

Text S1. **Methods**

Sample collection

San Clemente Island (SCI) and San Nicolas Island (SNI) are approximately 100 km from the mainland coast and approximately 80 km apart from each other (Figure 1). Santa Barbara Island (SBI) is approximately 60 km from the mainland, 65 km from SCI, and 45 km from SNI. At SBI, samples were mostly collected at or near the Southeast Rookery (33.470°N, 119.031°W), but in 1981, 1982, 1987, and 1988 some were also collected at Webster Point (33.484°N, 119.047°W). At SCI samples were collected at or near Mail Point (32.886°N, 118.519°W). At SNI samples were collected opportunistically at various areas of the island-rookery during 1981 – 1983, then collections were standardized and collected at Site 1 (33.244°N, 119.559°W during 1984 – 1991, and later moved approximately 0.45 km eastward to 33.241°N, 119.555°W during 1992 – 2015). Site 2 at SNI (33.229°N, 119.522°W; 3.3 km southeast of Site 1) was added during autumn 1991. During July-August collections at SNI in 1991, 1993, 1995, 1996, 1997, 1999 – 2001, and 2003, fecal samples were collected at male haulout areas (where no females were present) near the two female collection sites (Sites 1 and 2). Male Site 1 was located at 33.235°N, 119.547°W, Male Site 2 at 33.233°N, 119.539°W, and Male Site 3 at 33.251°N, 119.564°W. Sample collections at male sites would begin at Male Site 1, then proceed to Male Site 2 and Male Site 3 until 50 total samples were obtained.

During 1981 – 1986 fresh, partially desiccated, and dried fecal samples were collected (dry samples were collected at monitored sites and thus known to have been deposited since the previous collection), but after 1986 only fresh or partially desiccated samples were collected. Samples were collected from haulout sites predominantly inhabited by adult females and pups, but sometimes juveniles, sub-adult males, and adult males were present in these areas (excepting those collected in July or August at male haulout sites at SNI).

Prey species identification and storage

The John Fitch Otolith Collection at the Natural History Museum of Los Angeles County was used to verify fish otolith identifications. Eschmeyer et al. (1983) and preserved specimens were used to identify chondrichthian teeth, and Lowry (2011) was used to identify otoliths in the last five years of this study. The cephalopod beak collection at the Santa Barbara Museum of Natural History and at SWFSC, and Clarke (1986) were used to verify cephalopod beak identifications. Crustacean fragments from pelagic red crab and pyrosomes were identified from preserved specimens. Otoliths, cartilaginous vertebrae, and chondrichthian teeth were dried, placed in marked gelatin capsules, and stored in a labeled Whirl-Pak plastic bag. Beaks, crustacean fragments, and pyrosomes were placed in glass vials containing 70% ethanol and stored in labeled cardboard boxes.

Diet indices

Frequency of occurrence (FO) and split-sample frequency of occurrence (SSFO) were used to describe the presence-absence of prey categories in CSL fecal samples. Only fecal samples with hard parts used for identifying prey were tabulated. FO shows the proportion (or frequency) of fecal samples containing either a single prey-taxon or a group composed of

multiple prey-taxa in a group of fecal samples. The FO index is converted to percentage and expressed as %FO.

$$FO_i = \frac{\sum_{k=1}^s O_{ik}}{s_{fgh}} \quad (A)$$

Where $O_i = \begin{cases} 0 & \text{if taxon or group of taxa } i \text{ is absent in fecal sample } k \\ 1 & \text{if taxon or group of taxa } i \text{ is present in fecal sample } k \end{cases}$

s = total number of fecal samples that contained prey from samples collected at island f during season g in year h

The sum of %FO from a set of fecal samples does not equal 100%. The SSFO index, derived by Olesiuk et al. (1990), allows for the sum of SSFO percentages to equal 100% and is calculated as:

$$SSFO_i = \frac{\sum_{k=1}^s (O_{ik}/O_k)}{s_{fgh}} \quad (B)$$

Where $O_{ik} = \begin{cases} 0 & \text{if taxon } i \text{ is absent in fecal sample } k \\ 1 & \text{if taxon } i \text{ is present in fecal sample } k \end{cases}$

O_k = Total number of all taxa present in fecal sample k

s = total number of fecal samples that contained prey from samples collected at island f during season g in year h

The percentage value of each prey-taxon or group of prey-taxa (%SSFO) is taken from the sum of prey SSFO_{*i*} values.

Diet similarity

Krebs (1999) defined the Morisita Index of Similarity as:

$$C_\lambda = \frac{2 \sum X_{ij}X_{ik}}{(\lambda_1 + \lambda_2)N_jN_k} \quad (C)$$

Where C_λ = Morisita Index of Similarity between sample j and k

X_{ij}, X_{ik} = Number or proportion (%SSFO) of individuals of species i in sample j and sample k

$N_j = \sum X_{ij}$ = Total number of individuals in sample j

$N_k = \sum X_{ik}$ = Total number of individuals in sample k

$$\lambda_1 = \frac{\sum [X_{ij}(X_{ij} - 1)]}{N_j(N_j - 1)}$$

$$\lambda_2 = \frac{\sum [X_{ik}(X_{ik} - 1)]}{N_k(N_k - 1)}$$

Diet diversity

The Shannon-Wiener Index (H') and Species Richness (S), were used to describe diversity in the diet of CSLs. S enumerates the total number of taxa in a seasonal group of fecal samples. H' characterizes species diversity in a community by accounting for both abundance and evenness of the species present. Krebs (1999) defined the Shannon-Wiener Index (H') as:

$$H' = \sum_{i=1}^s (p_i)(\ln p_i) \quad (D)$$

Where H' = Index of species diversity

s = Number of prey-taxon

p_i = Proportion of total samples belonging to i th prey-taxon

The %SSFO index of each distinct prey-taxon was the diet index used as p in equation D. No prey-taxa were combined into groups because doing so reduces diversity of prey-taxon in the group of samples. The Shannon-Wiener index was then expressed in units of numbers of species (N_1) to allow direct comparisons to S :

$$N_1 = e^{H'} \quad (E)$$

Literature cited

- Clarke MR (1986) A handbook for the identification of cephalopod beaks. Clarendon Press, Oxford, Oxfordshire. 273 pp.
- Eschmeyer WN, Herald ES, Hammann H (1983) A field guide to Pacific coast fishes of North America: From the Gulf of Alaska to Baja California. Houghton Mifflin Company, Boston.
- Krebs CJ (1999). Ecological methodology. Benjamin/Cummings, Menlo Park, California.
- Lowry MS (2011) Photographic catalog of California marine fish otoliths: Prey of California sea lions (*Zalophus californianus*). NOAA Technical Memorandum NMFS, NOAA-TM-NMFS-SWFSC-483. 250pp.
- Olesiuk PF, Bigg MA, Ellis GM (1990). An assessment of the feeding habits of harbour seals (*Phoca vitulina*) in the Strait of Georgia, British Columbia, based on scat analysis. Canadian Technical Report of Fisheries and Aquatic Sciences No. 1730. 135pp.

