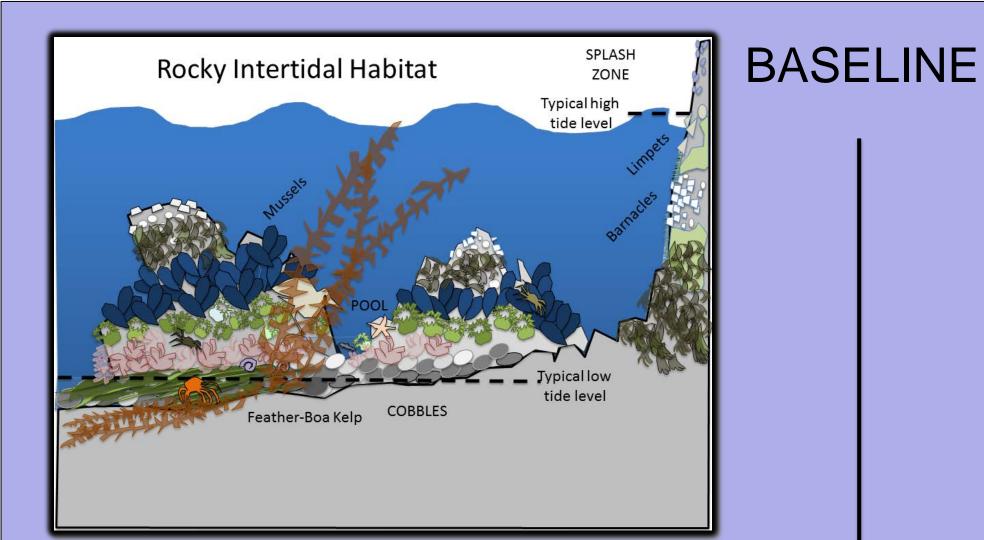
REFUGIO NATURAL RESOURCE DAMAGE ASSESSMENT ROCKY INTERTIDAL HABITATS

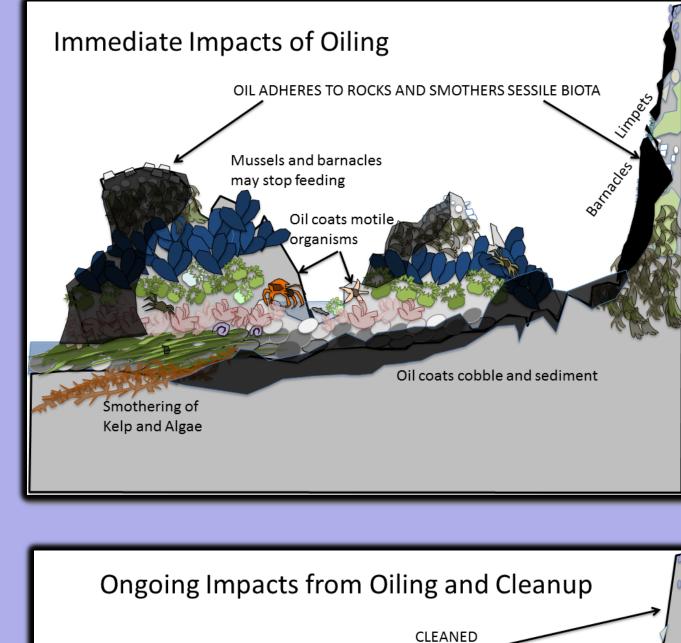


Injury Assessment Tasks: (partial list)

• Identify key rocky intertidal species potentially impacted by oil and/or cleanup activities

- Identify extent and degree of oiling and cleanup activities within rocky intertidal habitat
 - Evaluate Response Shoreline Cleanup Assessment Technique (SCAT) oiling data



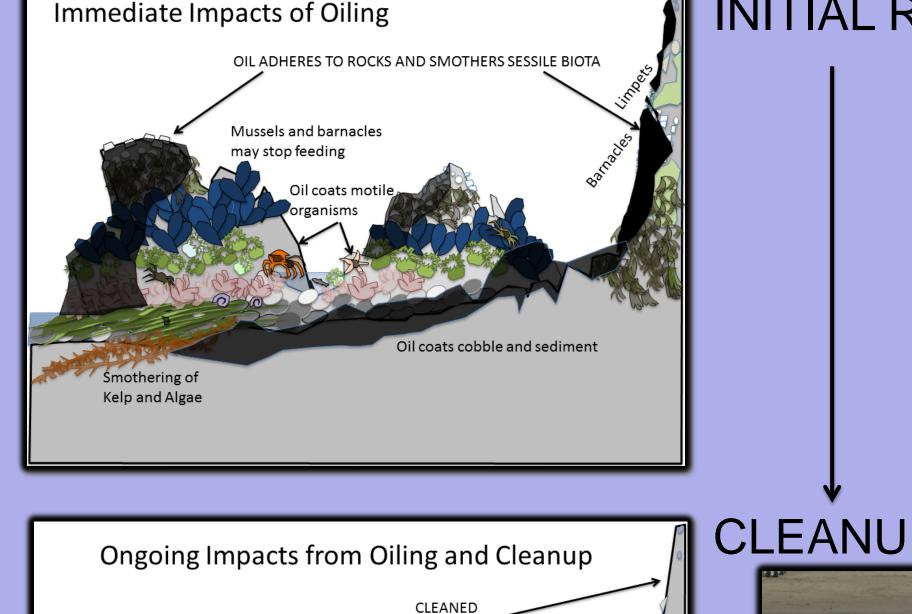


DIRECT REMOVAL OF OII

AND DEAD ORGANISMS



Key intertidal species – mussels, feather boa kelp, limpets, and barnacles (clockwise from upper left)



