

# Stable isotopes reveal temporal and between-habitat changes in trophic pathways in a southwestern Atlantic estuary

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Table S1. Mean values ( $\pm$  SD) of the total length (TL, mm) and  $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$ , and C:N ratios of macroconsumers, microconsumers, and basal sources collected in the marsh creek (MC) and the mudflat (MF) of the Patos Lagoon estuary across seasons (autumn, winter, spring, and summer). Superscript letters 'a' and 'b' denote plants with C3 and C4 photosynthesis, respectively. POM: suspended particulate organic matter; SOM: organic matter in the sediment

	Marsh creek (MC)																				
	Autumn					Winter					Spring					Summer					
	n	TL	$\delta^{13}\text{C}$	$\delta^{15}\text{N}$	C:N	n	TL	$\delta^{13}\text{C}$	$\delta^{15}\text{N}$	C:N	n	TL	$\delta^{13}\text{C}$	$\delta^{15}\text{N}$	C:N	n	TL	$\delta^{13}\text{C}$	$\delta^{15}\text{N}$	C:N	
<b>Macro-consumers</b>																					
<b>Fishes</b>																					
<i>Atherinella brasiliensis</i>	10	74.3 $\pm$ 25.6	-16.1 $\pm$ 0.7	14.0 $\pm$ 0.8	3.4	8	69.4 $\pm$ 23.8	-15.3 $\pm$ 0.5	13.7 $\pm$ 1.3	3.4	2	72.5 $\pm$ 2.1	-15.4 $\pm$ 0.4	14.7 $\pm$ 0.2	3.5	3	54.7 $\pm$ 11.2	-14.1 $\pm$ 1.3	12.7 $\pm$ 0.1	3.4	
<i>Jenynsia multidentata</i>	9	47.1 $\pm$ 17.0	-16.8 $\pm$ 0.9	13.0 $\pm$ 0.5	3.4	8	41.8 $\pm$ 13.3	-16.4 $\pm$ 2.0	13.4 $\pm$ 0.6	3.5	2	52.0 $\pm$ 4.2	-21.0 $\pm$ 1.2	12.0 $\pm$ 1.5	3.4	8	60.8 $\pm$ 17.7	-16.0 $\pm$ 1.0	13.3 $\pm$ 0.3	3.4	
<i>Mugil liza</i>	9	47.2 $\pm$ 23.1	-17.4 $\pm$ 1.9	10.8 $\pm$ 0.9	3.6	12	71.8 $\pm$ 36.4	-16.2 $\pm$ 2.4	10.2 $\pm$ 1.7	3.5	12	68.25 $\pm$ 37.3	-16.2 $\pm$ 2.6	9.7 $\pm$ 1.2	3.5	8	86.0 $\pm$ 37.8	-12.9 $\pm$ 2.5	10.1 $\pm$ 1.0	3.4	
<b>Decapod crustaceans</b>																					
<i>Callinectes sapidus</i>	12	58.2 $\pm$ 28.3	-15.9 $\pm$ 1.3	12.0 $\pm$ 1.0	3.4	3	45.3 $\pm$ 9.0	-16.3 $\pm$ 1.3	12.5 $\pm$ 0.2	3.3	4	71.3 $\pm$ 15.6	-14.0 $\pm$ 2.0	11.5 $\pm$ 1.1	3.3	8	77.6 $\pm$ 32.5	-16.1 $\pm$ 1.6	11.5 $\pm$ 0.5	3.3	
<i>Farfantepenaeus paulensis</i>	1	60.0	-16.7	12.1	3.3	4	37.0 $\pm$ 5.0	-14.6 $\pm$ 2.8	12.6 $\pm$ 0.4	3.4	4	33.1 $\pm$ 6.6	-19.7 $\pm$ 4.5	11.1 $\pm$ 1.2	3.5	9	54.0 $\pm$ 16.9	-15.8 $\pm$ 1.8	11.9 $\pm$ 0.5	3.3	
<i>Neohelice granulata</i>	4	24.3 $\pm$ 5.6	-16.7 $\pm$ 0.5	9.5 $\pm$ 0.5	3.4	6	29.5 $\pm$ 2.4	-16.9 $\pm$ 1.0	9.7 $\pm$ 0.8	3.4	5	26.8 $\pm$ 2.4	-18.4 $\pm$ 1.2	9.3 $\pm$ 1.5	3.5	6	27.2 $\pm$ 3.4	-18.2 $\pm$ 2.5	9.2 $\pm$ 1.0	3.4	