Table S1. Sampling occasions with number of fecal samples collected (n) and percentage (%) of those samples with prey hard parts used for prey identifications in samples collected at Santa Barbara Island during summer 1981 – 1996 and collected seasonally at San Clemente Island and San Nicolas Island during 1981 – 2015. Seasonal collection in bold had <20 samples with hard parts.

Year	Santa Barbara Island		San Clemente Island								San Nicolas Island							
	Summer		Winter		Spring		Summer		Autumn		Winter		Spring		Summer		Autumn	
	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts
1981	29	89.7	0	-	0	-	0	-	48	87.5	0	-	0	-	29	93.1	17	88.2
1982	65	81.5	3	100.0	159	82.4	150	84.7	54	94.4	12	100.0	17	94.1	78	71.8	18	94.4
1983	104	63.5	59	78.0	170	88.8	87	94.3	95	93.7	6	100.0	55	87.3	201	61.2	59	79.7
1984	50	94.0	148	87.8	117	85.5	89	95.5	53	94.3	78	75.6	35	82.9	116	97.4	93	87.1
1985	44	88.6	16	75.0	12	91.7	61	91.8	26	92.3	63	87.3	77	85.7	64	93.8	63	87.3
1986	52	92.3	0	-	44	84.1	66	98.5	22	90.9	35	88.6	24	95.8	80	91.3	132	93.9
1987	57	84.2	7	85.7	30	100.0	50	92.0	40	90.0	0	-	0	-	31	100.0	0	-
1988	51	94.1	49	98.0	57	98.2	43	88.4	13	92.3	21	85.7	26	100.0	52	92.3	0	-
1989	56	96.4	25	84.0	55	96.4	51	90.2	68	92.6	23	100.0	14	100.0	53	98.1	0	-
1990	56	92.9	37	97.3	50	92.0	55	65.5	50	90.0	0	-	49	98.0	0	-	0	-
1991	51	100.0	51	98.0	52	96.2	55	87.3	55	94.5	49	93.9	52	90.4	110	90.9	99	94.9
1992	51	86.3	50	96.0	51	76.5	52	94.2	50	92.0	102	93.1	97	89.7	149	84.6	101	93.1
1993	52	98.1	50	98.0	50	98.0	51	78.4	49	98.0	102	96.1	96	84.4	152	92.1	99	98.0
1994	50	96.0	0	-	0	-	49	83.7	45	91.1	0	-	0	-	98	83.7	99	85.9
1995	50	86.0	46	97.8	51	80.4	41	82.9	0	-	99	97.0	98	91.8	147	85.0	102	93.1
1996	23	87.0	47	97.9	50	98.0	51	80.4	46	97.8	95	94.7	90	92.2	150	87.3	102	90.2

Table S1. (Continued)

Year	Santa Barbara Island		San Clemente Island								San Nicolas Island							
	Summer		Winter		Spring		Summer		Autumn		Winter		Spring		Summer		Autumn	
	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts	Collected (n)	% w/hard parts
1997	0	-	49	98.0	51	86.3	47	87.2	50	88.0	93	94.6	106	83.0	145	82.8	97	87.6
1998	0	-	53	96.2	48	95.8	51	88.2	53	84.9	104	87.5	102	74.5	101	96.0	102	99.0
1999	0	-	51	86.3	50	92.0	47	85.1	50	88.0	104	92.3	101	97.0	150	85.3	100	95.0
2000	0	-	53	92.5	50	94.0	50	90.0	50	92.0	114	96.5	103	87.4	119	97.5	100	97.0
2001	0	-	53	98.1	51	94.1	49	89.8	47	80.9	104	92.3	102	73.5	127	93.7	99	94.9
2002	0	-	49	100.0	50	100.0	55	96.4	50	98.0	104	90.4	102	95.1	102	81.4	101	98.0
2003	0	-	50	80.0	50	88.0	55	90.9	50	100.0	100	88.0	103	79.6	170	92.4	101	100.0
2004	0	-	51	92.2	52	100.0	50	82.0	55	96.4	104	95.2	100	99.0	104	98.1	101	93.1
2005	0	-	48	95.8	54	92.6	53	94.3	55	98.2	101	88.1	100	71.0	104	90.4	104	96.2
2006	0	-	51	98.0	50	94.0	50	94.0	51	98.0	99	99.0	108	94.4	103	80.6	100	94.0
2007	0	-	53	100.0	54	88.9	48	89.6	51	98.0	101	98.0	98	94.9	100	88.0	100	94.0
2008	0	-	50	96.0	50	98.0	43	93.0	41	92.7	99	97.0	100	95.0	89	73.0	102	95.1
2009	0	-	51	88.2	50	96.0	51	96.1	38	89.5	100	96.0	102	85.3	101	86.1	101	93.1
2010	0	-	51	96.1	51	92.2	0	-	0	-	98	99.0	99	84.8	0	-	0	-
2011	0	-	50	100.0	50	98.0	0	-	0	-	97	96.9	98	83.7	0	-	0	-
2012	0	-	50	100.0	48	100.0	50	100.0	50	98.0	100	98.0	93	89.2	102	95.1	101	100.0
2013	0	-	50	96.0	55	92.7	61	96.7	50	100.0	100	95.0	100	96.0	100	92.0	100	100.0
2014	0	-	50	100.0	50	82.0	31	100.0	52	100.0	100	97.0	100	87.0	100	100.0	100	96.0
2015	0	-	50	94.0	51	98.0	50	96.0	50	100.0	100	88.0	100	94.0	99	88.9	96	100.0

Table S2. Fecal samples collected at Santa Barbara Island (summer 1981 – 1996), and San Clemente and San Nicolas Islands (seasonally 1981 – 2015). Only collections with ≥ 20 samples per season were included in the analysis.

Island	Season	Seasons sampled (n)	Fecal samples collected (n)	Fecal samples with prey taxa (n)	Seasonal samples with prey taxa mean (%)	Seasonal samples with prey taxa mean SD (%)
Santa Barbara Island	Summer	16	841	738	89.4	8.7
	Total	16	841	738	89.4	8.7
San Clemente Island	Winter	29	1,525	1,435	94.5	6.0
	Spring	32	1,901	1,737	92.5	6.5
	Summer	32	1,792	1,610	89.9	7.2
	Autumn	31	1,544	1,448	93.6	4.9
	Total	124	6,762	6,230	92.6	6.4
San Nicolas Island	Winter	28	2,568	2,402	93.4	5.2
	Spring	30	2,616	2,307	88.8	7.6
	Summer	32	3,426	3,003	88.9	8.7
	Autumn	27	2,654	2,502	93.9	5.0
	Total	117	11,264	10,214	91.1	7.2
Grand Total		257	18,867	17,182	91.7	7.0

Table S3. Number and percentage of seasons sampled (out of 124 at San Clemente Island and 117 at San Nicolas Island during 1981 – 2015, and out of 16 summer seasons during 1981 – 1996 at Santa Barbara Island) when prey taxa were present in California sea lion fecal samples, and corresponding seasonal percent Frequency of Occurrence (%FO) index, for identified and unidentified prey-taxa. Standard deviation (SD) represents the variation across the seasonal sampled means. “Common prey taxon” is shown in bold. Marine environmental zones: Ep = Epipelagic, Me = Mesopelagic, Ba = Bathypelagic, Be/De = Benthic and/or Demersal, Ne = Neritic, Un = Unknown.

