**Supplementary material**

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| **Prey species** | **Number of prey (wet weight in g)** |
| **Pm2** | **Pm3** | **Pm4** | **Pm5** | **Pm6** | **Pm7** | **Pm8** | **Pm9** | **Pm10 (partial)** |
| *Ancistrocheirus lesueurii* | 2 (1.3·103) | 2 (104) | 53 (1.3·104) | 74 (4.8·104) | 280 (1.9·105) | 10 (2.8·103) | 5 (2.5·103) | - | 0 |
| *Brachioteuthis riisei* | 0 | 0 | 0 | 10 (7) | 3 (10) | 0 | 0 | - | 0 |
| *Chiroteuthis veranyi* | 4 (188) | 2 (164) | 138 (6.6·103) | 6 (357) | 17 (1.4·103) | 2 (132) | 1 (4) | - | 0 |
| *Chtenopteryx sicula* | 0 | 1 (15) | 0 | 4 (63) | 2 (29) | 0 | 1 (22) | - | 0 |
| *Galiteuthis armata* | 13 (103) | 2 (258) | 0 | 141 (9.8·103) | 23 (2.7·103) | 0 | 18 (1.6·103) | - | 1 (6) |
| *Abralia veranyi* | 0 | 0 | 0 | 1 (0.4) | 4 (34) | 0 | 0 | - | 0 |
| *Abraliopsis morisii* | 0 | 0 | 1 (2) | 1 (5) | 0 | 0 | 0 | - | 0 |
| *Histioteuthis bonnellii* | 60 (3.3·106) | 1968 (2.6·106) | 6120 (2.2·106) | 3188 (3.6·106) | 2349 (3.2·106) | 137 (3.9·104) | 155 (1.6·106) | - | 95 (1.4·105) |
| *Histioteuthis reversa* | 27 (5.4·103) | 204 (4.8·104) | 2407 (2.8·105) | 652 (1.4·105) | 3019 (9·105) | 91 (1.1·104) | 693 (2.1·106) | - | 8 (2.3·103) |
| *Histioteuthis* spp. | 0 | 824 | 925 | 1 | 3 | 14 | 129 | - | 13 |
| *Octopoteuthis sicula* | 5 (6.4·103) | 190 (2.3·105) | 1506 (7.2·105) | 259 (4.1·105) | 106 (2.3·105) | 82 (2.5·104) | 117 (1.6·105) | - | 23 (5.3·104) |
| *Ommastrephes bartramii* | 0 | 0 | 0 | 0 | 5 (5.5·103) | 0 | 1 (103) | - | 0 |
| *Todarodes sagittatus* | 0 | 6 (9.6·103) | 19 (3·104) | 3 (5.7·103) | 6 (1.1·104) | 0 | 2 (3.4·103) | - | 1 (1.3·103) |
| *Ancistroteuthis lichtensteinii* | 0 | 2 (156) | 0 | 4 (373) | 10 (1.2·103) | 1 (114) | 1 (47) | - | 1 (78) |
| *Onychoteuthis banksii* | 0 | 0 | 2 (24) | 6 (61) | 8 (144) | 0 | 1 (9) | - | 0 |
| *Pyroteuthis margaritifera* | 0 | 0 | 2 (8) | 0 | 2 (12) | 0 | 0 | - | 0 |
| *Heteroteuthis dispar* | 0 | 0 | 1 (3) | 1 (2) | 0 | 0 | 0 | - | 0 |
| *Octopus vulgaris* | 0 | 0 | 1 (7) | 0 | 0 | 0 | 0 | - | 0 |
| *Chauliodus sloani* | 0 | 0 | 0 | 0 | 10 (-) | 0 | 0 | - | 0 |
| Broken beaks | 0 | 369 | 1768 | 317 | 723 | 36 | 197 | - | 1 |
| Sum | 111 (4.7·106) | 3570 (2.9·106) | 12943 (3.2·106) | 4668 (4.2·106) | 6570 (4.6·106) | 373 (7.8·104) | 1321 (5.4·105) | - | 143 (2·105) |

**Table S1.** Number of individuals and wet weight for each prey species found in the stomach contents. Beaks of *Histioteuthis* spp. were damaged and could not be assigned to any of the two *Histioteuthis* species found in the Mediterranean Sea. The stomach content of the newborn Pm9 did not contain any prey remains while the stomach of Pm10 was torn apart after a ship strike. Wet weight was not estimated for *C. sloani.* For the identification codes of individual sperm whales see Table 1.

**Table S2.** Equations for DML, TW and TL reconstruction of prey species identified in the stomach contents of *Physeter macrocephalus* stranded along the Greek coasts. The type A beaks of *Galiteuthis armata* correspond to several species of the family Cranchiidae (Clarke, 1986). Equations from *Abraliopsis felis* McGowan & Okutani, 1968 were used since there was none available for the congeneric *A. morisii*.

