

SUPPLEMENTARY MATERIAL

Ecological traits and trophic plasticity in the greater pipefish *Syngnathus acus* in NW Iberian Peninsula

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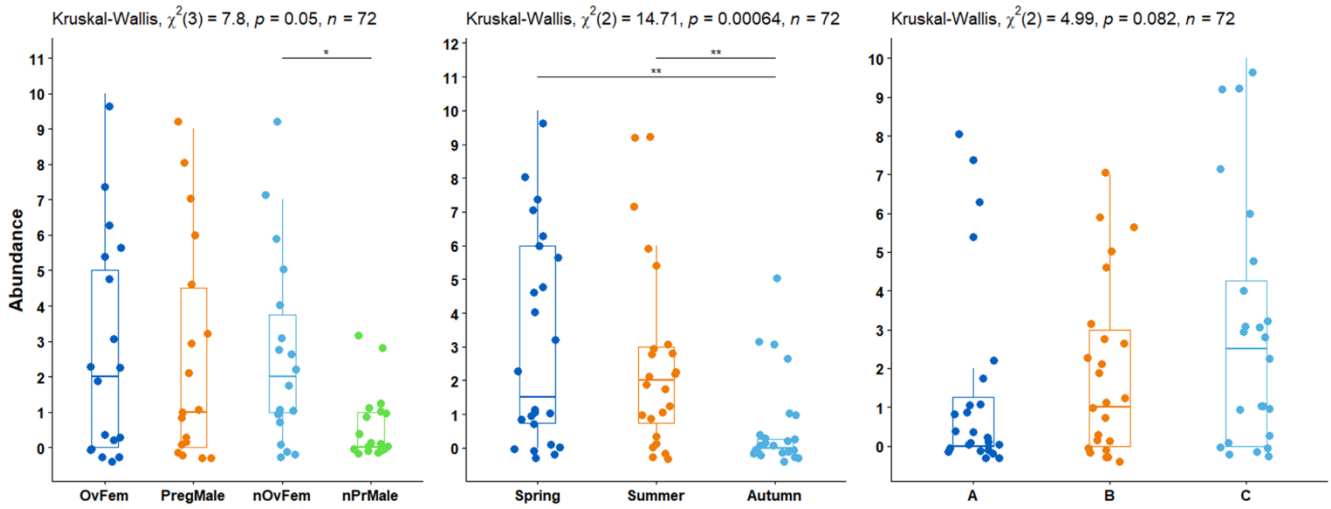


Figure S1. Abundances in *Syngnathus acus* collected in Cíes Archipelago (2017-2018) considering reproductive states (ovigerous females, pregnant males, nonovigerous females and non-pregnant males), seasons (spring, summer and autumn) and sites (A, B and C). Significances of Kruskal-Wallis test are shown.