Scientific name	Common name	Marine environmental zone	San Clemente Island			San Nicolas Island			Santa Barbara Island		
			% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Summers present	Mean summer %FO	SD summer %FO
<i>Doryteuthis opalescens</i>	market squid	Ep, Me	98.4	54.6	28.4	99.1	53.9	31.7	93.8	40.4	22.4
<i>Engraulis mordax</i>	northern anchovy	Ep	87.9	29.3	30.1	93.2	24.6	26.8	100.0	48.7	25.3
<i>Sebastes jordani</i>	shortbelly rockfish	Be/De, Ep	95.2	19.3	14.7	100.0	26.8	15.4	100.0	29.3	13.5
<i>Trachurus symmetricus</i>	jack mackerel	Ep	98.4	24.2	17.0	98.3	17.5	15.6	100.0	20.7	13.7
<i>Sardinops sagax</i>	Pacific sardine	Ep	75.0	20.6	23.3	76.1	21.2	22.9	62.5	11.7	14.0
<i>Merluccius productus</i>	Pacific hake	Ep	91.1	17.2	15.7	100.0	25.5	16.0	100.0	40.2	17.4
<i>Scomber japonicus</i>	Pacific mackerel	Ep	89.5	13.3	12.1	85.5	10.5	11.8	75.0	9.7	10.9
<i>Chromis punctipinnis</i>	blacksmith	Be/De, Ep	86.3	7.2	6.5	35.0	0.9	1.6	50.0	2.1	2.8
<i>Pleuroncodes planipes</i>	pelagic red crab	Ep	28.2	5.8	13.0	30.8	3.6	8.3	43.8	7.0	13.1
<i>Octopus rubescens</i>	Eastern Pacific red octopus	Be/De, Ne	49.2	3.4	7.3	73.5	5.9	10.8	75.0	9.7	14.5
<i>Abraliopsis spp.</i>	enope squid	Ep, Me	56.5	2.8	4.5	77.8	3.4	4.0	68.8	4.0	5.1
Teleostei	unidentified fishes	Un	54.0	2.7	3.4	59.8	1.6	1.9	62.5	3.5	3.7
<i>Gonatopsis borealis</i>	boreopacific gonate squid	Ep, Me	41.1	1.9	3.3	69.2	2.8	2.9	81.3	5.6	5.4
<i>Chilara taylori</i>	spotted cuskeel	Be/De, Ep	44.4	1.9	3.1	43.6	1.2	2.1	25.0	1.8	4.1
<i>Cololabis saira</i>	Pacific saury	Ep	32.3	1.5	2.9	43.6	1.8	3.4	18.8	0.4	0.8
<i>Sebastes semicinctus</i>	halfbanded rockfish	Be/De, Ep, Me	37.1	1.4	2.3	42.7	0.9	1.4	25.0	1.3	2.9
<i>Onychoteuthis borealijaponicus</i>	boreal clubhook squid	Ep	39.5	1.3	2.2	77.8	4.0	4.9	75.0	3.6	3.9
<i>Medialuna californiensis</i>	halfmoon	Be/De, Ep	38.7	1.2	1.9	13.7	0.2	0.5	12.5	0.3	0.9
<i>Sebastes spp. 1</i>	unidentified rockfish	Be/De, Ep	33.1	1.0	1.8	40.2	1.0	1.7	93.8	4.3	2.4
<i>Lyopsetta exilis</i>	slender sole	Be/De, Ep, Me	32.3	1.0	1.8	43.6	1.1	1.8	31.3	1.2	2.2
<i>Ichthyos lockingtoni</i>	medusafish	Ep	22.6	1.0	2.4	35.0	1.0	2.0	18.8	0.4	0.8

Table S3. (Continued)

Scientific name	Common name	Marine environmental zone	San Clemente Island			San Nicolas Island			Santa Barbara Island		
			% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Summers present	Mean summer %FO	SD summer %FO
<i>Sebastes spp. 2</i>	juvenile rockfish	Ep	23.4	1.0	2.5	35.9	1.1	4.0	6.3	0.3	1.3
<i>Sebastes diploproa</i>	splitnose rockfish	Be/De, Ep, Me	26.6	1.0	2.0	21.4	0.3	0.8	6.3	0.1	0.5
<i>Halichoeres californica</i>	señorita	Be/De, Ep	34.7	0.9	1.4	25.6	0.7	1.8	25.0	0.5	1.0
<i>Dosidicus gigas</i>	jumbo flying squid	Ep, Me	17.7	0.8	2.1	23.9	0.8	2.1	6.3	0.1	0.5
<i>Gonatus onyx</i>	clawed armhook squid	Ep, Me	27.4	0.8	1.6	50.4	1.6	2.5	37.5	1.7	3.3
<i>Citharichthys sordidus</i>	Pacific sanddab	Be/De, Ep, Me	29.8	0.8	1.5	23.1	0.4	0.9	25.0	1.2	2.6
<i>Citharichthys stigmaeus</i>	speckled sanddab	Be/De, Ep	24.2	0.8	1.6	40.2	0.8	1.2	12.5	0.5	1.3
<i>Symbolophorus californiensis</i>	bigfin lanternfish	Ep, Me	23.4	0.7	1.8	46.2	1.1	1.8	12.5	0.3	0.7
<i>Atherinops affinis</i>	topsmelt	Ep	24.2	0.7	1.5	2.6	0.0	0.2	6.3	0.3	1.3
<i>Sebastes hopkinsi</i>	squarespot rockfish	Be/De, Ep	24.2	0.7	1.6	22.2	0.3	0.8	25.0	0.7	1.6
<i>Hypocritichthys analis</i>	spotfin surfperch	Be/De, Ep	7.3	0.7	3.2	0.9	0.0	0.1	-	-	-
<i>Zaniolepis frenata</i>	shortspine combfish	Be/De, Ep, Me	15.3	0.6	1.8	23.1	0.5	1.3	6.3	0.2	1.0
<i>Pyrosoma atlanticum</i>	pyrosome	Ep	4.0	0.6	3.8	5.1	0.3	2.1	-	-	-
<i>Microstomus pacificus</i>	Dover sole	Be/De, Ep	21.8	0.6	1.2	48.7	1.1	1.6	43.8	1.2	1.6
<i>Stenobranchius leucopsarus</i>	northern lampfish	Ep, Me	21.8	0.6	1.2	35.9	0.7	1.4	31.3	0.7	1.0
<i>Sebastes ensifer</i>	swordspine rockfish	Be/De, Ep, Me	21.0	0.6	1.2	17.1	0.2	0.6	6.3	0.1	0.5
<i>Porichthys notatus</i>	plainfin midshipman	Be/De, Ep, Me	20.2	0.6	1.3	41.9	0.7	1.0	37.5	1.3	2.0
<i>Ceratoscopelus townsendi</i>	dogtooth lampfish	Ep, Me	13.7	0.5	2.2	21.4	0.4	1.0	12.5	0.2	0.6
Decapodiformes	unidentified cephalopods	Un	20.2	0.5	1.2	10.3	0.2	0.6	25.0	0.6	1.1
Crustacea	unidentified crustacean	Un	18.5	0.5	1.2	12.8	0.3	0.9	31.3	1.1	2.1
<i>Cymatogaster aggregata</i>	shiner surfperch	Be/De, Ep	14.5	0.5	1.5	16.2	0.2	0.6	-	-	-
<i>Cheilopogon californicus</i>	California flyingfish	Ep, Ne	12.1	0.4	1.5	0.9	0.0	0.1	6.3	0.2	1.0
<i>Leuroglossus stilbius</i>	California smoothtongue	Ep	12.1	0.4	1.3	39.3	1.1	2.3	25.0	0.9	1.8
Myctophidae	lanternfishes	Ep, Me	16.1	0.4	1.0	13.7	0.2	0.7	25.0	0.7	1.3
<i>Lestidiops ringens</i>	slender barracudina	Ba	8.9	0.3	1.3	23.9	0.5	1.2	18.8	0.5	1.2
<i>Magnisudis atlantica</i>	duckbill barracudina	Me	10.5	0.3	1.4	17.1	0.4	1.2	-	-	-
Pleuronectiformes	unidentified flatfish	Be/De, Ep, Me	6.5	0.3	2.4	12.8	0.6	4.5	12.5	0.2	0.7