<b>Micro-consumers</b>																					
<i>Kallapseudes schubartii</i>	6		-16.6 $\pm$ 0.2	8.5 $\pm$ 0.3	3.3	7		-16.4 $\pm$ 0.2	8.4 $\pm$ 0.3	4.8	6		-16.2 $\pm$ 0.1	8.4 $\pm$ 0.4	4.4	6		-15.8 $\pm$ 0.6	7.2 $\pm$ 1.2	4.4	
<i>Laeonereis acuta</i>	6		-15.2 $\pm$ 0.5	11.0 $\pm$ 0.8	3.4	8		-14.6 $\pm$ 0.7	12.0 $\pm$ 0.3	4.1	7		-14.8 $\pm$ 0.8	11.9 $\pm$ 0.4	4.0	5		-15.2 $\pm$ 0.6	11.2 $\pm$ 0.6	4.2	
<b>Organic sources</b>																					
Biofilme	2		-21.7 $\pm$ 1.8	7.9 $\pm$ 0.2	9.1	3		-25.7 $\pm$ 1.5	8.0 $\pm$ 1.5	22.3	5		-20.2 $\pm$ 2.6	7.6 $\pm$ 1.3	8.2	2		-19.7 $\pm$ 0.1	8.2 $\pm$ 0.2	9.4	
<i>Juncus acutus</i> <sup>a</sup>	5		-28.1 $\pm$ 0.6	3.6 $\pm$ 1.0	53.2	6		-27.5 $\pm$ 1.4	4.4 $\pm$ 1.6	42.8	6		-27.7 $\pm$ 0.5	5.5 $\pm$ 1.4	64.4	6		-27.6 $\pm$ 0.8	5.5 $\pm$ 1.3	68.6	
POM	6		-20.5 $\pm$ 0.9	1.4 $\pm$ 1.6	4.5											3		-19.9 $\pm$ 1.0	6.1 $\pm$ 0.7	9.1	
<i>Scirpus maritimus</i> <sup>a</sup>	5		-27.7 $\pm$ 0.6	6.7 $\pm$ 0.9	28.7	6		-28.7 $\pm$ 0.7	5.7 $\pm$ 2.1	32.3	6		-26.9 $\pm$ 0.6	8.7 $\pm$ 0.8	20.7	6		-26.4 $\pm$ 1.0	7.7 $\pm$ 0.5	25.7	
SOM	6		-17.8 $\pm$ 1.1	6.4 $\pm$ 0.9	9.5	6		-17.9 $\pm$ 0.5	7.2 $\pm$ 0.9	9.9	5		-18.4 $\pm$ 0.7	6.6 $\pm$ 1.5	9.0	6		-17.3 $\pm$ 1.1	6.1 $\pm$ 1.0	2.6	
<i>Spartina densiflora</i> <sup>b</sup>	3		-12.2 $\pm$ 0.3	6.0 $\pm$ 1.6	51.2	6		-12.9 $\pm$ 0.2	6.1 $\pm$ 1.3	47.2	6		-12.6 $\pm$ 0.5	7.0 $\pm$ 1.1	46.1	6		-12.1 $\pm$ 0.4	7.1 $\pm$ 0.7	51.7	
<b>Mudflat (MF)</b>																					
	Autumn					Winter					Spring					Summer					
	n	TL	$\delta^{13}\text{C}$	$\delta^{15}\text{N}$	C:N	n	TL	$\delta^{13}\text{C}$	$\delta^{15}\text{N}$	C:N	n	TL	$\delta^{13}\text{C}$	$\delta^{15}\text{N}$	C:N	n	TL	$\delta^{13}\text{C}$	$\delta^{15}\text{N}$	C:N	
<b>Macro-consumers</b>																					
<b>Fishes</b>																					
<i>Atherinella brasiliensis</i>	7	54.7 $\pm$ 36.7	-16.0 $\pm$ 0.8	12.3 $\pm$ 0.4	3.5	6	66.2 $\pm$ 42.7	-15.6 $\pm$ 0.5	13.1 $\pm$ 0.5	3.5						8	52.0 $\pm$ 15.8	-14.0 $\pm$ 1.1	12.5 $\pm$ 0.9	3.3	
<i>Jenynsia multidentata</i>	10	45.6 $\pm$ 15.8	-16.7 $\pm$ 0.9	11.2 $\pm$ 1.1	3.4	3	46.0 $\pm$ 15.4	-17.1 $\pm$ 1.8	10.0 $\pm$ 0.5	3.5	5	57.0 $\pm$ 19.8	-16.5 $\pm$ 1.9	10.9 $\pm$ 1.2	3.3	11	45.0 $\pm$ 13.7	-11.0 $\pm$ 2.2	10.3 $\pm$ 2.3	3.3	
