

Reconstructing habitat use by juvenile salmon sharks links upwelling to strandings in the California Current

Aaron B. Carlisle*, Steven Y. Litvin, Elliott L. Hazen, Daniel J. Madigan, Kenneth J. Goldman, Robert N. Lea, Barbara A. Block

*Corresponding author: aaroncar@stanford.edu

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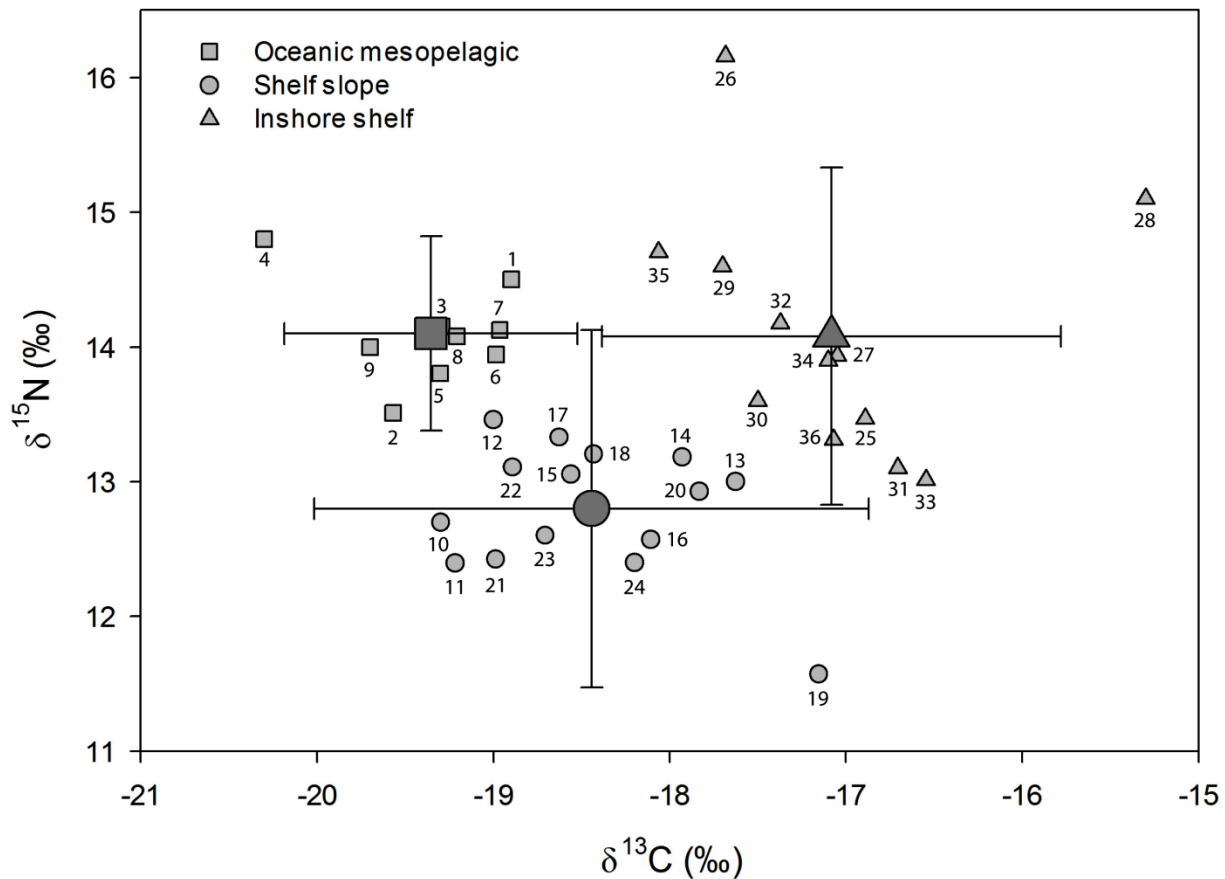


Figure S1: Mean $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ (\pm SD) values for potential prey items of juvenile salmon sharks in the California Current grouped by habitat. Specific prey taxa are labeled by their # in Table S3.

Table S1: Database of sex (M – male, F – female, U – unknown), date and location of stranding, and lengths of juvenile salmon sharks stranded on beaches along the west coast of North America. Reported length was included if some estimate of length was mentioned in the source or record. Measured lengths are lengths (cm PCL) recorded by the authors. All sharks, unless otherwise noted, were clearly YOY or 1 year old salmon sharks based on images or reported lengths. * Length was estimated, specimen is Catalog number USNM 27368 at Smithsonian Museum of Natural History.

