

Table S1: Individual variables for dead and living calves included in the fatty acid composition analysis. Calf length is provided in meters. Abbreviations: Sex: female (F) or male (M); Necropsy: fresh (“2”, Geraci & Lounsbury 2005) or moderate decomposition (“3”); Location: Golfo Nuevo (GN) or Golfo San José (GSJ); Size: small (< 6 m) or large (≥ 6m); Time of death or Stranding Month: July-August (m07-08), September (m09), October-November (m10-11). NA: not available.

ID	Dead/alive	Year	Length	Sex	Necropsy	Location	Size	Month
3-03A	Dead	2003	4.75	F	2	GN	Small	m07-08
7-03A	Dead	2003	4.68	F	2	GN	Small	m07-08
11-03A	Dead	2003	5.1	F	3	GN	Small	m09
16-03A	Dead	2003	6.8	NA	3	GN	Large	m07-08
11-04A	Dead	2004	4.95	M	2	GN	Small	m07-08
4-04A	Dead	2004	4.55	F	3	GN	Small	m10-11
1-05A	Dead	2005	5.4	M	2	GSJ	Small	m09
4-05A	Dead	2005	4.91	F	2	GN	Small	m10-11
42-05A	Dead	2005	6.61	M	2	GN	Large	m07-08
5-05A	Dead	2005	5.4	F	3	GSJ	Small	m07-08
2-06A	Dead	2006	5.43	F	3	GN	Small	m07-08
15-07A	Dead	2007	4.86	M	2	GN	Small	m07-08
27-07A	Dead	2007	8.05	F	2	GN	Large	m09
50-07A	Dead	2007	6.8	M	3	GN	Large	m07-08
3-08A	Dead	2008	4.9	NA	3	GN	Small	m07-08
14-08A	Dead	2008	5.46	M	3	GN	Small	m07-08
57-08A	Dead	2008	7.46	M	3	GSJ	Large	m07-08
6-09A	Dead	2009	5.05	M	2	GN	Small	m09
7-09A	Dead	2009	5.9	M	2	GN	Small	m09
21-09A	Dead	2009	5.8	M	2	GN	Small	m10-11
32-09A	Dead	2009	4.98	F	2	GN	Small	m07-08
59-09A	Dead	2009	5.85	F	2	GSJ	Small	m10-11
13-09A	Dead	2009	5.3	M	3	GN	Small	m09
15-09A	Dead	2009	4.5	F	3	GSJ	Small	m09
19-09A	Dead	2009	6.7	M	3	GN	Large	m07-08
20-09A	Dead	2009	5.8	F	3	GN	Small	m07-08
48-09A	Dead	2009	5.25	M	3	GN	Small	m07-08
2-10A	Dead	2010	4.96	M	2	GN	Small	m10-11
6-10A	Dead	2010	4.1	F	2	GN	Small	m07-08
11-10A	Dead	2010	4.9	F	2	GN	Small	m07-08
12-10A	Dead	2010	4.13	F	2	GN	Small	m09
17-10A	Dead	2010	7.3	M	2	GSJ	Large	m07-08
24-10A	Dead	2010	6.06	F	2	GSJ	Large	m07-08