<i>Mugil liza</i>	4	33.3 $\pm$ 8.4	-17.0 $\pm$ 2.0	10.4 $\pm$ 0.2	3.6	6	37.0 $\pm$ 6.4	-15.2 $\pm$ 2.5	9.5 $\pm$ 1.3	3.6	6	33.3 $\pm$ 5.3	-16.3 $\pm$ 1.6	9.3 $\pm$ 1.0	3.5	6	42.7 $\pm$ 21.3	-13.9 $\pm$ 4.8	8.6 $\pm$ 0.6	3.4	
<b>Decapod crustaceans</b>																					
<i>Callinectes sapidus</i>	10	59.9 $\pm$ 26.9	-14.8 $\pm$ 1.5	9.8 $\pm$ 0.7	3.5	9	34.4 $\pm$ 13.5	-13.4 $\pm$ 0.7	9.5 $\pm$ 0.6	3.5	9	65.4 $\pm$ 33.8	-13.4 $\pm$ 1.0	10.0 $\pm$ 0.6	3.4	5	66.6 $\pm$ 32.6	-11.8 $\pm$ 2.2	10.4 $\pm$ 0.6	3.2	
<i>Farfantepenaeus paulensis</i>	8	73.3 $\pm$ 27.0	-12.6 $\pm$ 1.5	10.0 $\pm$ 0.8	3.3	3	35.8 $\pm$ 3.5	-14.6 $\pm$ 1.6	11.9 $\pm$ 0.4	3.4	3	34.0 $\pm$ 2.0	-14.2 $\pm$ 5.2	11.1 $\pm$ 0.9	3.4	9	57.1 $\pm$ 21.1	-10.7 $\pm$ 1.5	9.9 $\pm$ 1.4	3.2	
<i>Neohelice granulata</i>	6	30.7 $\pm$ 4.6	-12.7 $\pm$ 1.6	8.7 $\pm$ 0.9	3.3	6	32.2 $\pm$ 2.3	-13.2 $\pm$ 1.7	8.8 $\pm$ 1.2	3.5	2	30.0 $\pm$ 1.4	-12.9 $\pm$ 0.9	8.6 $\pm$ 1.3	3.4	4	30.2 $\pm$ 2.9	-13.6 $\pm$ 0.9	8.4 $\pm$ 0.3	3.3	
<b>Micro-consumers</b>																					
<i>Kallapseudes shubartii</i>	4		-16.0 $\pm$ 0.4	7.2 $\pm$ 0.2	6.0	6		-15.9 $\pm$ 0.6	7.3 $\pm$ 0.3	5.6	6		-15.6 $\pm$ 0.9	7.2 $\pm$ 0.3	5.0	3		-15.8 $\pm$ 1.0	7.3 $\pm$ 0.2	5.1	
<i>Laeonereis acuta</i>	3		-14.0 $\pm$ 1.7	7.8 $\pm$ 0.7	5.0	6		-13.5 $\pm$ 1.7	8.1 $\pm$ 0.9	4.8	7		-14.1 $\pm$ 1.3	9.1 $\pm$ 1.4	4.3	4		-12.9 $\pm$ 1.6	9.9 $\pm$ 1.6	4.1	
<b>Organic sources</b>																					
POM	6		-19.5 $\pm$ 1.3	1.8 $\pm$ 1.6	4.1											3		-18.4 $\pm$ 0.4	6.6 $\pm$ 0.3	7.9	
<i>Rhizoclonium riparium</i>						5		-13.1 $\pm$ 2.0	6.7 $\pm$ 1.2	11.6	2		-10.1	0.2	6.7	0.1	8.9		-15.6 $\pm$ 2.0	7.6 $\pm$ 1.5	17.5
<i>Ruppia maritima</i>						6		-10.7 $\pm$ 1.2	6.0 $\pm$ 0.8	11.1	8		-10.8 $\pm$ 0.6	8.3 $\pm$ 1.4	10.2		4		-10.5 $\pm$ 1.4	7.3 $\pm$ 0.4	12.7
<i>Scirpus maritimus</i> <sup>a</sup>	5		-28.1 $\pm$ 0.6	5.7 $\pm$ 0.8	18.1	6		-27.0 $\pm$ 1.1	4.0 $\pm$ 2.1	26.3	4		-26.9 $\pm$ 0.4	8.4 $\pm$ 0.8	24.0	6		-25.2 $\pm$ 0.9	7.0 $\pm$ 0.5	31.7	
<i>Scirpus olney</i> <sup>a</sup>						2		-28.0 $\pm$ 1.1	6.0 $\pm$ 1.2	27.0	3		-26.5 $\pm$ 0.6	6.8 $\pm$ 0.4	29.2	6		-26.7 $\pm$ 1.0	6.0 $\pm$ 0.5	25.9	
SOM	4		-14.8 $\pm$ 1.0	6.1 $\pm$ 0.8	9.8	6		-14.6 $\pm$ 1.2	7.4 $\pm$ 0.6	9.0	6		-14.8 $\pm$ 1.2	7.0 $\pm$ 0.8	9.0	6		-14.7 $\pm$ 1.1	6.2 $\pm$ 1.4	9.0	
<i>Spartina densiflora</i> <sup>b</sup>	5		-12.3 $\pm$ 0.3	6.2 $\pm$ 0.7	49.9	6		-12.2 $\pm$ 0.6	4.5 $\pm$ 0.6	44.6	6		-12.1 $\pm$ 0.6	6.7 $\pm$ 0.5	39.2	6		-12.1 $\pm$ 0.2	6.2 $\pm$ 0.5	55.9	