Table S3. (Continued)

Scientific name	Common name	Marine environmental zone	San Clemente Island			San Nicolas Island			Santa Barbara Island		
			% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Summers present	Mean summer %FO	SD summer %FO
Unidentified unknown	unknown	Un	8.9	0.3	1.2	8.5	0.2	0.7	-	-	-
<i>Sebastes elongatus</i>	green striped rockfish	Be/De, Ep, Me	12.1	0.3	0.9	10.3	0.1	0.4	-	-	-
Embiotocidae	unidentified surfperch	Be/De, Ep	12.9	0.3	0.9	11.1	0.2	0.5	6.3	0.1	0.5
Teleostei spp. 1	unidentified fish	Un	8.1	0.3	1.3	3.4	0.0	0.2	-	-	-
<i>Gonatus pyros</i>	gonate squid	Ep, Me	11.3	0.3	0.9	32.5	0.8	1.6	31.3	0.6	1.0
<i>Icelinus tenuis</i>	spotfin Sculpin	Be/De, Ep, Me	11.3	0.3	0.9	6.8	0.1	0.3	18.8	0.5	1.2
<i>Argentina sialis</i>	Pacific argentine	Be/De, Ep, Me	9.7	0.3	1.0	15.4	0.3	0.7	31.3	0.6	1.0
<i>Sebastes goodei</i>	chilipepper	Be/De, Ep	8.9	0.3	0.9	16.2	0.4	1.3	6.3	0.1	0.5
<i>Gonatus</i> spp.	gonate squid	Ep, Me	8.1	0.2	1.0	16.2	0.3	0.8	31.3	1.2	2.2
Athernidae	unidentified silverside	Ep	8.9	0.2	0.9	1.7	0.0	0.1	-	-	-
<i>Gonatus californica</i>	gonate squid	Ep, Me	4.0	0.2	1.4	4.3	0.1	0.5	12.5	0.3	0.7
<i>Paralabrax clathratus</i>	kelp bass	Ep	8.9	0.2	0.8	0.9	0.0	0.1	-	-	-
<i>Triphoturus mexicanus</i>	Mexican lampfish	Ep, Me	8.1	0.2	0.8	12.8	0.3	0.8	0.0	0.0	0.0
<i>Histioteuthis heteropsis</i>	strawberry squid	Ba-Ep, Me	7.3	0.2	0.8	14.5	0.2	0.5	12.5	0.3	0.8
<i>Diaphus theta</i>	California headlightfish	Ep, Me	8.9	0.2	0.7	20.5	0.3	0.8	-	-	-
<i>Galeorhinus zyopterus</i>	soupfin shark	Ep	8.1	0.2	0.8	6.8	0.1	0.3	6.3	0.1	0.5
Elasmobranchii	shark, ray, or skate	Ep	8.9	0.2	0.8	6.0	0.1	0.4	-	-	-
<i>Citharichthys</i> spp.	unidentified sanddab	Be/De, Ep	7.3	0.2	0.8	11.1	0.2	0.8	-	-	-
<i>Xeneretmus ritteri</i>	stripefin poacher	Be/De, Me	7.3	0.2	0.7	11.1	0.2	0.5	-	-	-
Unidentified rajiform	skate	Be/De	7.3	0.2	0.8	8.5	0.2	0.8	-	-	-
<i>Zalembius rosaceus</i>	pink surfperch	Be/De, Ep	8.9	0.2	0.6	20.5	0.3	0.7	6.3	0.1	0.4
<i>Lycodes cortezianus</i>	bigfin eelpout	Be/De, Ep, Me	8.9	0.2	0.6	19.7	0.2	0.5	-	-	-
<i>Gonatus berryi</i>	Berry armhook squid	Ep, Me	7.3	0.2	0.7	27.4	0.5	0.9	25.0	0.6	1.0
<i>Zaniolepis</i> spp.	combfishes	Be/De, Ep	8.1	0.2	0.6	22.2	0.3	0.7	37.5	1.0	1.5
<i>Ocythoe tuberculata</i>	football octopus	Ep, Me	7.3	0.2	0.6	11.1	0.2	0.9	-	-	-
<i>Octopus bimaculoides/bimaculata</i>	octopus	Be/De, Ne	5.6	0.1	0.6	12.8	0.2	0.6	-	-	-
<i>Lyconema barbatum</i>	bearded eelpout	Be/De, Ep, Me	5.6	0.1	0.6	7.7	0.1	0.4	-	-	-

Table S3. (Continued)

