

## **Supplementary Material**

### **Niche partitioning among marine mammals inhabiting a large estuary as revealed by stable isotopes of C, N, O and S.**

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Submission date: 01 July 2022

**Table S1.** Pairwise multivariable comparison of marine mammal species from the Río de la Plata estuary, considering the nine groups (five odontocetes species plus females and males of the two otariid species) and four stable isotope ratios together ( $\delta^{34}\text{S}$ ,  $\delta^{18}\text{O}$ ,  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ ), presenting an adjusted p-value (correction for multiple comparisons using the Bonferroni method; Chen *et al.*, 2017). Sample sizes and species/groups: female South American sea lions (Of ♀, n = 11), male South American sea lions (Of ♂, n = 10), female South American fur seals (Aa ♀, n = 14), male South American fur seals (Aa ♂, n = 13), bottlenose dolphins (Tt, n = 10), franciscana dolphins (Pb, n = 22), false killer whales (Pc, n = 10), Burmeister's porpoises (Ps, n = 10) and Fraser's dolphins (Lh, n = 10)

| Group Pairs  | R2    | p.value | p.adjusted |
|--------------|-------|---------|------------|
| Lh vs Aa ♀   | 0.494 | 0.001   | 0.036      |
| Lh vs Aa ♂   | 0.560 | 0.001   | 0.036      |
| Lh vs Of ♀   | 0.781 | 0.001   | 0.036      |
| Lh vs Of ♂   | 0.728 | 0.001   | 0.036      |
| Lh vs Pb     | 0.647 | 0.001   | 0.036      |
| Lh vs Pc     | 0.339 | 0.001   | 0.036      |
| Lh vs Ps     | 0.504 | 0.001   | 0.036      |
| Lh vs Tt     | 0.627 | 0.001   | 0.036      |
| Aa ♀ vs Aa ♂ | 0.203 | 0.002   | 0.072      |
| Aa ♀ vs Of ♀ | 0.576 | 0.001   | 0.036      |
| Aa ♀ vs Of ♂ | 0.536 | 0.001   | 0.036      |
| Aa ♀ vs Pb   | 0.304 | 0.001   | 0.036      |
| Aa ♀ vs Pc   | 0.086 | 0.105   | 1.000      |
| Aa ♀ vs Ps   | 0.234 | 0.002   | 0.072      |
| Aa ♀ vs Tt   | 0.401 | 0.001   | 0.036      |
| Aa ♂ vs Of ♀ | 0.560 | 0.001   | 0.036      |
| Aa ♂ vs Of ♂ | 0.407 | 0.001   | 0.036      |
| Aa ♂ vs Pb   | 0.298 | 0.001   | 0.036      |
| Aa ♂ vs Pc   | 0.128 | 0.040   | 1.000      |
| Aa ♂ vs Ps   | 0.282 | 0.001   | 0.036      |
| Aa ♂ vs Tt   | 0.540 | 0.001   | 0.036      |
| Of ♀ vs Of ♂ | 0.227 | 0.006   | 0.216      |
| Of ♀ vs Pb   | 0.257 | 0.001   | 0.036      |
| Of ♀ vs Pc   | 0.371 | 0.001   | 0.036      |
| Of ♀ vs Ps   | 0.353 | 0.001   | 0.036      |
| Of ♀ vs Tt   | 0.368 | 0.001   | 0.036      |
| Of ♂ vs Pb   | 0.260 | 0.001   | 0.036      |

|            |       |       |       |
|------------|-------|-------|-------|
| Of ♂ vs Pc | 0.357 | 0.002 | 0.072 |
| Of ♂ vs Ps | 0.337 | 0.002 | 0.072 |
| Of ♂ vs Tt | 0.507 | 0.001 | 0.036 |
| Pb vs Pc   | 0.214 | 0.001 | 0.036 |
| Pb vs Ps   | 0.095 | 0.029 | 1.000 |
| Pb vs Tt   | 0.312 | 0.001 | 0.036 |
| Pc vs Ps   | 0.220 | 0.002 | 0.072 |
| Pc vs Tt   | 0.290 | 0.001 | 0.036 |
| Ps vs Tt   | 0.263 | 0.002 | 0.072 |