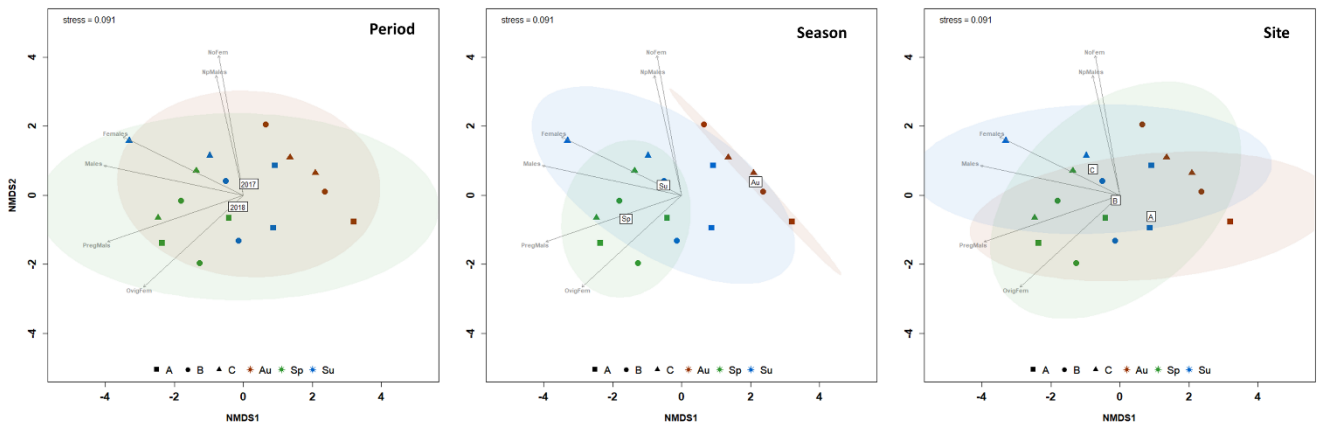


Figure S2. Two-dimensional non-metric multidimensional scaling (NMDS; Bray–Curtis similarities) plot for *Syngnathus acus* individuals collected in Cíes Archipelago considering period (years 2017 and 2018), seasons (spring, summer and autumn) and sites (A, B and C). The confidence limits for ellipses (95% confidence) are shown. The influence of reproductive states (ovigerous females, pregnant males, nonovigerous females and non-pregnant males) are indicated by arrows. Each mark corresponds to mean values for duplicate samples.

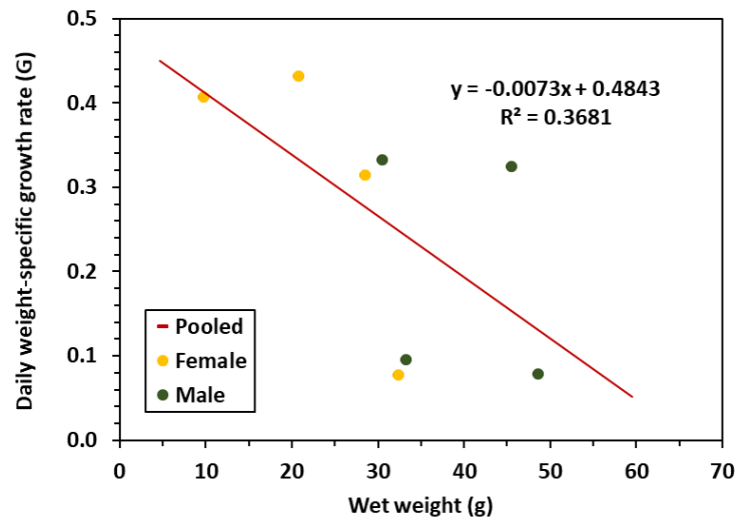


Figure S3. Relationship between wet weight and daily weight-specific growth rate in *Syngnathus acus* collected in Cíes Archipelago. Only recaptured individuals are included.