Scientific name	Common name	Marine environmental zone	San Clemente Island			San Nicolas Island			Santa Barbara Island		
			% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Summers present	Mean summer %FO	SD summer %FO
<i>Glyptocephalus zachirus</i>	rex sole	Be/De, Ep	7.3	0.1	0.5	14.5	0.3	0.8	6.3	0.3	1.3
<i>Tarletonbeania crenularis</i>	blue lanternfish	Ep, Me	4.0	0.1	0.8	22.2	0.4	0.8	-	-	-
Unidentified white tissue	unknown	Un	0.8	0.1	1.5	-	-	-	-	-	-
<i>Pterygioteuthis giardi</i>	roundear enope squid	Ep, Me	6.5	0.1	0.5	2.6	0.1	0.4	-	-	-
<i>Atherinopsis californiensis</i>	jacksmelt	Ep	5.6	0.1	0.5	0.9	0.0	0.1	-	-	-
<i>Sebastes</i> spp. 3	juvenile rockfish	Ep	2.4	0.1	0.8	6.8	0.2	0.9	-	-	-
<i>Synodus lucioceps</i>	California lizardfish	Be/De, Ep	4.0	0.1	0.6	5.1	0.1	0.2	6.3	0.1	0.4
<i>Sebastes saxicola</i>	stripetail rockfish	Be/De, Ep, Me	4.0	0.1	0.6	12.0	0.1	0.4	-	-	-
<i>Rhinogobiops nicholsii</i>	blackeye goby	Be/De, Ep	4.0	0.1	0.5	4.3	0.1	0.3	-	-	-
<i>Icelinus filamentosus</i>	threadfin sculpin	Be/De, Ep	4.8	0.1	0.5	9.4	0.1	0.4	18.8	0.4	0.8
<i>Cranchia scabra</i>	cranch squid	Ep, Me	5.6	0.1	0.4	7.7	0.1	0.3	-	-	-
<i>Sebastes umbrosus</i>	honeycomb rockfish	Be/De, Ep	4.0	0.1	0.4	-	-	-	12.5	0.4	1.1
<i>Nannobranchium ritteri</i>	broadfin lampfish	Ep, Me	4.0	0.1	0.4	12.0	0.2	0.5	-	-	-
<i>Zaniolepis latipinnis</i>	longspine combfish	Be/De, Ep	4.0	0.1	0.4	6.8	0.1	0.3	6.3	0.2	1.0
<i>Octopus</i> spp. 1	octopus	Be/De, Ne	4.8	0.1	0.4	6.0	0.1	0.3	6.3	0.1	0.5
Teleostei spp. 2	unidentified fish	Un	4.0	0.1	0.4	0.0	0.0	0.0	-	-	-
<i>Chitonotus pugetensis</i>	roughback sculpin	Be/De, Ep	3.2	0.1	0.5	1.7	0.0	0.1	-	-	-
<i>Seriphus politus</i>	queenfish	Be/De, Ep	3.2	0.1	0.4	0.9	0.0	0.1	12.5	0.4	1.0
<i>Octopoteuthis deletron</i>	oceanic squid	Ba-Ep, Me	3.2	0.1	0.4	11.1	0.1	0.4	12.5	0.4	1.2
<i>Peprilus simillimus</i>	Pacific butterfish	Be/De, Ep	2.4	0.1	0.5	6.8	0.1	0.3	-	-	-
<i>Tetragonurus cuvieri</i>	smalleye squaretail	Ep	3.2	0.1	0.4	7.7	0.1	0.3	-	-	-
<i>Symphurus atricauda</i>	California tonguefish	Be/De, Ep	3.2	0.1	0.4	-	-	-	-	-	-
<i>Prionace glauca</i>	blue shark	Ep	3.2	0.1	0.4	0.9	0.0	0.1	-	-	-
<i>Phanerodon furcatus</i>	white surfperch	Be/De, Ep	3.2	0.1	0.4	1.7	0.0	0.4	6.3	0.3	1.0
<i>Careproctus melanurus</i>	blacktail snailfish	Be/De, Ep, Me	3.2	0.1	0.4	6.0	0.1	0.3	-	-	-
<i>Parophrys vetulus</i>	English sole	Be/De, Ep	3.2	0.1	0.4	4.3	0.1	0.2	-	-	-
<i>Semicossyphus pulcher</i>	California sheephead	Ep	4.0	0.1	0.3	-	-	-	-	-	-

Table S3. (Continued)

Scientific name	Common name	Marine environmental zone	San Clemente Island			San Nicolas Island			Santa Barbara Island		
			% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Summers present	Mean summer %FO	SD summer %FO
<i>Chiroteuthis calyx</i>	oceanic squid	Ep, Me	3.2	0.1	0.4	6.8	0.1	0.4	-	-	-
<i>Sebastolobus alascanus</i>	shortspine thornyhead	Be/De, Ep, Me	3.2	0.1	0.3	4.3	0.1	0.3	-	-	-
<i>Icelinus fimbriatus</i>	fringed sculpin	Be/De, Ep	3.2	0.1	0.3	7.7	0.1	0.4	6.3	0.1	0.4
Cottidae	unidentified sculpin	Be/De, Ep	2.4	0.1	0.3	5.1	0.1	0.3	6.3	0.1	0.5
<i>Sebastes caurinus</i>	copper rockfish	Be/De, Ep	3.2	0.1	0.3	1.7	0.0	0.2	-	-	-
<i>Paralabrax</i> spp.	unidentified sea bass	Be/De, Ep	3.2	0.1	0.3	1.7	0.0	0.1	6.3	0.1	0.5
<i>Arctozenus risso</i>	spotted barracudina	Ba	2.4	0.1	0.3	8.5	0.1	0.4	-	-	-
<i>Physiculus rastrelliger</i>	hundred-fathom codling	Be/De, Ep, Me	2.4	0.1	0.3	-	-	-	-	-	-
<i>Lycodes pacificus</i>	blackbelly eelpout	Be/De, Ep, Me	2.4	0.1	0.3	5.1	0.1	0.3	-	-	-
<i>Sebastes lentiginosus</i>	freckled rockfish	Be/De, Ep	2.4	0.0	0.3	5.1	0.1	0.2	-	-	-
Labridae	unidentified wrass	Be/De, Ep	2.4	0.0	0.3	-	-	-	-	-	-
<i>Xeneretmus triacanthus</i>	bluespotted poacher	Be/De, Me	2.4	0.0	0.3	2.6	0.0	0.2	-	-	-
Selachii	unidentified shark	Ep	1.6	0.0	0.3	3.4	0.0	0.2	6.3	0.1	0.5
<i>Genyonemus lineatus</i>	white croaker	Ep	1.6	0.0	0.3	6.0	0.1	0.3	18.8	0.5	1.1
Zoarcidae	unidentified eelpout	Be/De, Ep, Me	2.4	0.0	0.3	0.9	0.0	0.1	-	-	-
<i>Radulinus asprellus</i>	slim sculpin	Be/De, Ep	1.6	0.0	0.3	1.7	0.0	0.2	-	-	-
<i>Oxylebius pictus</i>	painted greenling	Be/De, Ep	1.6	0.0	0.3	-	-	-	-	-	-
<i>Orthonopias triacis</i>	snubnose sculpin	Be/De, Ep	0.8	0.0	0.4	-	-	-	-	-	-
<i>Argonauta</i> spp.	paper nautilus	Ep	1.6	0.0	0.3	-	-	-	-	-	-
<i>Brosmophycis marginata</i>	red brotula	Be/De, Ep, Me	1.6	0.0	0.3	3.4	0.0	0.2	-	-	-
<i>Squalus acanthias</i>	spiny dogfish	Ep	0.8	0.0	0.4	0.9	0.0	0.1	-	-	-
Enopleteuthidae	unidentified squids	Un	1.6	0.0	0.3	-	-	-	-	-	-
<i>Sphyræna argentea</i>	California barracuda	Ep	1.6	0.0	0.3	-	-	-	-	-	-
<i>Sebastes simulator</i>	pinkrose rockfish	Be/De, Ep, Me	1.6	0.0	0.3	-	-	-	-	-	-
<i>Sebastes wilsoni</i>	pygmy rockfish	Be/De, Ep	1.6	0.0	0.2	3.4	0.0	0.2	6.3	0.1	0.6
<i>Leachia dislocata</i>	unidentified squid	Me	1.6	0.0	0.2	1.7	0.0	0.1	-	-	-