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| **Cephalopod / fish species** | **Equation** | **Sampling area** | **Reference** |
| *Ancistrocheirus lesueurii* | DML = -41.3 + 40.75 x LRL | Southern Ocean | Clarke, 1980 |
| TW = 0.8236 x LRL3.56 | Southern Ocean | Clarke, 1980 |
| *Brachioteuthis riisei* | DML = 7.69 + 23.06 x LRL | South Australia | Lu and Ickeringill, 2002 |
| TW = 0.44 x LRL2.94 | South Australia | Lu and Ickeringill, 2002 |
| *Chiroteuthis veranyi* | DML = 11.4 + 24.26 x LRL | Southern Ocean | Clarke, 1980 |
| TW = 0.7858 x LRL2.7 | Southern Ocean | Clarke, 1980 |
| *Chtenopteryx sicula* | DML = 11.69 + 32.42 x LRL | Southern Ocean | Clarke, 1980 |
| TW = 7.7679 x LRL2.29 | Southern Ocean | Clarke, 1980 |
| *Galiteuthis armata* | DML = 12.2 + 40.78 x LRL | Undetermined | Clarke, 1986 (type A) |
| TW = 2.013 x LRL2.23 | Central Mediterranean Sea | Romeo et al., 2012 |
| *Abralia veranyi* | DML = -2.103 + 24.527 x LRL | Aegean Sea | Salman, unpubl. |
| TW = 2.66 x LRL2.30 | Central Mediterranean Sea | Romeo et al., 2012 |
| *Abraliopsis morisii* | DML = -2.66 + 40.55 x LRL | Pacific Ocean | Wolff, 1984 |
| TW = 2.33 x LRL2.49 | Pacific Ocean | Wolff, 1984 |
| *Histioteuthis bonnellii*  | DML = -8.530 + 19.696 x LRL | Western Mediterranean Sea | Quetglas et al., 2010 |
| TW = 1.442 x LRL3.25 | Ligurian Sea | Garibaldi and Podestà, 2014 |
| *Histioteuthis reversa* | DML = -12.334 + 31.712 x LRL | Ligurian Sea | Würtz et al., 1992 |
| TW = 2.827 x LRL3.30 | Western Mediterranean Sea | Quetglas et al., 2010 |
| *Octopoteuthis sicula* | DML = 35.49 + 14.75 x LRL | Mediterranean Sea | Jereb et al., 2016 |
| TW = 0.0154 x LRL4.63 | Mediterranean Sea | Jereb et al., 2016 |
| *Ommastrephes bartramii* | DML = 36.2613 x LRL1.07 | Pacific Ocean | Wolff, 1984 |
| TW = 6.2566 x LRL2.07 | Eastern Mediterranean Sea | Lefkaditou et al., 2011 |
| *Todarodes sagittatus*  | DML = 76.62 + 27.379 x LRL | Eastern Mediterranean Sea | Lefkaditou, unpubl. |
| TW = 7.6139 x LRL2.22 | Eastern Mediterranean Sea | Lefkaditou, unpubl. |
| *Ancistroteuthis lichtensteinii* | DML = 33 x LRL0.98 | Ligurian Sea | Würtz et al., 1992 |
| TW = 2.296 x LRL2.21 | Ligurian Sea | Würtz et al., 1992 |
| *Onychoteuthis banksii* | DML = 2.31 + 32.75 x LRL | South Australia | Lu and Ickeringill, 2002 |
| TW = 0.9608 x LRL2.80 | South Australia | Lu and Ickeringill, 2002 |
| *Pyroteuthis margaritifera* | DML = 5.26 + 26.73 x LRL | South Australia | Lu and Ickeringill, 2002 |
| TW = 2.64 x LRL2.7 | South Australia | Lu and Ickeringill, 2002 |
| *Heteroteuthis dispar* | DML = 21.6 x LRL0.80 | Central Mediterranean Sea | Romeo et al., 2012 |
| TW = 2.80 x LRL2.53 | Eastern Mediterranean Sea | Lefkaditou, unpubl. |
| *Octopus vulgaris* | TW = 6.1718 x LHL3.03 | Balearic Sea | Pérez-Gándaras, 1986 |
| *Chauliodus sloani* | TL = 8 x DL | Caribbean Sea | Debrot, 1992 |

Abbreviations: DML, dorsal mantle length; LRL, lower rostral length; LHL, lower hood length; TL, total length; DL, dentary length in mm; TW, total weight in g.

**Figure S1.** Histograms of estimated dorsal mantle length (DML) for six cephalopod species in the sperm whale diet. Data from sperm whales Pm2-8 only are used (Table 1). *n*: number of measured lower beaks.



**Figure S2.** Boxplots of estimated dorsal mantle length (DML) for three prey species in two sperm whale age classes. For all three species, calves (Pm2, 4 & 7) consumed individuals of smaller mantle length than non-calves (Pm3, 5, 6 & 8). The boxes show the 25th, 50th (median) and 75th percentile (lower, mid and upper lines in the box) of DML, while whiskers denote the lowest and highest datum within 1.5 interquartile range. Data from sperm whales Pm2-8 only are used (Table 1). *n*: number of measured lower beaks.

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