Supplementary material for

Historic foraging ecology of the endangered Lahille's bottlenose dolphin (*Tursiops truncatus gephyreus*) inferred by stable isotopes

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Table S1. $\delta^{13}C$ and $\delta^{15}N$ values (‰) of prey species used in the Mixing models to estimate the diet composition of dolphins from Uruguay.

Species	Mean $\delta^{13}C$	SD $\delta^{13}C$	Mean $\delta^{15}N$	SD $\delta^{15}N$	n	Source
Menthicirrhus americanus	-15.4	0.4	16.7	0.4	4	Franco-Trecu et al. 2012
Micropogonias furnieri	-14.9	0.1	16.2	0.1	7	Franco-Trecu et al. 2012
Mugil liza	-18	0.4	7.9	0.4	3	Bergamino et al. 2012
Trichiurus lepturus	-17.3	0.4	15.4	1.4	2	Franco-Trecu et al. 2012
Macrodon ancyclodon	-15.3	0.3	16.3	0.2	10	Franco-Trecu et al. 2012
Paralonchurus brasiliensis	-15.5	0.5	16.3	0.5	5	Franco-Trecu et al. 2013
Cynoscion guatucupa	-15.4	0.3	17.0	0.1	6	Franco-Trecu et al. 2012

Table S2. Mean (± SD) $\delta^{13}C$ and $\delta^{15}N$ values (‰) of potential dietary source groups of *Tursiops truncatus gephyreus* collected along the coasts of Buenos Aires, Argentina.

Species	$\delta^{13}C$	SD	$\delta^{15}N$	SD	n
Cynoscion guatucupa	-17.1	0.4	17.9	0.6	10
Pagrus pagrus	-16.5	0.2	18.2	0.4	7
Percophis brasiliensis	-16.7	0.3	17.8	0.3	3
Mugil liza	-19.3	0.8	12.1	1.4	7
Brevoortia aurea	-18.6	0.4	12.9	1.5	8
Macrodon atricauda	-18.8	0.1	14.4	0.6	8
Odontesthes sp.	-18.3	0.6	15.3	0.6	27
Micropogonias furnieri	-17.8	0.7	15.9	0.3	8

Table S3. Values of Bayesian ellipse areas (SEA_B) overlap areas with their respective credibility intervals (CI 95%) from $\delta^{13}C$_corr ($\delta^{13}C$ values corrected by the Suess effect) and $\delta^{15}N$ values of Lahille´s bottlenose dolphin (*Tursiops truncatus gephyreus*) from Brazil (BR), Uruguay (UY) and Argentina (ARG) sampled during Periods I (1903-1980) and II (1981-2016). All metrics are in ($‰^2$). Upper and lower values correspond to Period I and Period II comparisons, respectively.

Area	ARG	BR	UY
ARG		0.18 (0.14-0.23)	1.94 (1.8-2.1)
BR	1.14 (1.04-1.24)		0.23 (0.19-0.27)
UY	0.05 (0.01-0.08)	0.44 (0.37-0.51)	

Table S4. Values of Bayesian ellipse areas (SEA_B) overlap areas with their respective credibility intervals (CI 95%) from $\delta^{13}C$_corr ($\delta^{13}C$ values corrected by the Suess effect) and $\delta^{15}N$ values of Lahille´s bottlenose dolphin (*Tursiops truncatus gephyreus*) from Brazil (BR), Uruguay (UY) and Argentina (ARG) sampled during Periods I (1903-1980) and II (1981-2016). All metrics are in ($‰^2$).

