

Supplementary Material.

1 Supplementary Tables

Supplementary Table 1. All species observed across all locations. Unknown species or species not identified to the taxonomic species level were not included.

Family	Scientific Name	Common Name
Anarhichadidae	<i>Anarrhichthys ocellatus</i>	Wolf eel
Bythitidae	<i>Brosmophycis marginata</i>	Red Brotula
Malacanthidae	<i>Caulolatilus princeps</i>	Ocean Whitefish
Pomacentridae	<i>Chromis punctipinnis</i>	Blacksmith
Engraulidae	<i>Engraulis mordax</i>	California Anchovy
Kyphosidae	<i>Girella nigricans</i>	Opaleye
Hexagrammidae	<i>Hexagrammos decagrammus</i>	Kelp Greenling
Chimaeridae	<i>Hydrolagus colliei</i>	Spotted Ratfish
Zoarcidae	<i>Lycodes cortezianus</i>	BigFin Eelpout
Hexagrammidae	<i>Ophiodon elongatus</i>	Lingcod
Labridae	<i>Oxyjulis californica</i>	Señorita
Zaniolepididae	<i>Oxylebius pictus</i>	Painted Greenling
Embiotocidae	<i>Phanerodon atripes</i>	Sharpnose Seaperch
Embiotocidae	<i>Phanerodon furcatus</i>	White Seaperch
Batrachiodidae	<i>Porichthys notatus</i>	Plainfin Midshipman
Serranidae	<i>Pronotogrammus multifasciatus</i>	Threadfin Bass
Rajidae	<i>Raja binoculata</i>	Big Skate
Bathymasteridae	<i>Rathbunella hypoplecta</i>	Stripedfin Ronquil
Embiotocidae	<i>Rhacochilus vacca</i>	Pile Perch
Gobiidae	<i>Rhinogobiops nicholsii</i>	Blackeye Goby
Bathymasteridae	<i>Ronquilus jordani</i>	Northern Ronquil
Scorpaenidae	<i>Scorpaena guttata</i>	California Scorpionfish
Scorpaenidae	<i>Sebastes atrovirens</i>	Kelp Rockfish
Scorpaenidae	<i>Sebastes auriculatus</i>	Brown Rockfish
Scorpaenidae	<i>Sebastes carnatus</i>	Gopher Rockfish
Scorpaenidae	<i>Sebastes caurinus</i>	Copper Rockfish
Scorpaenidae	<i>Sebastes chlorostictus</i>	Greenspotted Rockfish
Scorpaenidae	<i>Sebastes constellatus</i>	Starry Rockfish
Scorpaenidae	<i>Sebastes dallii</i>	Calico Rockfish
Scorpaenidae	<i>Sebastes elongatus</i>	Greenstriped Rockfish
Scorpaenidae	<i>Sebastes emphaeus</i>	Puget Sound Rockfish