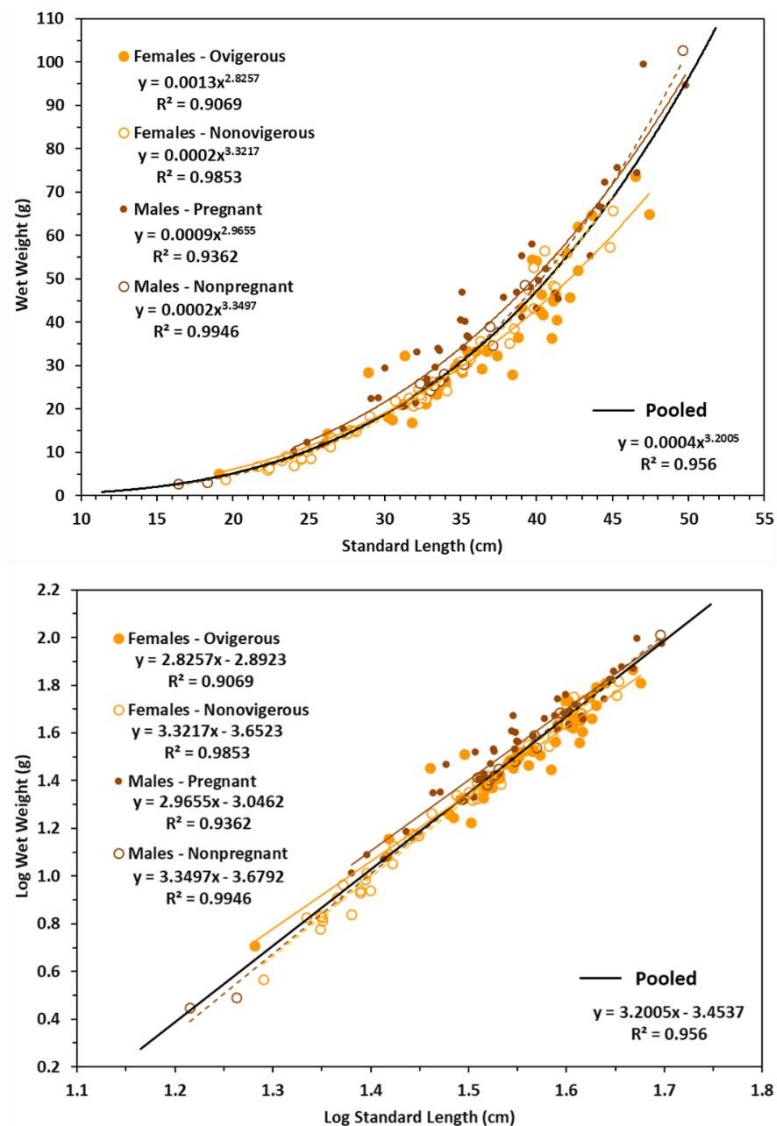


Figure S4. Length-weight relationships in mature (continuous line) and immature (dotted line) *Syngnathus acus* males and females captured in surveys carried out in spring, summer and autumn (2017 and 2018) on sites A, B and C in Cíes Archipelago.