ID	Sex	Date collected	Location collected	Lat	Long	Reported length	Measured length (PCL)
1	U	1880	Santa Cruz, CA	37.0	-121.9	54.5*	
2	U	10/1/1938	Seattle, WA	47.6	-122.3		
3	U	3/29/1950	San Pedro, CA	33.7	-118.3		51.8
4	U	Spring 1984	Stinson Beach, CA	37.9	-122.6		
5	M	12/31/1984	Santa Cruz, CA	37.0	-121.9		65.8
6	U	6/1/1994	Four Mile Beach, CA	37.0	-122.1	3 feet	
7	U	1/29/1995	Pleasure Point, CA	37.0	-122.0	3 feet	
8	U	1/29/1997	Morro Strand State Beach, CA	35.4	-120.9	3 feet	
9	U	1/31/1997	Tajiguas Beach, Santa Barbara, CA	34.5	-120.1	41 inches	
10	U	Feb 1997	Central CA between Santa Barbara and Monterey	35.7	-121.2		
11	U	Feb 1997	Central CA between Santa Barbara and Monterey	35.7	-121.2		
12	U	Feb 1997	Central CA between Santa Barbara and Monterey	35.7	-121.2		
13	U	Feb 1997	Central CA between Santa Barbara and Monterey	35.7	-121.2		
14	U	Feb 1997	Central CA between Santa Barbara and Monterey	35.7	-121.2		
15	U	Feb 1997	Clam Beach, CA	41.0	-124.1	4 feet	
16	U	2/6/1997	Cape Mendocino, CA	40.0	-124.0	4 feet	
17	F	2/10/1997	Pismo Beach, CA	35.1	-120.6		
18	U	2/16/1997	Drakes Bay, CA	38.0	-123.0		
19	F	2/17/1997	Moss Landing, CA	36.8	-121.8		80.1
20	U	2/28/1997	Miramar Beach, Santa Barbara, CA	34.4	-119.6	3 feet	
21	U	3/3/1997	San Clemente Island, CA	32.9	-118.5		72.3
22	F	3/4/1997	Topanga Beach, CA	34.0	-118.6		72.5
23	F	3/28/1997	Dockweiler State Beach, CA	33.9	-118.4		90.7
24	U	1999	Pacific Rim National Park, Vancouver Island, BC	48.6	-124.7		
25	M	2/2/1999	Seabright Beach, CA	37.0	-122.0		71.0
26	M	2/2/1999	Seabright Beach, CA	37.0	-122.0	1 m	
27	U	2/4/1999	La Jolla, CA	32.8	-117.3	1.3 m	
28	F	4/1/1999	Carmel Beach, CA	36.5	-121.9	1 m	
29	U	9/12/1999	Asilomar Beach, CA	36.6	-121.9	1 m	
30	F	9/7/2001	Asilomar Beach, CA	36.6	-121.9		70.1
31	U	7/29/2002	Golden Gate National Recreational Area, CA	37.8	-122.5	3-3.5 feet	
32	U	7/30/2002	Manresa State Beach, CA	36.9	-121.9		
33	U	8/1/2002	Sunset Beach, OR	46.1	-123.9		71.8
34	M	3/4/2003	Bodega Bay, CA	38.3	-123.1	1.2 m	
35	U	6/22/2003	Seacliff State Beach, CA	37.0	-121.9		84.7
36	M	8/26/2003	Ocean Beach, San Francisco, CA	37.8	-122.5		75.3
37	U	5/19/2005	Casper Beach, Mendocino County, CA	39.4	-123.8	4 feet	
38	U	7/17/2005	Pacific Rim National Park, Vancouver Island, BC	48.6	-124.7		
39	U	Summer 2005	Central Oregon	43.5	-124.2		
40	F	2006	Monterey Bay, CA	36.8	-121.8		86.0
41	M	2006	Monterey Bay, CA	36.8	-121.8		68.0
42	F	2006	Monterey Bay, CA	36.8	-121.8		83.0
43	F	2006	Monterey Bay, CA	36.8	-121.8		70.0
44	U	3/17/2006	Santa Cruz, CA	37.0	-121.9		

