

# 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   |
|---------------------------------------|-----|-----|-----|-----|-----|-----|---|---|---|-----|
| <b>ROCKY INTERTIDAL MACROBIOTA</b>    |     |     |     |     |     |     |   |   |   |     |
| Acorn barnacles                       | 0   | 0   | 0   | 0   | 0   | 0   |   |   |   | 0   |
| Chlorophyta                           | 0-C | 0-C | 0-C | 0-C | 0-C | C   |   |   |   | C   |
| Porphyra spp.                         | 0   | 0   | 0   | 0   | 0   | 0   |   |   |   | 0   |
| Pelvetiopsis limitata                 | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Endocladia muricata                   | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Pelvetia fastigiata                   | 0   | 0   | 0   | 0   | 0   | 0   |   |   |   | 0   |
| Fucus distichus                       | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Gigartina spp.                        | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Pollicipes polymerus                  | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Mytilus californianus                 | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Corallina spp./Gigartina spp.         | 0-C | 0-C | 0-C | 0-C | 0-C | 0-C |   |   |   | 0-C |
| Postelsia palmaeformis                | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Halosaccion glandiforme               | C   | C   | C   | C   | C   | 0-C |   |   |   | C   |
| Iridaea spp.                          | C   | C   | C   | C   | C-A | C   |   |   |   | C   |
| Odonthalia spp./Rhodomela larix       | C   | C   | C   | C   | C   | 0   |   |   |   | 0   |
| Coralline algae                       | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Phyllospadix spp.                     | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Alaria marginata                      | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Egregia menziesii                     | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Laminaria spp.                        | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| Lessoniopsis littoralis               | C   | C   | C   | C   | C   | C   |   |   |   | C   |
| <b>OTHER MACROBIOTA</b>               |     |     |     |     |     |     |   |   |   |     |
| <b>Kelp beds:</b>                     |     |     |     |     |     |     |   |   |   |     |
| Macrocystis spp.                      |     |     |     |     |     |     |   |   |   |     |
| Nereocystis luetkeana                 |     |     |     |     |     |     |   |   |   | C   |
| <b>Marine mammals:</b>                |     |     |     |     |     |     |   |   |   |     |
| Elephant seal                         |     |     |     |     |     |     |   |   |   |     |
| Harbor seal                           | 0   | 0   |     |     |     |     |   |   |   |     |
| Steller sea lion                      | 0   | 0   |     |     |     |     |   |   |   |     |
| California sea lion                   |     |     |     |     |     |     |   |   |   |     |
| <b>Seabird nesting colonies:</b>      |     |     |     |     |     |     |   |   |   |     |
| Fork-tailed storm petrel              |     |     |     |     |     |     |   |   |   |     |
| Leach's storm petrel                  |     |     |     |     |     |     |   |   |   |     |
| Ashy storm petrel                     |     |     |     |     |     |     |   |   |   |     |
| Brandt's cormorant                    |     |     | A   |     |     |     |   |   |   |     |
| Double-crested cormorant              |     |     |     |     |     |     |   |   |   |     |
| Pelagic cormorant                     | C   | C   | 0-A | A   | A   |     |   |   |   |     |
| Black oystercatcher                   |     | 0   | 0   | 0   | 0   |     |   |   |   |     |
| Western gull                          |     |     | 0   | 0   | 0   |     |   |   |   |     |
| Common murre                          |     |     |     |     |     |     |   |   |   |     |
| Pigeon guillemot                      |     | 0   | C   | C   | C   |     |   |   |   |     |
| Cassin's auklet                       |     |     |     |     |     |     |   |   |   |     |
| Rhinoceros auklet                     |     |     |     |     |     |     |   |   |   |     |
| Tufted puffin                         |     |     |     |     |     |     |   |   |   |     |
| <b>Threatened/Endangered Species:</b> |     |     |     |     |     |     |   |   |   |     |
| Aleutian Canada goose                 |     |     |     |     |     |     |   |   |   |     |
| Southern sea otter                    |     |     |     |     |     |     |   |   |   |     |