30-10A	Dead	2010	4.73	M	2	GSJ	Small	m07-08
7-10A	Dead	2010	5.5	F	3	GN	Small	m07-08
9-10A	Dead	2010	6.34	M	3	GN	Large	m09
10A-10A	Dead	2010	5.2	M	3	GN	Small	m07-08
18-10A	Dead	2010	4.68	M	3	GN	Small	m07-08
23-10A	Dead	2010	5.05	F	3	GN	Small	m07-08
52-10A	Dead	2010	4.85	F	3	GN	Small	m09
7-11	Dead	2011	3.64	M	2	GN	Small	m09
49-11	Dead	2011	6.53	F	2	GN	Large	m10-11
3-11	Dead	2011	5.6	F	3	GN	Small	m07-08
4-11	Dead	2011	5.1	M	3	GSJ	Small	m07-08
5-11	Dead	2011	4.13	M	3	GN	Small	m07-08
6-11	Dead	2011	5.73	M	3	GN	Small	m07-08
8-11	Dead	2011	6.43	F	3	GN	Large	m07-08
12-11	Dead	2011	4.84	M	3	GN	Small	m07-08
20-11	Dead	2011	5.65	F	3	GSJ	Small	m09
27-11	Dead	2011	4.3	F	3	GSJ	Small	m09
53-11	Dead	2011	5.74	M	3	GSJ	Small	m10-11
A2	Alive	2011	NA	NA	NA	GSJ	Large	NA
A6	Alive	2011	NA	NA	NA	GSJ	Large	NA
A8	Alive	2011	NA	F	NA	GSJ	Large	NA
A10	Alive	2011	NA	NA	NA	GSJ	Large	NA
A16	Alive	2011	NA	NA	NA	GSJ	Large	NA
A18	Alive	2011	NA	NA	NA	GSJ	Large	NA
A23	Alive	2011	NA	NA	NA	GSJ	Large	NA
A25	Alive	2011	NA	NA	NA	GSJ	Large	NA
A27	Alive	2011	NA	NA	NA	GSJ	Large	NA
A31	Alive	2011	NA	F	NA	GSJ	Large	NA
A33	Alive	2011	NA	NA	NA	GSJ	Large	NA
A37	Alive	2011	NA	NA	NA	GSJ	Large	NA
A39	Alive	2011	NA	NA	NA	GSJ	Large	NA
<b>SUMMARY</b>	<b>51 dead 13 alive</b>	<b>9 years</b>	<b>3.64 - 8.05 m</b>	<b>26 females 25 males</b>	<b>22 fresh 29 moderate</b>	<b>39 GN 25 GSJ</b>	<b>40 small 24 large</b>	<b>31 m07-08 13 m09 7 m10-11</b>

Table S2: Individual variables for dead and living calves included in the stable isotope analysis.

Isotope values are expressed as  $\delta^{13}\text{C}$  or  $\delta^{15}\text{N}$  (‰) =  $[(R_{\text{sample}}/R_{\text{standard}}) - 1] \times 1000$ , where  $R$  is  $^{13}\text{C}/^{12}\text{C}$  or  $^{15}\text{N}/^{14}\text{N}$ , for  $\delta^{13}\text{C}$  or  $\delta^{15}\text{N}$ , respectively. Feeding grounds were determined following Valenzuela et al. (2018), Patagonian Shelf (PS, highest isotopic values) and Southern Ocean (SO, lowest isotopic values). Calf length is provided in meters. Abbreviations: Stable isotopes of Nitrogen (N) or Carbon (C); Reference: samples determined by Marón et al. (this study) or by Valenzuela et al. (2010); Location: Golfo Nuevo (GN) or Golfo San José (GSJ); Size: small (< 6 m) or large ( $\geq 6\text{m}$ ). NA: not available.