45	U	8/14/2006	Pacific Rim National Park, Vancouver Island, BC	48.6	-124.7		
46	M	12/31/2006	Rio Del Mar Beach, CA	37.0	-121.9	3.3 feet	
47	U	4/25/2007	Monterey Bay, CA	36.8	-121.8		92.6
48	U	6/27/2007	Pacific Rim National Park, Vancouver Island, BC	48.6	-124.7		
49	M	7/1/2007	Capitola, CA	37.0	-122.0		
50	F	7/3/2007	Limantour Beach, CA	38.0	-122.9		77.0
51	U	7/8/2007	Santa Cruz, CA	37.0	-121.9		73.5
52	U	7/18/2007	Rockaway beach, OR	45.6	-124.0	~1 m	
53	U	late Jul 2007	Rockaway Beach, OR	45.6	-124.0	4-5 feet	
54	M	late Jul 2007	Spanish Bay, Asilomar, CA	36.6	-122.0		66.3
55	F	8/4/2007	Carmel, CA	36.6	-121.9		69.0
56	U	8/6/2007	Arch Cape, OR	45.8	-124.0	4-5 feet	
57	M	8/7/2007	Halfmoon Bay, CA	37.5	-122.4		77.0
58	F	8/7/2007	Capitola Wharf, CA	37.0	-122.0		80.0
59	U	8/8/2007	Shi shi beach, Olympic National Park, WA	48.3	-124.7	~1 m	
60	U	8/8/2007	Shi shi beach, Olympic National Park, WA	48.3	-124.7	~1 m	
61	F	8/15/2007	Bandon State Park, OR	43.0	-124.4		
62	U	8/15/2007	Bandon Beach, Coos County, OR	43.1	-124.4		
63	F	8/18/2007	North Clatsop Beach, OR	46.2	-124.0		69.9
64	F	8/21/2007	Bandon Beach, Coos County, OR	43.1	-124.4		
65	U	8/21/2007	Bandon Beach, Coos County, OR	43.1	-124.4		
66	U	8/21/2007	Between south Umpqua jetty and Ten Mile creek, OR	43.6	-124.2	~1 m	
67	F	8/23/2007	Salishan Beach, Lincoln City, OR	44.9	-124.0	1 m	
68	U	8/23/2007	Pacific Rim National Park, Vancouver Island, BC	48.6	-124.7		
69	U	8/24/2007	Coos County, OR	43.7	-124.2	3 feet	
70	M	9/3/2007	Whiskey run Beach, Coos County, OR	43.2	-124.2		
71	F	9/12/2007	Seaside Beach, OR	46.0	-123.9		69.2
72	U	9/12/2007	Ocean Shores, WA	47.0	-124.2	~1 m	
73	F	10/18/2007	North Clatsop Beach, OR	46.2	-124.0		77.4
74	U	10/22/2007	Rockaway beach, OR	45.6	-123.9	~1 m	
75	U	10/24/2007	Rockaway beach, OR	45.6	-123.9	3 feet	
76	F	11/24/2007	Monastery Beach, CA	36.5	-121.9		78.5
77	U	12/11/2007	D River Motel, OR	45.0	-124.0	2 feet	
78	U	3/5/2008	San Onofre, CA	33.4	-117.6		
79	U	7/4/2008	Coos County, OR	43.1	-124.4		
80	M	7/25/2008	Coos County, OR	43.1	-124.4		
81	U	8/1/2008	Coos County, OR	43.1	-124.4	~2 feet	
82	U	8/4/2008	Pacific Rim National Park, Vancouver Island, BC, Canada	48.6	-124.7	~90 cm	
83	U	8/6/2008	Arch Cape, OR	45.7	-123.9		
84	U	8/13/2008	Arcadia beach, OR	45.8	-124.0		75.0
85	U	8/18/2008	Gearhart Beach, OR	46.0	-123.9		
86	U	8/21/2008	Cannon Beach, OR	45.9	-124.0		
87	M	8/22/2008	Seaside, OR	46.0	-123.9		67.0
88	F	8/23/2008	Seaside, OR	46.0	-123.9		80.0
89	M	8/25/2008	Lincoln County, OR	44.6	-124.1		74.0
90	M	8/25/2008	Lincoln County, OR	44.6	-124.1		75.0
91	F	8/25/2008	Lincoln County, OR	44.6	-124.1		78.0
92	F	8/31/2008	Clatsop County, OR	46.1	-123.9		90.0
93	U	8/31/2008	Arcadia Beach, OR	45.8	-124.0		69.6
94	F	Sep 2008	Newport, OR	44.6	-124.1		71.8
95	U	9/1/2008	D River, OR	45.0	-124.0	~1 m	
96	U	9/4/2008	Gearhart Beach, OR	46.0	-123.9		68.6