Table S3. (Continued)

Scientific name	Common name	Marine environmental zone	San Clemente Island			San Nicolas Island			Santa Barbara Island		
			% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Summers present	Mean summer %FO	SD summer %FO
<i>Sebastes proriger</i>	redstripe rockfish	Be/De, Ep, Me	0.8	0.0	0.2	-	-	-	-	-	-
Gonatidae	unidentified gonate squids	Ep, Me	0.8	0.0	0.2	5.1	0.1	0.2	6.3	0.4	1.5
<i>Sarda chiliensis</i>	Pacific bonito	Ep	1.6	0.0	0.2	0.9	0.0	0.1	-	-	-
<i>Sebastes dallii</i>	calico rockfish	Be/De, Ep	0.8	0.0	0.2	-	-	-	-	-	-
<i>Apristurus brunneus</i>	brown cat shark	Ep, Me	0.8	0.0	0.2	-	-	-	-	-	-
<i>Nansenia crassa</i>	stout argentine	Be/De, Ep	0.8	0.0	0.2	4.3	0.1	0.3	-	-	-
Enopleteuthidae 1	unidentified squid	Un	0.8	0.0	0.2	-	-	-	-	-	-
<i>Eucryphycus californica</i>	persimmon eelpout	Be/De, Ep, Me	0.8	0.0	0.2	-	-	-	-	-	-
<i>Lepidopsetta bilineata</i>	rock sole	Be/De, Ep, Me	0.8	0.0	0.2	4.3	0.1	0.3	-	-	-
<i>Sebastes miniatus</i>	vermillion rockfish	Be/De, Ep	0.8	0.0	0.2	1.7	0.0	0.1	-	-	-
Decapodiformes spp.1	unidentified cephalopod	Un	0.8	0.0	0.2	-	-	-	-	-	-
<i>Melamphaes lugubris</i>	highsnout melamphid	Me	0.8	0.0	0.2	-	-	-	-	-	-
<i>Ophidion scrippsae</i>	basketweave cuskeel	Be/De, Ep	0.8	0.0	0.2	0.9	0.0	0.1	6.3	0.1	0.5
<i>Artedius notospilotus</i>	bonehead sculpin	Be/De, Ep	0.8	0.0	0.2	0.9	0.0	0.1	-	-	-
<i>Ophidion elongatus</i>	lingcod	Be/De, Ep, Me	0.8	0.0	0.2	0.9	0.0	0.1	-	-	-
<i>Sebastes rufus</i>	bank rockfish	Be/De, Ep, Me	0.8	0.0	0.2	-	-	-	-	-	-
<i>Berryteuthis magister</i>	armhook squid	Me	0.8	0.0	0.2	10.3	0.2	0.5	6.3	0.4	1.7
<i>Stigmatoteuthis dofleini</i>	flowervase jewell squid	Ba-Ep, Me	0.8	0.0	0.2	3.4	0.0	0.2	-	-	-
<i>Eptatretus stoutii</i>	Pacific hagfish	Be/De, Ep, Me	0.8	0.0	0.2	3.4	0.0	0.2	6.3	0.1	0.5
Neoscopelidae	unidentified blackchin	Ba	0.8	0.0	0.2	-	-	-	-	-	-
<i>Atractoscion nobilis</i>	white weakfish	Be/De, Ep	0.8	0.0	0.2	-	-	-	-	-	-
<i>Sebastes entomelas</i>	widow rockfish	Be/De, Ep, Me	0.8	0.0	0.2	0.9	0.0	0.1	6.3	0.1	0.5
<i>Girella nigricans</i>	opaleye	Ep	0.8	0.0	0.2	-	-	-	-	-	-
<i>Vampyroteuthis infernalis</i>	octopus	Me-Ba	0.8	0.0	0.2	-	-	-	-	-	-
<i>Galiteuthis</i> spp.	unidentified squid	Ep, Me	0.8	0.0	0.2	-	-	-	-	-	-
Ophidiidae	unidentified cuskeel	Be/De, Ep	0.8	0.0	0.2	-	-	-	-	-	-
<i>Paralabrax nebulifer</i>	barred sand bass	Be/De, Ep	0.8	0.0	0.2	0.9	0.0	0.1	-	-	-

Table S3. (Continued)