Scorpaenidae	<i>Sebastes ensifer</i>	Swordspine Rockfish
Scorpaenidae	<i>Sebastes entomelas</i>	Widow Rockfish
Scorpaenidae	<i>Sebastes flavidus</i>	Yellowtail Rockfish
Scorpaenidae	<i>Sebastes goodei</i>	Chilipepper Rockfish
Scorpaenidae	<i>Sebastes helvomaculatus</i>	Rosethorn Rockfish
Scorpaenidae	<i>Sebastes hopkinsi</i>	Squarespot Rockfish
Scorpaenidae	<i>Sebastes jordani</i>	Shortbelly Rockfish
Scorpaenidae	<i>Sebastes lentiginosus</i>	Freckled Rockfish
Scorpaenidae	<i>Sebastes levis</i>	Cowcod
Scorpaenidae	<i>Sebastes maliger</i>	Quillback Rockfish
Scorpaenidae	<i>Sebastes miniatus</i>	Vermilion Rockfish
Scorpaenidae	<i>Sebastes moseri</i>	Whitespeckled Rockfish
Scorpaenidae	<i>Sebastes mystinus</i>	Blue Rockfish
Scorpaenidae	<i>Sebastes nebulosus</i>	China Rockfish
Scorpaenidae	<i>Sebastes nigrocinctus</i>	Tiger Rockfish
Scorpaenidae	<i>Sebastes ovalis</i>	Speckled Rockfish
Scorpaenidae	<i>Sebastes paucispinis</i>	Bocaccio
Scorpaenidae	<i>Sebastes pinniger</i>	Canary Rockfish
Scorpaenidae	<i>Sebastes proriger</i>	Redstripe Rockfish
Scorpaenidae	<i>Sebastes rosaceus</i>	Rosy Rockfish
Scorpaenidae	<i>Sebastes ruberrimus</i>	Yelloweye Rockfish
Scorpaenidae	<i>Sebastes rubrivinctus</i>	Flag Rockfish
Scorpaenidae	<i>Sebastes rufinanus</i>	Dwarf-Red Rockfish
Scorpaenidae	<i>Sebastes rufus</i>	Bank Rockfish
Scorpaenidae	<i>Sebastes semicinctus</i>	Halfbanded Rockfish
Scorpaenidae	<i>Sebastes serranoides</i>	Olive Rockfish
Scorpaenidae	<i>Sebastes serriiceps</i>	Treefish Rockfish
Scorpaenidae	<i>Sebastes umbrosus</i>	Honeycomb Rockfish
Scorpaenidae	<i>Sebastes wilsoni</i>	Pygmy Rockfish
Scorpaenidae	<i>Sebastes zacentrus</i>	Sharpchin Rockfish
Labridae	<i>Semicossyphus pulcher</i>	California Sheephead
Torpedinidae	<i>Torpedo californica</i>	Pacific Electric Ray
Embiotocidae	<i>Zalembius rosaceus</i>	Pink Seaperch
Zaniolepididae	<i>Zaniolepis frenata</i>	Shortspine Combfish

Supplementary Table 2. Average number of Bocaccio, Canary Rockfish, Lingcod, and Vermilion Rockfish observed in one minute per tool off Carmel, California.

Species	Tool	Total fish	Average number of fish per minute
Bocaccio	BOSS and Rotating Lander	31	0.233 ± 0.555
	ROV	8	0.010 ± 0.038
Canary Rockfish	BOSS and Rotating Lander	98	0.894 ± 1.652
	ROV	43	0.051 ± 0.102
Lingcod	BOSS and Rotating Lander	31	0.269 ± 0.270
	ROV	104	0.120 ± 0.192
Vermilion Rockfish	BOSS and Rotating Lander	25	0.278 ± 0.488
	ROV	51	0.060 ± 0.079

Supplementary Table 3. Average number of Bocaccio, Canary Rockfish, Lingcod, and Vermilion Rockfish observed in one minute per tool off Monterey, California.

Species	Tool	Total fish	Average number of fish per minute
Bocaccio	BOSS and Rotating Lander	294	1.077 ± 1.549
	ROV	60	0.220 ± 0.255
Canary Rockfish	BOSS and Rotating Lander	34	0.125 ± 0.231
	ROV	25	0.089 ± 0.094
Lingcod	BOSS and Rotating Lander	79	0.289 ± 0.352
	ROV	298	1.060 ± 0.835
Vermilion Rockfish	BOSS and Rotating Lander	50	0.183 ± 0.218
	ROV	30	0.110 ± 0.065

Supplementary Table 3. Pairwise comparisons of species richness (number of species) among sites.

	OSF	MtB	C	BS	MB	SBC	NCI	SCI
OSF	-							
MtB	ns	-						
C	***	***	-					
BS	ns	ns	***	-				
MB	***	***	ns	***	-			
SBC	***	***	***	***	***	-		
NCI	***	***	***	***	***	**	-	
SCI	***	***	***	***	***	***	***	-

OSF = Offshore San Francisco, HMB = Half Moon Bay, NMB = Northern Monterey Bay, SMB = Southern Monterey Bay, C = Carmel, BS = Big Sur, MB = Morro Bay, SBC = Santa Barbara Channel, NCI = Northern Channel Islands, SCI = Southern Channel Islands. Significance levels: *** $p < 0.001$, ** $p < 0.01$, NS > 0.05 .

