

Habitat utilization patterns determine the physiological condition of *Cynoscion regalis* during estuarine residency

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Supplement. Additional results

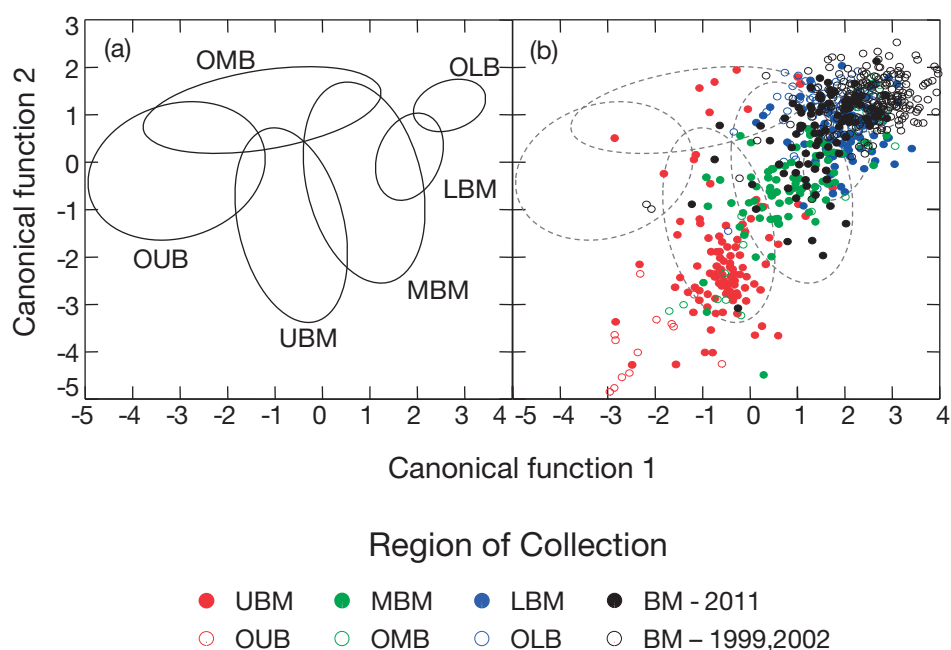


Fig. S1. Standardized canonical discriminant function scores based on the $\delta^{13}\text{C}$, $\delta^{15}\text{N}$, and $\delta^{34}\text{S}$ isotope signatures of young-of-the-year weakfish *Cynoscion regalis* (a) used to define the expected isotope values for a given region within Delaware Bay ('baseline weakfish,' Litvin & Weinstein 2004) and (b) collected as part of this study. Ellipses represent mean \pm SD of the standardized canonical function scores for baseline weakfish (adapted from Fig. 3 in Litvin & Weinstein 2004), and are repeated in panel b for reference, while colors and shading represent region of collection (see 'Materials and methods' in the main manuscript) and, in the case of weakfish collected at the mouth of Delaware Bay prior to emigration, year of collection. Regions are defined in Fig. 1 in the main manuscript

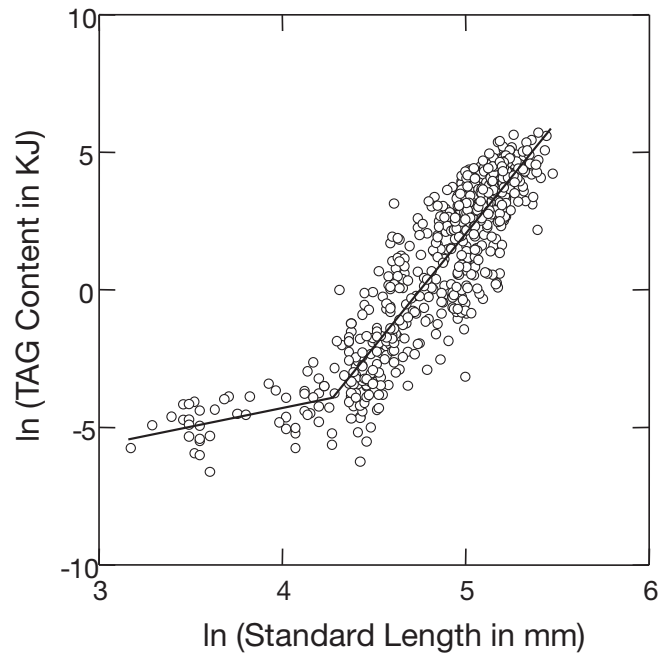


Fig. S2. Log-log non-linear piecewise regression for the relationship of energy content in the form of triacylglycerol (TAG) versus standard length for juvenile weakfish *Cynoscion regalis* constituting the baselines for physiological condition comparisons (see ‘Materials and methods’ in the main manuscript)