\*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                                 |
|---|--|-----------------------------------|--|--------------------|--|------------------------------|------------------|--|-----------------------------------|-----------------------------------|
| ALONGSHORE LENGTH (km)                        | 2.0  | 3.0                               | 1.0                                    | 0.4                | 1.4  | 0.7                          | 0.2              | 4.9  | 0.3                               | 0.9                               |
| ACROSS-SHORE WIDTH (m)                        | 100  | 5-300                             | 10                                     | <5                 | 10-20  | 20-150                       | -                | 100  | -                                 | 50                                |
| WAVE EXPOSURE                                 | 10   | 10                                | 10                                     | 10                 | 10   | 10                           | 1-10             | 10   | 1-10                              | 10                                |
| ACROSS-SHORE COMPONENTS (morphology, texture) | Ca, Rs<br>BF, Ccb:<br>Rs<br>BF, Cs<br>Or, Rs | Ca, Rs<br>Ph, Cb<br>Rs<br>Ore, Rs | Ca, Rs<br>Ore, Rs<br>Ca, Rs<br>Ore, Rs | Cc, Rs<br>Ores, Rs | Cc, Rs<br>Bi, Ccg<br>Pf, Ccb<br>Rs<br>Ores, Rs | Ca, Rs<br>BF, Cs:<br>Ore, Rs | Rs, Om<br>Is, Cs | Dl, Cs<br>Bs, At<br>Cs<br>Bb, Cs<br>BF, Cs | Rs, Cs:<br>Om<br>Ie, Cs<br>BF, Cs | Dl, Cs<br>Bs, Cs<br>BF, Cs:<br>Rs |
| Primary                                       |  |                                   |  |                    |  |                              |                  |  |                                   |                                   |
| Secondary                                     |  |                                   |  |                    |  |                              |                  |  |                                   |                                   |
| MICRO RELIEF                                  | R  | R                                 | S                                      | S                  | R  | S                            | S                | S  | S                                 | S                                 |
| MACRO RELIEF                                  | R  | R                                 | R                                      | R                  | R  | R                            | S                | S  | S                                 | R                                 |
| SUMMARY CHARACTERISTICS                       | Rbmvo  | RPvo                              | Rb'mvo                                 | Rvo                | RPbmvo   | bsvo                         | IsE              | bs   | Ie                                | bsvo                              |
| OIL RESIDENCE INDEX                           | 3  | 3                                 | 3                                      | 3                  | 3  | 3                            | 1-2              | 2  | 1-2                               | 2                                 |
| GROUND TRUTH                                  | 0  | 0                                 | 0                                      | 0                  | 2,3  | 0                            | 0                | 0,4  | 0                                 | 0                                 |

## 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 → Bh, Ccg ← 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.

|   |  |                    |           |
|---|--|--------------------|-----------|
| <b>Anthropogenic (A)</b>  | j jetty                                | m marina           | t trench  |
| e causeway  | g groin                                | r boat ramp        | s seawall |
| f float   |  |                    | w wharf   |
| <b>Beach (B)</b>  |  |                    |           |
| b berm  | i inclined slope                       | s storm ridge      |           |
| c washover channel  | n multiple intertidal bars             | t low-tide terrace |           |
| f beach face  | r single intertidal bar                | w washover         |           |
| <b>Cliff (C)</b>  |  |                    |           |
| a active or erosional   | p passive                              | c caves present    |           |
| <b>Dune (D)</b>   |  |                    |           |
| b blowout   | f foredune                             | s ridge and swale  |           |
| d stabilized  | r random form                          | l longitudinal     |           |
| <b>Coastal Bay, Lagoon, Estuary (E)</b>                         |  |                    |           |
| b enclosed bay  | e estuary                              |                    |           |
| <b>Inlet (I)</b>  |  |                    |           |
| e ephemeral   | a opening fixed by offshore structures |                    |           |
| s stable  | f flood-tidal delta                    | l ebb-tidal delta  |           |
| <b>Marsh (M)</b>  | c tidal creek                          |                    |           |
| <b>Offshore Rocks (O)</b>                                       |  |                    |           |
| e intertidal reef   | s sea stack                            |                    |           |
| r rock outcrop (>2 m above M.S.L. and <10 m in width or length) |  |                    |           |

|                       |                     |                  |
|-----------------------|---------------------|------------------|
| <b>Platform (P)</b>   |                     |                  |
| h high-tide platform  | f horizontal        | t terraced       |
| l low-tide platform   | r ramp              | i irregular      |
| <b>River (R)</b>      |                     |                  |
| b braided             | m multiple          | s single channel |
| <b>Bar/Trough (S)</b> | r with rip channels |                  |
| <b>Delta (T)</b>      |                     |                  |
| 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.

|  |  |                    |                       |
|--|--|--------------------|-----------------------|
| <b>Anthropogenic materials (A)</b>               | 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) |                    |                       |
| <b>Biogenic sediments (B)</b>                    | l trees or wood particles                    | o organic litter   |                       |
| s shell hash (with a texture as described below) |  |                    |                       |
| <b>Clastic sediments (C)</b>                     | b boulder                                    | s sand             | m mud                 |
| c cobble   | # silt                                       | g gravel           |                       |
| p pebble   | clay   | r rubble           |                       |
| <b>Bedrock (R)</b>                               | 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., Ca/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:Rl).

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**M.M.S. Map# 103**  
**Sheet 2 of 2**