Supplementary Table 4. Pairwise comparisons of species diversity (Shannon Index H') among sites.

	OSF	MtB	C	BS	MB	SBC	NCI	SCI
OSF	-							
MtB	***	-						
C	***	***	-					
BS	***	ns	***	-				
MB	***	ns	***	*	-			
SBC	***	ns	***	ns	ns	-		
NCI	***	***	***	***	***	***	-	
SCI	***	***	***	***	***	***	***	-

OSF = Offshore San Francisco, MtB = Monterey Bay, C = Carmel, BS = Big Sur, MB = Morro Bay, SBC = Santa Barbara Channel, NCI = Northern Channel Islands, SCI = Southern Channel Islands. Significance levels: *** $p < 0.001$, * $p < 0.05$, ns > 0.05 .

Supplementary Table 5. Pairwise comparisons of species Pielou evenness index among sites.

	OSF	MtB	C	BS	MB	SBC	NCI	SCI
OSF	-							
MtB	***	-						
C	***	***	-					
BS	***	*	***	-				
MB	***	***	***	***	-			
SBC	***	***	***	***	***	-		
NCI	ns	***	***	***	***	***	-	
SCI	***	ns	***	***	***	***		-

OSF = Offshore San Francisco, HMB = Half Moon Bay, NMB = Northern Monterey Bay, SMB = Southern Monterey Bay, C = Carmel, BS = Big Sur, MB = Morro Bay, SBC = Santa Barbara Channel, NCI = Northern Channel Islands, SCI = Southern Channel Islands. Significance levels: *** $p < 0.001$, * $p < 0.05$, ns > 0.05 .

Supplementary Table 6. Similarity percentages (SIMPER) results for between-group dissimilarity among Locations for square-root transformed abundance data showing the percent variability explained by each species. The values in parentheses represent the difference between the two Locations. Only the species that explained a cumulative 50% of the variation of each comparison are included.

Group	Species	% Explained
Big Sur – Carmel (74.2%)	Vermilion Rockfish	14.4
	Pygmy Rockfish	12.4
	Squarespot Rockfish	10.7
	Canary Rockfish	10.4
	Yellowtail Rockfish	10
Big Sur – Monterey (78.7%)	Vermilion Rockfish	14
	Yellowtail Rockfish	12.8
	Pygmy Rockfish	10.7
	Squarespot Rockfish	10.5
	Bocaccio	7.9
Big Sur – Morro Bay (83.2%)	Vermilion Rockfish	14.7
	Squarespot Rockfish	11.9
	Pygmy Rockfish	10.6
	Yellowtail Rockfish	9.5
	Lingcod	8.3
Big Sur – Northern Channel Islands (80.4%)	Squarespot Rockfish	16.2
	Vermilion Rockfish	10.9
	Pygmy Rockfish	8.4
	Halfbanded Rockfish	8.2
	Yellowtail Rockfish	6.3
Big Sur – Offshore San Francisco (81%)	Yellowtail Rockfish	15.4
	Vermilion Rockfish	13.6