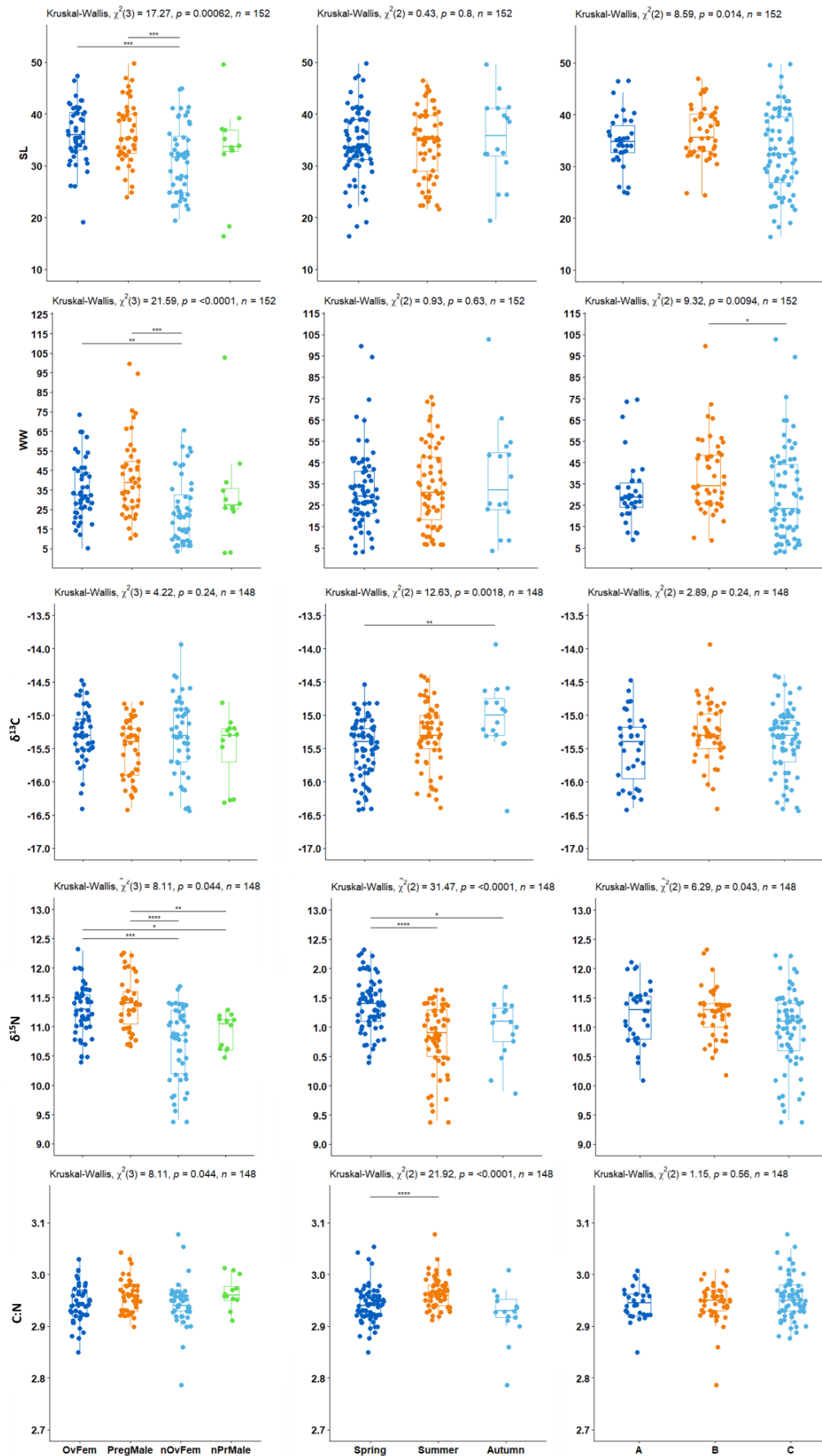


Figure S5. SL (cm), WW (g), $\delta^{13}\text{C}$ (‰), $\delta^{15}\text{N}$ (‰) and C:N values in *Syngnathus acus* collected in Cíes Archipelago (2017-2018) considering reproductive states (ovigerous females, pregnant males, nonovigerous females and non-pregnant males), seasons (spring, summer and autumn) and sites (A, B and C). Significances of Kruskal-Wallis test are shown.

