

Table S1: Mean (\pm SD) carbon ($\delta^{13}\text{C}$) and nitrogen ($\delta^{15}\text{N}$) isotope values of molted hair samples collected from southern elephant seals representing the 2011–2012 post-breeding foraging bout ($n = 325$ individuals). Estimates of small sample size corrected standard ellipse areas (SEA_C based on a 40% credible interval) are shown. A Kruskal-Wallis χ^2 test, followed by a *posthoc* Wilcoxon Rank-Sum Test, for significant differences are summarized in Table 2S.

Age Class	Sex	Sample Size	$\delta^{15}\text{N}$ (‰)	$\delta^{13}\text{C}$ (‰)	SEA_C (‰ ²)
Young-of-Year ¹	M	46	11.8 \pm 0.6	-20.0 \pm 0.8	1.3
	F	41	11.7 \pm 0.5	-19.9 \pm 0.8	1.1
Yearling	M	30	11.0 \pm 0.5	-19.5 \pm 0.4	0.8
	F	22	11.1 \pm 0.5	-19.1 \pm 0.6	0.9
Subadult	M	61	11.0 \pm 0.5	-19.1 \pm 0.8	1.2
	F	33	10.7 \pm 0.4	-19.0 \pm 1.0	1.3
Adults	M	7	12.1 \pm 0.6	-18.6 \pm 0.5	0.7
	F	91	10.6 \pm 0.4	-19.3 \pm 0.8	1.1

¹Represents maternally derived resources incorporated when lanugo is replaced after weaning.

Table S2: Age-related trophic niche partitioning assessed using molted hair bulk tissue $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values collected from southern elephant seals ($n = 325$ individuals) representing the 2011–2012 post-breeding foraging bout. A Kruskal-Wallis χ^2 test, followed by a *posthoc* Wilcoxon Rank-Sum Test, tested if the $\delta^{13}\text{C}$ (below diagonal) and $\delta^{15}\text{N}$ values (above diagonal) differed significantly. AF = adult female; AM = adult male; SAF = Subadult female; SAM = Subadult male; YoYF = Year-of-young female; YoYM = Year-of-young male; YF = Yearling female; YM = Yearling male.

	AF	AM	SAF	SAM	YoYF	YoYM	YF	YM
AF	-	0.000	1.000	0.002	0.000	< 2e-16	0.005	0.104
AM	0.194	-	0.000	0.002	0.634	1.000	0.002	0.001
SAF	1.000	1.000	-	0.093	0.000	0.000	0.068	0.508
SAM	1.000	0.354	1.000	-	0.000	0.000	1.000	1.000
YoYF	0.001	0.001	0.001	0.000	-	0.777	0.001	0.000
YoYM	0.000	0.002	0.000	0.000	1.000	-	0.000	0.000
YF	1.000	0.546	1.000	1.000	0.003	0.000	-	1.000
YM	1.000	0.003	0.350	0.263	0.120	0.038	0.290	-

$p < 0.05$; $p < 0.01$; $p < 0.001$

Table S3: Percentage overlap of small sample size corrected standard ellipse areas ($SEAC_C$ based on a 40% credible interval) based on the carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) isotope values measured in the molted hair samples collected from southern elephant seals representing the 2011–2012 post-breeding foraging bout ($n = 325$ individuals). AF = adult female; AM = adult male; SAF = Subadult female; SAM = Subadult male; YoYF = Year-of-young female; YoYM = Year-of-young male; YF = Yearling female; YM = Yearling male.

	AF	AM	SAF	SAM	YoYF	YoYM	YF	YM
AF	-							
AM	0.0	-						
SAF	93.4	0.0	-					
SAM	63.5	0.0	77.9	-				
YoYF	0.0	0.0	0.0	0.0	-			
YoYM	0.0	0.0	0.0	0.0	90.5	-		
YF	41.3	4.2	48.6	77.5	1.2	0.0	-	
YM	42.7	0.0	43.5	59.8	7.5	0.5	49.8	-

Table S4: Molted hair collected from individual southern elephant seals ($n = 25$) representing the nitrogen ($\delta^{15}N$) and carbon ($\delta^{13}C$) isotope values (expressed in parts per mill, ‰) incorporated in the hair during the 2009–2010, 2010–2011, and 2014–2015 annual pelage molt (Mean \pm SD). Annual estimates of the small sample size corrected standard ellipse areas ($SEAC_C$ based on a 40% credible interval) are shown for 2009–2010 and 2014–2015. The sample size for 2010–2011 was too low to obtain a $SEAC_C$. The 2011–2012 $SEAC_C$ ($n = 311$ individuals, Table S1) was 1.30‰^2

Period Represented	Sex	Sample size	$\delta^{15}N$	$\delta^{13}C$	$SEAC_C$ (‰ ²)
<u>2009–2010</u>					0.73
Yearling	M	2	11.1 ± 0.6	-19.6 ± 0.4	
	F	2	11.1 ± 0.5	-19.6 ± 0.7	
Subadult	M	2	10.9 ± 0.2	-19.3 ± 0.4	
	F	1	11.0	-19.1	
Adults	M	1	12.8	-18.7	
	F	2	10.8 ± 0.0	-19.3 ± 0.0	
<u>2010–2011</u>					
Adults	M	1	12.0	-18.1	
	F	2	10.7 ± 0.2	-19.1 ± 0.0	
<u>2014–2015</u>					1.18
Subadult	F	5	11.9 ± 0.3	-19.2 ± 0.4	
Adults	F	7	12.0 ± 0.6	-19.4 ± 1.0	