

## COASTAL HABITAT STUDY NUMBER 1A

Study Title: Comprehensive Assessment of Injury to Coastal Habitats

Lead Agency: USFS

### PROJECT JUSTIFICATION

Preliminary analysis of the coastal habitat data indicate that the intertidal zone was the most severely contaminated habitat within the oil spill area. Recovery in the supratidal is progressing. However, recovery in the one and two meter drop of the intertidal zone is still retarded. Natural populations of intertidal organisms were significantly reduced along heavily oiled shorelines throughout the oil impact region. Densities of intertidal algae (Fucus), barnacles, limpets, amphipods, isopods, and marine worms were decreased. Although there were increased densities of mussels in oiled areas in 1990, mussels were significantly smaller than mussels in the unoiled areas and the total biomass of mussels was significantly lower. In 1991, mussel densities and biomass were both greater at control sites than oiled sites. Petroleum hydrocarbon accumulation in filter-feeding mussels experimentally placed in oiled areas indicate that oil remains available for uptake by other organisms. In both 1990 and 1991, oiled surfaces retarded settlement by juvenile barnacles when compared to unoiled sites.

Fucus, the dominant intertidal plant, was severely affected by the oil and subsequent cleanup activities. In 1991, Fucus densities continued to be depressed at oiled sites, probably due to the poor dispersal capability of this algae. The percentage of intertidal areas covered by Fucus was reduced following the spill, and coverage of opportunistic plant species which characteristically flourish in disturbed areas increased. In 1991, most algal species showed adverse affects of the oil spill, with only one species being more abundant at oiled sites than control sites. The average size of Fucus was reduced, the number of reproductive-sized plants greatly decreased, and the remaining plants of reproductive size decreased in reproductive potential due to fewer fertile receptacles per plant. There was also reduced recruitment of Fucus at oiled sites.

Samples which were collected and sorted from 1989-1991 will be processed and analyzed in 1992. The final analysis of these data will be used to meet the following objectives:

- 1) Estimate the quantity, quality, and composition of critical trophic levels in moderately and heavily oiled sites relative to non-oiled sites;
- 2) Estimate hydrocarbon concentrations in sediments and biological samples;
- 3) Establish the response of populations of intertidal organisms to varying degrees of oiling and subsequent clean-up procedures
- 4) Extrapolate impact results to the entire spill-affected area;
- 5) Estimate the rate of recovery of the habitats studied and their potential for restoration; and
- 6) Provide linkages to other studies by demonstrating the relationships between oil, trophic level impacts, and higher organisms.

BUDGET (\$K)

Salaries	\$ 0.0
Travel	0.0
Contracts	2,300.0
Supplies	0.0
Equipment	0.0
Subtotal	\$2,300.0
General Administration	58.5
Total	\$2,358.5