97	M	9/5/2008	Gearhart Beach, OR	46.0	-123.9		74.9
98	U	9/5/2008	Mad River Beach, Humboldt County, CA	40.9	-124.1		
99	M	9/11/2008	Monterey Bay, CA	36.8	-121.8		70.0
100	U	9/12/2008	Seaside, OR	46.0	-123.9		
101	U	9/18/2008	DelRay, OR	46.1	-123.9		
102	U	9/24/2008	Vancouver Island, BC	48.8	-125.2	~1 m	
103	U	10/1/2008	Agate Beach, OR	44.7	-124.1	~1 m	
104	U	11/5/2008	Sandlake, OR	45.3	-124.0	92 cm	
105	U	11/12/2008	Seaside, OR	46.0	-123.9	~1 m	
106	F	11/24/2008	Del Monte Beach, Monterey, CA	36.6	-121.9		64.3
107	U	12/19/2008	Lincoln City, OR	45.0	-124.0	~1 m	
108	U	1/3/2009	Seaside, OR	46.0	-123.9		
109	U	1/31/2009	Coos County, OR	43.1	-124.4	111.5 cm	
110	U	4/30/2009	Malibu, CA	36.9	-121.9	4 feet	
111	F	5/4/2009	La Piedra Beach, Orange County, CA	34.0	-118.9		88.8
112	F	7/23/2009	Arch Cape, OR	45.8	-124.0		75.0
113	U	7/26/2009	Pismo Beach, CA	35.1	-120.6		
114	U	7/31/2009	Yachats, OR	44.3	-124.1	~1 m	
115	U	8/4/2009	Cape Kiwanda, OR	45.2	-124.0		
116	U	8/11/2009	Mouth of Asea River, OR	44.4	-124.1	~1 m	
117	U	8/14/2009	Garibaldi, OR	45.6	-124.0	~1 m	
118	U	8/15/2009	Arcadia State Park, OR	45.8	-124.0		
119	U	8/15/2009	Winchuck River, OR (south of Brookings)	42.0	-124.2		
120	F	8/16/2009	Sunset Beach, OR	46.1	-123.9		74.0
121	M	8/16/2009	Seal rock, OR	44.5	-124.1	~1 m	
122	M	8/17/2009	Seaside, OR	46.0	-123.9		69.0
123	U	8/17/2009	Otter Rock, OR	44.7	-124.1		
124	U	8/17/2009	Collins Creek State Park, Seal Rock, OR	44.5	-124.1	~1 m	
125	U	8/19/2009	Waldport, OR	44.4	-124.1	~1 m	
126	M	8/23/2009	Sunset Beach, OR	46.1	-123.9		74.0
127	U	8/23/2009	Yachats, OR	44.3	-124.1	~1 m	
128	U	8/24/2009	Driftwood shores, Florence, OR	44.0	-124.1	~1 m	
129	U	8/25/2009	Waldport, OR	44.4	-124.1	~1 m	
130	M	8/26/2009	Sunset Beach, OR	46.1	-123.9		70.0
131	U	9/2/2009	Nye Beach, OR	44.6	-124.1	~1 m	
132	U	9/3/2009	Shilo Inn, Newport, OR	44.6	-124.1	~1 m	
133	U	9/8/2009	North Jetty, Newport, OR	44.6	-124.1	~1 m	
134	F	9/10/2009	Delray Beach, OR	46.1	-123.9		68.6
135	U	9/11/2009	Yaquina bay lighthouse, OR	44.6	-124.1	~1 m	
136	U	9/15/2009	Coos County, OR	43.5	-124.2		
137	U	9/16/2009	Agate Beach, OR	44.7	-124.1	~1 m	
138	U	9/17/2009	Seal rock, OR	44.5	-124.1	~1 m	
139	U	9/17/2009	Yaquina Head, OR	44.7	-124.1	~1 m	
140	U	9/20/2009	Star Fish Point, Newport OR	44.7	-124.1	~1 m	
141	U	9/24/2009	South of Yachats, OR	44.2	-124.1	~1 m	
142	U	9/25/2009	0.5 mile north of Yaquina, OR	44.7	-124.2	~1 m	
143	U	9/26/2009	Agate Beach, OR	44.7	-124.1	~1 m	
144	U	9/26/2009	South of Manzanita, OR	45.7	-123.9	~1 m	
145	U	9/27/2009	Quail Street Beach, Waldport, OR	44.5	-124.1	~1 m	
146	U	10/4/2009	South side of Yaquina Head, OR	44.7	-124.1	~1 m	
147	U	10/12/2009	Devil's Punchbowl State Park, OR	44.8	-124.1	~1 m	
148	U	12/19/2009	Salishan Spit, OR	44.9	-124.0	~1 m	

