

# Central and Northern California Coastal Marine Habitats: Oil Residence and Biological Sensitivity Indices

## RELATIVE ABUNDANCE OF MAJOR MACROBIOTA\*

Taxa	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
<b>ROCKY INTERTIDAL MACROBIOTA</b>																									
Acorn barnacles			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chlorophyta			0	0	0	0	0	0	0	0															
Porphyra spp.				C	C	C																			
Pelvetiopsis limitata			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Endocladia muricata								0-C	0	0	C	C	C	C	C	C	C	C	C	C	C	C	C	C	0
Pelvetia fastigiata			C	C	C	C	C	0-C	C	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	C
Fucus distichus				0	0	0	0	0-C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gigartina spp.			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	0
Pollicipes polymerus			0	0	0	0	0	C		C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mytilus californianus			0	0	0	0	0	C		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	0
Corallina spp./Gigartina spp.			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Postelsia palmaeformis				C	C	C	C	C	C	C	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C	C	C	C	C	C	C-A
Halosaccion glandiforme																									
Iridaea spp.			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Odonthalia spp./Rhodomela larix																									
Coralline algae			C	C	C	C	C	C	C	C	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A
Phyllospadix spp.			0	0	0	0	0	C	0-C	0-C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Alaria marginata				0	0	0	0		C	C	C	C	C	C	C-A	C-A	C-A	0-C	0-C	0-C	0-C	0-C	0-C	0-C	C-A
Egregia menziesii			C	C	C	C	C		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Laminaria spp.				0	0	0	0	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Lessoniopsis littoralis									0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>OTHER MACROBIOTA</b>																									
<b>Kelp beds:</b>																									
Macrocystis spp.		0	C		C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A	C-A
Nereocystis luetkeana		0	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
<b>Marine mammals:</b>																									
Elephant seal																									
Harbor seal			0	0-C		0-C		0		0-A					0-A									0	
Steller sea lion				0																					
California sea lion			0-A	0-A	0-C																			0-A	
<b>Seabird nesting colonies:</b>																									
Fork-tailed storm petrel																									
Leach's storm petrel																									
Ashy storm petrel																									
Brandt's cormorant										A														0-A	
Double-crested cormorant																									
Pelagic cormorant																									0-C
Black oystercatcher											0				0										0-C
Western gull											0				0										0
Common murre																									
Pigeon guillemot																									0-A
Cassin's auklet																									
Rhinoceros auklet																									
Tufted puffin																									
<b>Threatened/Endangered Species:</b>																									
Aleutian Canada goose																									
Southern sea otter	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

\*Relative abundance for summer conditions: 0 = occasional, C = common, A = abundant

## PHYSICAL SHORE-ZONE CHARACTERISTICS

UNIT IDENTIFIERS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	
ALONGSHORE LENGTH (km)	1.2	0.3	1.7	1.8	2.7	1.5	1.6	0.7	2.1	3.0	2.5	0.8	0.5	0.3	0.6	1.9	1.0	0.5	0.3	0.3	0.2	0.2	5.2	0.2	0.4	
ACROSS-SHORE WIDTH (m)	50-200	10-50	0-30	30-100	30-100	30-100	20-50	0-20	50	30-100	0-20	30-100	50	60	30-100	50-200	30-100	75-100	100	100	50	75-100	0-20	20	0-20	
WAVE EXPOSURE	10	1-10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	10	8	
ACROSS-SHORE COMPONENTS (morphology, texture)	Cp,Ri Bb,Cs: RI Bf,Cs: RI Bt,Cs	Aj,Ad Am,An	As,An Ca,Ri	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Cp,Cs Bf,Csp RI	Cc,Ri Oe,Ri	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Cc,Ri Oe,Ri	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,R Bi,Csb	Ca,Ri Pl,Cb RI	Cp,Ri Bb,Cs: RI	Ca,Ri Pl,Cb RI	Dr,Cs Bs,Csp RI	Cp,Cg Bs,Cg RI	Cp,Cg Bs,Cg RI	Ca,Ri Pl,Cb RI	Dr,Cs Bs,Csp Ores,Ri	Cc,Ri Bi,Cs Ore,Ri	Cc,Ri Bi,Cs Ores,Ri	
Primary	Cp,Cs Or,Cs Bb,Cs Bf,Cs Bt,Cs		As,An Bi,Crs	Ore,Ri	Ca,Ri Bf,Csp RI	Ca,Ri Bf,Csp RI	Cp,Cs Bf,Csp RI	Cc,Ri Oe,Ri	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Bf,Cs: RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Ca,Ri Pl,Cb RI	Rs,Cs Ie,Cs Bf,Cs	Ca,Ri Bi,Csg Ore,Ri	Cc,Ri Ph,Ri Ore,Ri	Ca,Ri Bi,Csg Ore,Ri
Secondary																										
MICRO RELIEF	S	S	R	R	R	R	R	R	R	R	R	R	R	R	S	R	S	R	S	R	S	R	S	R	S	
MACRO RELIEF	S	R	R	R	R	R	S	R	R	R	R	R	R	R	S	R	S	R	S	R	S	R	S	R	S	
SUMMARY CHARACTERISTICS	bs	A	A	Rb'sv	Rb'mv	Rb'mv	bsv	Rv	RPb'mvO	RPb'sO	Rv	Rb'm	RPb'mv	bsv	RPb'mv	bs	RPv	bsIe	RP	bg	RP	bgIe	Rb'mO	bs	Rb'mO	
OIL RESIDENCE INDEX	2	1	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	1-2	3	2	3	1-2	3	3	3	
GROUND TRUTH	0	0	0	2	2	2	2	2	2	2	2	0	0	0	0	3	0	0	0	0	0	0	3	0	3	