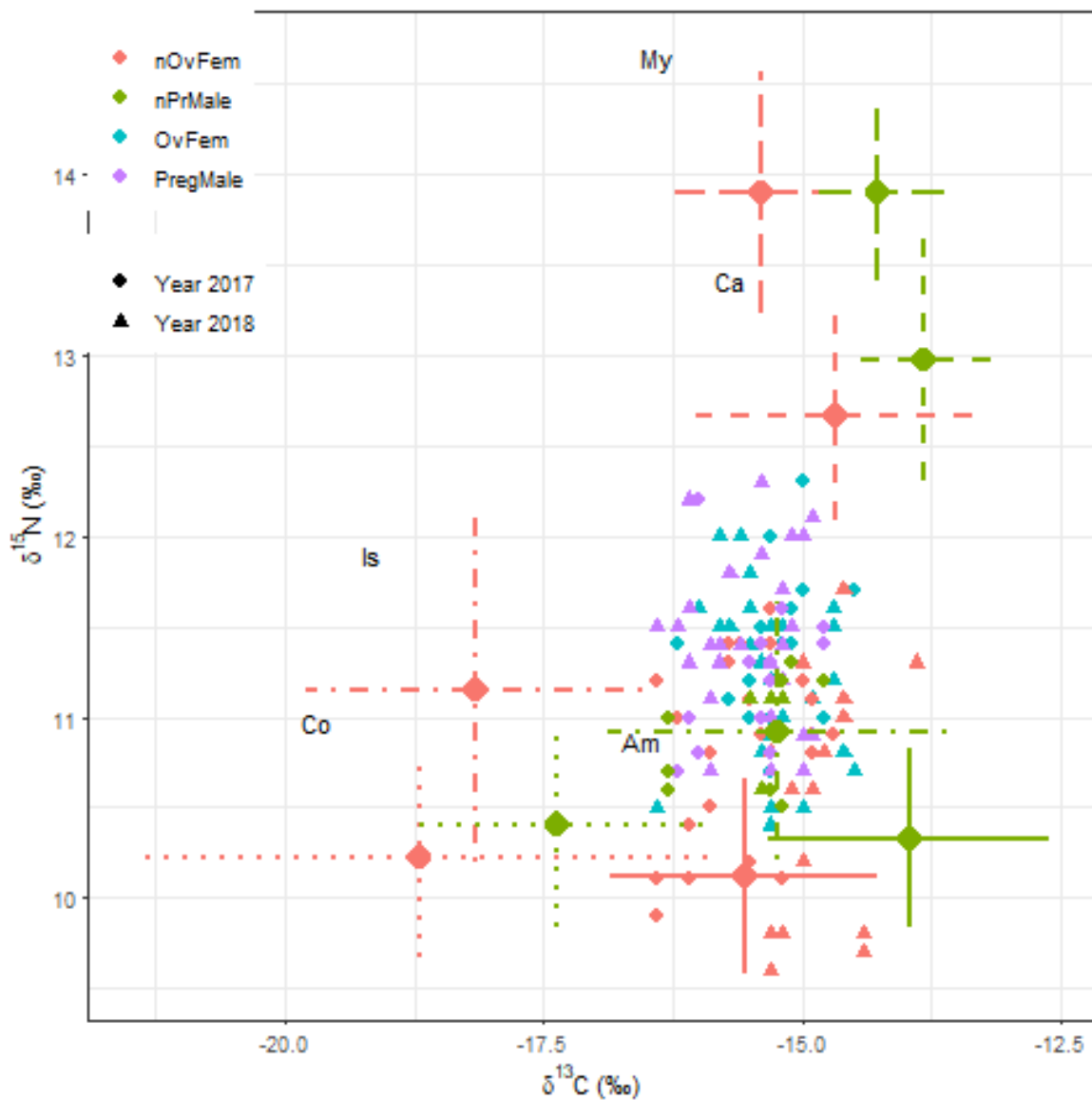


Figure S6. Isotopic bi-plot for reproductive stages in *Syngnathus acus* (n=146; 2017 and 2018 surveys) relative to average $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ signatures of five potential prey sources (mean \pm sd; crosses) adjusted for TDF values and consumers (coloured small symbols). TDF values: 2.5 for ^{13}C and 3.9 for ^{15}N [58]. Two consumers with a low probability (<5%) were excluded on both the plot and the subsequent mixing model [65]. Sources: Am - Amphipoda, Co - Copepoda, Ca - Caridea, Is – Isopoda, and My - Mysidacea. Reproductive stages: nOvFem – Nonovigerous female; nPrM – Non-pregnant male; OvFem – Ovigerous female; PregMale – Pregnant male.



Figure S7: Percent (mean \pm sd) contribution of potential prey sources to *S. acus* diet as estimated by Bayesian Stable Isotope Mixing Model (SIMM) (MixSIAR package in R v. 3.1.12). Analyses based on isotopic data for dorsal fin tissues of 146 fishes sampled on Cíes Archipelago in 2017-2018. Bayesian models run (long run; chain length=300,000, burn=200,000) using experimentally derived TDF values ($\Delta^{13}\text{C}=2.50\text{‰}$; $\Delta^{15}\text{N}=3.91\text{‰}$) (see [58] for further details). Convergence and diagnostic statistics evaluated using Gelman–Rubin and Geweke tests.

