The following supplement accompanies the article

Interdecadal variability in predator–prey interactions of juvenile North Pacific albacore in the California Current System

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Supplement. Variability in prey energy density values

Variability in intra- and interspecies energy density (*ED*) (kJ g^{-1}) was assessed from values reported in the literature (Table S1). Taxonomic aggregation was based on species categories used in data analysis, and represent those categories that occurred in 10 or more stomachs in any of the 4 studies (McHugh 1952, Iversen 1962, Pinkas et al. 1971, this study). For many prey consumed by juvenile albacore, species-specific energetic values were available. For others, closely related or ecologically similar species were used. Furthermore, the taxonomic resolution of diet categories often necessitated aggregation of species *ED* values. For crustaceans, mean and standard deviation (SD) was available for *Pleuroncodes planipes*; otherwise, values were reported as taxonomic aggregations (amphipods and euphausiids) and values for the 'Crustaceans (other)' category were calculated from 25 species of decapods and mysids. In the case of cephalopods, values came from 4 species that are consumed by albacore, 3 species in the same family as species consumed by albacore, and 2 values that have been reported for the categories Octopoda and Decapoda, generally. The SD was calculated for cephalopods using these 9 values, some of which were themselves means.

Finally, for fishes, values were available for most species, unless otherwise noted in Table S1. The SD used for all categories of fishes was based on data from Tirelli et al. (2006) because they calculated variability for juvenile fishes (the greatest degree of intraspecies variability in *ED* occurs in adults during spawning). They found low SDs (8% of the mean) for *Engraulis encrasicolus* ranging from 40 to 59 mm in length, the size range of fish prey found in juvenile albacore diet. Therefore, similarly low levels of *ED* variability for the other juvenile fish species were used in this study. Values for *Vinciguerria lucetia* were unavailable; instead, the mean value calculated for 5 categories of Myctophidae was used, because the similarities between ecological niches (vertically migrating mesopelagic fishes) suggest similar body chemistry. The SD for the category 'Fishes (other)' is the SD of the values collected from the literature for all fishes.

Table S1. Energy density values used to calculate distributions for parameters in an albacore bioenergetics model

Species category	Mean *ED*	*ED* values from literature (letters refer to citations)	Notes on means	SD	Notes on SDs
Amphipods	2.5	2.5[c]		0.9	Literature
Pleuroncodes planipes	3	2.09[a], 3.93[b]		1.3	2 studies
Euphausiids	3.1	3.1[c]		1.1	Literature
Malacostracans	3.2	3.2[d]	Mean of 25 species decapods and mysids	1.1	Literature
Cephalopods	4.4	3[a], 6.72[e], 3.51[a], 5.64[f], 3.29[a], 3.85[g], 3.8[g], 4.69[g], 5.4[g]	Octopoda, *Gonatus fabricii*, *Loligo opalescens*, *Moroteuthis ingens*, Decapoda, *Berryteuthis magister*, *Berryteuthis* sp., *Gonatopsis borealis*, *Onychoteuthis borealijaponica*	0.47	Mean of 9 categories of cephalopods
Cololabis saira	7.5	7.92[a], 7.0[j]		1.04	8 % of mean
Engraulis mordax	6.6	6.7[a]		0.54	8 % of mean
Sardinops sagax	7.3	8.6[n], 7.4[b], 5.9[o]		0.58	8 % of mean
Sebastes spp.	4.2	3.75[a], 3.95[a], 4.39[a], 3.87[a], 3.99[a], 4.37[a], 4.79[a], 4.43[a], 3.7[a], 5.12[f], 3.95[a], 4.18[a], 3.75[a], 3.21[a], 3.95[a], 5.21[e], 4.65[a]	*Sebastes alascanus*, *S. aleutianus*, *S. crameri*, *S. elongatus*, *S. flavidus*, *S. inermis*, *S. iracundus*, *S. matsubarae*, *S. melanops*, *S. oculatus*, *S. paucispinus*, *S. pinniger*, *S. rosaceus*, *S. ruberrimus*, *S. rubivinctus*, *S.* spp., *S. goodei*	0.34	8 % of mean
Merluccius productus	5.9	5.9[i]	Regression equation: mean ED calculated from hake size-frequency in this diet study	1.3	8 % of mean
Trachurus symmetricus	6.4	6.4[h]	Value for *Trachurus japonicus*	0.51	8 % of mean
Myctophidae	7.1	9.8[a], 7.6[k], 7.6[l], 7.3[l], 3.5[a]	*Diaphus theta*, Lanternfish, *Stenobrachius leucopsaurus*, *Triphoturus mexicanus*, *Tarletonbeania crenularis*	0.57	8 % of mean
Paralepididae	7.1	7.1	Value for Myctophidae	0.57	8 % of mean
Vinciguerria lucetia	5.2	5.2[m]		0.42	8 % of mean
Fishes (other)		6.6	Mean value of all 9 fish categories here	0.6	Mean of 9 categories of fishes

Citations: [a]Sidwell (1981), [b]Abitia-Cardenas et al. (1997), [c]Davis et al. (1998), [d]Donnelly et al. (1993), [e]Lawson et al. (1998), [f]Eder & Lewis (2005), [g]Perez (1994), [h]Osako et al. (2002), [i]Riis-Vestergaard et al. (2000), [j]Hunt et al. (2000), [k]Payne et al. (1999), [l]Childress & Nygaard (1974), [m]Peterson (1979), [n]Bunce (2001), [o]Childress et al. (1980)

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