ROCKS & CLIFF

RESIDUAL OIL ON COBBLES AND SEDIMEN

Reduced cove

INITIAL RELEASE



- Identify locations and types of cleanup in intertidal habitats
- Determine injuries to rocky intertidal habitats from oiling and/or cleanup activities
 - Conduct biological surveys of habitat and key species
 - Measure exposure of biota to spill-related chemicals, such as polycyclic aromatic hydrocarbons
- Quantify the overall extent, degree, and duration of injury to rocky intertidal habitats and associated species

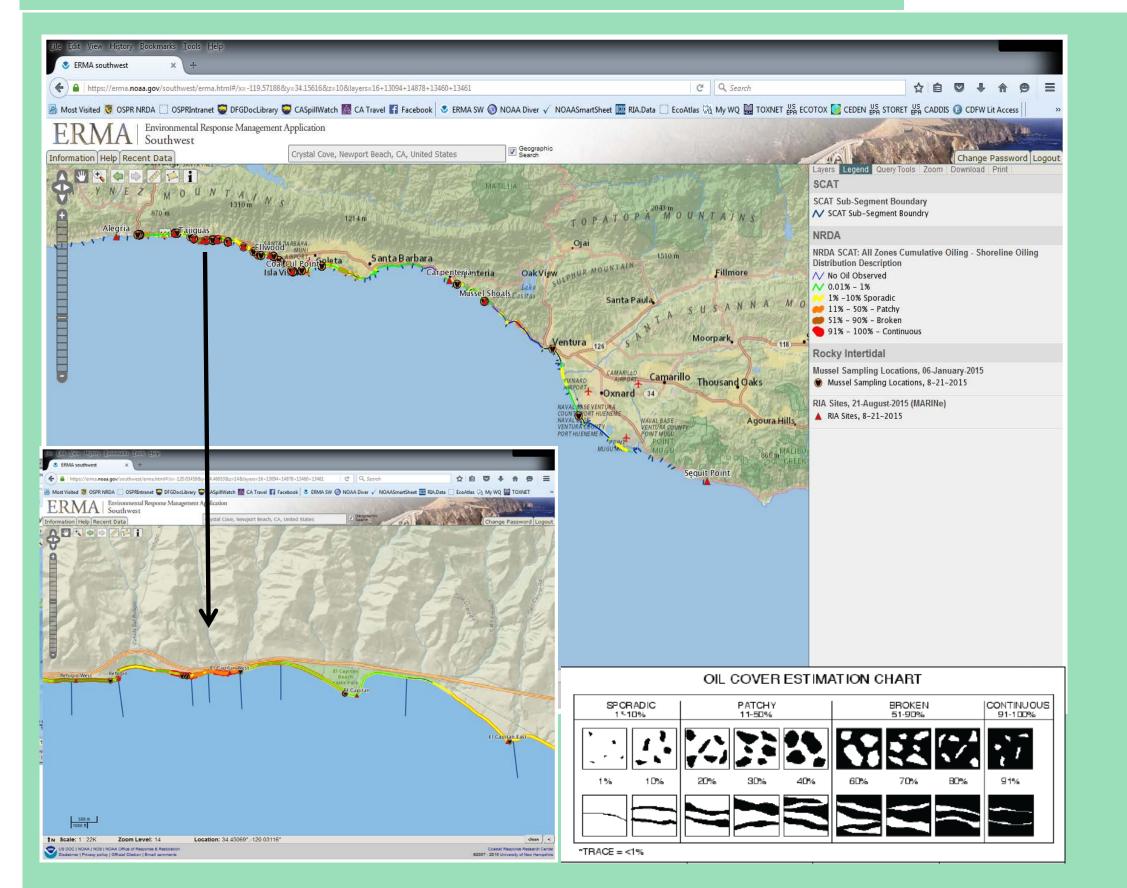
Oiled barnacles and mussels

CLEANUP & RESIDUAL IMPACTS



Manual cleanup of oiled intertidal rocks with wire brushes







Mussel sample collection

Restoration Planning Tasks: (partial list)

• Evaluate potential restoration projects for feasibility and potential benefits to natural resources

• Calculate the amount of restoration necessary to compensate for these spill-related injuries

Map of SCAT shoreline oiling (as percent oil cover) and locations of NRDA rocky intertidal biological surveys ("RIA sites") and mussel sampling



Biological surveys



Algae transplantation as potential option for rocky intertidal restoration