Area	Overlap	CI 95%
ARG	3.28	3.06-3.50
BR	0.19	0.14-0.23
UY	0.81	0.74-0.88

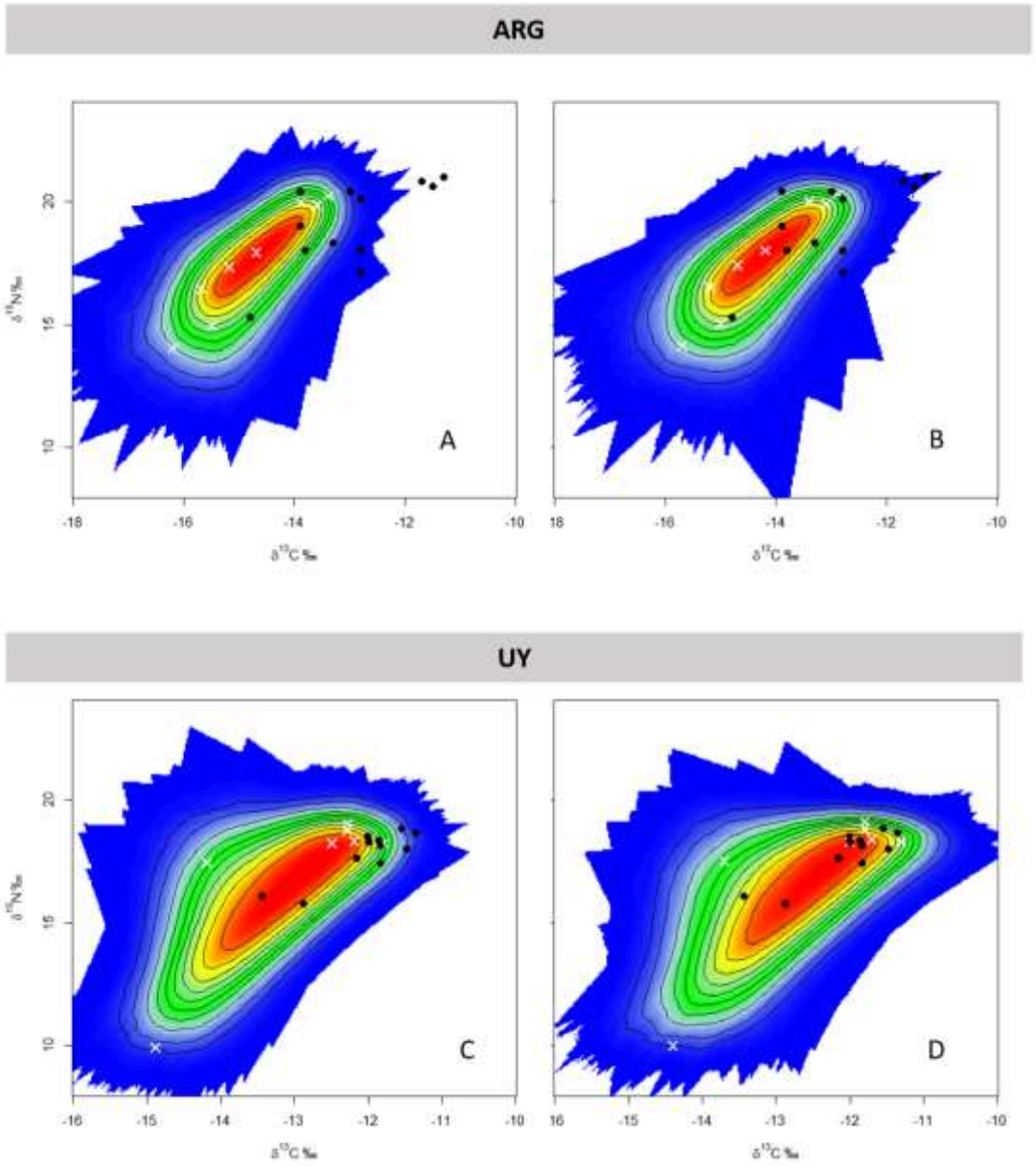

Figure S1. Simulated mixing polygons for Lahille's bottlenose dolphins (*Tursiops truncatus gephyreus*) sampled in Argentina (ARG) and Uruguay (UY) during Period II. Trophic discrimination factor (TDF) values for correcting prey isotopic values were applied: TDFs from Borrell et al. (2012) (A and C) and TDFs from Giménez et al. (2016) modified by Teixeira et al. (2020) (B and D). The position of the consumers (black dots) and the average source signatures (white crosses) are shown. Probability contours (black lines) are at the 5% level (outermost line) and at every 10% level.

References

Bergamino, L., Lercari, D., Defeo, O., 2011. Food web structure of sandy beaches: temporal and spatial variation using stable isotope analysis. Estuarine, Coastal and Shelf Science 91, 536-543.

Borrell, A., Aguilar A., Tornero, V., Sequeiro, M., Fernández G., Alis, S., 2006. Organochlorine compounds and stable isotopes indicate bottlenose dolphin subpopulation around the Iberian Peninsula. Environment International 32, 516–523.

Franco-Trecu, V., Aurioles-Gamboa, D., Arim, M., Lima, M., 2012. Prepartum and postpartum trophic segregation between sympatrically breeding female *Arctocephalus australis* and *Otaria flavescens*. Journal of Mammalogy 93, 514–521. https://doi.org/10.1644/11-mamm-a-174.1.

Franco-Trecu, V., Drago, M., Riet-Sapriza, F. G., Parnell, A., Frau, R., Inchausti, P., 2013. Bias in diet determination: incorporating traditional methods in Bayesian mixing models. PLoS One 8, e80019. https://doi.org/10.1371/journal.pone.0080019.

Gimenez, J., Ramirez, F., Almunia, J., Forero, M. G., de Stephanis, R., 2016. From the pool to the sea: Applicable isotope turnover rates and diet to skin discrimination factors for bottlenose dolphins (*Tursiops truncatus*). Journal of Experimental Marine Biology and Ecology 475, 54–61.

Teixeira, C.R., Botta, S., Daura-Jorge, F.G., Pereira, L.B., Newsome, S.D., Simões-Lopes, P.C., 2020. Niche overlap and diet composition of three sympatric coastal dolphin species in the southwest Atlantic Ocean. Marine Mammal Science 37, 111-126.