149	U	winter 2009	Coos County, OR	43.1	-124.4		
150	U	2/10/2010	Corona del Mar, Newport, CA	33.6	-117.9		
151	U	2/25/2010	Waldport, OR	44.4	-124.1	3 feet	
152	U	6/28/2010	Rincon Point, Santa Barbara, CA (11 miles E of SB)	34.4	-119.5		
153	U	Aug 2010	Monterey Bay, CA	36.8	-121.8		
154	U	Aug 2010	Monterey Bay, CA	36.8	-121.8		
155	U	Aug 2010	Monterey Bay, CA	36.8	-121.8		
156	U	Aug 2010	Monterey Bay, CA	36.8	-121.8		
157	U	Aug 2010	Monterey Bay, CA	36.8	-121.8		
158	U	Aug 2010	Monterey Bay, CA	36.8	-121.8		
159	U	8/12/2010	Beachside state park, OR	44.4	-124.1	~1 m	
160	U	8/13/2010	South spit of Siltcoos river, OR	43.9	-124.2	36 inches	
161	U	8/15/2010	In front of parking area, Washburn State Park, OR	44.2	-124.1	~1 m	
162	U	8/16/2010	Florence, OR	44.0	-124.1		
163	U	8/18/2010	Seal rock, OR	44.5	-124.1	2.5 feet	
164	F	8/20/2010	Anchor Bay, CA	38.8	-123.6		69.2
165	F	8/20/2010	Manressa Beach, CA	36.9	-121.9		73.0
166	U	8/20/2010	Rio Del Mar Beach, CA	37.0	-121.9	42 inches	
167	U	8/22/2010	Sunset State Beach, CA	34.5	-120.0		
168	U	8/23/2010	Pacifica, CA	37.6	-122.5		
169	F	8/27/2010	Morro Strand, Morro Bay, CA	35.4	-120.9		70.9
170	U	8/27/2010	Southern Oregon	43.0	-124.5	~1 m	
171	U	8/27/2010	North of Winchester Bay, OR	43.8	-124.2	~1 m	
172	M	8/29/2010	Pescadero Beach, CA	37.3	-122.4		74.0
173	F	9/2/2010	Stinson Beach, CA	37.9	-122.6		70.5
174	U	9/8/2010	Gardiner, OR	43.8	-124.2	~1 m	
175	U	9/10/2010	Cayucos, San Luis Obispo County, CA	35.4	-120.9		
176	U	10/7/2010	South Beach State Park, Newport OR	44.6	-124.1	~1 m	
177	F	10/16/2010	Tofino, British Columbia, Canada	49.1	-125.9		
178	U	10/17/2010	South Beach State Park, Newport OR	44.6	-124.1	~1 m	
179	U	10/18/2010	Yachats, OR	44.3	-124.1	~1 m	
180	U	10/28/2010	Astoria, Ft. Stevens	46.1	-124.0	~1 m	
181	U	1/7/2011	Pismo Beach, CA	35.1	-120.6		
182	U	1/20/2011	Malibu, CA	34.0	-118.8		
183	U	2/6/2011	Cowell Beach, CA	37.0	-122.0		
184	U	2/9/2011	Stinson Beach, CA	37.9	-122.6	young	
185	U	4/4/2011	Topanga Beach, CA	34.0	-118.6		
186	U	7/7/2011	Just to the south of Tahkenitch Creek, OR	43.8	-124.2	~1 m	
187	U	7/19/2011	Emerald Bay, Laguna, CA	33.6	-117.8	4 feet	
188	U	7/21/2011	Laguna Beach, CA	33.5	-117.8	4 feet	
189	U	7/21/2011	Pacifica, CA	37.6	-122.5		
190	U	7/28/2011	Mad River Beach, Humboldt County, CA	40.9	-124.1		
191	U	8/10/2011	Edgewater Cottage, OR	44.4	-124.1	3 feet	
192	U	8/20/2011	Whiskey Run Beach just north of Bandon, OR	43.2	-124.4	~1 m	
193	U	8/26/2011	La Push, WA	47.9	-124.6	5 feet	
194	U	8/30/2011	Cannon Beach, OR	45.9	-124.0		
195	M	9/6/2011	Rio Del Mar Beach, CA	37.0	-121.9		
196	U	9/6/2011	Manzanita, OR	45.7	-123.9		
197	U	9/12/2011	Near 3999 Hwy 101 Yachats (Silver Surf Motel), OR	44.3	-124.1	~1 m	
198	U	9/12/2011	0.25 - 0.75 miles north of Driftwood SP, OR	44.5	-124.1	~1 m	
199	U	9/12/2011	0.125 miles north of Sutton Creek, Florence, OR	44.1	-124.1	~1 m	
200	U	9/14/2011	Sunset Beach, OR	46.1	-123.9	4 feet	