**Table S2.** Percentage of overlapped area between each marine mammal group pair for the different combinations of stable isotope ratios (isospaces) shown in Fig. 3 (see main text), calculated with the R package “SIBER”, where i.e. the “% Overlap 1” indicates the percentage of the isotopic niche area of “Group 1” overlapped with the isotopic niche area of “Group 2” for a given pair of species and isospace. Groups with constant overlaps in all dimensions were considered to have similar isospaces within the Río de la Plata estuary and adjoining Atlantic waters. Sample sizes and species/groups: female South American sea lions (Of ♀, n = 11), male South American sea lions (Of ♂, n = 10), female South American fur seals (Aa ♀, n = 14), male South American fur seals (Aa ♂, n = 13), bottlenose dolphins (Tt, n = 10), franciscana dolphins (Pb, n = 22), false killer whales (Pc, n = 10), Burmeister’s porpoises (Ps, n = 10) and Fraser’s dolphins (Lh, n = 10)

| Group pairs<br>(1 vs 2) | $\delta^{18}\text{O}$ vs $\delta^{13}\text{C}$<br>(% Overlap) |       | $\delta^{18}\text{O}$ vs $\delta^{15}\text{N}$<br>(% Overlap) |       | $\delta^{34}\text{S}$ vs $\delta^{18}\text{O}$<br>(% Overlap) |       | $\delta^{13}\text{C}$ vs $\delta^{15}\text{N}$<br>(% Overlap) |       | $\delta^{34}\text{S}$ vs $\delta^{13}\text{C}$<br>(% Overlap) |       | $\delta^{34}\text{S}$ vs $\delta^{15}\text{N}$<br>(% Overlap) |       |
|-------------------------|---------------------------------------------------------------|-------|---------------------------------------------------------------|-------|---------------------------------------------------------------|-------|---------------------------------------------------------------|-------|---------------------------------------------------------------|-------|---------------------------------------------------------------|-------|
|                         | 1                                                             | 2     | 1                                                             | 2     | 1                                                             | 2     | 1                                                             | 2     | 1                                                             | 2     | 1                                                             | 2     |
| Lh vs Aa ♀              | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 23.13                                                         | 42.40 | 0.00                                                          | 0.00  |
| Lh vs Aa ♂              | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 33.32                                                         | 63.79 | 0.00                                                          | 0.00  |
| Lh vs Of ♀              | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  |
| Lh vs Of ♂              | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  |
| Lh vs Pb                | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  |
| Lh vs Pc                | 1.17                                                          | 0.73  | 5.13                                                          | 2.60  | 17.20                                                         | 10.44 | 3.68                                                          | 2.30  | 17.54                                                         | 15.68 | 7.08                                                          | 4.28  |
| Lh vs Ps                | 35.51                                                         | 40.65 | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 45.91                                                         | 12.05 | 0.00                                                          | 0.00  |
| Lh vs Tt                | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  |
| Aa ♀ vs Aa ♂            | 23.97                                                         | 27.73 | 22.14                                                         | 14.01 | 21.38                                                         | 31.36 | 28.94                                                         | 14.45 | 34.54                                                         | 36.06 | 26.44                                                         | 17.87 |
| Aa ♀ vs Of ♀            | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 20.47                                                         | 24.58 | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  |
| Aa ♀ vs Of ♂            | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 86.66                                                         | 38.33 | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  | 0.00                                                          | 0.00  |