ID	N	C	C:N ratio	Reference	Feeding ground	Dead/alive	Year	Length	Location	Size
2_03	6.8	-23.1	3.2	This study	SO	Dead	2003	5.67	GSJ	small
3_03	7.8	-23	3.5	This study	SO	Dead	2003	4.75	GN	small
4_03	7.5	-22.4	3.2	This study	SO	Dead	2003	6.2	GSJ	large
6_03	6.5	-22.1	3.4	This study	SO	Dead	2003	NA	GN	NA
7_03	7	-21.3	3.1	This study	SO	Dead	2003	4.68	GN	small
8_03	10.9	-21.3	3.5	This study	SO	Dead	2003	4.92	GN	small
10_03	8.5	-22	3.4	This study	SO	Dead	2003	4.59	GN	small
11_03	8	-20.7	3.2	This study	SO	Dead	2003	5.1	GN	small
16_03	7.6	-22.4	3.3	This study	SO	Dead	2003	6.8	GN	large
18_03	13.7	-17.9	3.2	This study	PAT	Dead	2003	6.55	GN	large
20_03	6.9	-22	3.4	This study	SO	Dead	2003	4.55	GSJ	small
2_04	8.7	-21.1	3.2	This study	SO	Dead	2004	6.04	GN	large
4_04	8.2	-22.2	3.4	This study	SO	Dead	2004	4.55	GN	small
6_04	6.8	-22	3.2	This study	SO	Dead	2004	4.75	GSJ	small
7_04	13.7	-18.2	3.2	This study	PAT	Dead	2004	4.07	GSJ	small
11_04	8.4	-20.8	3.4	This study	SO	Dead	2004	4.95	GN	small
13_04	9.3	-22.4	3.4	This study	SO	Dead	2004	6.65	GN	large
115C	7.2	-22.9	3.1	This study	SO	Dead	2005	NA	GSJ	NA
1_05	13.8	-17.2	3.5	This study	PAT	Dead	2005	5.4	GSJ	small
3_05	6.9	-22.4	3.2	This study	SO	Dead	2005	4.46	GN	small
4_05	12.7	-17.9	3.3	This study	PAT	Dead	2005	4.91	GN	small
5_05	8.1	-21.1	3.3	This study	SO	Dead	2005	5.4	GSJ	small
6_05	6.6	-22.2	3.2	This study	SO	Dead	2005	4.98	GN	small
7_05	6.4	-22.7	3.4	This study	SO	Dead	2005	5.48	GN	small
11_05	9.3	-19.8	3.3	This study	SO	Dead	2005	5.74	GSJ	small
13_05	7.8	-22.3	3.4	This study	SO	Dead	2005	5.41	GN	small
14_05	10.7	-20.2	3.9	This study	SO	Dead	2005	4.9	GN	small
15_05	7.4	-22	3.3	This study	SO	Dead	2005	6.1	GN	large
16_05	7.6	-22.2	3.2	This study	SO	Dead	2005	6.78	GN	large
17_05	7.7	-22.1	3.1	This study	SO	Dead	2005	7.05	GN	large
18_05	7.8	-22.2	3.3	This study	SO	Dead	2005	4.87	GSJ	small

19_05	7.5	-21	3.2	This study	SO	Dead	2005	6.9	GN	large
38_05	8	-21.8	3.2	This study	SO	Dead	2005	8.48	GN	large
42_05	8.9	-21.4	3.5	This study	SO	Dead	2005	6.61	GN	large
1_06	5.9	-23.2	3.3	This study	SO	Dead	2006	5.68	GSJ	small
2_06	6.4	-22.7	3.3	This study	SO	Dead	2006	5.43	GN	small
3_11	9.4	-21.8	3.4	This study	SO	Dead	2011	5.6	GN	small
4_11	7.2	-22.8	3.3	This study	SO	Dead	2011	5.1	GSJ	small
6_11	8	-22.8	3.7	This study	SO	Dead	2011	5.73	GN	small
7_11	6.2	-22.7	3.2	This study	SO	Dead	2011	3.64	GN	small
8_11	8.2	-22.6	3.3	This study	SO	Dead	2011	6.43	GN	large
12_11	6.3	-23.4	3.2	This study	SO	Dead	2011	4.84	GN	small
13_11	7.1	-22.5	3.1	This study	SO	Dead	2011	5.5	GN	small
15_11	7.6	-22.6	3.1	This study	SO	Dead	2011	6.43	GN	large
19_11	7.7	-23.7	3.3	This study	SO	Dead	2011	4.46	GN	small
20_11	7.3	-23.6	3.5	This study	SO	Dead	2011	5.65	GSJ	small
24_11	7.4	-23.5	3.3	This study	SO	Dead	2011	4.1	GN	small
25_11	7.6	-23.1	3.5	This study	SO	Dead	2011	7	GN	large
27_11	7.7	-22.6	3.3	This study	SO	Dead	2011	4.3	GSJ	small
33_11	9	-21.1	3.1	This study	SO	Dead	2011	6.9	GN	large
37_11	7	-23.7	3.2	This study	SO	Dead	2011	7.36	GN	large
43_11	7.2	-21.8	2.9	This study	SO	Dead	2011	4.17	GN	small
44_1	9.4	-21.9	3.4	This study	SO	Dead	2011	6.82	GN	large
48_11	8.4	-22.9	3.4	This study	SO	Dead	2011	7.8	GN	large
49_11	14.1	-16.9	3.2	This study	PAT	Dead	2011	6.53	GN	large
51_11	8.4	-22.7	3.2	This study	SO	Dead	2011	5.75	GN	small
53_11	11.2	-20.2	3.2	This study	SO	Dead	2011	5.74	GSJ	small
60_11	7.8	-23	3.4	This study	SO	Dead	2011	7.32	GN	large
03_Bc	9.4	-18.6	NA	Valenzuela	SO	Alive	2003	NA	GSJ	NA
03_Dc	8.8	-19.4	NA	Valenzuela	SO	Alive	2003	NA	GSJ	NA
03_Gc	7.9	-22.7	NA	Valenzuela	SO	Alive	2003	NA	GSJ	NA
03_HHc	7.8	-21.9	NA	Valenzuela	SO	Alive	2003	NA	GSJ	NA
03_Ic	8.5	-21.8	NA	Valenzuela	SO	Alive	2003	NA	GSJ	NA
03_Jc	12.7	-18	NA	Valenzuela	PAT	Alive	2003	NA	GSJ	NA
03_Qc	7.5	-20.5	NA	Valenzuela	SO	Alive	2003	NA	GSJ	NA
03_Sc	8.1	-20.5	NA	Valenzuela	SO	Alive	2003	NA	GSJ	NA
03_Uc	8.3	-20.3	NA	Valenzuela	SO	Alive	2003	NA	GSJ	NA
03_Wc	8.3	-20.8	NA	Valenzuela	SO	Alive	2003	NA	GSJ	NA
03_Xc	9.1	-19.1	NA	Valenzuela	SO	Alive	2003	NA	GSJ	NA
03_Yc	8	-21.3	NA	Valenzuela	SO	Alive	2003	NA	GSJ	NA
04_10c	7.4	-22.1	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_12c	7.2	-22.5	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_13'c	7	-22.1	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_14c	7.4	-22.1	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_16c	7.1	-21.8	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_18c	7.5	-22.4	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA