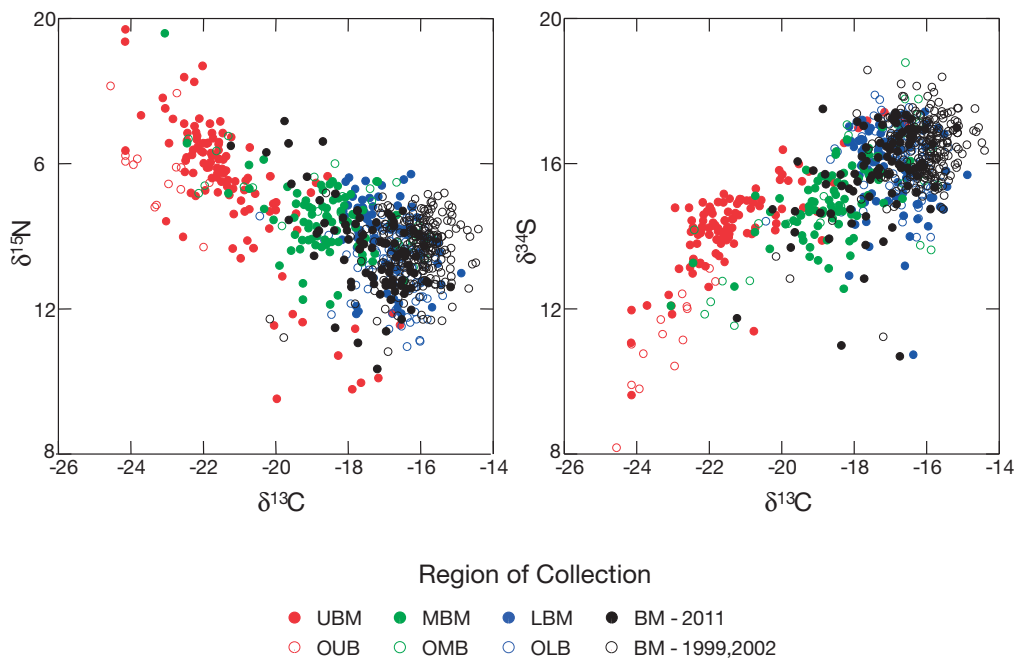


Fig. S3. Dual-isotope plots of $\delta^{15}\text{N}$ versus $\delta^{13}\text{C}$ and $\delta^{34}\text{S}$ versus $\delta^{13}\text{C}$ of young-of-the-year weakfish *Cynoscion regalis* collected as part of this study. Colors and shading represent region of collection (see ‘Materials and methods’ in the main manuscript) and, in the case of weakfish collected at the mouth of Delaware Bay prior to emigration, year of collection. Regions are defined in Fig. 1 in the main manuscript

