on the gonado-somatic index. The best model was selected with the AIC as being $\text{lme}(\text{GSI} \sim \text{Species} * \text{Sex} * \text{Sampling_Months}, \text{random} = \sim 1 | \text{Fish_}, \text{data} = \text{data}, \text{na.action} = \text{na.omit})$

	DF	F-value	p-value
(Intercept)	25	215.6	< 0.001
Species	14	0.27	0.61
Sex	14	2.0	0.2
Month	14	0.5	0.5
Species:Sex	14	2.7	0.1
Species: Month	14	0.3	0.6
Sex: Months	14	6.2	0.02
Species:Sex:Month	14	0.35	0.56

Table S3: Statistical results of the linear model testing the effect of species, sex, month on the neutral/polar lipids ratio. The best model was selected with the AIC as being lme(ratio~Species*Sex*Sampling_Months*Tissue, random =~1|Fish_., data=data, na.action=na.omit)

	DF	F-value	p-value
(Intercept)	39	65.4	<.0001
Species	39	3.8	0.06
Sex	39	6.8	0.01
Month	39	6.1	0.02
Tissue	23	14.5	<.001
Species:Sex	39	1.1	0.3
Species:Month	39	2.5	0.1
Sex:Month	39	7.7 ^E -3	0.9
Species:Tissue	23	10.7	0.003
Sex:Tissue	23	1.3	0.3

Table S4: PERMANOVA (Euclidian method performed on centered log data) complete results for comparison in fatty acid percentages among tissues (gonad and muscle), species (*S. aurita* and *S. maderensis*), sexes, lipid fraction (polar and neutral), sampling month (January and March) and their interactions.

Variable	Df	SumOfSqs	R ²	F	P-value	Significance
Fraction	1	274.8	0.39	185.8	0.001	***
Tissue	1	32.6	0.05	22051	0.001	***
Sex	1	29.3	0.04	19.8	0.001	***
Month	1	27.4	0.04	18.5	0.001	***
Species	1	5.7	0.01	3.8	0.018	*
Tissue:Species	1	2.0	0.03 ^E -1	1.3	0.201	
Tissue:Sex	1	23.4	0.03	15.8	0.001	***
Species:Sex	1	1.3	0.02 ^E -1	0.9	0.402	
Tissue:Fraction	1	32.9	0.05	22.2	0.001	***
Species:Fraction	1	3.3	0.05 ^E -1	2.2	0.083	.
Sex:Fraction	1	14.3	0.02	9.7	0.001	***
Tissue:Month	1	6.3	0.01	4.2	0.017	*
Species:Month	1	5.8	0.01	3.9	0.023	*
Sex:Month	1	3.4	0.05 ^E -1	2.3	0.084	.
Fraction:Month	1	7.0	0.01	4.7	0.007	**
Tissue:Species:Sex	1	2.3	0.03 ^E -1	1.6	0.173	
Tissue:Species:Fraction	1	1.3	0.02 ^E -1	0.9	0.391	
Tissue:Sex:Fraction	1	12.5	0.02	8.4	0.001	***
Species:Sex:Fraction	1	1.3	0.02 ^E -1	0.9	0.375	
Tissue:Species:Month	1	1.7	0.02 ^E -1	1157	0.294	
Tissue:Sex:Month	1	1.6	0.02 ^E -1	1106	0.277	
Species:Sex:Month	1	2.7	0.04 ^E -1	1.9	0.130	
Tissue:Fraction:Month	1	6.9	0.01	4.6	0.013	*
Species:Fraction:Month	1	1.1	0.02 ^E -1	0.8	0.464	
Sex:Fraction:Month	1	0.8	0.01 ^E -1	0.5	0.703	
Tissue:Species:Sex:Fraction	1	1.1	0.02 ^E -1	0.7	0.491	
Tissue:Species:Sex:Month	1	0.6	0.01 ^E -1	0.4	0.805	
Tissue:Species:Fraction:Month	1	1.6	0.02 ^E -1	1.1	0.321	
Tissue:Sex:Fraction:Month	1	5.2	0.07 ^E -1	3.5	0.024	*
Species:Sex:Fraction:Month	1	0.6	9 ^E -4	0.4	0.758	
Tissue:Species:Sex:Fraction:Month	1	0.4	0.01 ^E -1	0.3	0.897	
Residual	137	202.6	0.28			
Total	168	713.5	1			

43 Table S5: Statistical results of the linear model testing the effect of tissues (gonad and muscle),
 44 species, sexes, lipid fraction (polar and neutral), sampling month (January and March) and their
 45 interactions on DHA, ARA, and EPA fatty acid concentrations. Lme (Fatty acid~
 46 Species*Sex*Month*Fraction*Tissue, random =~1|Individual, data=data). Significant effects
 47 are indicated in bold.