Scientific name	Common name	Marine environmental zone	San Clemente Island			San Nicolas Island			Santa Barbara Island		
			% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Seasons present	Mean seasonal %FO	SD seasonal %FO	% Summers present	Mean summer %FO	SD summer %FO
<i>Grimalditeuthis bonplandi</i>	cephalopod	Me-Ba	0.8	0.0	0.2	-	-	-	-	-	-
<i>Sebastes paucispinis</i>	bocaccio	Be/De, Ep, Me	0.8	0.0	0.2	13.7	0.2	0.6	-	-	-
Octopus spp. 2	unidentified octopus	Be/De, Ne	0.8	0.0	0.2	5.1	0.1	0.4	-	-	-
<i>Embiotoca jacksoni</i>	black surfperch	Be/De, Ep	0.8	0.0	0.2	2.6	0.0	0.2	-	-	-
<i>Damalichthys vacca</i>	pile surfperch	Be/De, Ep	0.8	0.0	0.2	1.7	0.0	0.2	-	-	-
<i>Artedius corallinus</i>	coralline sculpin	Be/De, Ep	0.8	0.0	0.2	1.7	0.0	0.1	-	-	-
Scombridae	mackerels/tunas	Ep	0.8	0.0	0.1	-	-	-	-	-	-
<i>Hippoglossina stomata</i>	bigmouth sole	Be/De, Ep	0.8	0.0	0.1	2.6	0.0	0.2	-	-	-
<i>Onykia robusta</i>	robust clubhook squid	Be/De	0.8	0.0	0.1	1.7	0.0	0.1	-	-	-
<i>Berryteuthis anonychus</i>	smallfin gonate squid	Me	-	-	-	-	-	-	6.3	0.1	0.5
Sciaenidae	unidentified croaker	Ep	-	-	-	-	-	-	6.3	0.1	0.6
<i>Sebastes mystinus</i>	blue rockfish	Be/De, Ep, Me	-	-	-	2.6	0.0	0.2	12.5	0.5	1.4
<i>Lampadena urophaos</i>	sunbeam lampfish	Ep, Me	-	-	-	2.6	0.0	0.2	-	-	-
<i>Heterostichus rostratus</i>	giant kelpfish	Be/De, Ep	-	-	-	2.6	0.0	0.2	-	-	-
<i>Protomyctophum crockeri</i>	California flashlightfish	Ep, Me	-	-	-	2.6	0.0	0.1	-	-	-
<i>Mastigoteuthis pyrodes</i>	oceanic squid	Me	-	-	-	1.7	0.0	0.2	-	-	-
<i>Mastigoteuthis dentata</i>	oceanic squid	Me	-	-	-	1.7	0.0	0.4	-	-	-
<i>Gonatus</i> spp. Z	unidentified gonate squid	Ep, Me	-	-	-	1.7	0.0	0.1	-	-	-
<i>Rathbunella hypoplecta</i>	bluebanded ronquil	Be/De, Ep	-	-	-	1.7	0.0	0.1	-	-	-
<i>Anoplopoma fimbria</i>	sablefish	Be/De, Ep	-	-	-	0.9	0.0	0.1	-	-	-
<i>Clupea pallasii</i>	Pacific herring	Ep	-	-	-	0.9	0.0	0.1	-	-	-
<i>Artedius creaseri</i>	roughcheek sculpin	Be/De, Ep	-	-	-	0.9	0.0	0.1	-	-	-
Agonidae	unidentified poacher	Be/De, Me	-	-	-	0.9	0.0	0.1	-	-	-
<i>Cephaloscyllium ventriosum</i>	Eastern Pacific swell shark	Be/De, Ep	-	-	-	0.9	0.0	0.1	-	-	-
Decapodiformes spp. 1	unidentified cephalopod	Un	-	-	-	0.9	0.0	0.1	-	-	-
Decapodiformes spp. 2	unidentified cephalopod	Un	-	-	-	0.9	0.0	0.1	-	-	-
<i>Haliphron atlanticus</i>	octopus	Ba	-	-	-	0.9	0.0	0.1	-	-	-
Teleostei spp. 3	unknown fish	Un	-	-	-	0.9	0.0	0.1	-	-	-

Table S4. Least squares regression analysis for %FO Anomalies of CSL prey categories found in fecal samples collected at San Clemente Island and San Nicolas Island during 1981 – 2015.

Category	San Clemente Island						San Nicolas Island					
	R ²	Effect	Coefficient	Standard Error	t	p-Value	R ²	Effect	Coefficient	Standard Error	t	p-Value
Epipelagic prey taxa	0.163	Constant	1697.118	347.861	4.879	<0.001	0.273	Constant	2324.514	354.143	6.564	<0.001
		Slope	-0.849	0.174	-4.879	<0.001		Slope	-1.162	0.177	-6.564	<0.001
Epipelagic-Mesopelagic prey taxa	0.296	Constant	-2988.424	417.159	-7.164	<0.001	0.209	Constant	-2813.4	510.477	-5.511	<0.001
		Slope	1.495	0.209	7.164	<0.001		Slope	1.407	0.255	5.511	<0.001
Benthic & Demersal prey taxa	0.038	Constant	-670.301	304.79	-2.199	0.030	0.057	Constant	-834.744	316.601	-2.637	0.010
		Slope	0.335	0.152	2.199	0.030		Slope	0.417	0.158	2.637	0.010
Market squid	0.293	Constant	-3163.762	444.606	-7.116	<0.001	0.181	Constant	-2817.83	559.725	-5.034	<0.001
		Slope	1.583	0.222	7.116	<0.001		Slope	1.409	0.28	5.034	<0.001
Northern anchovy	0.176	Constant	2592.691	507.251	5.111	<0.001	0.137	Constant	2077.345	485.388	4.28	<0.001
		Slope	-1.297	0.254	-5.111	<0.001		Slope	-1.039	0.243	-4.28	<0.001
Shortbelly rockfish	0.075	Constant	-835.833	266.168	-3.14	0.002	0.007	Constant	-274.773	298.99	-0.919	0.360
		Slope	0.418	0.133	3.14	0.002		Slope	0.137	0.149	0.919	0.360
Jack mackerel	0.007	Constant	-291.681	315.297	-0.925	0.357	0.114	Constant	1105.794	287.339	3.848	<0.001
		Slope	0.146	0.158	0.925	0.357		Slope	-0.553	0.144	-3.848	<0.001
Pacific sardine	0.169	Constant	-1969.189	394.679	-4.989	<0.001	0.067	Constant	-1311.26	430.653	-3.045	0.003
		Slope	0.985	0.197	4.989	<0.001		Slope	0.656	0.215	3.045	0.003
Pacific hake	0.239	Constant	1573.826	254.027	6.196	<0.001	0.12	Constant	1162.48	293.82	3.956	<0.001
		Slope	-0.787	0.127	-6.196	<0.001		Slope	-0.581	0.147	-3.956	<0.001
Pacific mackerel	0.045	Constant	-528.825	220.264	-2.401	0.018	0.052	Constant	565.324	225.237	2.51	0.013
		Slope	0.265	0.11	2.401	0.018		Slope	-0.283	0.113	-2.51	0.013
Non-common fishes	0.035	Constant	-477.401	227.008	-2.103	0.038	0.064	Constant	-601.742	215.357	-2.794	0.006
		Slope	0.239	0.114	2.103	0.038		Slope	0.301	0.108	2.794	0.006
Non-common cephalopods	0.002	Constant	99.323	192.363	0.516	0.607	0.009	Constant	-262.818	262.759	-1	0.319
		Slope	-0.05	0.096	-0.516	0.607		Slope	0.131	0.131	1	0.319
Non-common cephalopods and/or fishes	0.003	Constant	-165.931	281.648	-0.589	0.557	0.021	Constant	-474.149	300.505	-1.578	0.117
		Slope	0.083	0.141	0.589	0.557		Slope	0.237	0.15	1.578	0.117

Table S5. Pearson correlation coefficients of California sea lion common prey-taxon and groups of prey taxa derived from percent frequency of occurrence (%FO) data obtained from seasonally collected fecal samples collected at San Clemente Island (SCI) and San Nicolas Island (SNI) during 1981 – 2015. Significant between-island correlations are bold with grey highlight, within-island correlations are shown in **bold**.