04_20c	8.1	-22.1	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_21c	8.4	-22.1	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_24c	13.3	-17.4	NA	Valenzuela	PAT	Alive	2004	NA	GSJ	NA
04_28c	7.1	-21.5	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_29c	7.3	-22.7	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_2c	7	-21.2	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_41c	10.3	-19.9	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_48c	7.4	-21.9	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_49c	7.1	-22.7	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_51c	6.9	-22.9	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_52c	14.1	-17.5	NA	Valenzuela	PAT	Alive	2004	NA	GSJ	NA
04_53c	8.1	-21.6	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_56c	7	-22.2	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_68c	7.8	-20.3	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_69c	6.8	-23	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_70c	7.3	-22.6	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_71c	7.4	-22.1	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_7c	6.9	-22.8	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
04_8c	6.8	-22.7	NA	Valenzuela	SO	Alive	2004	NA	GSJ	NA
05_103c	7.7	-20.3	NA	Valenzuela	SO	Alive	2005	NA	GSJ	NA
05_110c	12	-17.7	NA	Valenzuela	PAT	Alive	2005	NA	GSJ	NA
05_111c	7.5	-21.3	NA	Valenzuela	SO	Alive	2005	NA	GSJ	NA
05_114c	12.7	-16.9	NA	Valenzuela	PAT	Alive	2005	NA	GSJ	NA
05_31c	7.9	-21.2	NA	Valenzuela	SO	Alive	2005	NA	GSJ	NA
05_40c	8.6	-20.6	NA	Valenzuela	SO	Alive	2005	NA	GSJ	NA
05_62c	7.5	-21.4	NA	Valenzuela	SO	Alive	2005	NA	GSJ	NA
05_72c	8.3	-21.4	NA	Valenzuela	SO	Alive	2005	NA	GSJ	NA
05_86c	7.7	-20.6	NA	Valenzuela	SO	Alive	2005	NA	GSJ	NA
05_93c	7.6	-21.8	NA	Valenzuela	SO	Alive	2005	NA	GSJ	NA
34	7.5	-22.5	3.3	This study	SO	Alive	2005	NA	GSJ	NA
38	8.4	-22.8	3.4	This study	SO	Alive	2005	NA	GSJ	NA
39	7.3	-22.6	3.4	This study	SO	Alive	2005	NA	GSJ	NA
44	8.6	-21.9	3.3	This study	SO	Alive	2005	NA	GSJ	NA
45	7.3	-23.5	3.5	This study	SO	Alive	2005	NA	GSJ	NA
51	7.7	-22.9	3.6	This study	SO	Alive	2005	NA	GSJ	NA
60	8	-22.8	3.4	This study	SO	Alive	2005	NA	GSJ	NA
61	7.4	-23.3	3.4	This study	SO	Alive	2005	NA	GSJ	NA
63	7.5	-22.5	3.5	This study	SO	Alive	2005	NA	GSJ	NA
64	7.7	-21.9	3.2	This study	SO	Alive	2005	NA	GSJ	NA
66	7.7	-22.2	3.4	This study	SO	Alive	2005	NA	GSJ	NA
76	9.1	-20.6	3.2	This study	SO	Alive	2005	NA	GSJ	NA
77	7.3	-22.6	3.3	This study	SO	Alive	2005	NA	GSJ	NA
79	7.7	-22.6	3.4	This study	SO	Alive	2005	NA	GSJ	NA
80	8.5	-22.6	3.2	This study	SO	Alive	2005	NA	GSJ	NA
84	7.4	-23.6	3.3	This study	SO	Alive	2005	NA	GSJ	NA