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Variable	numDF	denDF	F-value	p-value
DHA concentration				
(Intercept)	1	97	919.1	< 0.001
Species	1	40	3.7	0.06
Sex	1	40	0.06	0.81
Month	1	40	15.42	< 0.001
Fraction	1	97	218.96	< 0.001
Tissu	1	97	156.39	< 0.001
Species:Sex	1	40	0.38	0.54
Species:Month	1	40	0.27	0.61
Sex:Month	1	40	2.29	0.14
Species:Fraction	1	97	2.22	0.14
Sex:Fraction	1	97	6.64	0.01
Month:Fraction	1	97	0.74	0.39
Species:Tissue	1	97	0.01	0.92
Sex:Tissue	1	97	0.30	0.58
Month:Tissue	1	97	0.89	0.35
Fraction:Tissue	1	97	54.35	< 0.001
Species:Sex:Month	1	40	1.52	0.22
Species:Sex:Fraction	1	97	1.75	0.19
Species:Month:Fraction	1	97	3.04	0.08
Sex:Month:Fraction	1	97	0.71	0.40
Species:Sex:Tissue	1	97	2.08	0.15
Species:Month:Tissue	1	97	0.05	0.83
Sex:Month:Tissue	1	97	2.24	0.14
Species:Fraction:Tissue	1	97	1.60	0.21
Sex:Fraction:Tissue	1	97	0.26	0.61
Month:Fraction:Tissue	1	97	1.15	0.29
Species:Sex:Month:Fraction	1	97	5.02	0.03
Species:Sex:Month:Tissue	1	97	0.25	0.62
Species:Sex:Fraction:Tissue	1	97	0.09	0.77
Species:Month:Fraction:Tissue	1	97	0.90	0.35
Sex:Month:Fraction:Tissue	1	97	0.11	0.74
Species:Sex:Month:Fraction:Tissue	1	97	0.73	0.40
EPA concentration				
(Intercept)	1	97	435.04	< 0.001
Species	1	40	0.45	0.51
Sex	1	40	13.70	< 0.001
Month	1	40	37.64	< 0.001
Fraction	1	97	0.46	0.50
Tissue	1	97	34.65	< 0.001
Species:Sex	1	40	0.93	0.34
Species:Month	1	40	5.90	0.02
Sex:Month	1	40	1.08	0.30
Species:Fraction	1	97	4.62	0.03
Sex:Fraction	1	97	4.55	0.04
Month:Fraction	1	97	8.05	< 0.01
Species:Tissue	1	97	2.09	0.15
Sex:Tissue	1	97	0.83	0.36

Variable	numDF	denDF	F-value	p-value
Month:Tissue	1	97	0.34	0.56
Fraction:Tissue	1	97	29.71	< 0.001
Species:Sex:Month	1	40	0.10	0.76
Species:Sex:Fraction	1	97	4.85	0.03
Species:Month:Fraction	1	97	1.52	0.22
Sex:Month:Fraction	1	97	0.21	0.65
Species:Sex:Tissue	1	97	0.01 ^{E-1}	0.97
Species:Month:Tissue	1	97	0.03	0.87
Sex:Month:Tissue	1	97	2.50	0.12
Species:Fraction:Tissue	1	97	3.59	0.06
Sex:Fraction:Tissue	1	97	1.24	0.27
Month:Fraction:Tissue	1	97	2.97	0.09
Species:Sex:Month:Fraction	1	97	2.69	0.10
Species:Sex:Month:Tissue	1	97	0.02	0.89
Species:Sex:Fraction:Tissue	1	97	0.64	0.42
Species:Month:Fraction:Tissue	1	97	1.92	0.17
Sex:Month:Fraction:Tissue	1	97	0.01	0.91
Species:Sex:Month:Fraction:Tissue	1	97	0.38	0.54

ARA concentration

(Intercept)	1	97	725.17	< 0.001
Species	1	40	10.11	< 0.01
Sex	1	40	0.02 ^{E-1}	0.97
Month	1	40	9.79	< 0.01
Fraction	1	97	122.61	< 0.001
Tissue	1	97	147.43	< 0.001
Species:Sex	1	40	0.15	0.70
Species:Month	1	40	4.00	0.05
Sex:Month	1	40	1.09	0.30
Species:Fraction	1	97	2.60	0.11
Sex:Fraction	1	97	0.13	0.72
Month:Fraction	1	97	8.59	< 0.01
Species:Tissue	1	97	0.32	0.57
Sex:Tissue	1	97	0.16	0.69
Month:Tissue	1	97	12.98	< 0.001
Fraction:Tissue	1	97	67.60	< 0.001
Species:Sex:Month	1	40	0.06	0.81
Species:Sex:Fraction	1	97	1.18	0.28
Species:Month:Fraction	1	97	0.40	0.53
Sex:Month:Fraction	1	97	0.80	0.37
Species:Sex:Tissue	1	97	0.36	0.55
Species:Month:Tissue	1	97	0.06	0.80
Sex:Month:Tissue	1	97	0.22	0.64
Species:Fraction:Tissue	1	97	2.37	0.13
Sex:Fraction:Tissue	1	97	2.32	0.13
Month:Fraction:Tissue	1	97	0.01	0.91
Species:Sex:Month:Fraction	1	97	0.05	0.82
Species:Sex:Month:Tissue	1	97	0.59	0.45
Species:Sex:Fraction:Tissue	1	97	0.30	0.58
Species:Month:Fraction:Tissue	1	97	0.61	0.44
Sex:Month:Fraction:Tissue	1	97	1.36	0.25
Species:Sex:Month:Fraction:Tissue	1	97	0.11	0.74