201	U	9/14/2011	Sunset Beach, OR	46.1	-123.9	4 feet
202	U	9/15/2011	Seacliff State Beach, CA	37.0	-121.9	1 m
203	U	9/21/2011	0.5 miles south of parking lot, Patterson State Park, OR	44.4	-124.1	~1 m
204	U	10/20/2011	Yaquina Bay, OR	44.6	-124.1	~1 m
205	U	10/22/2011	On beach near NOAA dock, Yaquina Bay, Newport, OR	44.6	-124.0	~1 m
206	U	10/24/2011	Yachats, OR	44.3	-124.1	~1 m
207	U	10/25/2011	South of Waldport, OR	44.4	-124.1	~1 m
208	U	10/27/2011	0.125 miles South of Colorado Street Access, Yachats, OR	44.4	-124.1	~1 m
209	U	10/27/2011	Waldport, OR	44.4	-124.1	3 feet
210	U	11/18/2011	Below China Creek parking area, next to China Creek, OR	43.1	-124.4	~1 m
211	U	2/6/2012	Cowell Beach, CA	37.0	-122.0	3 feet
212	U	7/22/2012	Neakahnie, Nehalem Rd, Manzanita, OR	45.7	-123.9	~1 m
213	U	7/23/2012	Arch Cape, OR	45.8	-124.0	
214	U	7/28/2012	Rockaway beach, OR	45.6	-123.9	4 feet
215	U	8/5/2012	Manresa State Beach, Santa Cruz, CA	36.9	-121.9	
216	U	8/5/2012	Otter Point State Park, north of Gold beach, OR	42.5	-124.4	~1 m
217	U	8/6/2012	Ocean Beach, San Francisco, CA	37.8	-122.5	
218	U	8/6/2012	Seascape, Pacifica, CA	37.6	-122.5	
219	U	8/6/2012	Lincoln City, OR	45.0	-124.0	~1 m
220	U	8/10/2012	Arch Rock, ~100 miles N San Francisco	38.7	-123.5	38 inches
221	U	8/15/2012	Montara State Beach, San Matea County, CA	37.5	-122.5	
222	U	8/20/2012	Gov. Patterson's Park, Waldport, OR	44.4	-124.1	~1 m
223	U	8/20/2012	Lone Ranch Beach, OR	42.1	-124.3	~1 m
224	U	8/21/2012	Proposal Rock, Neskowin, OR	45.1	-124.0	~1 m
225	U	8/23/2012	China creek, Coos City, OR	43.1	-124.4	2 feet
226	F	8/28/2012	Seaside Beach, Seaside OR	46.0	-123.9	44 inches
227	U	8/28/2012	Florence, OR	44.0	-124.1	~1 m
228	U	8/29/2012	13650 S. Coast Hwy, OR	44.7	-124.1	~1 m
229	U	8/30/2012	Salishan, Gleneden Beach, OR	44.9	-124.0	~1 m
230	U	8/30/2012	North of Laurel St, Gleneden Beach, OR	44.9	-124.0	~1 m
231	U	9/4/2012	0.25 miles north of Beachcombers, OR	44.9	-124.0	~1 m
232	U	9/16/2012	In front of driftwood shores hotel, Florence, OR	44.0	-124.1	~1 m
233	U	9/16/2012	North of Breach Sand Road north of the Siltcoos river, OR	43.9	-124.2	~1 m
234	U	10/1/2012	South of Curtis St access, Seal Rock, OR	44.5	-124.1	~1 m
235	U	10/2/2012	Sunset Beach, Seaside, OR	46.1	-123.9	42 inches
236	U	12/13/2012	Seaside, OR	46.0	-123.9	2.5 feet
237	U	12/23/2012	Bay City, OR	45.5	-123.9	~1 m
238	U	2/10/2013	Tajiguas Beach, Santa Barbara, CA	34.5	-120.1	
239	F	3/5/2013	Coronado Island, San Diego	32.7	-117.2	
240	M	3/5/2013	Morro Strand State Beach, CA	35.4	-120.9	86.6

Table S2: Generalized additive model results for number of strandings per month. Significance is denoted by *.

Parameter	edf	Ref.df	F	p-value	
Mean meridional winds	1.7521	4	0.623	0.21079	
Maximum northerly winds	0.2354	4	0.082	0.23717	
Mean sea surface temperature	2.3402	4	2.621	0.00869	**
Minimum sea surface temperature	2.9134	4	3.499	0.00404	**
R-sq.(adj) =			0.438	Deviance explained = 57%	
GCV score =			140.19	n = 32	

Table S3: Stable isotope values and trophic level (TL), size, habitat, and depth information of potential juvenile salmon shark prey. Only studies that accounted for lipids through chemical extraction or arithmetic correction were included. Group: prey group identified by cluster analysis (1: Oceanic mesopelagic, 2: Shelf slope, 3: Inshore shelf). Total sample size for each estimate is indicated (n). Distance habitat: general habitat based on distance from shore, INS: inner shelf; SHE: across the shelf; SLO: continental slope; OCE: off continental shelf. Depth habitats: BEN: benthic; DEM: demersal; MES: mesopelagic; PEL: pelagic. For habitat and depth categories a 1 indicates that species was assigned to that category. TL: general estimate of trophic level. Life stage information for stable isotope values: U (unknown), A (adult), J (juvenile), Y (yearling), S (subyearling). Numbered TL, habitat, and stable isotope references are shown below.