|              |        |       |       |       |       |       |       |       |       |       |       |       |
|--------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Aa ♀ vs Pb   | 0.00   | 0.00  | 0.00  | 0.00  | 24.42 | 31.20 | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Aa ♀ vs Pc   | 47.26  | 9.61  | 70.54 | 10.81 | 46.06 | 37.22 | 82.17 | 7.02  | 47.65 | 23.24 | 83.32 | 23.07 |
| Aa ♀ vs Ps   | 0.00   | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 96.79 | 13.86 | 0.00  | 0.00  |
| Aa ♀ vs Tt   | 0.00   | 0.00  | 99.33 | 14.09 | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.06  | 0.02  |
| Aa ♂ vs Of ♀ | 0.00   | 0.00  | 0.13  | 0.07  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Aa ♂ vs Of ♂ | 0.00   | 0.00  | 0.00  | 0.00  | 99.91 | 30.13 | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Aa ♂ vs Pb   | 34.05  | 31.93 | 44.57 | 32.81 | 8.45  | 7.36  | 28.92 | 23.43 | 0.00  | 0.00  | 0.00  | 0.00  |
| Aa ♂ vs Pc   | 99.92  | 17.57 | 96.50 | 23.38 | 56.05 | 30.87 | 99.94 | 17.11 | 35.52 | 16.59 | 54.63 | 22.38 |
| Aa ♂ vs Ps   | 0.00   | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 59.36 | 15.13 | 44.72 | 6.13  | 16.06 | 5.28  |
| Aa ♂ vs Tt   | 8.62   | 1.96  | 92.29 | 20.70 | 0.00  | 0.00  | 8.60  | 3.07  | 0.00  | 0.00  | 0.00  | 0.00  |
| Of ♀ vs Of ♂ | 55.48  | 44.45 | 1.54  | 1.38  | 64.63 | 23.81 | 17.18 | 24.24 | 78.06 | 20.85 | 2.82  | 1.60  |
| Of ♀ vs Pb   | 0.00   | 0.00  | 0.68  | 0.91  | 0.71  | 0.76  | 0.00  | 0.00  | 0.00  | 0.00  | 94.29 | 44.04 |
| Of ♀ vs Pc   | 0.00   | 0.00  | 9.24  | 4.07  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Of ♀ vs Ps   | 0.00   | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 91.94 | 20.37 |
| Of ♀ vs Tt   | 28.85  | 10.04 | 14.44 | 5.89  | 2.03  | 0.81  | 0.00  | 0.00  | 4.20  | 1.11  | 0.00  | 0.00  |
| Of ♂ vs Pb   | 0.00   | 0.00  | 6.18  | 9.26  | 6.96  | 20.10 | 0.00  | 0.00  | 0.00  | 0.00  | 5.14  | 4.23  |
| Of ♂ vs Pc   | 19.30  | 6.49  | 0.00  | 0.00  | 27.00 | 49.31 | 0.00  | 0.00  | 24.46 | 16.85 | 0.00  | 0.00  |
| Of ♂ vs Ps   | 0.00   | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Of ♂ vs Tt   | 37.83  | 16.43 | 0.00  | 0.00  | 0.82  | 0.89  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Pb vs Pc     | 100.00 | 18.75 | 34.90 | 34.90 | 43.82 | 43.82 | 52.08 | 52.08 | 50.03 | 50.03 | 10.47 | 10.47 |
| Pb vs Ps     | 1.51   | 0.52  | 8.52  | 10.81 | 4.98  | 2.99  | 70.83 | 22.29 | 91.39 | 10.97 | 92.73 | 43.98 |
| Pb vs Tt     | 37.51  | 9.09  | 28.99 | 8.83  | 6.53  | 2.46  | 22.43 | 9.90  | 0.00  | 0.00  | 0.03  | 0.02  |
| Pc vs Ps     | 11.97  | 22.03 | 0.00  | 0.00  | 19.64 | 18.65 | 16.77 | 24.98 | 48.68 | 14.29 | 20.13 | 16.16 |
| Pc vs Tt     | 27.61  | 35.66 | 39.24 | 36.33 | 0.00  | 0.00  | 43.06 | 89.89 | 0.00  | 0.00  | 0.00  | 0.00  |
| Ps vs Tt     | 0.00   | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 4.22  | 5.92  | 2.77  | 13.53 | 14.04 | 18.62 |