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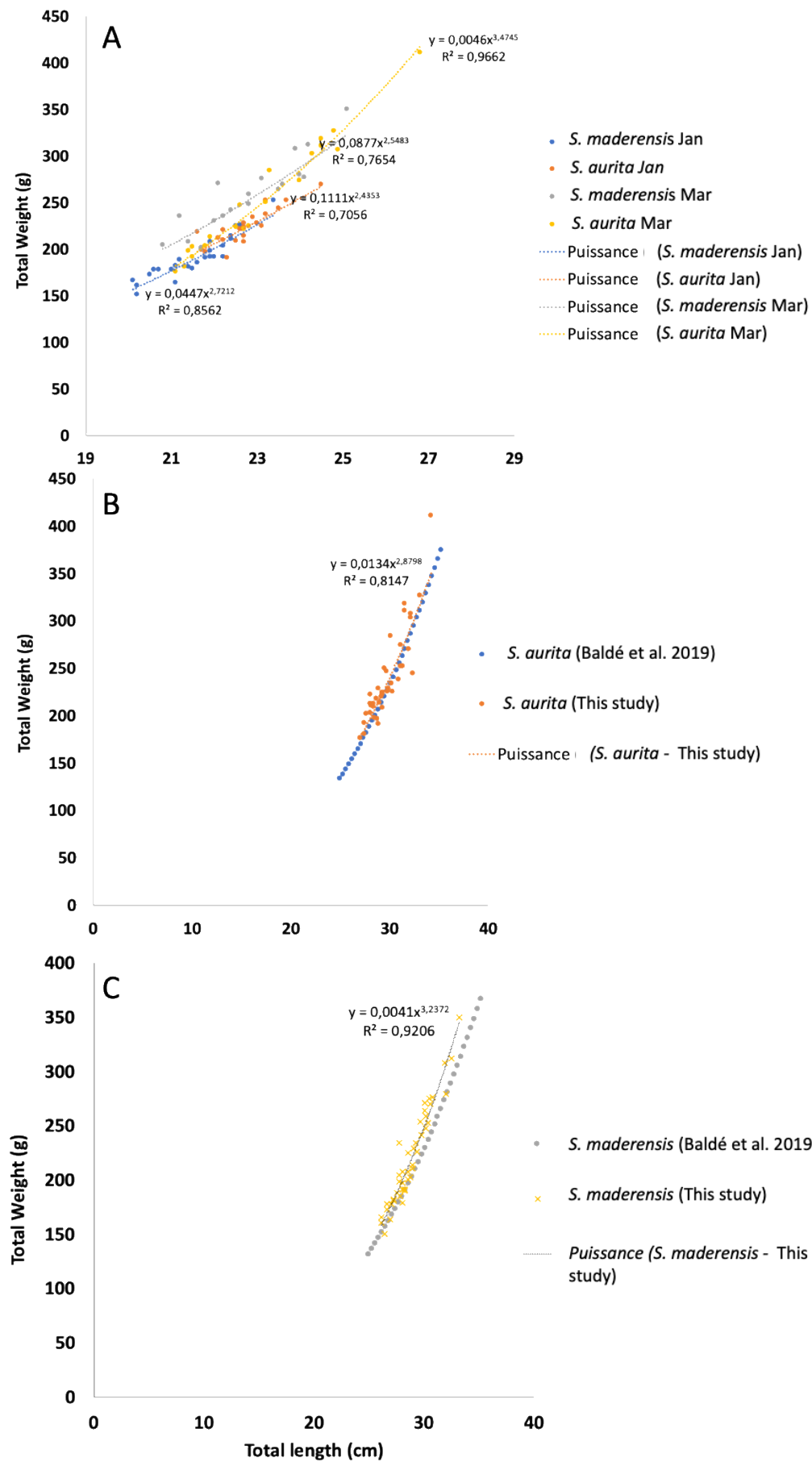


Figure S1: Total Length-Weight relationship of Sardinellas. (A) the *Sardinella aurita* and *Sardinella maderensis* individuals sampled in this study in January (Jan) and March (Mar); (B) the *S. aurita* individuals sampled in this study compared to the relationship found by Baldé et al. (2019) for the same species, (C) the *S. maderensis* individuals sampled in this study compared to the relationship found by Ba et al. (2016) for the same species.