	Market squid -SCI	Northern anchovy -SCI	Shortbelly rockfish -SCI	Jack mackerel -SCI	Pacific sardine -SCI	Pacific hake -SCI	Pacific mackerel -SCI	Non-common cephalopods -SCI	Non-common fishes -SCI	Non-common cephalopods and/or fishes -SCI	Market squid -SNI	Northern anchovy -SNI	Shortbelly rockfish -SNI	Jack mackerel -SNI	Pacific sardine -SNI	Pacific hake -SNI	Pacific mackerel -SNI	Non-common cephalopods -SNI	Non-common fishes -SNI	Non-common cephalopods and/or fishes -SNI	
Market squid -SCI	1.00																				
Northern anchovy -SCI	-0.35	1.00																			
Shortbelly rockfish -SCI	-0.08	-0.34	1.00																		
Jack mackerel -SCI	-0.08	-0.31	0.24	1.00																	
Pacific sardine -SCI	0.00	-0.17	-0.12	0.25	1.00																
Pacific hake -SCI	-0.26	0.02	0.02	-0.21	-0.29	1.00															
Pacific mackerel -SCI	-0.03	-0.38	0.08	0.45	0.46	-0.06	1.00														
Non-common cephalopods -SCI	-0.20	-0.20	0.35	0.11	-0.17	0.43	0.03	1.00													
Non-common fishes -SCI	-0.07	-0.35	0.56	0.40	-0.09	0.07	0.22	0.43	1.00												
Non-common cephalopods and/or fishes -SCI	-0.19	-0.34	0.56	0.32	-0.14	0.31	0.17	0.77	0.89	1.00											
Market squid -SNI	0.73	-0.36	0.01	0.02	-0.04	-0.08	0.03	-0.07	-0.02	-0.07	1.00										
Northern anchovy -SNI	-0.29	0.64	-0.21	-0.19	-0.13	0.07	-0.21	-0.19	-0.36	-0.34	-0.35	1.00									
Shortbelly rockfish -SNI	-0.08	-0.21	0.47	0.21	-0.19	0.16	0.14	0.43	0.43	0.51	-0.06	-0.22	1.00								
Jack mackerel -SNI	-0.31	0.02	0.05	0.23	-0.06	-0.06	0.02	0.01	0.24	0.19	-0.39	-0.05	-0.02	1.00							
Pacific sardine -SNI	-0.10	-0.06	-0.16	0.02	0.60	-0.22	0.21	-0.17	-0.14	-0.19	-0.29	-0.03	-0.31	0.09	1.00						
Pacific hake -SNI	0.03	-0.17	0.01	-0.15	-0.31	0.57	-0.06	0.34	0.14	0.29	0.02	-0.08	0.34	0.01	-0.30	1.00					
Pacific mackerel -SNI	-0.17	-0.13	0.00	0.03	0.06	0.12	0.22	0.02	0.02	0.05	-0.19	-0.10	-0.05	0.60	0.26	0.10	1.00				
Non-common cephalopods -SNI	-0.02	-0.08	0.19	0.09	-0.19	0.12	-0.07	0.61	0.27	0.47	-0.01	-0.09	0.50	-0.02	-0.23	0.37	-0.11	1.00			
Non-common fishes -SNI	0.05	-0.27	0.34	0.30	-0.08	-0.06	0.10	0.30	0.44	0.41	-0.11	-0.29	0.59	0.16	-0.15	0.06	-0.04	0.38	1.00		
Non-common cephalopods and/or fishes -SNI	-0.02	-0.20	0.31	0.19	-0.19	0.11	0.00	0.58	0.41	0.55	-0.06	-0.21	0.66	0.09	-0.26	0.32	-0.07	0.87	0.76	1.00	

Table S6. Seasonal mean and standard deviation (SD) of Species Richness (S) and Shannon-Wiener (N_1) diversity indices for various sample sizes derived from 50 random samplings of each sampling occasion from Santa Barbara Island during summer 1981 – 1996 and seasonally at San Clemente Island and San Nicolas Island during 1981 – 2015.

Season	Fecal samples		Species Richness (S)		Shannon-Weaver (N_1)	
	Sample size	Samplings	Mean	SD	Mean	SD
Santa Barbara Island						
Summer	30	700	18.56	5.66	8.60	3.12
	35	700	19.90	5.97	8.87	3.20
	40	650	21.45	6.25	9.11	3.30
	45	550	22.17	6.94	9.26	3.52
San Clemente Island						
Winter	30	1400	16.42	8.15	6.32	3.50
	35	1400	17.60	8.57	6.40	3.54
	40	1350	18.85	9.16	6.61	3.66
	45	1250	19.41	9.60	6.42	3.71
Spring	30	1600	16.68	6.28	7.16	2.96
	35	1550	18.11	6.94	7.40	3.06
	40	1450	19.42	7.34	7.44	3.06
	45	1250	20.34	8.25	7.46	3.29
Summer	30	1600	18.81	4.76	8.50	2.91
	35	1500	20.58	5.08	8.86	2.99
	40	1400	21.83	5.29	8.88	3.03
	45	950	22.27	6.04	8.31	2.88
Autumn	30	1450	18.76	5.58	8.03	2.62
	35	1400	20.34	5.95	8.31	2.66
	40	1250	21.20	6.27	8.45	2.69
	45	1050	23.19	6.70	8.76	2.75
San Nicolas Island						
Winter	30	1350	14.36	4.82	5.66	2.64
	35	1300	15.72	5.17	5.90	2.71
	40	1300	16.81	5.61	6.00	2.77
	45	1300	17.63	5.80	6.02	2.77
Spring	30	1350	17.36	8.03	7.94	4.24
	35	1350	18.41	8.62	8.10	4.47
	40	1350	19.87	9.12	8.27	4.56
	45	1350	21.02	9.65	8.41	4.66
Summer	30	1550	19.27	5.31	8.93	2.70
	35	1500	20.68	5.79	9.09	2.73
	40	1500	22.16	6.18	9.33	2.85
	45	1500	23.48	6.39	9.45	2.89
Autumn	30	1350	16.01	4.50	6.43	2.13
	35	1350	17.21	4.70	6.57	2.09
	40	1350	18.33	4.95	6.63	2.16
	45	1350	19.39	5.14	6.72	2.15

Table S7. Diversity models from Hierarchical Linear Mixed Model (HLMM) of Species Richness (S) and Shannon-Wiener (N_1) diversity indices for fecal sample size 40 derived from 50 random samplings of each set of seasonally collected fecal samples collected at Santa Barbara Island (SBI), San Clemente Island (SCI), and San Nicolas Island (SNI) during summer 1981 – 1996, at SCI and SNI during 1981 – 2015, and SNI Sites 1 and 2 during 1991 – 2015.

Comparison	Diversity Index	Fixed Effects				
		Effect	Numerator df	Denominator df	F-Ratio	p-Value
1981 – 1996 summer @ SBI, SCI, & SNI	S	Island	2	1896	23.337	<0.001
	N_1	Island	2	1896	3.362	0.035
1981 – 2015 @ SCI & SNI	S	Island	1	10941	91.117	<0.001
		Season	3	10941	240.450	<0.001
		Island*Season	3	10941	45.304	<0.001
	N_1	Island	1	10941	25.996	<0.001
		Season	3	10941	378.184	<0.001
		Island*Season	3	10941	95.567	<0.001
1991 – 2015 @ SNI Site 1 & 2	S	Season	3	8441	265.309	<0.001
		Area	1	8441	255.772	<0.001
		Season*Area	3	8441	1.109	0.344
	N_1	Season	3	8441	392.437	<0.001
		Area	1	8441	67.76	<0.001
		Season*Area	3	8441	11.614	<0.001