90	7.8	-22.4	3.2	This study	SO	Alive	2005	NA	GSJ	NA
91	7.3	-22.4	3.4	This study	SO	Alive	2005	NA	GSJ	NA
92	8	-22.8	3.3	This study	SO	Alive	2005	NA	GSJ	NA
94	7.2	-22.7	3.3	This study	SO	Alive	2005	NA	GSJ	NA
97	8.7	-22.1	3.5	This study	SO	Alive	2005	NA	GSJ	NA
98	13.3	-18.5	3.5	This study	PAT	Alive	2005	NA	GSJ	NA
113	11.8	-18.5	3.3	This study	PAT	Alive	2005	NA	GSJ	NA
116	11.1	-20.7	3.2	This study	SO	Alive	2005	NA	GSJ	NA
118	7.8	-22.1	3.4	This study	SO	Alive	2005	NA	GSJ	NA
A04	7.5	-22.7	3.1	This study	SO	Alive	2011	NA	GSJ	NA
A06	10.9	-18.6	3.1	This study	SO	Alive	2011	NA	GSJ	NA
A08	6.8	-22.4	3.2	This study	SO	Alive	2011	NA	GSJ	NA
A10	7.8	-23.2	3.4	This study	SO	Alive	2011	NA	GSJ	NA
A12	8.2	-21.8	3.4	This study	SO	Alive	2011	NA	GSJ	NA
A16	8.1	-22.9	3.3	This study	SO	Alive	2011	NA	GSJ	NA
A18	9.2	-20.9	3.4	This study	SO	Alive	2011	NA	GSJ	NA
A21	7.6	-22.3	3.3	This study	SO	Alive	2011	NA	GSJ	NA
A23	6.7	-23.8	3.3	This study	SO	Alive	2011	NA	GSJ	NA
A25	9	-21	3.4	This study	SO	Alive	2011	NA	GSJ	NA
A27	7.3	-22	3.1	This study	SO	Alive	2011	NA	GSJ	NA
A29	8	-22.7	3.3	This study	SO	Alive	2011	NA	GSJ	NA
A31	7.7	-22.4	3.2	This study	SO	Alive	2011	NA	GSJ	NA
A33	9	-22.2	3.2	This study	SO	Alive	2011	NA	GSJ	NA
A37	7.1	-23.4	3.2	This study	SO	Alive	2011	NA	GSJ	NA
A39	7.2	-22.9	3.2	This study	SO	Alive	2011	NA	GSJ	NA
A40	7.6	-22.2	3.1	This study	SO	Alive	2011	NA	GSJ	NA

Fig. S1: Stable carbon and nitrogen isotope values in the skin of southern right whale living (n = 89) and dead calves (n = 58) by year of collection. In living calves,  $\delta^{13}\text{C}$  was the highest in 2003 compared to 2004, 2005 and 2011 (a) and  $\delta^{15}\text{N}$  was the lowest in 2004 compared to 2003 and 2005 (b). In dead calves,  $\delta^{13}\text{C}$  was the highest in 2005 compared to 2011 (c) but  $\delta^{15}\text{N}$  showed no significant differences (d). The year 2006 was excluded from these comparisons because of low sample size (n=2).