#	Group	Name	Species	¹³ C		¹⁵ N		n	Distance habitat				Depth habitat			Life stage	TL reference	Habitat reference	Stable isotope reference		
				mean	sd	mean	sd		INS	SHE	SLO	OCE	BEN	DEM	MES					PEL	
1	1	Abralopsis squid	<i>Abralopsis felis</i>	-18.9	0.5	14.5	0.7	4			X	X			X	X	4.1	U	2	14	20
2	1	Argonaut	<i>Argonauta</i> sp.	-19.6	0.5	13.5	0.0	4			X	X				X	3.7	U	2	14	16
3	1	Barracudina	<i>Magnisudis atlantica</i> , <i>Lestidiops ringens</i>	-19.3	0.5	14.2	0.6	10			X	X			X	X	3.7	A	10	18	16
4	1	California smoothtongue	<i>Bathylagus stibius</i>	-20.3	0.2	14.8	0.3	3			X	X			X		3.2	U	9	18	6
5	1	Clubhook squid	<i>Onychoteuthis boreali-japonicus</i>	-19.3	0.8	13.8	0.8	20		X	X	X				X	5.1	A	2	14	17, 20
6	1	Midwater eelpout	<i>Melanostigma pammelas</i>	-19.0	0.3	13.9	0.3	8			X	X			X		3.2	A	9	8, 15	16
7	1	Humboldt squid	<i>Dosidicus gigas</i>	-19.0	0.5	14.1	1.1	99		X	X	X			X	X	4.1	J, A	30	14, 21, 29	16, 17, 20
8	1	Myctophidae	<i>Stenobrachius leucopsarus</i> , <i>Symbolophorus californiensis</i> , <i>Tarletonbeania crenularis</i> , <i>Diaphus theta</i>	-19.2	1.7	14.1	0.7	130			X	X			X		3.2	A	9	18	7, 16, 20
9	1	Pacific viperfish	<i>Chauliodus macouini</i>	-19.7	0.2	14.0	0.3	3			X	X			X		3.9	A	3	18	6
10	2	Clawed armhook squid	<i>Gonatus onyx</i>	-19.3	0.3	12.7	0.3	6			X	X			X	X	4.1	U	2	14	6
11	2	Coho salmon	<i>Oncorhynchus kisutch</i>	-19.2	3.5	12.4	2.7	68		X	X					X	4.1	Y	9	4, 25	19
12	2	Gonatid squid	<i>Gonatopsis</i> spp.	-19.0	0.5	13.5	1.3	16		X	X	X			X	X	4.1	U	9	14, 21, 29	17
13	2	Pacific hake	<i>Merluccius productus</i>	-17.6	0.6	13.0	0.7	89		X	X			X			3.6	J, Y	9	8, 15	19, 20
14	2	Rockfish (inner shelf)	<i>Sebastes</i> spp., <i>S. mystinus</i> , <i>S. pinnegar</i>	-17.9	1.9	13.2	1.5	53		X	X			X	X		3.7	J	9	8, 15	5, 6, 16, 19, 31, 32
15	2	Lingcod	<i>Ophiodon elongatus</i>	-18.6	0.7	13.1	0.8	8		X	X			X			3.2	J	9	8, 15	19, 31
16	2	Rockfish (outer shelf)	<i>Sebastes crameri</i> , <i>S. entomelas</i> , <i>S. jordani</i> , <i>S. rufus</i>	-18.1	1.7	12.6	1.3	56		X	X			X			3.3	J	9	8, 15	5, 6, 12, 19, 20
17	2	Pelagic red crab	<i>Pleuroncodes planipes</i>	-18.6	0.9	13.3	1.5	46		X	X	X		X		X	2.9	U	30	1, 28	16, 17, 24
18	2	Sablefish	<i>Anoplopoma fimbria</i>	-18.4	1.2	13.2	0.7	19		X	X					X	3.2	J	9	15, 18	19, 31
19	2	Sand lance	<i>Ammodytes hexapterus</i>	-17.2	1.2	11.6	1.6	74		X	X					X	3.3	U	10	15, 27	5, 19, 20
20	2	Sardine	<i>Sardinops sagax</i>	-17.8	1.1	12.9	0.8	161		X	X	X				X	2.8	J, A	9	8, 15	5, 11, 16, 17, 19, 20, 31, 32
21	2	Saury	<i>Cololabis saira</i>	-19.0	1.2	12.4	1.2	102			X	X				X	3.5	J	2	8, 15, 18	16, 17, 19, 20
22	2	Senorita	<i>Oxyjulis californica</i>	-18.9	0.0	13.1	0.0	2		X				X		X	3.1	U	10	15	16
23	2	Steelhead trout	<i>Oncorhynchus mykiss</i>	-18.7	2.2	12.6	1.0	49			X	X			X		4.8	J, A	2	4, 25	19, 26
24	2	Tomcod	<i>Microgadus proximus</i>	-18.2	0.3	12.4	0.0	2		X	X			X			3.6	U	30	8, 15	19
25	3	Anchovy	<i>Engraulis mordax</i>	-16.9	2.0	13.5	1.2	113		X	X	X			X		3.2	J, A	9	8, 15	5, 12, 19, 20, 31, 32
26	3	Bonito	<i>Sarda chiliensis</i>	-17.7	0.3	16.2	0.2	12		X	X	X			X		4.5	A	23	8, 15	16
27	3	Chinook salmon	<i>Oncorhynchus tshawytscha</i>	-17.0	1.7	13.9	0.8	182		X	X	X				X	4.1	S, Y	9	4, 25	19, 20, 31
28	3	White croaker	<i>Genyonemus lineatus</i>	-15.3	0.6	15.1	0.9	10		X				X			3.4	U	30	8, 15	5
29	3	Cutthroat trout	<i>Oncorhynchus clarkii</i>	-17.7	0.6	14.6	0.6	8		X					X		3.3	U	10	15, 25	19
30	3	Sharpear enope squid	<i>Ancistrocheirus lesueurii</i>	-17.5	0.3	13.6	1.0	6			X	X			X		4.4	U	2	13	24
31	3	Pacific herring	<i>Clupea pallasii</i>	-16.7	1.0	13.1	0.6	68		X	X				X		3.2	A	9	18, 22	19
32	3	Jack mackerel	<i>Trachurus symmetricus</i>	-17.4	1.2	14.2	0.8	64		X	X	X			X		3.5	J, A	9	8, 15	16, 19, 20, 32
33	3	Market squid	<i>Doryteuthis opalescens</i>	-16.5	1.6	13.0	1.2	166		X	X			X		X	3.9	A	9	14, 21, 29	17, 19, 20, 31
34	3	Midshipmen	<i>Porichthys notatus</i>	-17.1	0.6	13.9	0.4			X	X			X			3.3	U	9	8, 15	32
35	3	Pacific mackerel	<i>Scomber japonicus</i>	-18.1	0.9	14.7	0.9	28		X	X	X			X		3.5	J, A	9	8, 15	16, 17, 19
36	3	Smelt	<i>Spirinchus starksi</i> , <i>Hypomesus pretiosus</i> , <i>Allosmerus elongatus</i>	-17.1	1.1	13.3	1.1	115		X				X	X		3.2	A	9	8, 15	5, 19, 32