	Pygmy Rockfish	10.3
	Squarespot Rockfish	9.6
	Canary Rockfish	8.8
Big Sur – Santa Barbara Channel (79.6%)	Vermilion Rockfish	15.2
	Squarespot Rockfish	11.1
	Pygmy Rockfish	8.5
	Halfbanded Rockfish	7
	Yellowtail Rockfish	6.9
	Lingcod	6.4
Big Sur – Southern Channel Islands (80.3%)	Squarespot Rockfish	11.2
	Pygmy Rockfish	9.5
	Vermilion Rockfish	9.2
	Ocean Whitefish	7
	Blackeye Goby	5.6
	Yellowtail Rockfish	5.5
	Lingcod	5.5
Carmel – Monterey Bay (80.6%)	Yellowtail Rockfish	14.4
	Canary Rockfish	13.6
	Bocaccio	9.4
	Rosy Rockfish	8.8
	Pygmy Rockfish	8.6
Carmel – Morro Bay (85.7%)	Canary Rockfish	13.8
	Rosy Rockfish	10.2
	Vermilion Rockfish	9.4
	Lingcod	9.1
	Yellowtail Rockfish	8.8
Carmel – Northern Channel Islands (88.7%)	Squarespot Rockfish	20.4
	Halfbanded Rockfish	9.7
	Canary Rockfish	8.5
	Pygmy Rockfish	6.6
	Vermilion Rockfish	6.0
Carmel – Offshore San Francisco (79.9%)	Yellowtail Rockfish	21.6
	Canary Rockfish	14.2
	Pygmy Rockfish	9.2
	Rosy Rockfish	8.3
Carmel – Santa Barbara Channel (87.7%)	Vermilion Rockfish	14.4
	Canary Rockfish	9.4
	Squarespot Rockfish	9.2
	Halfbanded Rockfish	8.6
	Rosy Rockfish	6.4
	Pygmy Rockfish	5.8
Carmel – Southern Channel Islands (86.5%)	Squarespot Rockfish	13.4
	Pygmy Rockfish	8.9
	Ocean Whitefish	7.8
	Canary Rockfish	7.4
	Blackeye Goby	5.9

	Bocaccio	5.6
	Rosy Rockfish	5.0
Monterey – Morro Bay (86.4%)	Yellowtail Rockfish	15.3
	Bocaccio	9.4
	Vermilion Rockfish	9.2
	Lingcod	9.1
	Blue Rockfish	8.2
Monterey – Northern Channel Islands (89.6%)	Squarespot Rockfish	20.8
	Halfbanded Rockfish	9.8
	Yellowtail Rockfish	8.9
	Bocaccio	7.2
	Vermilion Rockfish	5.6
Monterey – Offshore San Francisco (79.9%)	Yellowtail Rockfish	22.4
	Canary Rockfish	12.2
	Bocaccio	8.4
	Lingcod	6.6
	Pygmy Rockfish	6.4
Monterey – Santa Barbara Channel (87.1%)	Vermilion Rockfish	14.6
	Yellowtail Rockfish	10
	Squarespot Rockfish	9.3
	Halfbanded Rockfish	8.9
	Bocaccio	7.6
Monterey – Southern Channel Islands (89.9%)	Squarespot Rockfish	13.3
	Yellowtail Rockfish	7.6
	Ocean Whitefish	7.6
	Pygmy Rockfish	7.3
	Bocaccio	6.7
	Blackeye Goby	5.8
	Rosy Rockfish	4.9
Morro Bay – Northern Channel Islands (86.1%)	Squarespot Rockfish	23.6
	Halfbanded Rockfish	12.3
	Vermilion Rockfish	7.7
	Blue Rockfish	6.1
	Lingcod	4.5
Morro Bay – Offshore San Francisco (85.8%)	Yellowtail Rockfish	22.8
	Canary Rockfish	11.7
	Blue Rockfish	10.3
	Vermilion Rockfish	8.7
Morro Bay – Santa Barbara Channel (86.2%)	Vermilion Rockfish	17.3
	Halfbanded Rockfish	11.8
	Squarespot Rockfish	11.3
	Blue Rockfish	7.3
	Copper Rockfish	5.9
Morro Bay – Southern Channel Islands (91.7%)	Squarespot Rockfish	14.6
	Ocean Whitefish	8.1
	Pygmy Rockfish	7.1