Sources: Amphipods: *Amphilochus manudens*, *Apherusa* spp., *Caprella acanthifera*, *C. linearis*, *Corophium* spp., and other gammaridae
 Caridea: *Hippolyte varians*
 Copepods: Harpacticoida
 Isopoda: *Cymodoce truncata*, *Dynamene bidentata*
 Mysidacea: *Siriella armata*.

Table S1. Standard length (cm) and wet weight (g) in *Syngnathus acus* collected in 2017-2018 in Cíes Archipelago. Recaptured specimens are not included.

	Standard length (cm)				Wet weight (g)			
	Mean \pm sd	Max	Min	n	Mean \pm sd	Max	Min	n
Total	34.4 \pm 6.8	49.8	6.8	152	33.3 \pm 19.3	102.7	2.8	152
Period								
2017	33.6 \pm 6.9	49.6	16.4	70	30.7 \pm 18.6	102.7	2.8	70
2018	35.2 \pm 6.6	49.8	21.6	82	35.4 \pm 19.7	99.6	6.0	82
Season								
Spring	34.3 \pm 6.6	49.8	16.4	75	31.9 \pm 18.1	99.6	2.8	75
Summer	34.4 \pm 6.7	46.5	21.6	61	33.8 \pm 19.2	75.6	6.5	61
Autumn	35.3 \pm 8.1	49.6	19.5	16	37.7 \pm 25.3	102.7	3.7	16
Site								
A	35.0 \pm 5.3	46.6	24.9	34	31.5 \pm 15.7	74.5	8.7	34
B	36.6 \pm 5.0	47.0	24.5	47	39.0 \pm 17.4	99.6	8.7	47
C	32.7 \pm 8.0	49.8	16.4	71	30.3 \pm 21.4	102.7	2.8	71

Table S2. Isotopic profiles ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) and C:N ratios in *Syngnathus acus* collected in 2017-2018 in Cíes Archipelago. Recaptured specimens are not included.

	$\delta^{13}\text{C}$ (‰)				$\delta^{15}\text{N}$ (‰)				C:N			
	Mean \pm sd	Max	Min	n	Mean \pm sd	Max	Min	n	Mean \pm sd	Max	Min	n
Total	-15.4 \pm 0.5	-13.9	-16.4	148	11.1 \pm 0.6	12.3	9.4	148	3.0 \pm 0.1	3.5	2.8	148
Period												
2017	-15.4 \pm 0.5	-14.5	-16.4	68	11.1 \pm 0.5	12.3	9.9	68	3.0 \pm 0.1	3.5	2.9	70
2018	-15.3 \pm 0.5	-13.9	-16.4	80	11.1 \pm 0.6	12.3	9.4	80	2.9 \pm 0.0	3.0	2.8	80
Season												
Spring	-15.5 \pm 0.4	-14.5	-16.4	71	11.4 \pm 0.4	12.3	10.4	71	2.9 \pm 0.0	3.0	2.9	71
Summer	-15.3 \pm 0.5	-14.4	-16.4	61	10.8 \pm 0.6	11.6	9.4	61	3.0 \pm 0.0	3.1	2.9	61
Autumn	-15.0 \pm 0.5	-13.9	-16.4	61	11.0 \pm 0.5	11.7	9.9	61	3.0 \pm 0.2	3.5	2.8	61
Site												
A	-15.0 \pm 0.5	-14.5	-16.4	32	11.2 \pm 0.5	12.1	10.1	32	2.9 \pm 0.0	3.0	2.9	32
B	-15.3 \pm 0.4	-13.9	-16.4	48	11.2 \pm 0.4	12.3	10.2	48	2.9 \pm 0.0	3.0	2.8	48
C	-15.4 \pm 0.5	-14.4	-16.4	68	11.0 \pm 0.7	12.2	9.4	68	3.0 \pm 0.1	3.5	2.9	68