Table S4: Juvenile salmon sharks collected for stable isotope analysis. Tissues collected from each specimen are indicated (VERT: vertebra, LIV: liver, WM: muscle). Estimated age is based on Goldman (2002).

ID	Sex	Date collected	Location collected	Latitude	Longitude	Age (mos)	PCL (cm)	VERT	LIV	WM
1	U	3/17/2006	Santa Cruz, CA	37.0	-121.9			x		x
2	U	4/25/2007	Monterey Bay, CA	36.8	-121.8	16.7	92.6	x	x	x
3	U	7/8/2007	Santa Cruz, CA	37.0	-121.9	5.7	73.5	x	x	x
4	F	8/4/2007	Carmel, CA	36.6	-121.9	3.3	69.0	x	x	x
5	M	8/7/2007	Halfmoon Bay, CA	37.5	-122.4	7.5	77.0	x	x	x
6	F	8/7/2007	Capitola, CA	37.0	-122.0	9.2	80.0	x	x	x
7	F	8/18/2007	North Clatsop beach, OR	46.2	-124.0	3.8	69.9		x	x
8	U	9/4/2007	Gearhart beach, OR	46.0	-123.9	3.1	68.6		x	x
9	M	9/5/2007	Gearhart beach, OR	46.0	-123.9	6.4	74.9		x	x
10	F	9/12/2007	Seaside beach, OR	46.0	-123.9	3.4	69.2		x	x
11	F	10/18/2007	North Clatsop beach, OR	46.2	-124.0	7.8	77.4			x
12	F	11/24/2007	Monastery beach, CA	36.5	-121.9	8.4	78.5	x	x	x
13	U	8/13/2008	Arcadia beach, OR	45.8	-124.0	6.5	75.0	x	x	x
14	M	8/22/2008	Seaside, OR	46.0	-123.9	2.3	67.0	x	x	x
15	F	8/23/2008	Seaside, OR	46.0	-123.9	9.2	80.0	x	x	x
16	M	8/25/2008	Lincoln County, OR	44.6	-121.1	5.9	74.0	x	x	x
17	M	8/25/2008	Lincoln County, OR	44.6	-121.1	6.5	75.0	x	x	x
18	F	8/25/2008	Lincoln County, OR	44.6	-121.1	8.1	78.0	x	x	x
19	F	8/31/2008	Clatsop County, OR	46.1	-123.9	15.1	90.0	x	x	x
20	M	9/11/2008	Monterey Bay, CA	37.0	-121.0	3.8	70.0	x	x	x
21	F	11/24/2008	Del Monte beach, CA	36.6	-121.9	0.9	64.3	x	x	x
22	F	7/23/2009	Arch Cape, OR	45.8	-124.0	6.5	75.0	x	x	x
23	F	8/16/2009	Sunset beach, OR	46.1	-123.9	5.9	74.0	x	x	x
24	M	8/17/2009	Seaside, OR	46.0	-123.9	3.3	69.0	x	x	x
25	M	8/23/2009	Sunset beach, OR	46.1	-123.9	5.9	74.0	x	x	x
26	M	8/26/2009	Sunset beach, OR	46.1	-123.9	3.8	70.0	x	x	x
27	F	9/10/2009	Delray beach, OR	46.1	-123.9	3.1	68.6	x		x
28	F	8/20/2010	Anchor Bay, CA	38.8	-123.6	3.4	69.2	x	x	x
29	F	8/20/2010	Manressa beach, CA	36.9	-121.9	5.4	73.0	x	x	x
30	F	8/27/2010	Morro Strand, CA	35.4	-120.9	4.3	70.9	x	x	x
31	M	8/29/2010	Pescadero beach, CA	37.3	-122.4	5.9	74.0	x	x	x
32	F	9/2/2010	Stinson beach, CA	37.9	-122.6	4.1	70.5	x	x	x
33	F	2006	Monterey Bay, CA	36.8	-121.8	12.7	86.0	x	x	x
34	M	2006	Monterey Bay, CA	36.8	-121.8	2.8	68.0	x	x	x
35	F	2006	Monterey Bay, CA	36.8	-121.8	10.9	83.0	x	x	x
36	F	2006	Monterey Bay, CA	36.8	-121.8	3.8	70.0	x	x	x

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