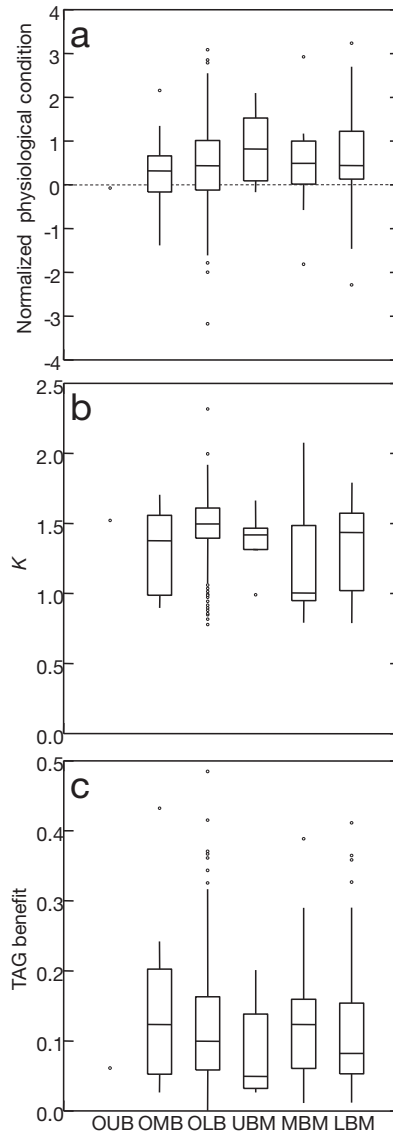


Fig. S4. (a) Normalized physiological condition (NPC), (b) Fulton's K (K), and (c) triacylglycerol (TAG) benefit (see 'Materials and methods' in the main manuscript) of young of the year weakfish *Cynoscion regalis* collected at the mouth of Delaware Bay in 1999, 2001, and 2002 pooled by habitat of residence over all years. In box plots, center line represents median, ends of box are 25th and 75th percentiles, and ends of whiskers are 10th and 90th percentiles; circles represent individual outliers

Table S1. Parameter estimates (lower and upper 95% CI) from the nonlinear piecewise regression of the total energetic (KJ) content of young-of-the-year weakfish *Cynoscion regalis* in the form of triacylglycerol (TAG) a function of their standard length (SL, mm), excluding individuals with no measured TAG, which constitutes the predicted value from which normalized physiological condition is calculated (see 'Materials and methods' in the main manuscript)

n	Intercept (b_0) (natural log TAG energy content)	Regression 1 slope (b_1)	Difference in slopes (b_2)	Inflection (I) (natural log mm SL)	Overall R^2
642	-9.746 (-14.339, -5.153)	1.359 (0.166, 2.552)	6.875 (5.625, 8.124)	4.276 (4.175, 4.377)	0.82

Table S2. Summary of Mann-Whitney 2-way tests (with sequential Bonferroni corrections) for region of collection and region of residence of normalized physiological condition of young-of-the-year weakfish *Cynoscion regalis*, excluding those collected at the mouth of Delaware Bay, from 1999, 2000, and 2001; ns: not significant. Region of collection/residence classification follows Table 1 in the main manuscript

Region of collection/ residence	Region of collection/residence									
	OUB		OMB		OLB		UBM		MBM	
	collection	residence ^a	collection	residence ^a	collection	residence	collection	residence	collection	residence
1999 OMB	----	----								
OLB	----	----	----	0.003						
UBM	----	----	----	ns	----	0.002				
MBM	----	----	----	ns	----	0.004	ns	ns		
LBM	----	----	----	<0.001	----	ns	<0.001	<0.001	<0.001	0.001
2000 OMB	----	----								
OLB	----	----	----	----						
UBM	----	----	----	----	----	0.006				
MBM	----	----	----	----	----	ns	ns	ns		
LBM	----	----	----	----	----	ns	<0.001	0.002	0.001	0.009
2001 OMB	ns	----								
OLB	ns	----	ns	----						
UBM	ns	----	<0.001	----	<0.001	<0.001				
MBM	ns	----	<0.001	----	<0.001	ns	ns	ns		
LBM	ns	----	<0.001	----	<0.001	ns	ns	ns	ns	ns

^aComparisons of normalized physiological condition among regions of residence was limited to cases where the number of individuals assigned to both regions were >2

Table S3. Summary of Mann-Whitney 2-way tests (with sequential Bonferroni adjustments) for effect of collection year on normalized physiological condition (NPC), Fulton's *K*, and triacylglycerol (TAG) benefit of young-of-the-year weakfish *Cynoscion regalis* collected at the mouth of Delaware Bay in 1999, 2001, and 2002; ns: not significant

Collection year		Collection year	
		1999	2001
2001	NPC	0.006	
	Fulton's <i>K</i>	<0.001	
	TAG benefit	ns	
2002	NPC	<0.001	ns
	Fulton's <i>K</i>	<0.001	<0.001
	TAG benefit	ns	0.009

LITERATURE CITED

Litvin SY, Weinstein MP (2004) Multivariate analysis of stable isotope ratios to infer movements and utilization of estuarine organic matter by juvenile weakfish (*Cynoscion regalis*). Can J Fish Aquat Sci 61:1851–1861 doi:10.1139/f04-121