### ABBREVIATED PHYSICAL SHORE-ZONE CODING EXPLANATION

This is an abbreviated legend for the physical shore-zone coding sheets; consult the main text for a complete discussion of codes and rationale. Only the across-shore descriptors for morphology and texture are discussed.

ACROSS-SHORE COMPONENTS - dominant morphologic and textural character of each across-shore component, described in a landward to seaward sequence. Each component consists of a geomorphic form descriptor and a substrate descriptor:  
FORM → Bb, Csg + TEXTURE

The primary geomorphic forms are initially described by a series of 12 codes:  
A Anthropogenic E Coastal Bay, Lagoon, Estuary P Platform  
B Beach I Inlet R River  
C Cliff M Marsh S Bar/Trough  
D Dune O Offshore Rocks T Delta

Each of these groups is then further modified by codes as indicated below.

Anthropogenic (A)  
e causeway j jetty m marina t trench  
f float g groin r boat ramp s seawall  
w wharf

Beach (B)  
b berm i inclined slope s storm ridge  
c washover channel m multiple intertidal bars t low-tide terrace  
f beach face r single intertidal bar w washover

Cliff (C)  
a active or erosional p passive c caves present

Dune (D)  
b blowout f foredune s ridge and swale  
d stabilized r random form t longitudinal

Coastal Bay, Lagoon, Estuary (E)  
b enclosed bay e estuary

Inlet (I)  
e ephemeral a opening fixed by offshore structures  
s stable f flood-tidal delta l ebb-tidal delta

Marsh (M)  
c tidal creek

Offshore Rocks (O)  
e intertidal reef s sea stack  
r rock outcrop (>2 m above M.S.L. and <10 m in width or length)

Platform (P)  
h high-tide platform f horizontal t terraced  
l low-tide platform r ramp i irregular

River (R)  
b braided m multiple s single channel

Bar/Trough (S) subtidal r with rip channels

Delta (T)  
c channel m multiple channels p delta plain  
f fan s single channel v crevasse  
l levee

Substrate type or sediment texture are described in detail by a series of codes. The sediments or materials of the shore are initially coded into one of four groups:  
A anthropogenic materials C clastic sediments  
B biogenic sediments R bedrock

Each of these groups is then further modified by texture or composition as indicated below.

Anthropogenic materials (A)  
a metal n concrete (solid) w bark or wood debris  
d debris, rubble t logs  
e concrete (individually formed) u wood (structural; e.g., pilings or boards)

Biogenic sediments (B)  
l trees or wood particles o organic litter  
s shell hash (with a texture as described below)

Clastic sediments (C)  
b boulder s sand m mud  
c cobble f silt g gravel  
p pebble e clay r rubble

Bedrock (R)  
i igneous m metamorphic s sedimentary

Where more than one texture is present in an across-shore component, several substrates or textures may be indicated. Where one texture physically overlies another, it is indicated by a slash (e.g., Cs/Rs, and over rock). Where several mutually exclusive textures occur within a component, such as rock outcrops within a sand beach, a colon is used to indicate that association (e.g., Cs:Ri).

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**M.M.S. Map# 63**  
**Sheet 2 of 2**