	Blackeye Goby	6.4
	Rosy Rockfish	5.5
	Bocaccio	5.3
	Vermilion Rockfish	5.1
Northern Channel Islands – Offshore San Francisco (93.1%)	Squarespot Rockfish	19.5
	Yellowtail Rockfish	14.6
	Halfbanded Rockfish	8.7
	Canary Rockfish	6.9
	Pygmy Rockfish	5.1
	Squarespot Rockfish	18.7
	Vermilion Rockfish	12.9
Northern Channel Islands – Santa Barbara Channel (80.8%)	Halfbanded Rockfish	12.0
	Bocaccio	5.3
	Copper Rockfish	4.2
	Squarespot Rockfish	14.8
	Ocean Whitefish	8.4
	Halfbanded Rockfish	7.5
	Pygmy Rockfish	7.5
Northern Channel Islands – Southern Channel Islands (79.0%)	Bocaccio	5.6
	Blackeye Goby	5.3
	Rosy Rockfish	4.6
	Yellowtail Rockfish	15.7
	Vermilion Rockfish	13.6
	Squarespot Rockfish	8.0
	Halfbanded Rockfish	7.8
Offshore San Francisco – Santa Barbara Channel (90.8%)	Canary Rockfish	7.7
	Squarespot Rockfish	12.7
	Yellowtail Rockfish	12.4
	Pygmy Rockfish	7.3
	Ocean Whitefish	7.1
	Canary Rockfish	5.9
	Blackeye Goby	5.4
Santa Barbara Channel – Southern Channel Islands (85.7%)	Squarespot Rockfish	12.4
	Vermilion Rockfish	10.3
	Ocean Whitefish	7.2
	Pygmy Rockfish	6.5
	Halfbanded Rockfish	6.0
	Bocaccio	5.3
	Blackeye Goby	5.2

Supplementary Table 7. Average length $\pm$ SD of Bocaccio, Canary Rockfish, Lingcod, Vermilion Rockfish, and Yellowtail Rockfish, at survey locations. Sample size is denoted within the parentheses.

Species	Offshore San Francisco	Monterey Bay	Big Sur	Channel Islands
Bocaccio	50.29 $\pm$ 1.79 (3)	56.10 $\pm$ 8.23 (159)	58.62 $\pm$ 5.64 (72)	45.22 $\pm$ 11.30 (44)
Canary Rockfish	31.91 $\pm$ 5.96 (129)	41.38 $\pm$ 4.92 (197)	43.27 $\pm$ 4.69 (97)	45.90 $\pm$ 2.40 (6)
Lingcod	60.50 $\pm$ 15.66 (5)	68.27 $\pm$ 12.00 (160)	74.94 $\pm$ 12.44 (109)	69.00 $\pm$ 8.94 (14)
Vermilion Rockfish	47.59 $\pm$ 7.11 (33)	47.76 $\pm$ 3.73 (71)	48.05 $\pm$ 4.92 (368)	43.84 $\pm$ 4.92 (167)
Yellowtail Rockfish	33.77 $\pm$ 5.48 (262)	37.76 $\pm$ 5.25 (385)	41.01 $\pm$ 6.35 (136)	34.22 $\pm$ 8.76 (7)

Supplementary Table 8. One-way ANOSIM test for variation in community assemblages among groups in Monterey Bay.

	A	B	C	D	E
A	-				
B	0.12ns	-			
C	0.21***	0.08ns	-		
D	0.41***	0.26*	0.39***	-	
E	0.21***	0.19*	0.07*	0.28***	-

R values and p-values are shown. Significance levels: *** $p < 0.001$, * $p < 0.05$, ns > 0.05 .

Supplementary Table 8. One-way ANOSIM test for variation in community assemblages among groups in the northern Channel Islands.

	A	B	C	D	E
A	-				
B	0.22**	-			
C	0.20**	0.30**	-		
D	0.06ns	0.05ns	0.18**	-	
E	0.21ns	0.42**	0.10ns	0.31*	-

R values and p-values are shown. Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, ns > 0.05 .